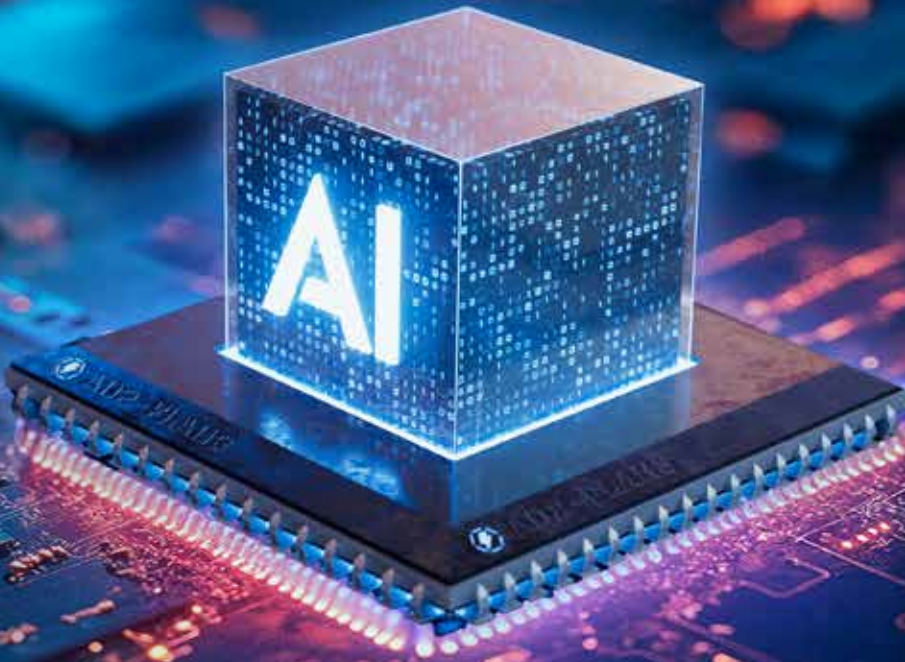تحت رعاية صاحب السمو الشيخ محمد بن زايد آل نهيان، رئيس دولة الامارات العربية المتحدة

Under the patronage of His Highness Sheikh Mohamed Bin Zayed Al Nahyan, President of the United Arab Emirates

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ADNOC

4-7 November 2024
Abu Dhabi, UAE

Innovation Guide

AI & DIGITALISATION FOR ENERGY TRANSFORMATION

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ENERGY *ai*
by ADNOC

EMBRACING AI TO GO FURTHER, FASTER

As energy demand increases, we are integrating cutting edge AI solutions and revolutionary technologies from the control room to the boardroom to provide secure, reliable, and responsible products to our customers.

**AI FOR ENERGY.
ENERGY FOR AI.**

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#EnergyForLife

INTRODUCING THE ADIPEC INNOVATION GUIDE

With a progressive legacy spanning four decades, ADIPEC 2024 unfolds under the forward-looking theme, 'Connecting Minds. Transforming Energy.' This year's event centers on harnessing innovation and accelerating decisive action at the intersection of energy and artificial intelligence (AI). By bringing together industry leaders, innovators, and visionaries from across the energy ecosystem, ADIPEC 2024 aims to spark global impact and foster collaboration on transformative solutions based on innovation, artificial intelligence (AI) and digitalization.

In its inaugural edition, the ADIPEC Innovation Guide embodies ADIPEC's mission to highlight the pioneering role of AI in reshaping the technologies and strategies accelerating the global energy transition. Designed as a valuable resource for all attendees, the guide illuminates how AI, advanced digitalisation, and cross-sector partnerships are redefining energy landscapes, igniting change across both established and emerging markets.

The Innovation Guide provides a comprehensive look at the AI and technology breakthroughs as well as products, solutions, and initiatives presented by ADIPEC 2024 exhibitors. It serves as a pathway to discovery, helping attendees identify AI-driven solutions and partnerships that enhance efficiency, scalability, and sustainability in energy supply. With dedicated content on key areas such as next-generation AI and its impact on the global energy ecosystem, the Innovation Guide navigates diverse industry scenarios, demonstrating how these sectors are embracing innovation.

The Innovation Guide also embodies ADIPEC 2024's commitment to a unified and inclusive approach to energy progress. By amplifying voices from the frontiers of the AI and technology community along with innovators and experts, ADIPEC 2024 aims to forge a global ecosystem dedicated to the energy systems of tomorrow — where secure, sustainable, and equitable energy solutions drive prosperity for all.

ENERGY*ai*

by ADNOC

Leveraging AI to drive sustainability

The integration of artificial intelligence (AI) technologies in the energy sector continues to drive advancements in efficiency, optimisation and the transition to lower-carbon sources of energy.

However, as AI capabilities expand, so too does its demand for energy. The computing power required for AI doubles every 100 days and is projected to increase exponentially, placing growing pressure on energy infrastructure. This presents a challenge in how AI can continue to be leveraged to advance the energy transition in a manner consistent with global sustainability objectives.

Spotlighting the transformational impact of AI on the energy transition, the inaugral edition of Energy[ai] by ADNOC will explore the energy-AI nexus, highlighting the integration and impact of AI solutions across the value chain while shining a light on the increasing demands AI is placing on our energy systems. Hosted in a purpose-built exhibition hall, Energy[ai] by ADNOC, the world's largest energy event, will convene energy and AI stakeholders from across the energy and technology ecosystem to catalyse new partnerships and collaborations centred on technological innovation and advancing the global AI roadmap in support of sustainable energy transformation.

EMBRACING AI FOR ACCELERATED ENERGY ACTION

Energy^ai by ADNOC showcases the latest advancements in AI and digital technologies, demonstrating their crucial role in mitigating climate change, driving the energy transition, and supporting global net-zero ambitions. Here are the companies showcasing their solutions at Energy^ai by ADNOC:

AI Principal Partner

AI Strategic Partners

AI Partners

AI Innovators

NAVIGATING AI CHALLENGES AND OPPORTUNITIES IN GLOBAL MARKETS

Recent advancements in AI technologies are reshaping the energy sector, changing the way energy is being produced, distributed and used. AI is enhancing capabilities in areas such as energy exploration, efficiency and storage. AI-driven predictive models and performance analysis are also optimising business processes, reducing costs and boosting efficiency. The emergence of new AI technologies such as OpenAI's ChatGPT, Google's Bard, DeepMind's AlphaFold, and IBM's Watson is making AI more accessible and impactful than ever before.

As AI adoption accelerates, it brings both significant industry challenges and substantial opportunities for growth that differ across the Global North and South. It is particularly crucial in the Global South, to address issues such as internet penetration, electricity access, and mitigating negative impacts of AI through targeted legislation, investment, and public-private partnerships.

According to PwC, AI is projected to contribute up to US$15.7 trillion to the global economy by 2030, more than the current output of China and India combined. In the Middle East, AI is anticipated to generate up to US$320 billion by 2030, with significant contributions from the UAE and Saudi Arabia. This growth underscores the region's potential to play a pivotal role in the global AI landscape, influencing market trends and driving innovation.

Energy^ai by ADNOC will examine these pivotal challenges and offer strategic insights and solutions to promote a balanced and sustainable future for AI and energy.

ACCELERATING INNOVATION AS A CATALYST FOR TRANSFORMATION

By Christopher Hudson
President - dmg events

This year marks a pivotal moment for the energy industry, with innovation, artificial intelligence (AI) and digitalisation accelerating the global energy transition and reshaping the sector to meet operational and environmental challenges head-on.
This year also celebrates a milestone as ADIPEC marks 40 years of energy leadership, continuing its mission to drive innovation, foster equitable growth and explore new technologies that empower lives, drive global prosperity and ensure a secure, sustainable future.

At ADIPEC 2024, we're committed to tackling the most pressing energy challenges by bringing together the world's leading energy producers, consumers and innovators from government, technology and finance. Our goal is to spark new ideas, drive impactful actions and create solutions that move us toward a future that's both low-carbon and geared for growth.

A critical driver of this transformation is AI, which enables energy companies to reduce costs, enhance performance, and support global decarbonisation goals. ADIPEC champions AI as a transformative force and proudly introduces Energyai by ADNOC, a groundbreaking new zone that highlights AI's impact across the energy value chain, showcasing how AI drives efficiency, fosters innovation and stimulates growth while addressing the increasing demands it places on energy systems.

Beyond AI, digitalisation is reshaping the industry. Technologies like blockchain are enhancing transparency, automation is improving reliability and reducing emissions, and digital twins enable real-time optimisation of assets. The Industrial Internet of Things (IIoT) is strengthening connectivity and enabling smarter energy management across the value chain, laying the foundation for a more agile, data-driven and resilient energy system.

The ADIPEC Innovation Guide provides a comprehensive look at the pioneering technologies featured at ADIPEC 2024. From AI-powered predictive maintenance to smarter grid management, this guide showcases the advancements shaping the energy landscape and highlights essential collaborations for scaling these solutions.

ADIPEC 2024 is more than just a gathering of industry players; it's about uniting the right people to ignite critical conversations, inspire innovation, and drive meaningful change across sectors. At its core, ADIPEC enables cross-sector collaborations and impactful partnerships that will transform industries while advancing sustainable economic growth.

I invite you to explore this Innovation Guide and discover the transformative possibilities that ADIPEC 2024 offers. Together, through innovation and collaboration, we can drive the energy transition and build a brighter, more sustainable energy future for all.

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Christopher Hudson

UNITING FOR PROGRESS: TRANSFORMING ENERGY, EMBRACING AI AND CHAMPIONING DECARBONISATION

By Sophie Hildebrand
Chief Technology Officer, ADNOC Group

We come together at a pivotal time for our industry and the world, where three forces are converging to define our future: the rapid rise of artificial intelligence (AI), the world's growing demand for energy and the imperative to decarbonise. Each of these forces on its own present challenges and opportunities; their convergence will define the path forward.

At ADNOC, we recognise that these challenges cannot be tackled in isolation. Our Energyai strategy is built on the understanding that energy needs AI, and AI needs energy. This understanding is central to our ambition to be the world's most AI-enabled energy company. We are powering the growth of the AI revolution while embedding the solutions it offers across our business – from the control room to the boardroom – to enhance safety, reduce emissions, optimise efficiency and maximise value. We are creating partnerships with innovators and pioneers to transform the future of energy and provide secure, accessible and sustainable energy to the growing global population.

AI's rise, however, brings with it a new dynamic— the energy consumption of AI itself. The data centres, algorithms, and computational infrastructure that underpin AI innovations require significant amounts of energy. This creates a powerful feedback loop: AI drives efficiencies in energy production, but AI also needs a steady, reliable supply of energy to thrive. This inter-dependency places energy companies like ADNOC at the heart of the global digital economy. We are energy producers, and we bring energy for life.

We are committed to deploying the latest technologies – including carbon capture and stemless valves – to decarbonise today's energy system and build a clean energy future, creating long-term value for our people, business, and society. We embrace the energy transition and

> **We are committed to deploying the latest technologies – including carbon capture and stemless valves – to decarbonise today's energy system and build a clean energy future, creating long-term value for our people, business, and society**

aim to achieve net zero across our operations by 2045, reduce carbon intensity by 25%, and deliver near-zero methane emissions by 2030. Technology and AI play a crucial role in accelerating a just and equitable energy transition.

At ADNOC, AI integration enables smarter decision-making and better protection for our people and the environment. As we expand our diversified portfolio, we continue to integrate AI to future-proof our business and drive sustainable value from our assets and resources.

There is an unprecedented level of sensing in our operations today. Moving from the smallest pressure and temperature sensors in our processing facilities all the way to satellite monitoring of the environmental conditions of operations from space. ADIPEC is the place to fuse together this diversity of data into a cohesive picture.

AI and the energy transition are so fundamentally interconnected that a meaningful way forward must be a collaborative one. ADIPEC presents an ideal opportunity to explore how we can work together to transform our industry for the future and in this exciting new world.

I wish you well for a thought-provoking, productive ADIPEC.

At ADNOC, AI integration enables smarter decision-making and better protection for our people and the environment. As we expand our diversified portfolio, we continue to integrate AI to future-proof our business and drive sustainable value from our assets and resources.

Sophie Hildebrand

Siemens Energy
Stand: 3550
Hall: 3

DIGITAL SOLUTIONS: ENHANCING SUSTAINABILITY AND EFFICIENCY IN CURRENT SYSTEMS

By Dr. Fahad Al Yafe
Chief Technology Officer - Middle East, Siemens Energy

Siemens Energy is at the forefront of leveraging artificial intelligence (AI) and digital solutions to support net-zero and climate goals. We are utilising and developing AI and digital solutions to manage grid stability, which is becoming increasingly important as more intermittent renewable energy sources like wind and solar are integrated. These sources can increase volatility and instability in the grid, but our AI-driven solutions help manage these challenges effectively. Our solutions ensure a stable and reliable energy supply even as the proportion of renewable energy increases.

At ADIPEC this year, we will be showcasing these innovative solutions that are crucial for achieving the ambitious goals set at the United Nations Climate Change Conference (COP28), such as tripling renewable energy capacity and doubling energy efficiency by the end of the decade.

AI plays a crucial role in the transformation of the energy sector by optimising grid operations, predicting energy demand, forecasting weather patterns, and accelerating the integration of renewable energy sources. It also aids in developing innovative new technologies, designing components, creating energy storage solutions, and strengthening cybersecurity protections. The potential of AI to revolutionise the energy sector is immense, as it can drive significant improvements in efficiency, reliability, and sustainability.

One of the key examples of how our AI and digital solutions have improved efficiency in energy services is through AI-powered predictive maintenance. This technology significantly reduces equipment failures, minimises downtime, and optimises asset utilisation. For

> **AI plays a crucial role in the transformation of the energy sector by optimising grid operations, predicting energy demand, forecasting weather patterns, and accelerating the integration of renewable energy sources.**
>
> **Dr. Fahad Al Yafe**

instance, we have demonstrated how leveraging AI can enhance turbine efficiency, reduce fuel usage, lower emissions, and extend maintenance intervals—all while minimising maintenance times. These tangible results underscore the transformative impact of AI on energy efficiency and sustainability.

The role of ADIPEC in enabling AI and digital innovations for a sustainable future cannot be overstated. As a premier platform for industry leaders, policymakers, and technology innovators, ADIPEC facilitates the exchange of ideas, collaboration, and the showcasing of groundbreaking technologies. It provides a unique opportunity for Siemens Energy to demonstrate our AI and digital solutions, engage with stakeholders, and drive the adoption of sustainable energy practices. By fostering collaboration and innovation, ADIPEC plays a vital role in shaping a sustainable future for the energy sector.

AIQ
Stand: AI-9
Hall:Energy[ai] by ADNOC

LESSONS TO BE LEARNED FROM UAE'S AI-ENERGY LEADERSHIP

By Magzhan Kenesbai
Acting Managing Director, AIQ

Global demand for energy is considerable and expanding, which is a trend that needs to be balanced by calls for cleaner and more sustainable energy sources. Digitisation generally, and artificial intelligence (AI) in particular, is playing a major role in creating a new paradigm in the industry where lower cost energy can be produced, while environmental, sustainability, and operational factors can all be uplifted, leading to an energy sector that is fit-for-purpose for the modern era.

Progressive energy companies around the world are investing in AI-based innovations to not only optimise operations and reduce OPEX, but also to drive down CAPEX, catalyse sustainability efforts, and even accelerate energy transition agendas.

The UAE stands as an example globally, of how the energy sector itself, can invest in and find solutions to managing its future development, relevance, impact, and evolution. At a national level, AI has been identified as the driving changemaker to transform the sector in the years and decades to come, and the use of the technology is already accelerating in use cases and impact.

The results of this investment in technology are already starting to speak volumes. Abu Dhabi National Oil Company (ADNOC), which is on a mission to become the most AI-enabled energy company in the world, reported that AI solutions across its full value chain generated US$500 million in value in 2023 alone.

This monumental achievement is part of a multi-year program to accelerate the deployment of AI solutions across ADNOC's vast businesses, from field operations to smarter and quicker corporate decision-making, which has also resulted in the abatement of up to 1 million tons of carbon dioxide (CO2) emissions between 2022 and 2023, the equivalent of removing approximately 200,000 gasoline-powered cars from the road.

The UAE continues to lead the way in the adoption of AI-driven solutions across the energy value chain, leveraging AI to transform both traditional and renewable energy sectors, significantly enhancing operational efficiency, sustainability, and the pace of the energy transition, which feeds back into supporting AI's veracious appetite for energy. Incorporating next-generation technology such as AI with legacy systems, overcoming expensive set-up costs, and managing new emissions profiles will all need to be navigated and overcome.

Throughout the energy sector, AI-powered predictive maintenance tools are being employed to monitor and forecast equipment health, reduce unexpected failures, and optimise production processes, for example. AIQ already has products in commercial use driving gains from autonomous operations, while smart grid initiatives are using AI to balance demand and supply in real-time, ensuring efficient distribution and reducing waste.

In the UAE, the collaboration between the public and private sectors has been instrumental in scaling AI-driven solutions. This successful model can be replicated by forming cross-sector alliances that combine technological expertise with industry-specific knowledge.

Equally important is the need for significant investment in AI infrastructure. Similar to the UAE's prioritisation of investment in digital infrastructure to support the deployment of AI across the energy value chain, industries and governments aiming to harness AI should focus on upgrading digital platforms, ensuring robust data management, and integrating AI into operational systems.

Take for example the recent announcement by BlackRock, Global Infrastructure Partners (GIP), Microsoft, and MGX, of the Global AI Infrastructure Investment Partnership (GAIIP) to make investments in new and expanded data centres to meet growing demand for computing power, as well as energy infrastructure to create new sources of power for these facilities. These infrastructure investments will be chiefly in the United States fuelling AI innovation and economic growth, and the remainder will be invested in U.S. partner countries.

Supportive policies also play a crucial role in AI integration. The UAE's forward-thinking regula-

tory framework has demonstrated the impact that supportive legislation plays in promoting innovation while addressing challenges like data privacy and cybersecurity, creating an environment where AI can safely thrive, providing other governments with successful models they can adopt.

Take for example the collaboration between G42 and Nvidia to develop AI solutions aimed at enhancing the accuracy of weather forecasting globally. The collaboration will drive advanced climate solutions through Nvidia's Earth-2 platform, which can make climate and weather predictions with interactive, AI-augmented, high-resolution simulation.

Lastly, the energy transformation driven by AI requires a skilled workforce capable of managing and optimising AI technologies. Creating programmes and incentives to upskill the workforce and produce graduates with the requisite training and experience can ensure that a country has a steady stream of professionals able to manage and lead AI integration. Industries globally should prioritise reskilling programmes to facilitate AI integration and maximise its benefits, while governments can take inspiration from the AI-focused higher education that the UAE is pioneering through its Mohammed bin Zayed University of Artificial Intelligence and training provided by its National Programme for Artificial Intelligence.

Progressive energy companies are investing in AI-based innovations to drive down CAPEX, catalyse sustainability efforts, and even accelerate energy transition agendas.

Magzhan Kenesbai

Microsoft
Stand: 14250
Hall:14

THE ROAD TO NET ZERO: DIGITAL SOLUTIONS, GLOBAL COLLABORATION, AND UNWAVERING SUSTAINABILITY GOALS

By Darryl Willis
Corporate Vice President,
Energy & Resources Industry, Microsoft

As the global energy landscape undergoes a profound transformation, the imperatives of energy security, resilience, accessibility and sustainability have never been more critical. At Microsoft, we are committed to developing and driving the digital innovations needed to advance the energy transition and the journey to net-zero emissions. We are helping organisations of all sizes unlock the power of data and AI to create a data-driven digital foundation for a sustainable future. This includes empowering employees, increasing operational efficiency, achieving net-zero commitments, and growing sustainable businesses. By promoting collaboration and leveraging AI-powered technologies, we are enabling the energy sector to meet today's challenges and capture tomorrow's opportunities.

The transition to a more sustainable energy future is both urgent and complex. The increasing demand for energy, integration of renewable energy sources, rise in electric vehicles, and decentralisation of energy supply present unprecedented challenges. Navigating and thriving in this complex landscape requires embracing digital innovation. Cloud-powered advanced analytics, AI, and quantum computing are reshaping how we manage the end-to-end energy value chain, making it possible to optimise energy supply, enhance grid resilience, and improve efficiency across the enterprise.

AI is at the forefront of delivering a more secure, equitable and sustainable future by measuring,

predicting and optimising complex systems, accelerating the development of sustainability solutions and by empowering the sustainability workforce. It enhances our ability to forecast energy demand, optimise resource allocation, and manage the complexities of a modern grid. AI-driven insights allow us to anticipate and respond to fluctuations in energy supply and demand, ensuring a more reliable and efficient energy system. By identifying inefficiencies and optimising operations, AI helps reduce carbon intensity across the energy sector and facilitates the integration of renewable energy sources, supporting the global push towards net-zero emissions.

Quantum computing represents a revolutionary leap in our ability to solve some of the most complex problems in the energy sector. Its potential to process vast amounts of data at unprecedented speeds opens new avenues for optimising energy systems, from identifying new materials and increasing battery storage capacities to enhancing load balancing and resource scheduling in real-time. As we continue to develop quantum technologies, their application in the energy sector will become increasingly transformative, unlocking new efficiencies and innovations that drive significant progress towards a more sustainable future.

The journey to net zero is a collective global mission that requires collaboration across the energy ecosystem. Partnerships between the public and private sectors, industry leaders, incumbents and startups, academia and technology innovators are crucial in accelerating the energy transition. By working together, we can share knowledge, leverage resources, and drive the broad adoption of more sustainable practices and technologies. Public-private partnerships are particularly vital, as they align policies and incentives with the development and deployment of new technologies and strategies.

At Microsoft, our commitment to sustainability is integral to our mission to empower every person and every organisation on the planet to achieve more. We aim to be carbon negative by 2030, and by 2050 to remove from the environment all the carbon the company has emitted since it was founded in 1975. These ambitious goals reflect our dedication to leading by example and promoting a sustainable future for all. Our approach to sustainability includes reducing our own carbon footprint, advancing sustainable practices across our supply chain, and supporting our partners and customers in their sustainability journeys. By setting high standards and working collaboratively, we can drive meaningful change and create a more sustainable world.

As we look to the future, the imperatives for a net-zero world are clear—leveraging digital innovations, fostering collaboration, and maintaining a constant commitment to sustainability. At Microsoft, we are honoured to play a pivotal role in this journey, providing the leadership, vision, and expertise to help drive the multidimensional global energy transition forward.

Together we can build a secure, resilient, accessible and sustainable energy future for all, ensuring a brighter future for generations to come. Learn more at Sustainable Energy Solutions | Microsoft Industry.

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By identifying inefficiencies and optimising operations, AI helps reduce carbon intensity across the energy sector and facilitates the integration of renewable energy sources, supporting the global push towards net-zero emissions.

Darryl Willis

ENI
Stand: A300
Hall: Atrium

AI'S PIVOTAL ROLE IN THE ENERGY REVOLUTION

By Claudio Descalzi
CEO, Eni

As the world grapples with the urgent need to transition to a more sustainable energy landscape, technological innovation, and collaboration have emerged as indispensable and pivotal tools.

Technology is at the heart of progress and prosperity, driving economic growth and enhancing the quality of life. However, it is nothing without scalability and it evolves into an effective deployment only if the industry sector can apply it, transforming technology into a profitable business.

On the energy side, technological advancements are crucial in driving efficiency and reducing costs. Meanwhile, innovation drives the development of new business models that can better align with a changing energy landscape. So, the energy transition is itself a technological transition.

Fully aware of this, Eni shapes the new era of sustainable energy solutions through technological innovation: we are progressively decarbonising our activities, reducing our carbon footprint improving efficiency of our existing operations, and transforming our industrial processes, products, and services. This approach, based on proprietary technology, is able to generate new businesses ("satellites") that produce energy and decarbonisation solutions and are capable of independently accessing capital markets to fund their growth along with new opportunities for the people and territories involved.

In fact, Eni is deploying new technologies to transform its activities in support of the energy transition and at the same time creating new independent companies that provide material and sustainable returns. Traditional refineries have been and will be converted into biorefineries to produce biofuels, the core of Enilive, Eni's mobility transformation company. Renewable energy generation is integrated in Plenitude alongside the network of charging systems for electric vehicles and solutions for end customers. Moreover, by leveraging carbon capture and storage (CCS), Eni is already helping decarbonise hard-to-abate industrial sectors.

At the same time, we know the energy system of the future requires technologies that are not yet available at scale; so, our research and development of breakthrough technologies will support the revolution of the energy sector.

In this path, high-performance computing (HPC) and Artificial intelligence (AI) are pivotal tools. Eni has been investing steadily for decades in HPC systems, which have significantly contributed to Eni's exploration successes while supporting our R&D studies in new technological solutions for the energy transition through advanced simulations applied to solve complex modelling problems. We are now launching HPC6, which will significantly enhance our computing capacity, and will be one of the most powerful industrial computing systems in the world. Artificial Intelligence is already extensively used in our business, to help the pursuit of operational excellence in our processes, improve the energy efficiency of our facilities, increase the safety of our people, and help preserve the integrity of our assets: HPC6 will also be crucial to further boost the implementation of Artificial Intelligence models.

Enabling partnerships to grow through the transition
The energy transition is a complex challenge and cannot be solved by any single actor: partnerships are vital to share knowledge to increase the impact of transformation.

Eni collaborates with universities, research entities, and industry consortia worldwide to foster knowledge exchange and drive innovation; partnering with technology companies and startups, we can also accelerate the development and adoption of new energy solutions. The collaborations with international organisations are pivotal in shaping industry standards, promoting sustainable practices, and advocating for policies that support a low-carbon future.

The dialogue with a wide range of stakeholders is constant and it is necessary to address the challenges of the energy transition.

Eni has a long-standing relationship with the United Arab Emirates, where we operate along the entire energy value chain with our vertical integrated approach. Our collaboration with ADNOC has been particularly fruitful, resulting in several significant undertakings, like Ghasha, a mega gas project. Furthermore, we are also working together to explore opportunities in renewable energy, hydrogen, carbon capture and storage, and energy efficiency to support global energy security and a sustainable energy transition.

A commitment to ADIPEC
ADIPEC provides a platform for industry leaders to discuss the challenges and opportunities facing the energy sector. Eni is proud to be a long-time participant. We look forward to continuing to share our vision for a sustainable energy future.

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Claudio Descalzi

Baker Hughes
Stand: AI-12
Hall: Energy ai by ADNOC

ACCELERATING AI SOLUTIONS FOR NET-ZERO GOALS

By Lorenzo Simonelli
Chairman & CEO, Baker Hughes

ADIPEC is a leading industry event that brings together energy leaders to discuss critical needs and key actions to help energise the sector's transformation. With current geopolitical uncertainties, shifting economies, and volatile markets, the energy sector is undergoing a significant evolution. The imperative to advance sustainable energy development has never been greater. Baker Hughes leverages ADIPEC to engage with world leaders in discussions centred around the importance of accelerating energy, and industry, toward a more sustainable, efficient and innovative future. This provides us with an opportunity to showcase our commitment to energising change within our own transition journey, while continuing to deliver affordable, reliable, and secure energy.

While some technologies exist today that can deliver a significant reduction in emissions, we must accelerate the development of new solutions that help accelerate progress toward net-zero goals. Digital and AI will play a critical role in driving efficiency gains and reducing emissions; the importance of digital is reflected in the launch of the "Digitalisation & Technology Conference" at ADIPEC this year to discuss and highlight the latest Fourth Industrial Revolution technologies needed to accelerate the energy transition.

Over the past few years, Baker Hughes has invested $2.1 billion in strategic initiatives focused on new energy solutions, demonstrating our commitment to advancing the energy transition. We have made early-stage investments and acquisitions in companies such as Mosaic Materials, NET Power, and GreenFire Energy. Additionally, strategic collaborations like our partnership with HIF Global reflect our dedication to driving multi-industry emissions reductions and addressing climate change.

With growing energy demand around the globe, hydrocarbons will continue to be a significant part of the global energy mix. Therefore, enhancing efficiency and reducing emissions in the oil and gas sector is paramount. According to the International Energy Agency (IEA), more than 40% of the emissions abatement needed by 2040 to meet the Paris Agreement goals can be achieved through energy efficiency gains. Implementing energy-efficient practices in extraction, processing, and distribution operations can reduce overall emissions. This includes optimising processes, upgrading infrastructure, and minimising methane leaks. Baker Hughes is focused on the entire lifecycle of energy production and consumption and aims to work with its customers on optimising efficiency and minimising environmental impact at every stage, whilst also providing long-term value. Additionally, we are keen to provide energy solutions that are sustainable for the economy and society at large.

We firmly believe that achieving net-zero goals necessitates robust partnerships, integrated thinking, and adherence to common sustainability standards. Collaborative innovation is key: by leveraging each other's strengths, we can develop cutting-edge solutions to better serve the energy sector. Such partnerships can lead to expanded service offerings, facilitating progress toward sustainable energy development.

Alignment with global standards ensures that customers are part of a universally recognised effort, making it easier to engage with international markets and stakeholders and capitalise on the growing global momentum toward sustainable energy development.

Collaboration with Baker Hughes means being at the forefront of energy technology innovation. Together, we can explore sustainable solutions across the spectrum of energy sources whilst demonstrating a proactive commitment to sustainable energy development.

This is all aligned with the ADIPEC 2024 theme of 'unite for accelerated energy progress'. We need to develop and scale new technologies and solutions that help drive growth, inspire collective climate action and deliver collaborative global energy progress.

As the energy transition continues to accelerate, delivering tangible climate action is necessary. That requires the energy industry to rethink energy production and consumption. With this complexity in mind, collaboration across industries is required; leaders must come together to explore new ways of partnerships to drive collective action.

Partnerships, particularly in hard-to-abate sectors such as mining, steel, cement and transportation, will be instrumental in overcoming challenges related to

financing, technology, infrastructure development and talent. Collaborative efforts between energy providers and end-users are vital for addressing these challenges effectively and to scale-up progress across multiple sectors.

At Baker Hughes, we design, manufacture, and service transformative technologies to help take energy forward – making it safer, cleaner, and more efficient for people and the planet.

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While some technologies exist today that can deliver a significant reduction in emissions, we must accelerate the development of new solutions that help accelerate progress toward net-zero goals. Digital and AI will play a critical role in driving efficiency gains and reducing emissions.

Lorenzo Simonelli

Samsung E&A,
Stand 9420
Hall 9

INTEGRATING AI TO ENHANCE ENERGY EFFICIENCY AND PRODUCTIVITY

How do you see your company expediting the role of AI and machine learning as part of the global energy transition?

SAMSUNG E&A plays a crucial role in the global energy transition by integrating AI and machine learning to enhance energy efficiency and productivity, especially in industrial plant design and construction. AI's rapid evolution enables us to optimise operations, even though it demands significant energy. However, the productivity gains achieved through AI outweigh the energy cost by reducing construction schedules and operational inefficiencies.

We are both energy consumers and contributors to energy efficiency, working not just on optimising existing plants but ensuring energy-efficient designs for new projects. One of our key strategies involves off-site manufacturing for large plant constructions. By shifting construction to controlled environments, we significantly reduce energy consumption, improve timelines, and limit the environmental impact at on-site locations.

Overall, higher productivity, enabled by AI, leads to significant energy savings and lower emissions, benefiting both our clients and the broader energy transition effort.

What technology and services will the company spotlight at ADIPEC in this edition?

SAMSUNG E&A will highlight its commitment to sustainable solutions showcasing innovations to accelerate decarbonisation. This year, the company rebranded to SAMSUNG E&A to reflect the evolving business landscape and growth opportunities in the energy transition era.

Our AHEAD execution model, based on the Engineering Data Platform (EDP), integrates intelligence and automation across all EPC phases, with Design AHEAD, Build AHEAD, and Integrate AHEAD leading the way. We will also present our Future Map, which introduces the E&Able strategy,

> **"**
> **AI and digitalisation are essential in accelerating the transition to a low-carbon world. By combining AI's predictive capabilities with human judgment, we achieve better outcomes.**

Hong Namkoong
President & CEO of SAMSUNG E&A

a sustainable model for future growth. 'E&Able' is a compound word created that 'SAMSUNG E&A 'with their technology 'is "Able" to develop future businesses. Key innovations like Modularisation and Eco Complex City will also be featured.

Introducing the E to M (Electron to Molecules) Value Chain, we illustrate the complete process from decarbonisation and electrolysis to fuel and product production. Our safety brand S.A.Y (Safety Around You) and the HSE Platform 4S (Smart Site Safety Solution) will emphasize safety and advanced features like Smart AI CCTV, Smart Safety Harness, Smart Air Vest, Smart Patrol Robot, and Smart Confined Space Monitoring, ensuring the highest standards of workplace safety will be highlighted.

What role does ADIPEC play in advancing progress to decarbonisation and a clean energy ecosystem?

ADIPEC 2024 serves as a significant platform for driving the global energy transition by bringing together industry leaders to discuss AI, finance, and sustainable practices. This year's conference will focus on the AI-energy nexus, exploring how AI can transform the sector to meet decarbonisation goals more efficiently. SAMSUNG E&A sees this as an opportunity to collaborate with partners and leverage cutting-edge digitalisation strategies to accelerate progress toward a clean energy ecosystem.

Can you highlight the successful projects and innovations relating to the energy transition journey that your company has executed since the previous ADIPEC?

Since the last ADIPEC, SAMSUNG E&A has made significant strides in the energy transition, hosting the 'Shepherd CCS Summit 2024' in Korea to discuss the future of Carbon Capture & Storage (CCS), essential for meeting National Determined Contributions (NDCs). We also organised the E&Able Tech Forum to showcase our technology solutions and roadmaps for achieving net zero while exploring new business opportunities.

We are developing new engineering platforms from an engineer's perspective, like our EDP, and enhancing existing programmes that manage quantities, schedules, and risks. We are using AI technology to integrate our systems for greater platform connectivity. Further, we focused on innovation to reduce site work and tackle construction areas with the most volatility, focusing on underground and aboveground works, modularisation, and energisation.

How do you view the importance and direction of AI and digitalisation in making a low-carbon world a reality, sooner?

AI and digitalisation are essential in accelerating the transition to a low-carbon world. By combining AI's predictive capabilities with human judgment, we achieve better outcomes, and training engineers to work with AI is critical. At SAMSUNG E&A, we've made significant advancements through automation and AI, particularly in data collection and construction processes.

Our EDP enhances collaboration among all engineering disciplines, allowing for seamless updates and corrections through AI support. This leads to greater efficiency in the design stage. In the execution stage, our Smart Piping Shop integrates design data with AI, where robots handle the work, improving both quality and productivity.

These innovations not only boost efficiency but also help reduce energy consumption. AI and automation will help us find more sustainable solutions, reducing fuel consumption and carbon emissions. AI is thus becoming a key driver in improving quality, productivity, and environmental outcomes in the plant industry.

Aveva
Stand: 4410
Hall:4

INDUSTRY 5.0: HOW DIGITAL INSIGHTS LEAD TRANSFORMATION

By Sue Quense
Chief Commercial Officer, AVEVA

Even as the global economy heads towards a soft landing, concerns over disruption and fragmentation remain dominant business themes this year. Renewed geopolitical tensions are affecting supply routes, while mounting fragmentation is influencing both trade and climate issues.

Three technologies transforming Threats into Opportunities

Three transformative engines can help turn these challenges into opportunities. Businesses across the industrial spectrum are turning to digital twins, industrial artificial intelligence (AI), and ecosystem-wide industrial intelligence to build competitive advantages. Companies that invest in cutting-edge digital technologies today will begin to pull away from the rest of the pack. Conversely, those who don't, run the risk of being left behind. Most recently, companies that amplified investments in cloud, AI, and other technologies during the pandemic were growing revenue at five times the rate of late adopters beginning their digital journey just a year later, according to Accenture.

In this challenging new business environment, digitalisation can help achieve profit targets while also supporting positive outcomes for people and the planet. Taking a cue from nature, success lies in an ecosystem-first approach to data and insight. Built around the integrated digital twin and overlaid with AI, a connected industrial ecosystem delivers tangible benefits to all members of the value network.

By bringing together data from across the industrial lifecycle, these trusted applications drive meaningful insights and efficiency. With the cloud enabling the viewing of this integrated data in context and from anywhere, teams can collaborate and operate from a common reference point. This gives them the confidence to make decisions quickly.

This common reference point relies on the use of a

digital twin. Defined as a virtual representation of a physical asset or process, it serves as the single source of truth for authorised stakeholders at every step of the product or process lifecycle. It can be used to forecast potential maintenance issues, find ways to use fewer resources, and can even address the skills shortage through virtual training, optimised workflows, and remote maintenance.

Bringing industrial and generative AI technologies to this golden digital data thread strengthens these capabilities. Indeed, this combination supports optioneering, predicts maintenance, and optimises operations in real time. Taken to its logical conclusion, the result is a perpetual state of iterative improvement arising from the use of automated processes.

Extending these benefits to the entire value chain — internally, such as across a company's distributed geographical network, or externally, including partners, suppliers, and other stakeholders — builds a set of continuous feedback loops that spark ingenuity at every level. Seeded by data and backed by generative AI, these connected intelligent networks can be the key force-multiplier in advancing the development of Industry 5.0 and, consequently, fostering a more sustainable global environment.

Three ways digital insight is delivering for profit and planet

Industrial players are already seeing significant results from the use of these technologies. SCG Chemicals in Thailand, one of the country's largest petrochemical companies, gains real-time, end-to-end visibility into engineering, operations, and maintenance processes with a virtual three-dimensional plant and immersive, touch-based visualisation tools. Through better understanding and tracking of data and KPIs, teams can find the information they need in less than 10 seconds. Plant reliability rose to nearly 100%, and the company achieved nine times its return on investment in just six months.

Syscom has worked with Dubai Municipality to design and set up a system for overseeing hundreds of remote sites. By offering predictive data, analysis, and monitoring and control capabilities, the solution has boosted productivity and efficiency by 21%. Notably, the heightened visibility has enabled Dubai Municipality to achieve daily savings of $2 million through water reuse initiatives.

RHI Magnesita relies on performance data to carry out predictive maintenance for its customers' high-temperature industrial furnaces around the world. A global connected-machines architecture enables the refractory materials supplier to predict refractory consumption for up to six months with an accuracy of more than 80%. It shares these benefits with its client network, advising on when to repair units and reorder

new materials, increasing coordination and efficiency for both client and supplier, while reducing energy, downtime, and waste.

Industrial intelligence to thrive amid disruption and fragmentation

These are just a few ways that industrial businesses are now making the most of digital insights to deliver for profit, people, and the planet. AVEVA research shows that 84% of companies are making decisions with incomplete data. Yet, almost as many — 78% — know that enabling data sharing drives the highest value.

That's why we expect to see more industries adopt digital twin and AI solutions in order to start to actively blend digital insights with knowledge and experience from human, environmental, and social sources. Combining data analytics, AI, and human creativity unlocks the industrial intelligence needed to thrive amid the threats of constant disruption and fragmentation, and with it, to create new sustainable opportunities for the future.

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Sue Quense

Accenture
Stand: AI-14
Hall: Energy[ai] by ADNOC

FORWARD-THINKING: WHAT LEADERS CAN LEARN FROM UAE'S AI INTIATIVES

By Muqsit Ashraf
Group Chief Executive, Accenture Strategy

As I join thousands of leaders heading to Abu Dhabi for this year's ADIPEC conference, I'm again reminded of the United Arab Emirates' ambitions for growth. In each dialogue I've had with UAE leaders over the years, I've had the chance to hear first-hand the concerted effort they have made to be forward-looking. While the country has long been known as an energy powerhouse and a tourism hub, it is also keen on driving innovation in areas such as social welfare, public services, and, most recently, leadership in artificial intelligence (AI).

Every action, every message has propelled the UAE's narrative of economic diversification and technological advancement. The country is swiftly moving to establish itself as a leader in AI, having launched Falcon, an open-source, sovereign large language model, ahead of most nations. The UAE has recently quadrupled its AI workforce and established multiple data centres to support the technology. Falcon, for instance, can power chatbots and image generators like other generative AI tools, and its latest iteration claims to be the first LLM model with image-to-text conversion.

At the heart of this rise in AI tools, which has been underpinned by ChatGPT and generative AI more broadly, is a clear reminder of how important agility and intentionality can be for leaders. With the technology moving from media headlines into boardroom discussions, it is evident that despite most using AI and wanting to leverage it to advance business growth – less than a third of companies are seeing the value they anticipate.

Part of that is because unlocking this value requires a full reimagining and continuous reinventing of functions, processes and most other ways of working within an organisation. It begins with – and is enabled by – a strong digital core that combines the right data and technology with people at the very centre.

At a time of constant change, where business leaders rank technology as the most disruptive force for companies, having a robust digital core can put businesses on track to meet the current digital transformation needs.

The Digital Core: Foundation for AI-Driven Transformation

We define the digital core as the critical technological capability to create and empower an organisation's reinvention ambitions. It means reintegrating advanced digital platforms, having seamless data and AI backbone and building a secure foundation using new engineering principles.

Enterprises that have done this well have seen 60% higher revenue growth rate and 40% higher profitability. They've adopted a digital core tailored to their industry and company, consistently increased investments in innovation and have addressed technical debt in their IT systems.

Energy companies, for instance, are facing rapid change ahead, which will require new skillsets. Technologies like robotics and drones will account for 20% of the global workforce by 2028. To address these changes effectively, energy leaders must focus on moving quickly to modernise their technology operations and shifting away from legacy infrastructures. A sign of their efforts has been consistent investment in technology like generative AI, data analytics, machine learning and cloud to drive three primary goals: operational excellence (71%), increased employee productivity (40%) and business resilience (31%).

Customising the digital core to meet business objectives

A digital core goes hand in hand with new ways of working and adoption of new operating models, methods and processes alongside expanding employee skillset. For energy companies, as an example, this can mean a shift away from legacy IT systems that are often siloed to a more comprehensive view of their technology foundations that can help drive decision-making.

When built well, a strong digital core can enable companies to have:

1. **Data integration and accessibility:** Breaking down silos to create a unified view of enterprise data.

2. **Real-time analytics:** Providing instant insights to speed up decision-making.

3. **Scalability:** Allowing rapid deployment of AI solutions across the organisation.

4. **Enhanced Security:** Protecting data assets and AI models from threats.

A multinational oil company, for example, successfully enabled its crews to make decisions on and deliver operations remotely by migrating to the cloud, leading to significant operational cost savings and to better user experience. And a US chemicals company used AI-enabled market analysis tools to create a relevant value proposition, and further, equip sales and engineers with the data to better anticipate and address customer demands.

To Reinvent or Stand Still?

Recounting the last time the Middle East spurned the top innovation of its time, the Gutenberg press, the UAE's AI Minister His Excellency Omar Sultan Al Olama said, "We are still paying the price" of that decision nearly 700 years ago. He emphasised that the UAE will not repeat this mistake, asserting that "whoever leads the race on AI will lead the future." The tone is clear, and so are the country's actions since his appointment in 2017, the first in the world.

Moreover, neither HE Al Olama nor the UAE, at large, views this ambition in isolation, suggesting that the global collaboration could lead to "centres and nodes of excellence around the world" in AI.

The companies that are well suited to make this a reality globally are those that are intentional about building a strong digital core and leverage AI to address unique challenges.

With the economic potential for generative AI to reach US$10.3 trillion by 2038, the imperative is clear: companies must adapt to these technological advancements, or risk being left behind while their peers gain a competitive advantage.

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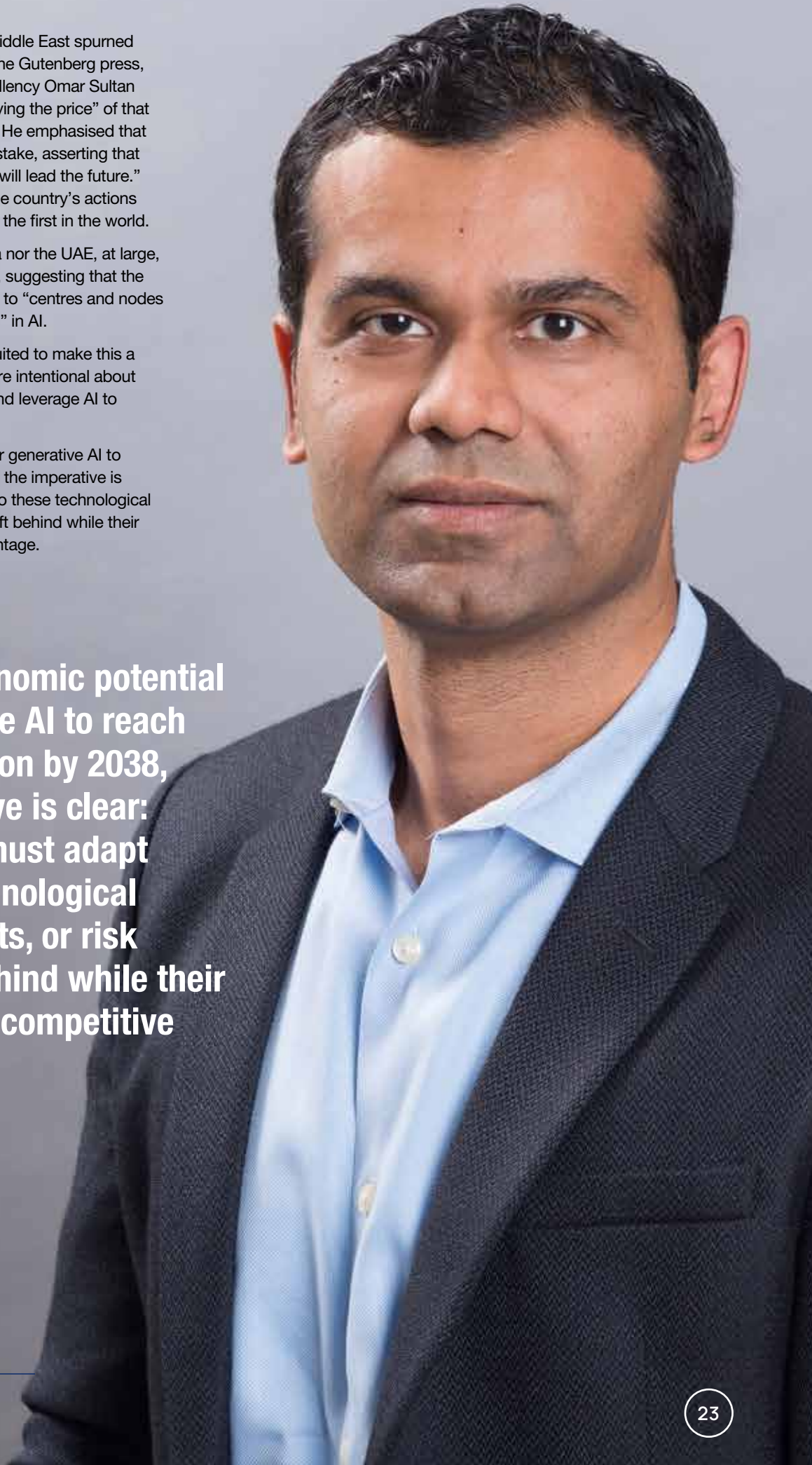
Honeywell
Stand: 4150
Hall: 4

REAPING THE REWARDS OF AI-PIONEERED OPERATIONS WITH INDUSTRIAL AUTONOMY

By George Bou Mitri

Vice President & General Manager, Industrial Automation, Honeywell MENA

As we stand on the cusp of the fourth industrial revolution, the role of artificial intelligence (AI) in reshaping the energy sector is more critical than ever. Across industries, AI helps employees work smarter, make systems more efficient and allow plant operations to accelerate the path to autonomy. Nowhere is this evolution more relevant than in the energy sector, where the adoption of AI presents both challenges and opportunities for companies in the United Arab Emirates (UAE) and the Kingdom of Saudi Arabia (KSA).

Recent research by Honeywell, surveying 1,600 AI leaders across 12 global markets, sheds light on the state of AI adoption in industrial applications. In countries like the UAE and KSA, where technological advancements are central to national economic development, the potential for AI to drive autonomy, efficiency, and safety is clear.

AI has evolved from basic process control to highly sophisticated techniques. In the energy sector, this means increased throughput and yield, reduced downtime, and more streamlined operations across power plants, oil refineries, and other industrial sites.

Honeywell's research reveals that 82% of industrial companies consider themselves pioneers or early adopters of AI. This includes key players in the energy sectors of the UAE and KSA, where national visions like Saudi Arabia's Vision 2030 and the UAE's strategic focus on AI are pushing for rapid adoption of advanced technologies. In both nations, AI is no longer just a buzzword; it is becoming

a necessity for maintaining global competitiveness and meeting the rising demand for energy efficiency and sustainability.

The UAE and KSA: Leading AI adoption in energy

In the UAE, 61% of companies surveyed consider themselves as early adopters of AI, with another 19% pioneering its use. This proactive stance places the UAE at the forefront of AI-driven innovation in the energy sector. AI is being used to improve everything from cybersecurity to real-time data analysis, allowing decision-makers to respond faster to operational challenges. Automation is another critical focus, with 65% of UAE energy leaders highlighting its role in increasing efficiency across operations.

Meanwhile, Saudi Arabia is also making significant strides in its AI journey. Almost 58% of companies in the Kingdom identify as early adopters, while 27% are pioneers. As the Kingdom pushes forward with massive energy infrastructure projects, AI is seen as a key enabler of increased cybersecurity and automation — with 67% and 65% of KSA leaders, respectively, citing these as top use cases.

Both the UAE and KSA are not only embracing AI for current applications but also planning for the future. In Saudi Arabia, 54% of companies are already expanding AI into new use cases, while 51% are refining existing applications. In the UAE, 55% of respondents report that they will continue to expand AI implementations, particularly in areas like automation, data security, and real-time analytics.

According to the research, the top three benefits of AI implementation across industries are clear: increased efficiency through automation, improved cybersecurity, and real-time data to enhance decision-making. These same benefits are driving AI adoption in the energy sector of the UAE and KSA, where complex industrial environments require precise control and optimisation.

In the energy industry, AI's ability to manage vast amounts of data — generated by refineries, power plants, and pipelines — provides unprecedented insights into operations. AI-powered systems can predict equipment failures before they happen, optimise energy production in real-time, and even monitor emissions to meet regulatory compliance.

In both the UAE and KSA, there is a growing recognition that AI is a tool to bridge the skills gap, particularly as the current workforce ages. About 64% of global respondents cited increasing worker efficiency as AI's most promising use.

The potential of AI in the energy sector is immense, especially for nations like the UAE and KSA, which are at the forefront of technological innovation. By focusing on data, design, and people, companies in these regions can navigate the path toward full industrial autonomy and reap the rewards of AI-powered operations. As we look to the future, the question is no longer whether AI will transform the energy sector but how quickly companies can adapt to unlock its full potential.

As we stand on the cusp of the fourth industrial revolution, the role of artificial intelligence (AI) in reshaping the energy sector is more critical than ever. Across industries, AI helps employees work smarter, make systems more efficient and allow plant operations to accelerate the path to autonomy.

George Bou Mitri

SLB
Stand: 4330
Hall: 3

BRIDGING THE OPERATIONS GAP: BRINGING AI TO THE EDGE

By Sujit Kumar
Global Director of Digital Production and Edge, SLB

As the energy transition accelerates, the shift away from new oil and gas exploration intensifies. For operators, that reality puts a premium on maximising production and recovery from existing assets. AI solutions are playing a key role in helping oil and gas operators realise value and minimise CAPEX inefficiencies on the planning side. That's been less the case in operations, where field environments can be harsh and disparate, data is often siloed, and communications between the office and the field can be a challenge. Bringing AI to operations was not possible. Until now.

The imperatives to produce more with less, minimise operational costs, improve safety and reduce emissions are simply too compelling an opportunity. We're now at an inflection point in bringing AI into operations, bridging the divide between office and field and between planning and operations. That's where the next tier of returns from digital will come from in our industry.

Think about today's conventional operations. Reservoir, petroleum and production engineers generate a lot of insights in the office desktop environment. Far too often these insights fail to get executed in the field. In a not an uncommon scenario, an engineer in the office makes a call to an operator in the field to change a setpoint. Because of inertia, pushback or miscommunication, it may never happen.

This disconnect between planning and operations can result in unplanned downtime due to equipment failure or nonproductive time spent troubleshooting. It makes it harder to stay ahead of production challenges, whether it's paraffin deposition or high-water cuts in wells.

The solution: distributed AI in both the planning and operations environment, conditioned by physics-based simulations that provide trust in the AI predictions and bridging these environments through technology integration between the edge and the desktop.

The most illustrative analogy is probably the autonomous vehicle. It requires two infrastructures working together. At the edge, the compute infrastructure, sensing and AI model reference data in real time to drive the car in the correct lane on the right navigational path. The second infrastructure is looking at all the other cars on the road along the route, measuring their speed, assessing traffic and road conditions, crunching all those billions of data points in the cloud and sending that intelligence back to the car itself to select the best route. It's this partnership between the edge and the cloud that makes this autonomous and optimal journey from point A to point B possible.

We're seeing something similar playing out in oil and gas production operations. In the desktop environment, whether it's public cloud, sovereign cloud or on-site, science- and physics-based simulators can model reality and bring the all-important trust factor to the underlying data. Fusing those simulations with AI capability to identify trends from that data creates much better and faster insights in real time.

Those insights are then sent back to the edge environment, near the wellbore, the rig or the pipeline, to facilitate autonomous operations. The result is better insights, trust in those insights and seamless execution in the field — without the risk of instructions going awry.

SLB is the only company in the industry doing this right now. Working closely with an operator in South America, we deployed a smart production operations solution in a remote brownfield that increased oil production by 4%, dramatically reduced production losses, raised crew efficiency by over 60%, reduced well failures by 25%, lowered CO_2 emissions by 57%, and boosted chemical treatment reliability to 99%.

We're also working with a major operator in the Middle East on a similar concept, deploying our OptiFlow™ production assurance solutions and Agora™ edge AI and IoT solutions. These solutions combine real-time intelligence at the edge with full-field visibility across wells and gathering networks. This will enable autonomous capabilities that reduce uncertainty between planning and operations and significantly increase proactive actions that improve production performance.

Ultimately, what these technologies enable us to do is bring the entire production community into a single operations environment. Wells, pipelines, facilities, operations, maintenance and all the other elements of the fragmented production landscape are finally able to come together as an integrated and collaborative one. That's a game changer for the industry.

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Technologies allow us to bring the entire production community into a single operations environment. Wells, pipelines, facilities, operations, maintenance and other elements of the production landscape are now coming together as an integrated and collaborative one. That's a game changer.

Sujit Kumar

Siemens
Stand: 14130
Hall: 14

DIGITAL INVESTMENTS DRIVE SUSTAINABILITY AND PERFORMANCE

By John Nixon
Vice President, Energy, Chemicals and Infrastructure at Siemens Digital Industries Software

To help energy businesses use software and digitalisation to thrive in today's fast-changing clean energy landscape, John Nixon, Vice President, Energy, Chemicals and Infrastructure at Siemens Digital Industries Software, clears the air on clean energy related questions from Siemens partners and customers.

The energy transition is most associated with renewable energy sources like solar and wind. But what are some opportunities it provides for more traditional energy sources like oil and gas?
Oil and gas companies face increased scrutiny around their emissions and contributions to climate change. At the same time, technologies developed during the energy transition offer great opportunities for traditional oil and gas providers to dramatically improve operational efficiency and productivity. To remain competitive and profitable, businesses can invest in new technologies like the executable digital twin to gain a remarkably detailed understanding of the complete lifecycle of the assets they operate and the products they produce. Whether a business produces renewable energy sources or fossil fuels, its Chief Financial Officer (CFO) must be able to understand the immediate and long-term financial impact of all activities. Adopting technologies like design space exploration gives CFOs access to scenario analysis tied to financial modelling, which we call model-based financial optimisation (MBFO). Inside a digital environment known as the industrial metaverse, CFOs can observe a direct relationship between real asset performance and financial performance. It has become possible to quickly understand the journey from energy molecules, whether wind, oil, nuclear or solar, to your financial EBITDA margin.

How will the energy transition to impact energy production levels?
Different organisations, such as the IEA, OPEC and others, have varying projections for energy production levels. As our species goes through the energy transition globally, we have to embrace the electrification we're investing in while also making sure we keep the lights on. Conventional oil and gas production levels will remain the same or may actually increase in the short term as we make deeper investments in energy sources such as hydrogen, wind, solar and advanced nuclear, including small modular reactors and nuclear fusion.

What role can power plant simulation and manufacturing simulation play in reducing emissions?
Because of huge investments in the cloud, simulation today is no longer limited by computational power. Manufacturing simulation in particular has been a deep investment for Siemens Digital Industries Software. The same challenges in molecular reactions, asset performance and emissions management for manufacturing facilities are, in fact, challenges we find in power plant simulation. Businesses now have the ability to simulate with high fidelity and take advantage of massive improvements in analysis capability that can be done in a fraction of the time. This allows them to explore options at orders of magnitude greater than just five years ago. It also enables real-world improvements where emissions are actually created. The power and fidelity we have today, and the trust we have in simulation, is constantly improving.

How does design automation speed up the engineering design process for clean energy capital assets like wind turbines, solar farms, hydrogen power plants and small modular reactors?
Design automation, and what we refer to as design space exploration, provides a collaborative digital environment that integrates all your engineering disciplines, including civil, structural, mechanical, geospatial, electrical, and more and offers a greater systems-based approach. It helps us understand how the smallest design changes can have the greatest impacts on asset performance. We are seeing dramatic improvements in both the speed and quality of capital asset designs created using this systems-based approach.

How can energy businesses reduce carbon emissions?
Our species is trying to reduce carbon emissions, as well as productivity and material waste, when we are constructing and operating capital assets. At Siemens, we call this Capital Asset Lifecycle Management. It's a connected, holistic approach to understanding requirements, design, construction and operations, plus the emissions and waste that are associated with these activities. When energy businesses and equipment manufacturers invest in digitalisation and Capital Asset

Lifecycle Management, you have an environment where you can proactively strip away great volumes of emissions and waste. This can be performed through visualising, navigating and optimising your processes, programmes and project execution using a "digital twin," which is a data-driven, visually navigable digital representation of the physical reality of your asset portfolio.

What's your advice for energy companies and energy equipment manufacturers who want to become more sustainable?
Sustainability is the first and most important consideration for energy companies and energy equipment manufacturers. Considering what we've highlighted above with investments in digitalisation, addressing sustainability starts on the drawing board. And the best drawing board is a digital one. When you start with digitalisation, it's the best use of your investment. It helps energy businesses realise optimal performance, profitability and sustainability. Sustainability is profitability, and digital investments drive sustainability.

> **When you start with digitalisation, it's the best use of your investment. It helps energy businesses realise optimal performance, profitability and sustainability.**
>
> **John Nixon**

Boston Consulting Group
Strategic Insights Partner

SUCCESSFUL ENERGY TRANSITIONS: LESSONS FROM LEADING COMPANIES

By Rebecca Fitz
Partner and Associate Director,
Boston Consulting Group

In the energy industry, excelling in delivering superior shareholder value during the energy transition is a true test of strategic prowess, exceptional execution, and resilience. BCG's analysis of total shareholder return (TSR) from 2019 to 2023 highlights that companies with the highest shareholder returns effectively managed capital allocation tradeoffs between reinvestment decisions, shareholder payouts, and balance sheet improvements. The top performers excelled in six dimensions: revenue growth, cost management, balance sheet health, shareholder payouts, valuation multiple stability, and deal-making. Here's a more detailed breakdown of each one:

1. Revenue Growth
Top energy companies consistently achieved substantial revenue growth by innovating, expanding into new markets, and making strategic investments. This approach allowed them to adapt to market shifts and capitalise on emerging opportunities. The leaders in this sector demonstrated a keen understanding of evolving energy demands and positioned themselves to meet these needs effectively. They actively managed their portfolios in order to sustain revenue growth even during challenging times.

2. Cost Management
Effective cost management was a hallmark of the top performers. These companies implemented rigorous controls over operational expenses, streamlined processes, and adopted advanced technologies to boost efficiency. They also renegotiated supply contracts and optimised their logistics to further cut costs.

3. Balance Sheet Health
Strong balance sheets were crucial for resilience and agility. The top companies maintained robust financial positions with low debt levels, ample liquidity, and prudent financial management. This financial health enabled them to weather market fluctuations and confidently invest in growth opportunities. Maintaining a healthy balance sheet meant these companies could take advantage of investment opportunities without over-leveraging themselves. They kept a close eye on their balance sheets and ensured they had enough cash reserves to handle unforeseen circumstances.

4. Shareholder Payouts
High returns to shareholders were achieved through disciplined capital allocation. These companies balanced reinvesting in the business with consistent dividend payouts and share buybacks. This approach ensured attractive returns for investors. The leaders prioritised shareholder value, regularly reviewing their capital allocation strategies to maximise returns. They communicated transparently with shareholders about their financial strategies and performance, building trust and confidence.

5. Valuation Multiple Stability
Stability in valuation multiples reflected investor confidence. The top companies managed to maintain stable and favourable valuation multiples by demonstrating consistent performance, clear growth strategies, and transparent communication with stakeholders. This stability was a result of their robust financial health, strategic growth initiatives, and effective risk management. They provided detailed and transparent reporting to the market, which helped maintain investor confidence even during periods of market volatility.

6. Deal-Making
Strategic mergers and acquisitions (M&A) played a significant role in driving growth. Successful companies executed well-planned M&A activities that aligned with their long-term strategic goals, enhancing their market positions and capabilities. These companies were adept at identifying and integrating acquisitions that provided synergies, expanded their market reach, or added new capabilities. They approached M&A with a strategic mindset, ensuring that each deal was accretive to their overall business objectives.

Capital Allocation Tradeoffs
Top-performing energy companies made informed decisions about where to allocate resources, balancing short-term returns with long-term growth. This strategic approach enabled them to navigate the complexities of the energy transition, characterised by the shift towards renewable energy, regulatory changes, and evolving market dynamics. By carefully analysing investment opportunities and potential returns, these companies optimised their capital deployment to maximise shareholder value.

Adaptability and Resilience
Companies that proactively adapted to market trends, regulatory shifts, and technological advancements outperformed their peers. Their ability to anticipate and respond to changes was critical in maintaining their leadership positions. They fostered a culture of agility and continuous improvement, encouraging innovation at all levels of the organisation.

Conclusion
The lessons from top energy companies provide a comprehensive roadmap for others in the sector aiming to enhance shareholder returns. By focusing on the six dimensions described above, companies can navigate the challenges and opportunities of the energy transition. Embracing innovation, digital transformation, and adaptability will further bolster their competitiveness and sustainability in the evolving energy landscape.

> **Embracing innovation, digital transformation, and adaptability bolsters competitiveness and sustainability in the evolving energy landscape.**
>
> **Rebecca Fitz**

Emerson
Stand: 7531
Hall: 7

NEXT-GEN SOLUTIONS: PIONEERING THE FUTURE OF AUTOMATION FOR INDUSTRIAL OPERATORS

By Widad Haddad
Vice President & General Manager, Emerson

The energy industry is undergoing a transformation, where digital technologies, artificial intelligence and automation are reshaping how industrial operators approach critical areas such as capital project development, operational efficiency, and sustainability. As the sector faces growing demands, leveraging technologies is becoming essential to driving progress.

Emerson supports these objectives through a broad portfolio of automation technologies and industrial software, designed to help stakeholders optimise performance, improve operational outcomes, and achieve sustainability goals.

- **Capital projects:** Emerson's Project Certainty approach focuses on early engagement with project developers and stakeholders with a view to improving capital efficiency and ensuring reliable project schedules. Software approaches such as the Front-End Digital Twin help operators consider engineering, execution and cost in a holistic environment to improve project cost and schedule outcomes. Similarly, value engineering practices such as Cloud Engineering and Smart Commissioning help reduce project schedules, while specific technology applications like Electronic Marshalling, Distributed Field Boxes, and Virtualisation help reduce project costs and footprint.

- **Operational excellence:** Emerson helps industrial operators achieve top-quartile performance across safety, reliability, production, and energy management. Firstly, by increasing visibility into the operating field through an array of non-intrusive, and wireless enables measurement points, operators can have easy access to critical asset data such as vibration and corrosion data, and gain visibility into previously unmonitored devices such as pressure relief valves and steam traps. By integrating this data into AI-driven insight applications that provide advanced analytics, we enable companies to optimise asset performance, reduce operational costs, and improve productivity.

- **Sustainability performance:** Emerson's sustainability solutions are designed to help operators drive scalable approaches to reduce emissions, improve energy efficiency, and better manage their carbon footprint. Technologies such as Emerson's Energy Management Information Systems (EMIS) and Predictive Emissions Monitoring System (PEMS) help our customers take advantage of predictive models and software to improve operational safety performance.

- In addition to these focused efforts, Emerson is pioneering the future of automation through Boundless Automation™. This vision for software-defined automation breaks down data silos, empowering operators to unlock new levels of productivity and efficiency, further accelerating industry progress.

Together, these innovations are enabling the energy sector to meet its most urgent challenges while driving the future of energy.

Digital Energy

TRANSFORMING ENERGY: WHERE AI PRECISION MEETS HUMAN INNOVATION

By Morgan Eldred
Founder of Digital Energy

Artificial intelligence (AI) in the energy industry represents a partnership between human creativity and machine precision, enhancing operational efficiency and sustainability. Rather than replacing human innovation, AI amplifies mankind's ability to address complex energy challenges. However, as AI becomes more integral to energy operations, ethical considerations such as accountability, transparency, and potential bias must be addressed.

Historically, AI's role in the energy sector was limited to isolated tasks like predictive maintenance. Today, it is part of an interconnected ecosystem that spans the entire hydrocarbon value chain, from exploration to logistics. AI not only boosts precision but also collaborates with human intuition to drive innovation. This shift prompts questions about decision-making responsibility in increasingly automated processes.

The hydrocarbon value chain is evolving into a digitally connected network driven by real-time data. AI integrates machine learning, analytics, and natural language processing across the supply chain. In exploration, AI enables real-time data analysis, helping teams make quicker, more accurate decisions, reducing the time to identify drilling locations by up to 50%. In supply chain management, AI improves demand forecasting and reduces inefficiencies in procurement and logistics, with companies reporting up to 30% cost reductions and 25% efficiency gains.

AI enhances human creativity by revolutionising knowledge management, enabling access to vast datasets. However, this shift brings ethical challenges. AI systems, especially machine learning models, are often seen as "black boxes," where the logic behind decisions is unclear. Ensuring AI-driven decisions are explainable and justifiable is essential.

AI won't replace human intuition but will provide tools to make smarter, more creative decisions. As AI becomes integral to the energy sector's digital ecosystem, its value lies in balancing precision with human ingenuity. The future of AI in energy involves creating an interconnected, immersive digital ecosystem, transforming everything from supply chains to exploration. With AI-driven transformation, the sector can unlock new levels of efficiency, sustainability, and creativity.

ADIPEC
conferences overview

The ADIPEC Conferences seek to advance tangible action and demonstrate collaborative industry progress, emphasising the need for an economy-wide transformation for people and the planet. The conference programme aims to catalyse innovation and energy action by connecting the ideas, ambition, technology,and capital necessary to foster innovative solutions and drive actionable outcomes. Through its dynamic portfolio of conferences, ADIPEC will provide an inclusive stage for more than 1,800 speakers to address the most urgent global energy challenges. These leaders and innovators will offer diverse perspectives and approaches, sharing impactful insights from across the energy, finance, technology, manufacturing,transport and construction sectors.Welcoming more than 16,500 delegates, the conferences will encourage crosssector collaboration and explore pivotal strategies and innovations essential to addressing the energy trilemma.

STRATEGIC CONFERENCES

- Strategic Conference
- Decarbonisation Conference
- Hydrogen Conference
- Maritime & Logistics Conference
- Finance & Investment Conference **- New**
- Digitalisation & Technology Conference **- New**
- Voices of Tomorrow **- New**

TECHNICAL CONFERENCES

- Technical Conferences
- Downstream Technical Conference

ADIPEC Conferences in numbers

16,500+
Delegates

1,800+
Speakers

370+
Sessions

Energy^{ai} Conference
programme

Building on 40 years of energy leadership, ADIPEC 2024 is set to catalyse innovation and action at the intersection of energy and AI, driving the global energy transition. AI has the potential to transform the energy sector by enhancing efficiency, optimising carbon-intensive processes, and accelerating innovation across industries. However, as the world strives to balance energy security, emissions reductions and economic growth, addressing AI's own energy consumption and environmental impact will require cross-sector collaboration.

ADIPEC's Energyai Conference will bring together industry leaders, innovators and experts to explore how AI can revolutionise energy systems, enhance grid resilience and unlock new investment opportunities. The conference will also examine the challenge of aligning AI's energy demands with the sector's decarbonisation goals, ensuring that AI-driven innovation supports a sustainable energy future.

DAY 1	Monday 4 November 2024

13:00-13:30   Energy AI Talk: Leveraging AI to accelerate climate solutions

In this Energy AI talk, Aadith Moorthy the CEO of Boomitra and The Earthshot Prize winner will discuss how AI enhances ESG management through detailed reporting and actionable insights, enabling organisations to meet sustainability goals while preparing for future environmental challenges, highlighting the critical role of partnerships in driving innovation for climate solutions.

Speaker: Aadith Moorthy, Founder & CEO, Boomitra

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13:30-14:00   Energy AI Talk

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14:00-14:30   Energy AI Talk: Unlocking value in energy and industry through AI

In this Energy AI Talk, Reza Zadeh, CEO, Matroid, will showcase compelling case studies that highlight the positive impact of visual analytics on operational efficiency and safety in the energy sector, illustrating how AI enhances infrastructure monitoring, detects anomalies, and optimises resource management.

Speaker: Reza Zadeh, CEO, Matroid

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14:30-15:00   Energy AI Talk

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15:00-15:15   Innovation showcase: The role of AI in transforming the energy sector

In this talk, we'll explore how advanced AI technologies—particularly Generative AI (GenAI) and other AI models—are enabling Energy companies to transform, drive efficiency, and unlock new value while meeting global climate targets and the growing demand for Energy.

Speaker: Magzhan Kenesbai, Acting Managing Director, AIQ

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15:15-15:30   Innovation showcase

Presented by: Accenture

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15:30-16:00   Innovation showcase: Supporting the energy transition for AI datacentres

As AI enters its next evolution of computing, it is anticipated that the power demand will grow exponentially year on year. The required energy to accommodate the ever-growing computing requirements of AI modelling is fast becoming one the biggest issues that hyperscalers and data centre providers need to address – this challenge is further compounded by the lack of grid connection capacity, renewable power availability and effective power management when it is required.

Presented by: Mark Blackwell, CEO, Apex Investment PSC

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16:00-16:30   Innovation showcase: AI: accelerating transformation in oil & gas

This presentation will explore how AI is revolutionising oil and gas operations through diverse use cases built on a technology agnostic stack, with end-to-end data integration, and robust enterprise access controls. We'll touch on predictive maintenance and process optimisation, enabling companies to foresee equipment failures, minimise downtime, and achieve higher throughput. We'll touch on AI-driven supply chain optimisation and demand forecasting to enable better resource allocation, cost savings, and capture market imbalance opportunities.

Speaker: Denis Prokofiev, CTO Industrial Asset Management, C3.ai

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16:30-17:00   Innovation showcase: Using AI to analysis realtime dashboards using NLP
This session will highlight a cutting-edge integrated dashboard powered by Natural Language Processing (NLP), enabling users to interact through spoken or typed questions to gain quick, actionable project insights and predictive analysis. The dashboard's advanced features include identifying potential delays in deliverables based on real-time progress, sending automated alerts if resource productivity dips below planned levels, and recommending additional resources to keep projects on track.
Speaker: Varghese Daniel, CEO, Wrench Solutions Private Limited

17:00-17:15   Innovation showcase: Integrated E&P data management, visualisation and analytics
This session introduces cutting-edge technology that streamlines the management, fusion, and visualisation of datasets. By leveraging a web-based "data lake" architecture, it enables seamless 3D modelling of tens of millions of cells, real-time visualisation of drilling and production data, and standardised display of logs and geological maps.
Speaker: Dr. Wenyue Sun, R&D Manager, Tracy Energy Technologies

17:15-17:30   Innovation showcase: Harnessing AI to transform power plant operations: JERA's Journey toward a smarter, more sustainable energy future
This session will explore how JERA is leveraging advanced AI technologies to reshape power plant operations and maintenance. Focusing on the innovative JERA-DPP® (Digital Power Plant) solution, it will discuss how AI-driven tools, digital twins, and predictive maintenance enable real-time management, optimise plant performance, and reduce forced outages and maintenance costs.
Speaker: Fadhloun Hamdy, CTO, Avaxia International Group

DAY 2	Tuesday 5 November 2024

10:30-11:00   Energy AI Talk: Accelerating critical infrastructure security in the energy sector
In this Energy AI talk, Richard Burns, Chairman, ISS, will explore how integrated solutions are driving efficiency and sustainability across energy and other industries with critical installations.
Speaker: Richard Burns, Chairman, ISS

11:00-11:30   Energy AI Talk

11:30-12:00   Innovation showcase: How generative AI can significantly reduce the risk, cost and time to license clean energy projects
The presentation will outline a comprehensive initiative aimed at leveraging generative AI to streamline the permitting process for clean energy projects. The primary objective will be to significantly reduce the cost and time required for licencing, which is currently a major bottleneck in the deployment of advanced nuclear and other clean energy technologies. The solution accelerator will utilise historical licencing data, real-time project-specific data, and various datasets to enhance the productivity of creating permits.
Speaker: Neeraj Joshi, Worldwide CTO - Energy & Resources, Microsoft

12:00-12:30   Innovation showcase
Presented by: Accenture

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Visit: www.adipec.com/delreg I Email: delegate@adipec.com I Call: +9712 444 4909

12:30-13:00   Innovation showcase: Physics + AI powered framework for reservoir characterisation and forecast

This session introduces a physics-informed, AI-driven framework, for reservoir characterisation and forecasting, aimed at improving operational efficiency in reservoir engineering. The application integrates multi-source data analytics and automates sample construction with commercial standard data platform.

Speaker: Dr. Wenyue Sun, R&D Manager, Tracy Energy Technologies

13:00-13:30   Innovation showcase
Presented by: e&

13:30-14:00   Innovation showcase: Smart stations and hyper-personalisation
Presented by: Jacqueline Elboghdadi, Chief Marketing Officer, ADNOC Distribution

14:00-14:30   Energy AI Talk

15:00-15:30   Innovation showcase: Unlocking efficiency: AI-driven process optimisation in industrial operations

This presentation will explore how AI and advanced optimisation techniques, such as real-time modelling, simulation, and predictive analytics, can transform industrial processes. Attendees will hear practical examples of how these tools enable operators to maximise plant performance, improve yield and better manage energy consumption.

Speaker: Anton Melnik, Industrial Enterprise AI Director, Industrial Solutions, Baker Hughes

15:30-16:00   Innovation showcase: Revolutionising AI models and operational excellence in the energy sector

AI is set to transform every stage of the energy value chain—from exploration and production to distribution. In this session, Dr. Mike will discuss how AIQ, in partnership with Inception, is pioneering the development and application of proprietary AI solutions to optimise operations.

Speaker: Dr. Mike Roshchin, Head of AI, AIQ

16:00-16:30   Innovation showcase: Using artificial intelligence (AI) and visual automation for advanced emissions reduction, leak detection, and MMRV / OGMP 2.0 compliance

This session will cover Artificial Intelligence (AI) driven 360-degree autonomous visual emissions site, source, component level, real

DAY 3	Wednesday 6 November 2024

10:30-11:00   Energy AI Talk

11:00-11:30   Energy AI Talk

11:30-12:00   Innovation showcase
Presented by: Accenture

12:00-12:15   Innovation showcase: A strategic approach to developmental financing
Presented by: Emirates Development Bank

12:15-12:45   Innovation showcase: Introducing Earth Insight: the next generation of exploration technology

Be part of the debut of Earth Insight, a groundbreaking technology set to transform the exploration industry. Utilising advanced laser spectroscopy and electromagnetic waves, Earth Insight can penetrate up to 6,000 metres below the Earth's surface, providing unprecedented real-time geological data. This innovation enables more accurate drilling, minimises risks, and optimises resource extraction. Join us as we unveil this game-changing tool that will redefine how we explore the earth's hidden potential.

Speaker: Ahmed Alkhatib, Founder, TrueLevel

12:45-13:00   Innovation showcase
Presented by: Faiz Sulaiman, Microsoft

13:00-13:30   Innovation showcase
Presented by: Carbon Clean

13:30-14:00   Innovation showcase
Presented by: EY

14:00-14:30   Energy AI Talk

14:30-15:00   Energy AI Talk

15:00-15:30   Innovation showcase: AI-powered energy: driving the future of sustainable operations
This session will delve into how AI is transforming the energy sector, driving efficiency, reducing emissions, and enhancing decision-making and safety. Our speaker will provide a detailed exploration of best practises when scaling AI solutions and share key lessons learnt from AIQ's deployment journey within the Energy sector.
Speaker: Saravan Penubarthi, CTO, AIQ

15:30-15:45   Innovation showcase
Presented by: Emirates Development Bank

15:45-16:15   Innovation showcase: Enhancing operational asset performance with AI
With growing pressure to improve asset reliability and operational efficiency, energy and industrial operators are turning to AI-powered Asset Performance Management to reduce downtime, lower costs and increase productivity. This presentation will outline how holistic approaches – combining physics-based models, first principles and AI – can enhance performance across critical equipment through to plantwide assets.
Speaker: Elena Lucattini, Engineering & Technology AI Director, Baker Hughes

16:15-16:30   Innovation showcase: Cloud-based platform for modelling and simulation
Reservoir modeling and simulation is the most used techniques to understand subsurface reservoir dynamics and evaluate the optimal development plan to maximise EUR and economics. However, the process—from building static models to dynamic history matching and forecasting—can be time-consuming.
Speaker: Dr. Bo Lu, VP Applications, Tracy Energy Technologies

16:30-17:00   Innovation showcase: AI operator: paving the way for autonomous operations in the energy sector
This presentation covers critical elements of technology, including change management, training, technology, cybersecurity, and a roadmap for successful implementation. Join us to understand how AI is revolutionising autonomous operations, representing a major leap forward for the industry.

DAY 4	Thursday 7 November 2024

10:30-11:00   Energy AI Talk

11:00-11:30   Energy AI Talk

11:30-12:00   Innovation showcase
Presented by: Accenture

12:00-12:30   Innovation showcase: Mitigating project risk and optimising CO2 management in CCUS operations
Carbon capture, utilisation and storage (CCUS) solutions will be a critical component of the energy transition, helping to reduce emissions and support global climate goals. However, organisations face significant challenges in managing the complexity of these systems, ensuring compliance with increasingly stringent regulations, and maintaining safe, efficient operations. This presentation will explore how digital technologies can address these hurdles, offering advanced tools for optimising the monitoring, control, and management of Co2 storage and transport.
Speaker: Prem Saini, Digital Product Leader, Baker Hughes

12:30-13:00   Innovation showcase: Generation of organised asset information from legacy document
This session will showcase how Machine Learning (ML) and AI technologies can revolutionise the management of as-built documents in operating plants, where unstructured formats often result in missing or inaccessible information. By training ML to understand document content, it scans files stored in Windows folders, automatically extracting key details and adding them as metadata for streamlined organisation.
Speaker: Varghese Daniel, CEO, Wrench Solutions Private Limited

13:00-13:30   Innovation showcase: AI for good: shaping a better world
This session will explore the "AI for Good" initiative discussing how artificial intelligence is being harnessed to tackle global challenges, from climate change to AI in energy. During the session, our speaker will share innovative AI solutions being applied within the Energy sector, which are already demonstrating AI's potential to create a more equitable and sustainable world.
Speaker: Magdalena Konig, General Counsel, AIQ

13:30-14:00   Innovation showcase: Digital twin solution for intelligent oil & gas fields
Creating a digital twin of the reservoir and entire production system is key to optimising oil and gas field management. Timeline offers a comprehensive solution to achieve this, utilising cutting-edge cloud-based data lake technology with AI and domain algorithms deployed as microservices for seamless access and collaboration.
Speaker: Dr. Bin Gong, CEO, Tracy Energy Technologies

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Digitalisation & Technology Conference programme

The Digitalisation & Technology Conference will bring together energy and technology pioneers to showcase the latest Fourth Industrial Revolution technologies needed to accelerate the energy transition.

DAY 1 — Monday 4 November 2024

STRATEGIC PANEL

14:00 - 15:00 **Location: Digitalisation & Technology Theatre**

The future of digitalisation: how will it impact the future of energy?

Technology has the potential to accelerate the transition of the energy sector to a low-carbon and clean energy system and contribute to meeting ambitious climate targets in time and in a just and equitable manner. But what will this look like in practice? At its core, the digital transformation of the energy sector will require cooperation, data sharing, and investment at an unprecedented scale. With immense benefits, especially in energy efficiency, this cross-sector collaboration is key for industry development.

TECHNOLOGY TALK

15:00 - 15:30 **Location: Digitalisation & Technology Theatre**

Digital evolution: evolving energy sector business models for the new energy system

As the digital evolution continues to change the way the economy develops, businesses are having to rewire business and operating models to remain competitive. To navigate this transformation successfully, businesses must make large-scale investments in technologies, work force development, supply chain modelling and R&D, seamlessly integrating them into business operations to facilitate increased operational efficiency and customer satisfaction.

DAY 2 — Tuesday 5 November 2024

STRATEGIC PANEL

10:00 - 11:00 **Location: Digitalisation & Technology Theatre**

Balancing priorities to advance energy transformation: the AI boom, data centres and escalating power demand

AI's boom has highlighted the potential threat posed to the grid due to the amount of energy required by data centres. So much so that governments around the world are intensifying scrutiny of building new data centres over fears they are putting excessive pressure on electricity grids. For AI and other data-centric solutions to continue to grow, developers must find solutions for the sharp increase in power demand. Increased energy efficiency, onsite power generation, and nuclear energy are potential solutions. However, many believe restructuring of supporting electrical infrastructure and an overhaul of supportive policy will be required.

STRATEGIC PANEL

11:00 - 12:00 **Location: Digitalisation & Technology Theatre**

Realising the full potential of AI in the energy sector: developing essential standards and systems

To maximise the advances AI and machine learning can deliver, open technology standards that foster greater data interoperability among energy operators, service, equipment providers and software vendors are critical to unleashing the full potential of the digital technology. Organisations like the Trusted Energy Interoperability Alliance and the Open AI Energy Initiative are working toward standardising security formats, application interfaces, and compliance requirements for energy hardware and software. To achieve potentially optimised production, reduced costs, and an accelerated energy transition across the energy industry these standards and strategies will need to be widely adopted.

DAY 3 — Wednesday 6 November 2024

FISHBOWL

10:00 - 11:00　　　　　　　　　　　　　　　**Location: Digitalisation & Technology Theatre**

Innovative solutions for overcoming the AI skill gap in a competitive talent market

An informal panel-style session with panellists sat in a circle surrounded by the audience. After an initial conversation, led by a facilitator and the panellists, the audience will be invited to comment on and ask questions to the wider group.

A recent IEA report on the relationship between energy and AI found there are only 22,000 AI specialists globally across all industries, and 61% of large businesses surveyed in the US and UK, reported a lack of staff with sufficient AI experience. As a result, all industries are competing for a limited skill set. Many energy companies are approaching this challenge through the upskilling and retraining of their existing workforces, as well as implementing innovative new programming such as back-to-school initiatives. However, cost-effectively achieving this, at scale, while managing the increased power demand for all of the above is a challenge.

FISHBOWL

11:00 - 12:00　　　　　　　　　　　　　　　**Location: Digitalisation & Technology Theatre**

The role of smart grids: matching energy supply with demand while increasing grid reliability and resiliency

The variable nature of renewable energy sources creates challenges for ensuring a reliable, consistent power supply. Combined with the rising number of prosumers and continuing rising power demand this complexity is expected to increase. To effectively navigate this challenge, grid operators must invest in supporting infrastructure to modernise grids and maximise the impact and financial potential of renewable energy. To achieve this, providers will need to utilise novel technologies, including distributed energy resource management systems, advanced voltage, reactive power controls and network digital twins to provide robust, future-proofed power grids.

LIVE DEMO

12:00 - 12:30　　　　　　　　　　　　　　　**Location: Digitalisation & Technology Theatre**

From the control room to the board room: the role of digital twins to enable data driven decision making

Digital twin technology - a combination of technologies that replicates a physical asset in a virtual model and then uses data to analyse and support decision making - is enabling energy companies to improve asset performance and business impact. Combined with the emergence of AI and machine learning, digital twin technology allows businesses to assess their power plants, transmission lines, distribution networks, and other assets to optimise performance through predictive maintenance and production optimisation. But companies must overcome barriers to implementation including aging infrastructure, data standardisation and management, upfront investment concerns and more.

ACTION SESSION

13:30 - 14:30　　　　　　　　　　　　　　　**Location: Conference Room B**

Enabling AI in the energy systems of tomorrow

AI has and will continue to revolutionise the energy sector, driving digitalisation and predictive capabilities. To maximise the increased efficiency and productivity AI and machine learning can deliver, open technology standards that foster greater data interoperability will be essential to overcome many of the cybersecurity and data management concerns. Organisations like the Trusted Energy Interoperability Alliance (TEIA) - which aims to create standards and agreed-upon formats and protocols for secure and interoperable data communications within the energy system—and the Open AI Energy Initiative (OAI) - an open ecosystem of AI-based solutions for the energy and process industries - are working toward this. To mitigate risks, businesses must standardise security formats, and compliance requirements for energy hardware and software, and develop internal AI specialists to deliver transformation at scale.

DAY 4 | **Thursday 7 November 2024**

10:00 - 11:00   **Location: Digitalisation & Technology Theatre**

Industry shaping technology showcase

A series of 15-minute presentations covering some of the most essential technologies needed for businesses to bring their operations into the digital age.

Digital twins, generative AI, smart grids, EV charging, and many more technologies are changing how energy is produced, distributed, and consumed. Each offers opportunities for increased energy efficiency, sustainability, and an overall better customer experience, while also presenting unique challenges and opportunities.

TECHNOLOGY TALK

11:00 - 11:30   **Location: Digitalisation & Technology Theatre**

Blockchain's entrance into the carbon credits industry: the promise of transparency and accountability

The carbon credit market has historically lacked the transparency, accessibility, liquidity, and standardisation to create an established trading system. Blockchain-based carbon trading is relatively new in the market and through tokenisation, it can securely digitise carbon credits on the blockchain, creating a digital footprint for the credit and allowing for easy buying and selling. However, a lack of a legal framework and scepticism over the quality of carbon credit tokens are just two examples of the challenges that need to be overcome to create transparency and trust.

TECHNOLOGY TALK

11:30 - 12:00   **Location: Digitalisation & Technology Theatre**

Scaling AI solutions to deliver the circular economy

The shift to a circular economy, in which businesses recover or recycle resources used in their value chain, has remained elusive, despite offering trillions of dollars in value creation. Barriers include the low residual value of used products, an inability to collect materials, prohibitive costs of separating and processing materials, and lack of traceability of products and materials that are being recycled. Using digital tools and artificial intelligence can potentially remove these barriers and create entirely new markets and business models.

TECHNOLOGY TALK

12:00 - 12:30   **Location: Digitalisation & Technology Theatre**

Harnessing the potential of 4IR technologies for sustainable food systems

Energy is a fundamental enabler of food security and zero hunger. With the World Resource Institute estimating that 10 billion mouths will need to be fed by 2050, the two sectors are being pulled closer together. AI can assist in enabling organisations to quickly interpret large amounts of data to predict hunger and ensure efficient distribution of food. AI can help connect farmers to markets where they can sell their products, predict yields, mitigate waste and even help price crops, all of which move the needle when it comes to improving the profitability of farms and reducing hunger. The food chain is a complex ecosystem and this is where AI has an advantage. By navigating the complex web of information, from farming to food distribution, it can help ensure higher-quality decision-making every step of the way.

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Avaxía

ENERGY SECTOR:
SHAPING THE FUTURE OF IT CONSULTING

Avaxia's Human 2.0 augments human capabilities with AI-driven insights, enabling companies to optimise their SAP systems, streamline operations, and reduce risks

As the energy industry faces unprecedented challenges—such as the need for greater efficiency and sustainability—traditional IT solutions are no longer sufficient. Avaxia Group is introducing a groundbreaking approach to IT consulting called Human 2.0. This concept integrates human expertise with advanced AI technology, embodied by Avaxia's AI-powered solution, MINOTAUR. Together, they enhance decision-making capabilities and drive transformation in energy operations.

HUMAN 2.0: REDEFINING IT CONSULTING

Human 2.0 signifies the evolution of IT consulting, where human knowledge is augmented by AI. For energy companies relying on complex SAP systems for resource allocation and regulatory compliance, this approach offers real-time insights, predictive capabilities, and automation.

The energy sector requires constant monitoring and proactive maintenance, utilising vast data sets. Human 2.0 empowers IT consultants to predict issues, optimise workflows, and ensure seamless operations. With MINOTAUR's ability to analyse data at scale, consultants can make faster, more informed decisions, amplifying their expertise.

AUGMENTING HUMAN EXPERTISE WITH MINOTAUR

MINOTAUR enhances human judgement by providing real-time insights into system performance. Energy consultants can leverage MINOTAUR's AI-driven analytics to identify trends, detect anomalies, and improve operational strategies. This collaboration allows for informed decision-making based on comprehensive data analysis, ensuring companies remain competitive in a rapidly evolving market.

Additionally, MINOTAUR supports consultants in complex problem-solving scenarios, offering recommendations that align with industry best practices and regulatory requirements. This partnership fosters both efficiency and innovation within the energy sector.

WORKFLOW AUTOMATION: STREAMLINING OPERATIONS

A key benefit of the Human 2.0 approach is the automation of essential business processes within SAP environments, facilitated by MINOTAUR. Delays in procurement, maintenance, or regulatory compliance can lead to costly setbacks. By automating task assignments, approval routing, and data management, energy companies can significantly reduce human error and enhance overall efficiency.
This streamlined workflow allows teams to focus on strategic initiatives rather than being bogged down by repetitive tasks. Energy companies that adopt MINOTAUR's automation capabilities achieve faster decision-making, increased productivity, and reduced operational inefficiencies, ultimately improving their performance.

THE INDUSTRIAL METAVERSE: A NEW FRONTIER FOR ENERGY

The industrial metaverse further enhances these capabilities by creating virtual environments where digital twins of physical assets can be monitored and optimised. This immersive platform allows energy companies to simulate operations, conduct remote training, and collaborate across teams in real time. By integrating Avaxia Group's AI solutions into this virtual space, firms can enhance operational resilience and effectively adapt to market changes.

PREDICTIVE MAINTENANCE FOR ENERGY ASSETS

Managing maintenance for large-scale infrastructure, such as refineries and power plants, is critical in the energy industry. With predictive maintenance strategies, companies can proactively address potential issues before they escalate. Continuous monitoring of key performance indicators (KPIs) allows for timely alerts and preventive actions.

INDUSTRY 4.0: TRANSFORMING ENERGY THROUGH ADVANCED TECHNOLOGIES

In the context of Industry 4.0, the energy sector can leverage the interconnectedness of digital technologies, big data, and automation. This transformation is essential for creating intelligent energy systems capable of adapting to changing demands and integrating renewable resources. Avaxia Group's AI solutions align seamlessly with Industry 4.0 principles, providing energy companies with real-time data from IoT devices and AI-driven decision-making.

CONCLUSION

Avaxia's Human 2.0 approach, supported by MINOTAUR, represents the future of IT consulting in the energy sector. By augmenting human capabilities with AI-driven insights, this model enables companies to optimise their SAP systems, streamline operations, and reduce risks. The integration of workflow automation, predictive maintenance, and Industry 4.0 principles ensures that energy firms can operate efficiently, maintain resilience, and drive innovation—preparing them for the challenges of tomorrow.

CHINA ZHENHUA OIL CO. | **STAND: 3220** | **HALL: 3**

AI INNOVATIONS IN GAS DETECTION SYSTEMS

China ZhenHua Oil Co.'s digital solutions are providing technological support for the transformation of the energy industry, particularly in areas such as safety management, efficiency improvement, and sustainable development

In the energy sector, particularly in petrochemical fields, hazardous gas monitoring and prevention systems are critical to digital transformation. AI and real-time monitoring technologies can help companies detect gas leaks earlier and faster, ensuring the safety of production and reducing risks. These gas monitoring and prevention systems not only excel at minimising potential environmental and health hazards but also provide businesses with a solution that can visually trace gas leaks.

The Industrial Gas Infrared Detection System (IGIDS), presented by China ZhenHua Oil Co. Ltd. in Hall 3, stand 3320, utilises a network of sensors accompanied by AI algorithms to monitor gas leaks in factories in real-time, trigger alarms, and take preventive actions when necessary. Not only does IGIDS effectively guard against production safety risks and reduce the economic losses caused by accidents, but it also cuts down unnecessary gas emissions, helping to achieve net-zero targets.

China ZhenHua Oil Co. always strives to offer more for a greener future. Methane is a critical greenhouse gas (GHG) that has more than 80 times the warming power of the same volume of CO_2. Detecting methane leakage remotely with IGIDS could slow down the pace of global warming while also guaranteeing personnel safety and avoiding hours of labour for inspections.

ADIPEC has long been a leading platform for showcasing cutting-edge technologies and innovations in the energy sector. Solutions such as the real-time monitoring and alarming systems demonstrate how technological innovation is driving industry transformation and helping to meet sustainability goals.

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ADIPEC has long been a leading platform for showcasing cutting-edge technologies and innovations in the energy sector.

AI has a variety of applications in improving efficiency across the energy industry. In the case of IGIDS, AI analyses sensor data to quickly identify potential leaks and trigger alarms. This is not only faster and more precise than traditional manual monitoring and detection methods but also significantly reduces the need for human intervention, thereby lowering the risk of human error.

Furthermore, IGIDS can operate as a third-party monitoring system. The deployment of IGIDS is quick and straightforward. Companies do not need to undertake extensive modifications to existing infrastructure. By introducing AI and digital technologies, petrochemical companies can not only ensure safety in production processes but also further optimise energy use, reducing unnecessary waste.

AI plays a crucial role in the transformation of the energy industry in several key areas:

1. **Enhancing Production Safety**: AI can monitor potential safety risks, such as hazardous gas leaks or equipment malfunctions, in real-time and respond quickly, preventing accidents. For instance, with the hazardous gas real-time monitoring and alarm system, AI helps companies better manage safety risks, improving overall safety levels.

2. **Optimising Energy Efficiency:** By analysing data, AI can identify inefficiencies in energy usage and provide optimisation suggestions, helping companies conserve energy. For instance, AI-based energy management systems can monitor the energy performance of equipment and suggest adjustments to reduce unnecessary energy consumption.

3. **Supporting Sustainable Development:** Through gas leak monitoring and emission reduction, AI provides the technological support needed to achieve net-zero targets. This not only helps companies meet their climate commitments but also aids them in complying with stricter environmental regulations by reducing carbon emissions.
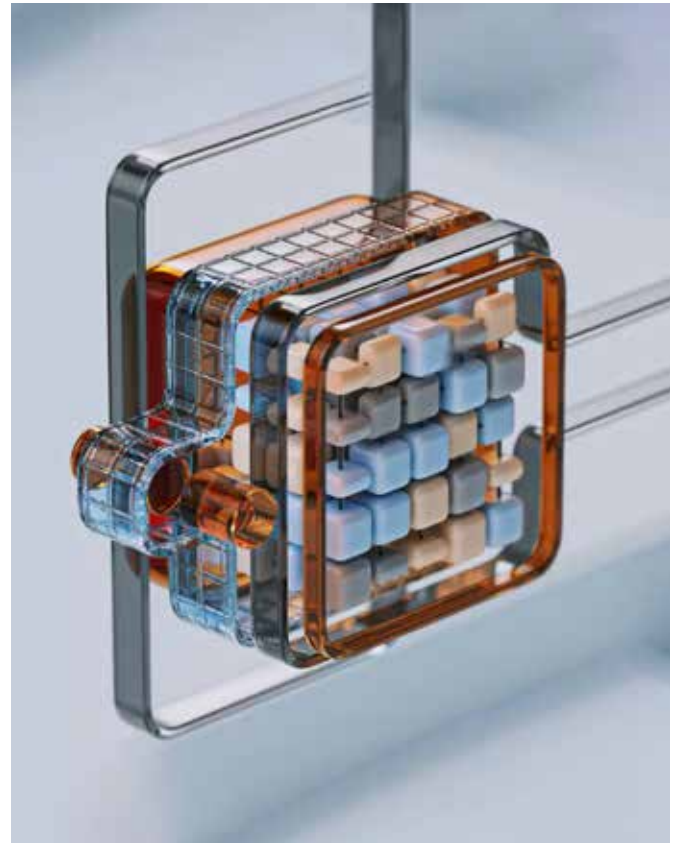
ADIPEC is one of the most important exhibitions in the global energy industry, offering a platform for showcasing cutting-edge technologies and discussing the future direction of the sector. Each year, companies from around the world exhibit the latest AI and digital solutions, particularly those focused on achieving net-zero emissions and advancing the industry's sustainable development.

By showcasing solutions such as hazardous gas real-time monitoring and alarm systems at ADIPEC, the energy sector can gain a broader understanding of the potential and applications of these technologies. The interactive discussions, technical demonstrations, and live presentations at the event provide a valuable opportunity for global energy companies to learn and share, accelerating the adoption and application of AI technologies and pushing the industry towards a more intelligent and low-carbon future.

In summary, AI and digital solutions are providing technological support for the transformation of the energy industry, particularly in areas such as safety management, efficiency improvement, and sustainable development. Solutions like the hazardous gas real-time monitoring and alarm system not only enhance safety but also reduce carbon emissions, driving the energy industry closer to net-zero goals. Showcasing these technologies on a global platform like ADIPEC will further accelerate their application and adoption in the industry.

CleanConnect.ai
Visual Automation

STRIKING A BALANCE:
ECO-FRIENDLY SOLUTIONS THAT BOOST ROI TOO

CleanConnect.ai specialises in autonomous, AI-driven visual automation solutions for the energy industry

Artificial intelligence (AI) and digitisation are significantly reshaping the energy sector, driving advancements towards net-zero and climate change goals. Despite ongoing questions about progress and the dynamic nature of timelines, these technologies are facilitating unprecedented developments aimed at accelerating change within the industry.

CleanConnect.ai is an AI Software as a Service (SaaS) company specialising in autonomous, AI-driven visual automation. With proprietary hardware that maximises the capabilities of its platform, CleanConnect.ai is revolutionising emission reduction, leak detection, and digital documentation to ProveZero®. The company addresses a critical industry challenge: accurately documenting, verifying, and reducing emissions, which has traditionally relied on estimates. CleanConnect.ai will showcase its disruptive technology at the Energy[ai] by ADNOC section during ADIPEC.

CleanConnect.ai will have a Showcase Pod and present its platform and ecosystem at the AI Pavilion auditorium on Day 2: November 5, 2024, at 15:45; and a Primary Presentation SPE sponsored Technical Session on Day 2: November 5, at 09:30, at Capital Suite 13, focusing on Tank Level Monitoring Using Thermal Video Processing AI Model.

CleanConnect.ai's solutions align with the vision of HE Dr. Sultan Al Jaber, UAE Minister of Industry and

> **The CleanConnect.ai platform features autonomous, real-time detection of emissions and various greenhouse gases (GHGs).**

Advanced Technology, COP28 President and Chairman of Masdar, who advocates for collaboration and the use of advanced technologies to combat climate change.

Following COP28, the UAE Consensus 2023 was signed by 197 countries, promoting an orderly energy transition. The consensus supports emission monitoring and

> **The platform provides 360-degree visualisation and detection, instantly alarming control centres with documented evidence and digitised quantification.**

leak detection, aligning with the Gold Standard for Global Goals through the Measure, Monitor, Report & Verify (MMRV) platform and the Oil and Gas Methane Partnership 2.0 (OGMP 2.0) under the United Nations Environment Programme (UNEP). The OGMP 2.0 framework comprises five reporting levels, increasing in detail as companies progress. CleanConnect.ai's platform enables compliance with MMRV Gold Standard and OGMP 2.0 levels 4 and 5.

The CleanConnect.ai platform features autonomous, real-time detection of emissions and various greenhouse gases (GHGs). Its proprietary Minerva Sensor Fusion™ technology offers a continuous monitoring solution that detects emissions without the need for human intervention. Rather than relying on manual methods, the platform provides 360-degree visualisation and detection, instantly alarming control centres with documented evidence and digitised quantification. This capability supports compliance with MMRV and OGMP 2.0 frameworks and significantly enhances efficiency in achieving energy transition objectives. The data captured is searchable via EnerGPT®, facilitating documentation, analysis, and KPI setting for performance benchmarking.

Beyond MMRV and OGMP compliance, *CleanConnect.ai*'s platform serves as a comprehensive visual monitoring system. It enables remote monitoring of tank levels, liquid leaks, and health and safety (HSE) concerns, thereby becoming an essential

tool for onsite oversight. Investing in CleanConnect.ai not only helps reduce emissions but also offers a return on investment (ROI), addressing a common concern for companies allocating budgets for energy transition initiatives. The efficiencies gained through risk reduction, safety improvements, and compliance enhancements provide tangible value to clients. CleanConnect.ai has also developed a blockchain NFT for quantification and validation data, branded as ProveZero®, marking a significant step in AI-powered emissions reduction.

Digitisation and AI are now integral to the industry. A few years ago, digitisation was a buzzword, but it has evolved into a key driver of technological advancements. It has improved operational efficiencies, mitigated risks, and propelled emissions reduction efforts towards Net Zero. Industry leaders recognise this importance, dedicating significant resources to enhance AI and digitisation.

CleanConnect.ai is introducing scalable technologies that act as change agents for climate initiatives. As we aim for 2050 goals, it will be essential to adopt innovative technologies that are not yet commercialised.

We are honoured and privileged to showcase in the UAE at ADIPEC in the AI Pavilion, almost a year after the UAE Consensus 2023 at COP28, and in preparations for COP29 in Baku.

EDB
مصرف الإمارات للتنمية
Emirates Development Bank

POWERING TRANSFORMATION:
FINANCING A SUSTAINABLE FUTURE WITH AI AND INNOVATION

Emirates Development Bank (EDB) powers the UAE's transition to a sustainable, low-carbon economy by leveraging AI, digital innovation, and tailored financing solutions across key sectors like renewables, advanced technology, and manufacturing

The energy industry is undergoing a profound transformation, driven by the urgent need for a sustainable future. At the heart of this shift lies the power of AI and digitalisation, enabling unprecedented efficiency, innovation, and climate action. Emirates Development Bank (EDB), a valued sponsor of ADIPEC, is playing a pivotal role in this transformation, leveraging AI and digital solutions to empower businesses and accelerate the UAE's journey towards a low-carbon economy.

EDB recognises the importance of ADIPEC as a platform for showcasing innovations that drive a sustainable future. The event provides an opportunity to engage with industry leaders, share best practices, and explore new technologies that can accelerate the energy transition.

As the key financial engine of the nation's economic development and industrial advancement, EDB leverages digital innovation to empower businesses across five strategic priority sectors: manufacturing, food security, healthcare, advanced technology, and renewables.

EDB's commitment to supporting the UAE's transition to a low-carbon future is embedded in its financing solutions and digital banking offerings. The Bank is actively supporting the transition to a sustainable, innovation-led economy, with a particular focus on renewable energy and advanced technology.

In 2023, EDB has made significant strides towards reinforcing the UAE's commitment to sustainable growth by adding renewables to its priority sectors, to help ensure

> **EDB has provided over AED 1.78 billion in financing to the renewable energy projects, demonstrating its dedication to reducing carbon emissions and fostering a cleaner environment.**

a just and equitable energy transition in the UAE. Since then, EDB has provided over AED 1.78 billion in financing to the renewable energy projects, demonstrating its dedication to reducing carbon emissions and fostering a cleaner environment. This commitment to financing sustainable and renewable energy projects aligns with the UAE's net zero by 20250 strategy and its broader sustainability agenda.

EDB's Solar Energy Financing Program provides up to AED 5 million in long-term loans and working capital to businesses looking to install solar energy infrastructure. With favorable terms and conditions, including up

to 8-year tenors and 6-month grace periods, EDB is making solar energy more accessible and affordable for businesses of all sizes.

Additionally, EDB has partnered with the International Renewable Energy Agency (IRENA) through the Energy Transition Accelerator Financing (ETAF) platform, committing up to AED 1.3 billion to finance renewable energy projects recommended by IRENA. This collaboration underscores EDB's dedication to global cooperation and its commitment to financing projects aligned with the Paris Agreement and UN Sustainable Development Goals.

Beyond renewable energy, EDB is committed to integrating AI and digital technologies across its operations and financing solutions. The Bank actively supports advanced technology ventures, offering financing to spur the adoption of cutting-edge technologies. Since launching its new strategy in April 2021, EDB's cumulative total financing has reached AED 12.97 billion, including AED1.89 billion for advanced technology projects, solidifying the UAE's position as a leader in innovation and technological advancement.

Recently, EDB unveiled a new AI financing solution, committing AED 370 million to the 'Artificial Intelligence in Industry Innovation Program,' in collaboration with the Ministry of Industry and Advanced Technology (MoIAT). By promoting AI deployment across industries, we enhance industrial advancement, maximise local production capacity, and boost the industrial sector's contribution to the national GDP.

Other strategic initiatives include EDB Smart Connect, a cutting-edge cash management platform that provides

clients with a seamless omnichannel experience with real-time insights into their financial positions. This empowers businesses to optimise cash flow and make informed decisions, ultimately contributing to greater efficiency and sustainability. Furthermore, EDB's Business Banking App, launched in 2021, has revolutionised the banking experience, allowing customers to complete applications in seconds, acquire an IBAN number within minutes, and start transacting within 48 hours. The Bank also offers digital supply chain and trade finance solutions, leveraging digital technologies to facilitate secure and efficient global trade operations while mitigating risks associated with cross-border transactions.

EDB firmly believes that AI can play a transformative role in the energy sector. By analysing vast amounts of data, AI can optimise energy consumption. AI algorithms can identify patterns and trends in energy usage, enabling businesses to implement targeted energy efficiency measures and reduce their carbon footprint. AI can also predict energy generation from renewable sources, facilitating their seamless integration into the grid, and can drive the development of new energy technologies and solutions, leading to breakthroughs in areas such as energy storage, smart grids, and carbon capture.

EDB is dedicated to supporting the UAE's transition to a sustainable future, and ADIPEC provides a crucial platform for advancing this mission. By showcasing its innovative financing solutions, fostering partnerships and engaging in collaborative discussions, EDB aims to highlight the power of AI and digitalisation in driving the energy transition. ADIPEC's role in fostering such dialogue and partnerships is essential for accelerating the adoption of these technologies and achieving a cleaner, more sustainable energy future for all.

RESEARCH & INNOVATION: TRANSFORMING THE ENERGY MARKET OF THE FUTURE

Eni **increases the efficiency and precision of operations with its cutting-edge digital technologies**

Eni, a global tech energy company, has always put research and technological innovation at the centre of its business strategy and energy transition path. Our company fosters innovation by optimising established technologies and developing breakthrough ones that have the potential to radically transform the energy market of the future. Today, digital innovation permeates all business areas and enables as well as amplifies the opportunities provided by research and technology to achieve our net-zero target by 2050. In particular, our digital and information technology unit supports the introduction of new digital solutions, especially concerning aspects of infrastructure resilience, operational excellence and security. In particular, Eni is focused on cloud, data, artificial intelligence, cybersecurity and supercomputing.

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Being present at ADIPEC is important for Eni as this exhibition promotes cooperation, quickens action, and produces results, while advancing ideas to assist in achieving sustainability goals.

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AI offers our company unprecedented opportunities to develop valuable tools for businesses and processes.

Thanks to the use of cutting-edge digital technologies, such as supercomputing and artificial intelligence, Eni increases the efficiency and precision of its operations. Our company relies on its own supercomputing systems, hosted in its Green Data Center, located in Pavia.

Eni's peak computational power is being upgraded from 70 PFlop/s (HPC4s + HPC5s) to an expected over 600 PFlop/s of the new HPC6; this is equivalent to 600 quadrillion complex mathematical operations per second. Supercomputing allows our company to improve

the accuracy of geological and fluid dynamics studies, increasing prospecting precision, reducing uncertainty in identifying new deposits and speeding up production: these are key factors for guaranteeing natural gas supplies and energy security. Our supercomputers also prove invaluable for applied research into new energies, like magnetic confinement fusion.

Furthermore, AI offers our company unprecedented opportunities to develop valuable tools for businesses and processes. Eni's initiatives on AI cover four key areas: scaled development of AI solutions at the service of business, prototyping increasingly complex use cases using state-of-the-art methodologies, ad-hoc internal initiatives on AI solutions to continuously evaluate their adoption and value, and promoting a culture of responsible AI use across the company.

Being present at ADIPEC is important for Eni as this exhibition promotes cooperation, quickens action, and produces results, while advancing ideas to assist in achieving sustainability goals. This year's programme underlines how digital technologies are crucial and are the cornerstone of sustainability initiatives.

Honeywell

POWERING THE ENERGY SECTOR WITH NEW ARTIFICIAL INTELLIGENCE SOLUTIONS

Honeywell's solutions integrate artificial intelligence into traditional industrial processes to improve efficiency and solve complex problems

Honeywell is introducing new artificial intelligence (AI)-enabled solutions designed to help employees work smarter, make systems more efficient and allow plant operations to accelerate the path to autonomy. By combining decades of industry knowledge and deep domain data with the latest AI technologies, including Honeywell Forge, Honeywell is infusing AI into both new and existing solutions. This provides companies with end-to-end AI experience for the worker in the field, the process operator in the control room, and executives at an enterprise level.

Today's energy industry faces several challenges, including a widespread shortage of skilled talent to run facilities and a need to enhance efficiency while maintaining accuracy and quality. To address these challenges, Honeywell's AI solutions can help enhance decision-making speed, operational efficiency and workforce productivity while also upskilling the workforce through enhanced training. The company has also announced a partnership with Chevron to develop additional advanced AI-enabled solutions focused on enhancing refining operations. Honeywell's new AI capabilities include the Experion Operations Assistant, which integrates explainable AI into the industrial process to help operators identify production issues and offer step-by-step guidance to address the issue. With an Experion Operations Assistant running alongside plant operators, companies can optimise operations and less experienced operators can build new expertise more quickly by gaining access to the decades of industry knowledge within their company.

Honeywell recently commissioned a survey of 1,600 executive AI leaders globally and found that nearly two-thirds of all respondents believe increasing worker efficiency and productivity is the most promising use of AI. The integration of AI to optimise

> Honeywell's technologies are enabled by AI to help improve the performance of the industrial workforce – enabling workers to increase efficiency and rapidly accelerate their time to expertise.

operations to improve efficiency and upskill the workforce supports Honeywell's alignment of its portfolio with three powerful megatrends, including automation.

"As the industrial workforce experiences a skills and experience gap globally, the worker is still an integral part of the automation journey," said Lucian Boldea, President and CEO of Honeywell Industrial Automation. "Honeywell's technologies are enabled by AI to help improve the performance of the industrial workforce – enabling workers to increase efficiency and rapidly accelerate their time to expertise."

Honeywell is launching a new AI-enabled solution:

Honeywell Field Process Knowledge System (PKS) and its "field assistant" with AI powered by Honeywell Forge is designed to make operations

and maintenance actions easier, safer and more accurate. It consists of a web-based application for supervisors, and a mobile device for field workers that provides a single pane of glass for all field-related tasks including operations, maintenance, permits, documentation, and more.

Honeywell is also adding AI-assisted capabilities to its existing solutions including:

Honeywell Experion® PKS, an industry-leading distributed control system, now incorporates comprehensive operations support with predictive advisories, recommendations and troubleshooting. It also offers access to the AI-assisted Experion Operations Assistant to improve production and help keep system operations at optimum levels. Honeywell AI-enabled services and advice can provide predictive notification of issues with recommended actions throughout the entire lifecycle of the facility. The solution provides engineering support for faster project startup and day-one ready operations.

Honeywell Production Intelligence is designed to contextualise Operational Technology (OT) and Information Technology (IT) data from onsite operations to deliver meaningful insights and

> **Today's energy industry faces several challenges, including a widespread shortage of skilled talent to run facilities and a need to enhance efficiency while maintaining accuracy and quality.**

analytics-driven recommendations for executives across the business. Additionally, it provides near real-time monitoring, diagnosis, and predictive modules to help address and prevent future production issues.

For more information, please visit www.honeywell.com

FIPI
Federation of Indian Petroleum Industry

PROMOTING DIGITALISATION IN THE INDIAN OIL & GAS INDUSTRY

Federation of Indian Petroleum Industry is an industry body that uses its platform to identify and award groundbreaking projects that leverage digital technologies in the areas of IoT, AI, and ML

The Federation of Indian Petroleum Industry (FIPI) is actively promoting the adoption of digital solutions across India's hydrocarbon sector through its prestigious annual awards. These awards celebrate and encourage innovations in the Indian oil and gas sector. By recognising and rewarding groundbreaking projects that leverage digital technologies in the areas of internet of things (IoT), artificial intelligence (AI), and machine learning (ML), FIPI not only highlights the transformative impact of digital tools but also encourages other industry players to embrace such innovations. This approach helps drive efficiency, safety, and sustainability within the sector, ensuring that the Indian hydrocarbon industry remains competitive and technologically adept in a rapidly evolving energy landscape.

Among the various FIPI award categories, two are especially dedicated to promoting digitalisation: Digitally Advanced Company of the Year and Digital Technology Provider of the Year. In FY 2022-23, FIPI received 13 entries for the DACY category and nine for the DTPY category.

These 22 entries from the Indian oil and gas sector have brought an impressive bouquet of innovation and digital solutions across the energy value chain, from exploration and production to refining and marketing. Some of the notable entries are as follows (names of the companies are withheld due to confidentiality agreements):

1. Data-Driven Reservoir Management: By consolidating and employing ML to contextualise siloed data sources, a central platform for all reservoir engineering data, organised at an asset-

> The convergence of technology and sustainability in India's energy sector is not just a technological evolution but a profound shift towards a more responsible and resilient energy system.

level hierarchy, has been created. The platform is facilitating reservoir engineering workflows, with the potential to boost production and enhance the efficiency of data scientists and front-end engineers.

2. **Process Digital Twin:** The deployment of an innovative virtual Process Digital Twin has enhanced asset health monitoring by simulating real-life conditions at gas and offshore facilities, utilising "Physics-informed ML modelling" for greater efficiency and higher production.

3. **Petro-Technical Cloud Migration:** For hybrid work environments and high-power computing, a first-of-its-kind platform for geoscience and geophysics has been introduced, which reduced the time from exploration to first oil by approximately 20%.

4. **Digital Command & Control Centre:** Utilising AI and ML, this integrates systems across supply locations and fleets, ensuring optimal performance through effective analysis and quality decision-making.

5. **CO2 Emission Estimation Web Platform:** An indigenous digital web-based platform for CO2 emissions calculation specific to Indian needs has been developed. It provides comprehensive Scope-1 and 2 GHG emissions estimation with an analytical dashboard.

6. **IoT-based Earthquake Warning System:** Offers real-time monitoring of seismic activity and provides early alerts to protect critical infrastructure, thereby enhancing safety by minimising risks, reducing damage, and enabling swift responses to potential hazards.

7. **Multilingual Chatbot:** An AI-powered, NLP-driven chatbot capable of communicating in multiple languages, providing services such as fuel bookings, fuel station details, customer feedback, and more. This is highly useful for non-English-speaking people.

8. **Smart Wearables for Workforce Management:** Smart wearables have enhanced workforce management through digital applications like real-time tracking, health monitoring, and safety alerts. These devices help improve productivity, ensure better compliance with safety protocols, and enable data-driven decisions for efficient operations.

9. **Drone-based Monitoring:** Advanced drones are used for asset inspections, minimising manual intervention while improving accuracy and efficiency. This allows for enhanced real-time data collection, reduced inspection time, and improved safety.

10. **Water Balancing System:** Measurements are taken from reservoirs (overhead and underground) through ultrasonic level transmitters. Data are then fed to a PLC-based water balancing system that monitors water withdrawal and consumption, mapping them on a real-time basis. The PLC also controls pump operation based on the water level in the reservoirs.

The convergence of technology and sustainability in India's energy sector is not just a technological evolution but a profound shift towards a more responsible and resilient energy system. As these digital solutions continue to advance, they will play a pivotal role in shaping the future of energy in India and beyond. It is imperative that AI and digital solutions remain at the forefront of India's energy transformation, driving progress towards net-zero emissions and climate goals.

FIPI is an apex society of entities in the hydrocarbon sector in India and acts as an industry interface with the government and regulatory authorities. It supports the government in resolving issues and evolving policies and regulations. It represents the industry on various government bodies, committees, and task forces and has been instrumental in voicing industry concerns with various ministries and regulators.

UNLOCKING ENERGY EFFICIENCY: THE FUTURE OF COMPRESSED AIR SYSTEMS

FS-Elliott offers a range of technologically advanced compressors that harness data and AI for unparalleled operational efficiency

The operation of a compressed air system is a major energy consumer, often regarded as the fourth utility. When not designed or operated with energy efficiency in mind, these systems can become inefficient, leading to substantial energy wastage. Recognising these inefficiencies, FS-Elliott is committed to advancing energy-efficient air compressor technologies while ensuring our control system solutions enable users to achieve optimal efficiency tailored to their specific environmental objectives.

At FS-Elliott, we understand that the integration of data, digitalisation, and AI solutions plays a critical role in enhancing operational efficiency and supporting net-zero ambitions. Our Regulus control systems are distinguished in the industry, boasting unique features that facilitate the pursuit of maximum energy efficiency and the achievement of net-zero targets.

Central to our approach are the advanced energy-efficient control modes, the innovative Energy Advisor feature, and the Maintenance Notification System — all designed to provide exceptional performance. Focusing on the energy-efficient control modes, we have meticulously developed a range of options tailored to diverse operational needs. These include pressure and flow control modes, all aimed at maximising operational efficiency.

Starting with pressure control modes, FS-Elliott offers several options, such as Suction Throttle (ST), Pressure Band Optimisation (PBO), Ambient Compensation (ACC), and Integrated Compressor Control (ICC). Each of these modes is optimised for individual compressor operation and can be combined with auto unload, start, and stop functionalities. ICC is particularly valuable for managing multiple air compressors supplying a common air header, ensuring that all compressors operate at maximum turn-down while minimising blow-off across the system.

> " At FS-Elliott, we understand that the integration of data, digitalisation, and AI solutions plays a critical role in enhancing operational efficiency and supporting net-zero ambitions.

Recently, we have elevated our control capabilities by introducing Mass Flow and Anti-Surge Control modes, now available directly from the OEM. These advancements empower users to meet their operational needs while utilising the least amount of energy possible, aligning with their energy usage goals and overall operational efficiency.

However, energy-efficient control modes are only beneficial when correctly applied, and the compressor package is maintained to the highest standards. To assist customers in selecting the most suitable control mode for their application, we have launched the Energy Advisor, integrated into all Regulus Control Panel solutions. This onboard energy management system monitors compressor performance, providing energy usage data and tailored suggestions for control modes that can yield further energy savings.

Another essential component in boosting operational efficiency is the maintenance of routine parts. To support this, FS-Elliott has introduced the Maintenance Notification System across our Regulus Control Panel range. This system tracks the usage of routine maintenance components, alerting users when maintenance is approaching or due.

> **FS-Elliott is dedicated to developing technologies that align with digitalisation and future AI advancements, all aimed at helping our customers achieve their net-zero emission targets.**

Moreover, the energy-saving features of FS-Elliott's Regulus Control Panel can be seamlessly integrated with FS-Connect, our remote monitoring platform. This integration not only offers remote monitoring capabilities but also delivers real-time, data-driven recommendations from the Energy Advisor and Maintenance Notification System. This proactive strategy enables operators to swiftly address changes in compressor operations, ensuring continuous optimisation of system performance.

In summary, the operation of centrifugal air compressors significantly contributes to overall energy consumption, and reliance on outdated control system technologies can hinder the benefits of modern innovations. FS-Elliott is dedicated to developing technologies that align with digitalisation and future AI advancements, all aimed at helping our customers achieve their net-zero emission targets. To learn more about FS-Elliott's product offerings, please visit our booth or explore our website at www.fs-elliott.com.

GECKO ROBOTICS | STAND: 14477 | HALL: 14

THE DIGITAL SHIFT:
HOW ROBOTICS AND AI ARE BUILDING GREENER INDUSTRIES

Gecko Robotics' Cantilever software is the world's first asset performance management platform powered by Artificial Intelligence + Robotics (AIR) technology, empowering organisations with actionable data to achieve operational excellence

The world relies on the dependable, sustainable, and efficient operation of infrastructure assets across critical sectors, including energy, manufacturing, government and defence, transportation, and beyond. However, there has been a gap in the ability to effectively use technology to modernise and assess the needs of this critical infrastructure, which we depend on in our everyday lives. As these assets age, they become increasingly prone to failure due to mechanical integrity issues, such as corrosion, erosion, and cracking—leading to disastrous consequences, including widespread blackouts, environmental remediation, shortages of essential resources, and weakened military defence systems.

Data revolutionises decision-making to ensure a secure, just, and equitable transition to net zero. Data quality is essential in fuelling AI and digital solutions that allow us to achieve climate goals. As the saying goes, garbage in, garbage out. Algorithms are only as good as the data used to train them, and even the most sophisticated data analytics platforms will fall short if fed poor-quality data. Conventional data collection and analysis capabilities cannot meet the growing demands of the energy sector, but leaders can leverage automated robotic solutions to ensure efficient, reliable, and precise asset health data. Therefore, AI and robotics must be implemented in tandem.

Gecko Robotics is transforming how the world builds, operates, and maintains its critical infrastructure for a more reliable and sustainable future. Gecko's Cantilever software is the world's first asset performance management platform powered by

Artificial Intelligence + Robotics (AIR) technology. Our advanced suite of robots collects full-coverage, high-fidelity asset health data layers. Cantilever uses AI to clean, process, and analyse this data. This results in an accurate and trusted digital twin that enables real-time decision-making to increase operational efficiency and safety, supporting asset integrity assessment and planning. Gecko's AIR digitalisation solution provides actionable data that empowers leading energy, manufacturing, and defence organisations to achieve operational excellence.

Gecko's capabilities have been shown to decrease carbon emissions in partnership with customers. Digitalisation tools unlock new industrial efficiencies, minimise resource wastage, and reduce carbon footprints. Gecko partnered with Rho Impact, a leading analytics firm, to unveil findings on the environmental impact of digitalising critical infrastructure. The research found that increased digitalisation of assets across the energy, manufacturing, and transportation industries can reduce emissions by 853 MMT CO_2e, nearly the equivalent of four times the annual CO_2 emissions of the United Arab Emirates.

Addressing Fugitive Emissions: Detecting corrosion, leaks, and other defects within the oil and gas sector could reduce fugitive emissions by 556 MMT CO_2e per year by 2030. The findings show a 37% emissions efficiency improvement compared to undigitalised, unrepaired assets, largely by decreasing the release of potent greenhouse gases such as methane.

Decreasing Forced Outages: In the electric power generation sector, digitalising boiler tubes could result in a potential 230 MMT CO_2 reduction per year by

keeping more efficient baseload generation online and inefficient backup generation offline.

Monitoring Improves Efficiency: In the paper manufacturing industry, digitalising key physical assets could lead to an annual emissions reduction of 46 MMT CO_2e by 2030. Digitalisation can drive a 6% emissions efficiency improvement compared to undigitalised assets.

Optimising Maritime: Load optimisation and leak detection present significant opportunities in maritime shipping. Digitalisation could avoid 11 MMT of CO_2 emissions by improving the availability of the largest, most efficient shipping vessels.

The impact of digitalisation is clear. Improved asset monitoring leads to greener infrastructure. This data represents a major shift in how the world thinks about

achieving 2030 net zero goals and Industry 4.0. Leaders are balancing green energy initiatives with economic stimulation and an ever-increasing demand for energy, especially in developing economies. This paradigm demands that the energy and industrial sectors adopt technology at warp speed but in a strategic and scalable way to ensure infrastructure is well maintained.

Improving the sustainability of today's infrastructure requires ongoing innovation, including how we collect data about the built world. The potential emissions impact of improving the reliability of heavy industry and infrastructure highlights the promise of deploying technologies available today. ADIPEC plays a significant role in enabling AI and digitalisation solutions by eliminating a major hurdle in implementation and making decision-makers aware of the existing technologies that can solve their largest problems.

kent

SOLUTIONS:
SEAMLESS DIGITAL THREAD FOR OPERATIONAL EXCELLENCE

Kent is driving the future of energy with smarter, sustainable solutions

AI is transforming the energy sector by optimising processes, reducing emissions, and enabling smarter resource management. With predictive analytics and advanced process controls, AI facilitates real-time decision-making and remote operations, enhancing safety and efficiency.

Kent is at the forefront of this transformation, leveraging AI and digital solutions to drive efficiency. Our proprietary platform developed by our Global Innovation & Digital Engineering team, revolutionises

asset management across their entire lifecycle by integrating digital assets and intelligence across multiple dimensions (1D-8D). Powered by AI, our digital solutions platform enables autonomous operations and creates a seamless digital thread for operational excellence.

Through immersive simulations, live visualisations, advanced analytics, and AI-driven tools like Virtual Flow Metre and AI Autopilot, we empower clients to make informed decisions, reduce emissions, optimise energy use, and lower costs.

Our proprietary platform developed by our Global Innovation & Digital Engineering team revolutionises asset management across their entire lifecycle by integrating digital assets and intelligence across multiple dimensions.

A selection of very specific use cases for AI in energy Operations include:

- **Autonomous Operations -** AI autopilot and autonomous operations, including automated drilling, autonomous wells, minimises human error and enhances efficiency.

- **Closed-Loop Automation and Monitoring -** allowing clients to continuously adjust operations based on real-time data, through conversational AI.

- **AI for Flaring Monitoring -** AI-driven monitoring systems for flare reduction and optimisation.

- **Digital Twin for Emission Tracking and Supply Chain Management -** by creating virtual replicas of physical assets, surrounding environment and processes, digital twins enable real-time monitoring and analysis of emissions across all operations. Plus, digital twins can simulate the entire supply chain, enabling companies to select and engage with suppliers who comply with specific environmental standards.

- **Asset Performance Management -** not limited to predictive maintenance, energy management, powered by AI, analysing data from various sources and historical trends, AI can predict equipment failures, and manage energy efficiently.

The future of energy lies in AI's ability to augment energy resources by optimising systems, minimise resource consumption, and deliver a more sustainable energy landscape. At Kent, we are proud to be at the forefront of this transformation, offering our clients the solutions to excel in both conventional and future energy sectors. Get in touch to book a visit to our Digital Factory in Abu Dhabi and find out more about Kent's digital solutions.

Microsoft

TECHNOLOGIES:
EMPOWERING THE INDUSTRY TO ACHIEVE SUSTAINABILITY GOALS

Microsoft is committed to enabling the energy sector through the transition with innovative AI and digital solutions

The energy industry stands at a critical crossroads. As the global energy landscape shifts towards sustainability, the challenge is clear: how can the industry balance rising energy demands with the urgent need for decarbonisation? Microsoft is committed to enabling the sector through this transition with innovative AI and digital solutions. These technologies help companies reduce carbon emissions, increase operational efficiency, and accelerate the shift towards a low-carbon future.

AI AND DIGITALISATION POWERING OPERATIONAL EXCELLENCE

Microsoft's cloud platform, along with its data and AI solutions, is leading the digital transformation across the energy industry. With Azure AI, machine learning, and advanced data analytics, operators can leverage their data to improve decision-making and streamline operations. These tools provide real-time insights for better resource management, predictive maintenance, and operational efficiency, supporting the transition

to a low-carbon future. A key area where AI is driving change is in predictive analytics for equipment maintenance and asset management. Traditionally, the industry has relied on scheduled maintenance to prevent downtime. However, AI enables a more proactive approach — predicting equipment failures before they occur, reducing both emissions and costs by minimising unplanned shutdowns and energy wastage. This predictive capability not only cuts costs but also reduces environmental impacts by optimising energy consumption and avoiding unnecessary emissions.

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At ADIPEC 2024, Microsoft is demonstrating AI's role in optimising production, enhancing grid management, accelerating low- and no-carbon energy sources, and reducing emissions across the energy value chain. We are committed to ethical development and deployment of AI.

Efficiency is a key lever in reducing the carbon footprint of energy operations, and AI plays a critical role in achieving this goal. By integrating digital twin models and AI-based predictive analytics, operators can further optimise asset safety, reliability, and performance. These technologies enable real-time monitoring of critical infrastructure, such as pipelines and offshore platforms, identifying anomalies and inefficiencies that might otherwise go undetected. A significant achievement of AI in this domain is its impact on safety and operational risks. AI-powered surveillance and monitoring systems help predict and prevent incidents like spills and equipment failures, resulting in fewer incidents and reducing

environmental impact. By lowering risks and unplanned downtime, the industry uses less energy and lowers carbon emissions.

AI'S ROLE IN THE ENERGY TRANSITION

AI has the potential to make significant reductions in greenhouse emissions. One of the most pressing challenges for the energy industry is minimising methane emissions. Methane, a highly potent greenhouse gas, can be released during natural gas production, transportation, and processing. Microsoft's AI technologies are used by operators to assist in detecting and mitigating these emissions by providing real-time data on leaks and system vulnerabilities. AI is also transformative in Carbon Capture and Storage (CCS) operations. Microsoft's AI solutions enhance the monitoring and optimisation of CCS processes, ensuring that captured carbon is securely and permanently stored, while maximising the reliability and efficiency of the end-to-end process. This is crucial not only for the energy industry to reduce its carbon footprint while continuing to meet global energy demands, but also for hard-to-abate industries such as cement and steel.

THE IMPORTANCE OF ADIPEC IN FOSTERING AI AND DIGITAL INNOVATION

ADIPEC is a leading event for the energy industry, and Microsoft recognises its importance in driving AI and digital innovation. The transition to a low-carbon future requires collaboration, and ADIPEC unites leaders from across the globe to discuss and showcase advancements in AI, data analytics, and digitalisation that will shape the future of energy.
At ADIPEC 2024, Microsoft, together with its customers and partners, will showcase how AI and digital solutions support the industry's transformation towards sustainability. This includes demonstrating AI's role in optimising production, enhancing grid management, accelerating low- and no-carbon energy sources, and reducing emissions across the energy value chain. Microsoft's commitment to responsible AI ensures that this technology is developed and deployed ethically, is trustworthy, and aligned with human values.
The energy industry is undergoing a profound transformation, and Microsoft is committed to supporting this change with AI and digital solutions. By leveraging AI, energy operators can reduce their carbon footprint, improve efficiency, and drive innovation. As the world strives towards a low-carbon future, Microsoft will continue to lead with the tools and technologies that empower the industry to achieve its sustainability goals.

NMDC
GROUP

PROTECTING THE WORKFORCE AND ENHANCING EFFICIENCY

From AI-powered monitoring to real-time location systems, NMDC Group is leading the way in technological innovation

There is no doubt that technology has brought significant benefits to the energy industry. It drives efficiency, reduces costs, supports the energy transition, and helps businesses better understand their customers' evolving needs. Another critical area where technology is making strides is in workplace safety, delivering positive outcomes for both businesses and employees.

At the National Marine Dredging Company (NMDC) Group, safety and efficiency are at the core of all our operations. This is why we have always been early adopters within our sector, consistently integrating fit-for-purpose solutions to improve the daily experiences of our workforce. By doing so, we not only protect our workforce but also deliver projects to the highest standards.

One example of this is the recent introduction of the NMDC Group Connected Workforce solution, implemented for over 5,000 production employees at the NMDC Energy Yard in Musaffah, Abu Dhabi. This solution utilises Real-Time Location Systems (RTLS) to monitor employee movements and enhance safety while boosting operational efficiency.

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We have always been early adopters within our sector, consistently integrating fit-for-purpose solutions to improve the daily experiences of our workforce.

Employees are provided with wearable devices upon entering the Yard, which help track their locations. These devices send alerts to a central dashboard in cases of extended immobility or suspicious movements, such as a fall, notifying the HSE (Health, Safety, and Environment) teams for immediate action. The system minimises incident risks and ensures a swift response if an accident does occur.

In addition to improving safety, the Connected Workforce system ensures workers are at the correct locations for their scheduled tasks, improving resource allocation and productivity. Since its implementation, this solution has saved over a million dollars and resulted in zero work-related accidents during its first year.

We have also introduced blind spot monitoring technology, which provides 360-degree visibility around heavy machinery, eliminating blind spots. In a busy fabrication yard with 10,000 workers and constantly moving equipment, safety is paramount. With multiple operations occurring simultaneously, protecting both workers and equipment operators from potential accidents is critical. The Blindspot Detection System, featuring 360-degree cameras and an intelligent dashboard in the operator's cabin, enables drivers to monitor all angles, ensuring safe equipment operation even in hazardous environments.

To further enhance safety, we have integrated artificial intelligence-powered dash cameras to monitor operators for signs of fatigue, mobile phone use, or distraction. This ensures operators remain focused on their tasks.

Additionally, NMDC Group has deployed the site safety analyser solution to improve safety standards within the Yard workshops. With 18 advanced AI-powered cameras and a smart dashboard, the system continuously monitors for potential hazards, ensuring all workers wear the proper personal protective equipment and follow safety protocols. The AI detects unsafe acts, such as improper use of protective gear, bypassing safety checks, or using faulty equipment.

As technology in the energy sector continues to evolve, NMDC Group remains committed to being an early adopter to ensure the safety of employees and the advancement of the industry.

FROM GEOTHERMAL TO CCS: HOW AI IS POWERING OUR JOURNEY TO NET ZERO

OMV is harnessing the potential of artificial intelligence and digital technologies to power a sustainable transformation

We are on a mission to create a world where sustainable energy becomes a reality for everyone. Achieving this is a monumental challenge that requires us to transform our business and embrace sustainable innovation to meet ambitious climate goals. As we evolve our portfolio, we aim to deliver solutions that support the future energy mix.

By 2030, our target is to generate around 4 TWh of geothermal energy and store approximately three million metric tonnes of CO2 annually through carbon capture and storage (CCS). AI will play a pivotal role in realising this vision, reshaping the way we work and driving innovation throughout our operations and processes. By applying advanced AI intelligently in areas where it has the most

significant impact, we will meet our Strategy 2030 goals faster and more effectively.

THE POWER OF AI

AI can process vast amounts of data, surpassing human capabilities. By analysing this data to streamline operations or automate processes, AI can dramatically improve efficiency and resilience. AI is already making a substantial impact at OMV across various applications, such as data analytics and data science. In combination with emerging technologies like virtual reality and the Internet of Things (IoT), AI helps optimise drilling, process seismic data, model reservoirs, and enable predictive maintenance.

The integration of AI into our energy business brings a multitude of benefits. It enhances decision-making and safety, improves risk assessments, and drives cost-efficient investments. AI also allows us to maximise resource usage, optimise energy consumption, and reduce waste, thereby lowering the environmental footprint of our operations.

OPTIMISING LOW-CARBON SOLUTIONS

Our low-carbon business areas face many challenges, particularly in project performance, which often depends on unpredictable subsurface geologies. For instance, the design of a well for carbon storage or geothermal energy extraction must consider a wide variety of constraints and performance factors, all based on unknown reservoir properties.

Our ambition is to develop cutting-edge intelligence systems for natural energy resource development. With our partner ecosystem, we are applying AI to support decision-making for one of our major CCS projects. We are funding research teams at Stanford University to help tackle these challenges. By using advanced techniques from fields such as autonomous vehicles, we are developing new methods to help strategically plan and monitor CCS and geothermal development projects. This will optimise economic performance and ensure the highest levels of operational safety.

The system we are currently developing combines data and geological expertise to design and position CO_2 injectors and develop monitoring strategies that ensure long-term safety while maximising storage capacity. By reducing field development and operational costs, these AI tools will help us expand our low-carbon business and attract investment in sustainable projects.

GENERATIVE AI FOR OUR SUBSURFACE EXPERTS

Building in-house expertise in Generative AI (GenAI) is another crucial area of focus for our energy business. It allows us to create customised AI solutions aligned with our goals, integrate domain-specific knowledge, and handle sensitive data.

We manage an enormous volume of data in our conventional exploration and production (E&P) assets, which is usually retrieved manually. To address this, we are developing an in-house AI tool to extract valuable insights efficiently.

The OMV Energy Chatbot will utilise generative pre-trained transformers (GPTs), Large Language Models (LLMs), and knowledge graphs to summarise, extract, and present complex technical information across disciplines. We are working closely with geoscientists in Norway to refine

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> Our ambition is to develop cutting-edge intelligence systems for natural energy resource development. With our partner ecosystem, we are applying AI to support decision-making for one of our major CCS projects.

this approach. Additionally, we are piloting a system that provides well engineering teams with contextualised and relevant information to support well design activities.

The AI revolution is well underway in our industry, and at OMV, we are harnessing its potential to power our sustainable transformation

BUILDING PATHWAYS FOR HIGH-EFFICIENCY, LOW CARBON ENERGY SOLUTIONS

PTTEP is helping the industrial sector digitalise operations, while enhancing competitiveness and driving sustainable growth

PTTEP, Thailand's national energy company under PTT Group, is committed to becoming a high-performance, low-carbon organisation. Recognising digitalisation as a significant challenge for the industrial sector, PTTEP launched the DigitalX Project, which integrates 65 digital features aimed at enhancing competitiveness and driving sustainable growth. To address this challenge, PTTEP has fostered a digital culture that encourages employees to utilise cutting-edge technologies. Furthermore, the company has established the Digital Centre of Excellence to expedite the development of digital skills and solutions across the organisation.

By expanding digital solutions through data platforms and AI, PTTEP has significantly improved operational efficiency, reduced time and costs, and increased revenue. These digital innovations have mitigated avoidable expenses, resulting in a net benefit of over US$560 million since 2019. PTTEP's commitment to digital transformation not only enhances internal processes but also positions the company as a leader in leveraging digital technologies to achieve sustainable growth and long-term success in the energy sector. Here are some of the recent successful digital features:

- **PathSight:** Designed for the gas fields in the Gulf of Thailand, PathSight locates wells and wellhead platforms, optimizing drilling locations to maximize reserve extraction while minimizing costs. By using advanced algorithms and subsurface data, it delivers superior speed and accuracy compared to conventional methods. PathSight is one of key features of Sight Solutions, an in-house developed platform by PTTEP offering end-to-end solutions for subsurface challenges. Sight Solutions includes various features to address a wide range of subsurface-related pain points effectively.

> By expanding digital solutions through data platforms and AI, PTTEP has significantly improved operational efficiency, reduced time and costs, and increased revenue.

- MLOG (Minimum Leak-Off Gradient & Loss Prediction) and DORA (Drilling Operations Real-time Analysis): They are AI-driven tools designed to improve drilling performance and maximize productive time. By using virtual simulations and statistical models, they predict potential pre-drilling issues and eliminate reliance on individual judgment. These tools reduce financial losses and resource costs associated with drilling rod issues, saving up to 15 million USD annually and enabling team to respond proactively and efficiently.

- CO2 Membrane Optimization: A digital solution for CO2 membrane operation with main features to advise the most optimum process parameters for operation adjustment. Using real-time data, machine learning and optimization algorithm, it serves as an innovative model aimed at reducing hydrocarbon loss. CO2 Membrane Optimization is one of digital solution in APEX (Advance Production Excellence), a comprehensive digital solution package for offshore gas operation in the Gulf of Thailand.

- AI for Early Detection and AI for Prompt Resolution: These AI technologies offer real-time machine health monitoring, predict machinery lifespan, and enable proactive performance checks with timely interventions. These tools excel at identifying problems and providing precise solutions, significantly reducing machine downtime by 85%. Over the past three years, they have saved more than 70 million USD by preventing costly equipment failures and minimizing disruptions.

- Cost Excellence: An AI and machine learning-powered solution designed to estimate project costs more efficiently. With cost estimation process automation, it reduces the time required for calculations by over 50%. Additionally, it enhances accuracy, leading to over 10% budget savings. This innovative contributes to significant cost reduction, making it a valuable tool for optimizing project management and financial planning.

- AI for Bid Evaluation: Utilizing GPT technology to streamline and enhance the bid evaluation process, for faster and more efficient. By automating the generation of detailed evaluation reports, this solution cuts down evaluation time by an impressive 92%, which significantly accelerates the procurement cycle. The efficiency gains translate into cost savings of 16 million USD annually.

- AI for Inventory Management: Utilizing advanced AI algorithms to predict demand, optimize stock levels, and reduce excess inventory. It decreases inventory costs and enhances operational efficiency.

Additionally, PTTEP introduced a sustainable development framework in 2019, with clear goals to enhance long-term value for stakeholders, focuses on risk management, employee safety, and environmental protection. An example is the GRC One Digital System which manages Governance, Risk Management, and Compliance data, offering tools like the Whistleblowing Report, Risk Register, and Business Continuity Management System. It uses AI-powered tools to predict risks, automate compliance checks, and integrate data for seamless reporting and analysis to enhance decision-making and streamlines GRC reporting, risk assessment, and compliance management.

PTTEP has aimed to become a Digital-Driven Organization as a leading high-performance company. Digital solutions and AI-driven tools have optimized costs, increased production, and improved efficiency, yielding significant benefits. These advancements enhance operational excellence while promoting company's sustainability and resilience. Please visit our PTTEP's booth in Hall 5 to explore more technologies.

ROCK RIGID

PHYSICS-INFORMED AI:
PAVING THE WAY FOR ENERGY REVOLUTION

Rock Rigid is driving sustainable transformation and forging human-AI partnerships through its suite of solutions

I n the traditionally conservative energy sector, few technologies have generated as much interest or promise as artificial intelligence (AI). As we support our clients in achieving ambitious net-zero emissions and sustainable development goals, AI-driven transformation is the backbone of a new energy paradigm — one where efficiency, reliability, and adaptability take centre stage. At Rock Rigid, we're not just participants in this change; we are

pioneers, using AI and digitalisation to reshape the future of energy.

TRANSFORMING THE ENERGY SECTOR WITH AI
Our innovative AI-assisted platform, Derek Suite, is revolutionising how energy systems are monitored, managed, and optimised. It integrates tools such as virtual multiphase flow metering, real-time calculations, field mass balance, and low-code engineering. These features empower operators to make

proactive decisions, streamline workflows, and improve operational excellence, delivering tangible results.

SUPPORTING NET-ZERO AND CLIMATE GOALS
The pursuit of net-zero emissions is a massive challenge requiring innovative technologies for decarbonisation. Our mission at Rock Rigid is to accelerate the energy transition by integrating digital technologies that enhance sustainability. Our mass balancing solution aids clients in accurately measuring their carbon footprints. Accurate measurement is foundational to achieving net-zero; without precise tracking, managing emissions effectively becomes impossible.

Rock Rigid's AI solutions have transformed operations across various fields. For instance, Derek Suite solutions for an offshore field helped improve a client's back allocation process from monthly reports to daily updates through real-time calculations, using the MassBalance, and reducing gross errors to just 1.6%. Additionally, Derek Suite's low-code feature allowed the client to streamline gas export measurements with high accuracy while waiting for equipment repairs, providing a crucial buffer period.

In another case, Neuronet, the deep learning module, enabled a client to maintain accurate well flow rate measurements using a virtual flow meter while physical meters were offline for weeks. Our third success story involved an AI-driven proxy modelling tool, which reduced a client's production decision-making time from two weeks to just three days, with an error margin of 0.76%.

Rock Rigid's AI and 'mathematical twin' solutions are revolutionising the energy sector by delivering real-time insights, reducing decision-making time, and driving operational excellence with unmatched accuracy and efficiency.

AI: THE CATALYST FOR ENERGY TRANSFORMATION
Artificial intelligence is now a practical tool at Rock Rigid, fostering a more resilient energy infrastructure. We introduce physics-informed analytical AI, coupled with on-premise Generative Pre-trained Transformers (GPTs) and Large Language Models (LLMs), to drive innovation in energy production and measurements. The role of no-code AI capabilities is equally significant, allowing engineers to create custom solutions easily and fostering a "Human-AI Partnership." This empowers teams to solve problems creatively, blending human expertise with computational power.
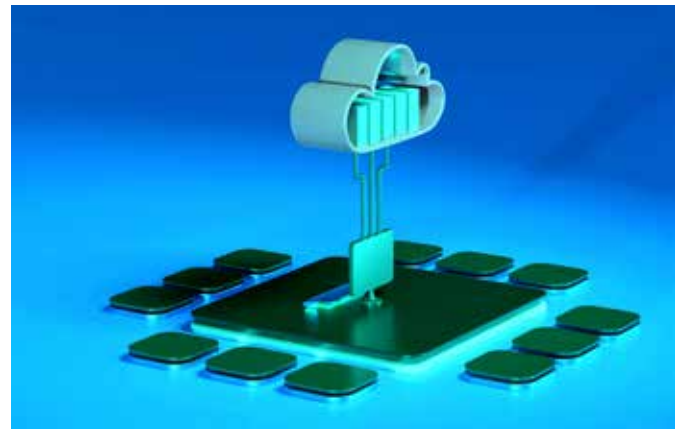
> **"**
> We envision a future that is emission-less, cost-effective, continuously evolving, AI-powered, digitally twinned, and less reliant on manual operations.

A VISION FOR THE FUTURE OF AI IN ENERGY
The emergence of LLMs and GPTs is already providing a productivity boost across industries. However, the challenge of data residency is slowing down adoption. The way forward is to optimise AI systems for on-premise or edge devices, incorporating Retrieval Augmented Generation (RAG) to develop robust AI assistants for corporate environments.

The energy sector is undergoing gradual but fundamental changes in how fields are operated. We envision a future that is emission-less, cost-effective, continuously evolving, AI-powered, digitally twinned, and less reliant on manual operations. However, the conservative nature of the energy sector may pose challenges to AI adoption. Effective strategies include education and training, pilot programmes, and strong leadership to promote AI's benefits and foster a culture of innovation.

TechnipFMC

APP-BASED SOLUTIONS TO DIGITALISE OILFIELD EQUIPMENT

TechnipFMC's CyberFrac™ is a wellpad solution that allows operations to run autonomously and improve efficiencies

TechnipFMC integrates digital systems with oilfield equipment to provide safe, reliable, value-adding solutions for 24/7 monitoring and full autonomy of operations anywhere in the world.

CyberFrac™, the app-based solution at the core of TechnipFMC's iComplete™ unconventional fracking system, is a clear example of the company's approach to optimising production through digitalisation and automation. Real-time data from sensors integrated into oilfield equipment is used by operators to run autonomous operations, drive significant efficiencies, and improve time to first oil.

CyberFrac™ is adaptable to all frac pad requirements, and eliminates manual human errors, maximises pump time, and improves safety by keeping personnel out of the red zone.

Thierry Conti, President at TechnipFMC, said, "Our digital wellpad solutions are all about adding value for operators and driving efficiency. They allow autonomous operations

> Our focus on digitalisation and automation allows critical personnel to concentrate on making the best decisions using instantly available information – making operations more efficient and more cost effective.
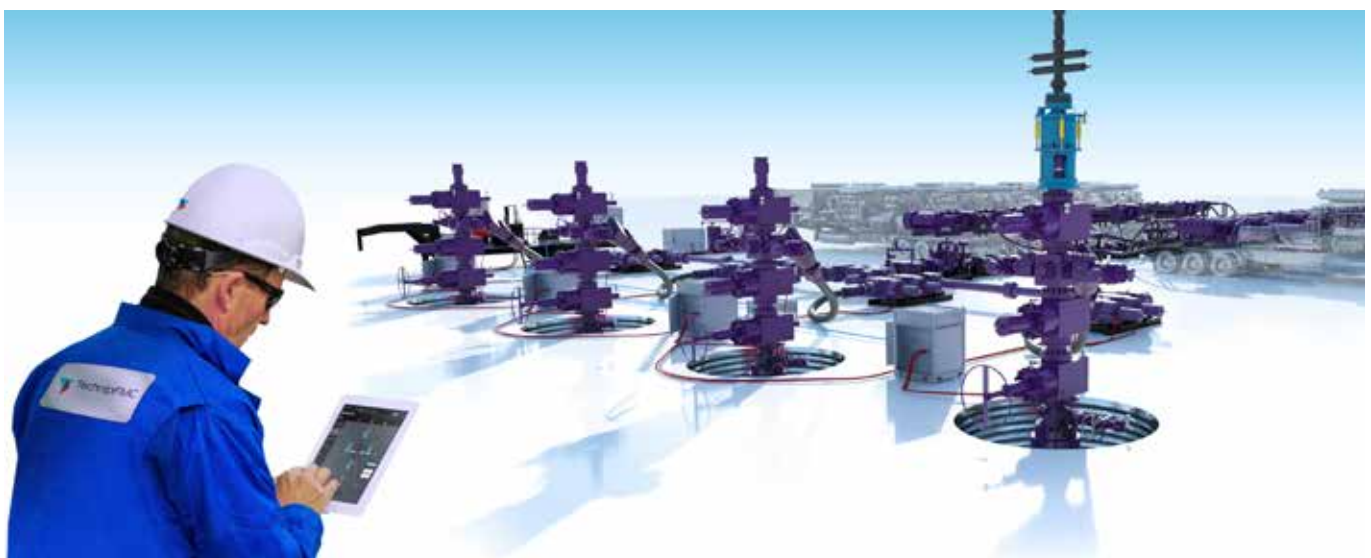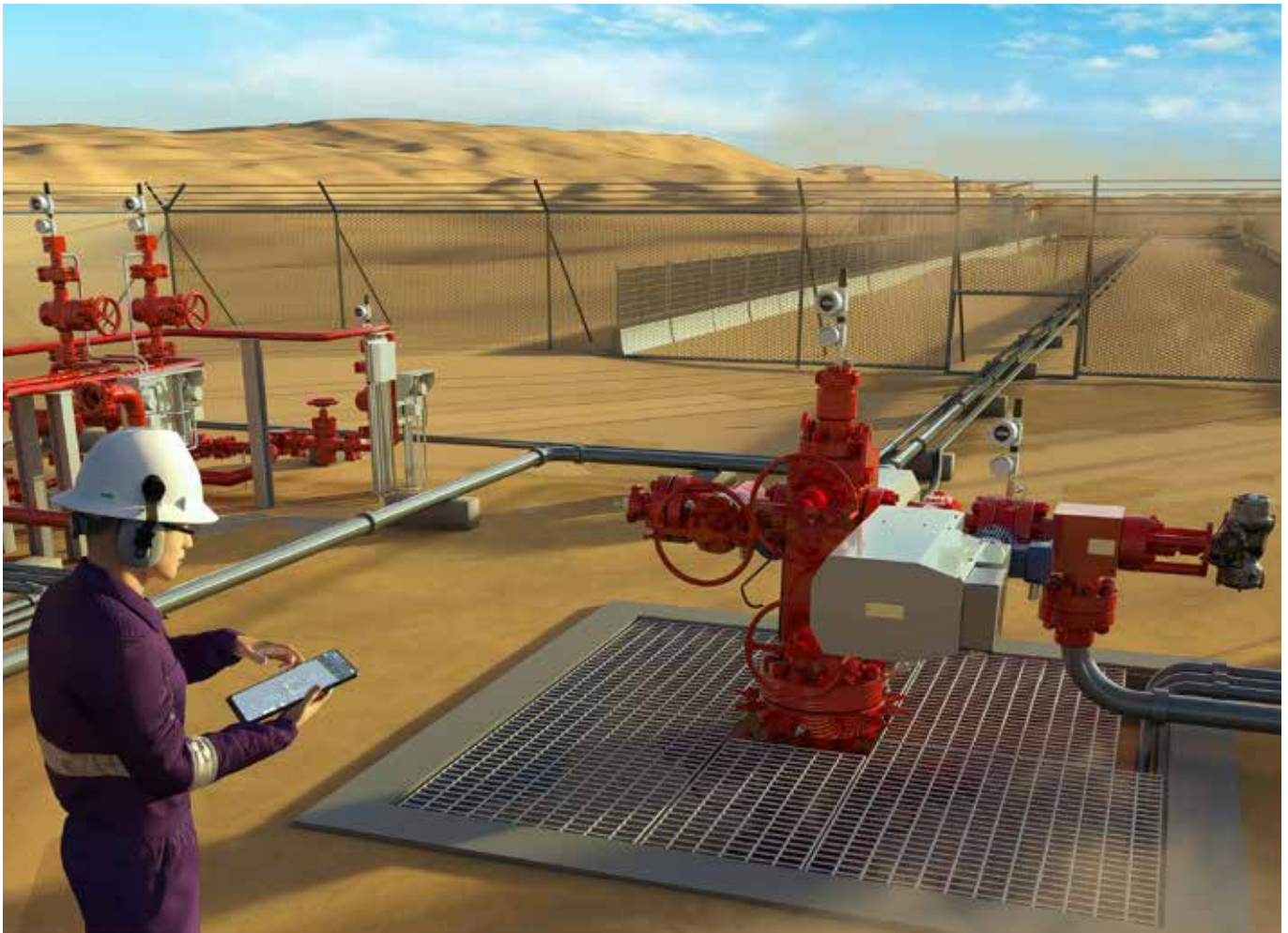
to be realised, providing a step-change in efficiency, reliability, and safety performance.

"Our technology stack has been used to revolutionise and automate unconventional completions to remove the need for personnel to be in the red zone, while preventing unnecessary downtime by detecting potential issues before they become problems.

"We've used the similar digital technology stack to improve efficiencies of oil stabilisation to reduce flaring while improving production levels."

TechnipFMC's established, field-proven systems work remotely to collect real-time data about production and performance variables down to the subsystem level.

This data goes through sophisticated analysis using machine learning and AI models to support production optimisation. Data from various installations is connected, and any production issues are detected before they escalate. These can be resolved before they affect production, thus reducing downtime.

Our focus on digitalisation and automation allows critical personnel to concentrate on making the best decisions using instantly available information – making operations

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TechnipFMC's established, field-proven systems work remotely to collect real-time data about production and performance variables down to the subsystem level.

more efficient and more cost effective. TechnipFMC is a leading technology provider to the traditional and new energy industries, delivering fully integrated projects, products, and services.

Learn more about TechnipFMC's digital solutions and other unconventional technologies and carbon mitigating capabilities at our stand, where the team hosts talks at 11am, 1pm, and 3pm daily.

Tenaris

MILL TO WELL: SOLUTIONS ENHANCING SAFETY, RELIABILITY OF DRILLING OPERATIONS

Steel pipe manufacturer, Tenaris, is launching a suite of digital solutions at ADIPEC

Tenaris, a leading manufacturer of steel pipe for the energy sector, is introducing its latest digital solutions to the UAE, contributing significantly to the region's digital transformation. As a long-standing partner of ADNOC, Tenaris has participated in ADIPEC since 2010, making it an ideal platform for showcasing its innovative solutions for the future of energy.

In response to the challenge of maximising the lifecycle of pipe strings in wells, Tenaris is launching WISer™ at ADIPEC 2024. This suite of digital solutions, integrated within the Rig Direct® mill-to-well service model, aims to enhance well integrity while improving safety, efficiency, and reliability in drilling operations. The suite includes the iRun Casing® tool and on-site torque-turn monitoring services, with PipeTracer® technology as a critical enabler.

END-TO-END TRACEABILITY

PipeTracer® technology provides a digital identification system that ensures pipe-by-pipe identification, granting full access to physical and technical specifications throughout the manufacturing process and supply chain. As an integrated manufacturer of Oil Country Tubular Goods (OCTG), traceability begins with raw materials at Tenaris. Each pipe is meticulously measured and weighed within required tolerances at the mill. Pipes and thread protectors feature QR codes linking to their complete manufacturing history, technical specifications, and relevant certifications.

At the well site, Tenaris personnel use the PipeTracer® online application, accessible via mobile devices, to scan the QR codes on each product and create digital tallies. This system significantly reduces the need for manual measurements, limits pipe handling, enhances accuracy, and simplifies operations. Previously, operators required a crew of six to eight to manage around 20 trucks, measure each pipe on-site, and manually record measurements. This time-consuming

> **Today, Tenaris is digitally connecting all components of the tubular supply chain, delivering pipes ready for use at the rig site.**

process, taking four to five hours, has been streamlined, allowing one or two technicians to complete the task simply by scanning QR codes.

Once the well design is finalised, Tenaris field service representatives utilise the PipeTracer® application to create a well schematic tally. As running operations commence, they scan each pipe as it is inserted into the well, automatically recording the running time between joints. Operators receive real-time alerts and notifications on the progress of the operation, while crucial data is captured throughout the process.

DATA SUPPORTING WELL INTEGRITY

Since its introduction in 2021, the iRun Casing® digital solution has been used in over 1,100 wells globally, providing real-time monitoring of casing installation. This tool connects directly to the drilling rig, processing large volumes of data, thereby minimising risks associated with lost lateral length and potential production losses. It also mitigates costly accessibility issues arising from fatigue damage, buckling, over-torque, or stuck pipes.

One of its most valued benefits is the reduction of non-productive time by offering guidance on the optimal

" At the well site, Tenaris personnel use the PipeTracer® online application, accessible via mobile devices, to scan the QR codes on each product and create digital tallies. This system significantly reduces the need for manual measurements, limits pipe handling, enhances accuracy, and simplifies operations.

point to begin rotating the casing to alleviate axial drag. The solution also streamlines the engineering hours required for automating torque and drag workflows, enhancing overall operational efficiency. With direct

data access, best practices across various rigs can be identified, enabling effective knowledge transfer—a prime example of how collaboration and digital transformation are advancing the UAE's energy sector.

Another essential aspect of WISer™ is Tenaris's on-site torque-turn monitoring service. This involves the collection and analysis of real-time torque data at the well site by field services experts using Tenaris's advanced equipment. This service enhances the reliability of connection make-up, reduces the risk of errors, and improves the overall integrity of the assembly. It also bolsters operational efficiency and quality control, ensuring casing installations meet the highest industry standards.

Tenaris's torque monitoring service has simplified processes for operators, who previously relied on third parties for torque measurements and analysis of make-up graphs. This integration reduces personnel on the rig floor, contributing to a safer working environment. By combining insights gained during casing installation with real-time data analytics, Tenaris's service enhances decision-making and consistency within casing crew operations.

Today, Tenaris is digitally connecting all components of the tubular supply chain, delivering pipes ready for use at the rig site, and improving well integrity on and off the rig floor. In an industry where knowledge equates to power, these digital solutions empower operators to leverage Tenaris's global field experience during critical phases of their drilling operations

DATA & AI: ACCELERATORS OF THE ENERGY TRANSITION

TotalEnergies Digital Factory is developing and deploying AI solutions at scale, allowing companies to embrace technology for a new era of reliable, affordable, and sustainable energy

TotalEnergies has adopted an ambitious artificial intelligence (AI) strategy to bolster its digital transformation and enhance performance across various domains. AI and digital technology are at the heart of TotalEnergies' strategy.

As a global integrated energy company, TotalEnergies produces and markets various forms of energy, including oil and biofuels, natural gas and green gases, renewables, and electricity. Our more than 100,000 employees are committed to providing energy that is more reliable, affordable, and sustainable. Active in around 120 countries, TotalEnergies places sustainability at the core of its strategy, projects, and operations. AI and data are pivotal levers supporting this strategy.

AI is already a reality in many of TotalEnergies' businesses. Although it has been used since the 1990s (notably in seismic facies classification

use cases), its application domains remained very specialised until the late 2010s, when technologies began to reach a broader public domain due to increased usage. To accelerate the dissemination of these technologies, the company was restructured in 2020 to centralise the development and deployment of AI solutions at scale through the TotalEnergies Digital Factory. Since then, over 80 solutions have been delivered to the business units by the Digital Factory, incorporating workflows for model monitoring and retraining (AIOps). Currently, around 600 models are in production.

The company also relies on R&D for highly complex projects, leveraging its historical expertise in modelling and simulation. There are specialised teams focused on particular functional or technical domains, such as supercomputers, process modelling, and search engines. A coordinated approach allows for the organisation of capabilities at the company

level while supporting stakeholders' maturity in understanding, implementing effectively, and making these technologies useful for business activities.

This dynamic is supported by shared technical digital platforms, which are continuously improved to remain at the cutting edge of technology. Additionally, a strong commitment to data management (including data quality and exposure) is essential, as data is a critical aspect of the success of AI projects.

Some examples of cases developed by the Digital Factory include:

- **OneCBM (One Condition-Based Maintenance):** A digital platform that consolidates mechanical data and anticipates secondary equipment failures. This solution allows for monitoring the condition of machines, optimising planned maintenance, and reducing unplanned downtimes.

• **SOLEAD (Sunroof Lead Generation):** An initiative that uses AI to generate leads for solar roof installations, helping to identify market opportunities and optimise sales efforts.

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TotalEnergies' AI strategy centres on integrating AI into all of the company's activities to improve performance and offer better services to customers.

• **4MATION:** An industrial process optimisation solution that predicts quality risks in battery production plants.

• **Power2Market:** An application that assists trading in optimising CCGT production, helping to forecast target power and improve production predictions, resulting in significant gains for the company.

• **JobIDCard:** A collaborative platform designed to digitise the preparation process for on-site activities, aiming to improve operational

efficiency and safety through better planning and anticipation.

• **MyCFR:** A tool to monitor the performance of significant energy users such as gas turbines, compressors, and pumps, with the objective of quickly identifying and diagnosing efficiency degradations that lead to additional CO_2 emissions.

• **RADAR:** An integrated well monitoring tool that provides real-time production estimates and detects abnormal well behaviour using a Virtual Flow Meter, aiming to reduce production shortfalls and optimise output.

TotalEnergies also invests in generative AI. For instance, solutions like GitHub Copilot for developers and Office 365 Copilot are deployed to enhance employee skills and creativity. Office 365 has been rolled out with a one-day training session on AI

and low-code/no-code for over 30,000 employees, making it one of the largest deployments of this tool worldwide. In addition to these off-the-shelf solutions, more than 70 projects with a strong generative AI component are currently under development, focusing on themes such as augmented information retrieval, customer relations, and improving human-machine interfaces. Dedicated secure development environments have been established for this purpose.

TotalEnergies' AI strategy centres on integrating AI into all of the company's activities to improve performance and offer better services to customers. True to its pioneering spirit, AI enables the company to stay at the forefront of innovation.

Experts from the TotalEnergies Digital Factory will be present at our stand A232 in the Atrium during ADIPEC 2024.

ACCELERATING E&P WITH AI: ADVANCED RESERVOIR MODELING SOLUTIONS

Tracy Energy Technologies (TET) develops AI-powered reservoir modeling and intelligent decision-making solutions for the energy sector through its flagship TET-Suite platform

Tracy Energy Technologies (TET), founded in 2013, is at the forefront of innovation in the energy sector, providing cutting-edge solutions for exploration and production (E&P) data management. Specialising in artificial intelligence (AI) and physics-powered reservoir modelling and simulation, TET offers a digital-twin level of reservoir forecasting and model evolution, alongside intelligent decision-making tools for drilling, completion, and production.

Over the past decade, TET has grown into a formidable technology company, with a team of 70 highly skilled engineers operating across four countries. With a client base that includes both national oil companies and independent energy firms, TET's technology has been applied to over 200 complex reservoirs worldwide. This impressive track record underscores the company's expertise in harnessing AI and data to drive efficiency and precision in the energy sector.

At the core of TET's offering is the TET-Suite, an integrated software platform that delivers comprehensive solutions for data management, reservoir modelling, and AI-powered simulation. The suite comprises four key modules:

> **TET serves many NOC and independent energy companies; its technology has been applied to more than 200 complex reservoirs globally.**

1. Datapool: This module enables exhaustive data integration for exploration and development, ensuring all relevant data is gathered and organised for effective use.

2. Datawiz: A powerful AI computing engine that utilises deep learning and business intelligence to process vast amounts of data, transforming it into actionable insights.

3. Simba: A cloud-based engine that provides advanced tools for reservoir modelling and simulation, enabling energy companies to make informed decisions and optimise production.

4. Timeline: This module is designed to manage continuous model updates, facilitating intelligent engineering decisions by incorporating the latest data and trends in real-time.

The uniqueness of TET-Suite lies in its innovative integration of AI with traditional reservoir modelling approaches. By leveraging a "data + physics" framework, TET-Suite offers an advanced solution that can integrate diverse data sources, make accurate predictions in real-time, and build a self-improving reservoir twin. This twin continually evolves, reducing uncertainty in reservoir management and improving decision-making processes through data-driven, deep-learning algorithms.

At ADIPEC, the company will be exhibiting its latest solutions and enhancing the visitor experience with presentations from the company's senior leadership. Dr Wenyue Sun, R&D Manager, will deliver talks on 'Innovation Showcase: Integrated E&P Data Management, Visualisation, and Analytics' and 'Innovation Showcase: Physics + AI-Powered Framework for Reservoir Characterisation and Forecast' on days one and two of the event. These sessions will introduce technology that streamlines the management, fusion, and visualisation of various datasets. A web-based 'data lake' architecture enables seamless 3D modelling of tens of millions of cells, real-time visualisation of drilling and production data, and standardised display of logs and geological maps. This solution frees scientists and engineers from the burdens of manual data migration and quality checks, accelerating the process of building data models for machine learning and enhancing decision-making.

Dr Bo Lu, VP Applications, will be taking the stage on November 6 to discuss a cloud-based platform for modelling and simulation. Dr Bin Gong, CEO, will be speaking on 'Digital Twin Solution for Intelligent Oil & Gas Fields' on November 7.

A digital twin of the reservoir and entire production system is key to optimising oil and gas field management. Timeline offers a comprehensive solution to achieve this, utilising cutting-edge cloud-based data lake technology with AI and domain algorithms deployed as microservices for seamless access and collaboration. The platform provides real-time 3D visualisation of subsurface and surface assets, including reservoirs, wells, pipelines, and platforms. It uses advanced AI models, such as GNN/CNN-Transformer, to deliver rapid, accurate predictions of reservoir and pipeline dynamics. By enabling real-time simulations and tracking, Timeline allows for near-instant predictions and well control optimisations, transforming decision-making and operational efficiency.

true level

INDUSTRIAL AI:
THE FUTURE OF SMARTER, MORE EFFICIENT ENERGY DISCOVERY

Truelevel is committed to reshaping the industry for a more sustainable future, as their innovative technologies empower companies to make smarter, faster, and more environmentally responsible decisions, paving the way for a more sustainable and prosperous energy landscape

In the rapidly evolving energy sector, the integration of industrial AI is revolutionising how companies discover, extract, and manage resources. Truelevel, through its cutting-edge Earth Insight technology, is at the forefront of this transformation, offering innovative solutions that address both opportunities and challenges in the energy sector.

Earth Insight: a new era in exploration
Earth Insight is a non-invasive subsurface exploration technology that utilises AI-driven data analysis to identify and quantify mineral and energy resources, such as oil, gas, and critical minerals. By harnessing radio frequency (RF) signals, laser guidance, and molecular excitation, this technology offers a precise, efficient alternative to traditional exploration methods. The AI component analyses the vast datasets generated, providing real-time insights on resource distribution, deposit size, and saturation levels.

Opportunities through AI integration
Industrial AI in exploration significantly improves both accuracy and cost-efficiency. By eliminating the need for invasive drilling or seismic surveys, Earth Insight minimises environmental disruption while speeding up the discovery process. AI-driven models interpret subsurface data more precisely, leading to a higher success rate in identifying viable resource deposits. This reduces the risk associated
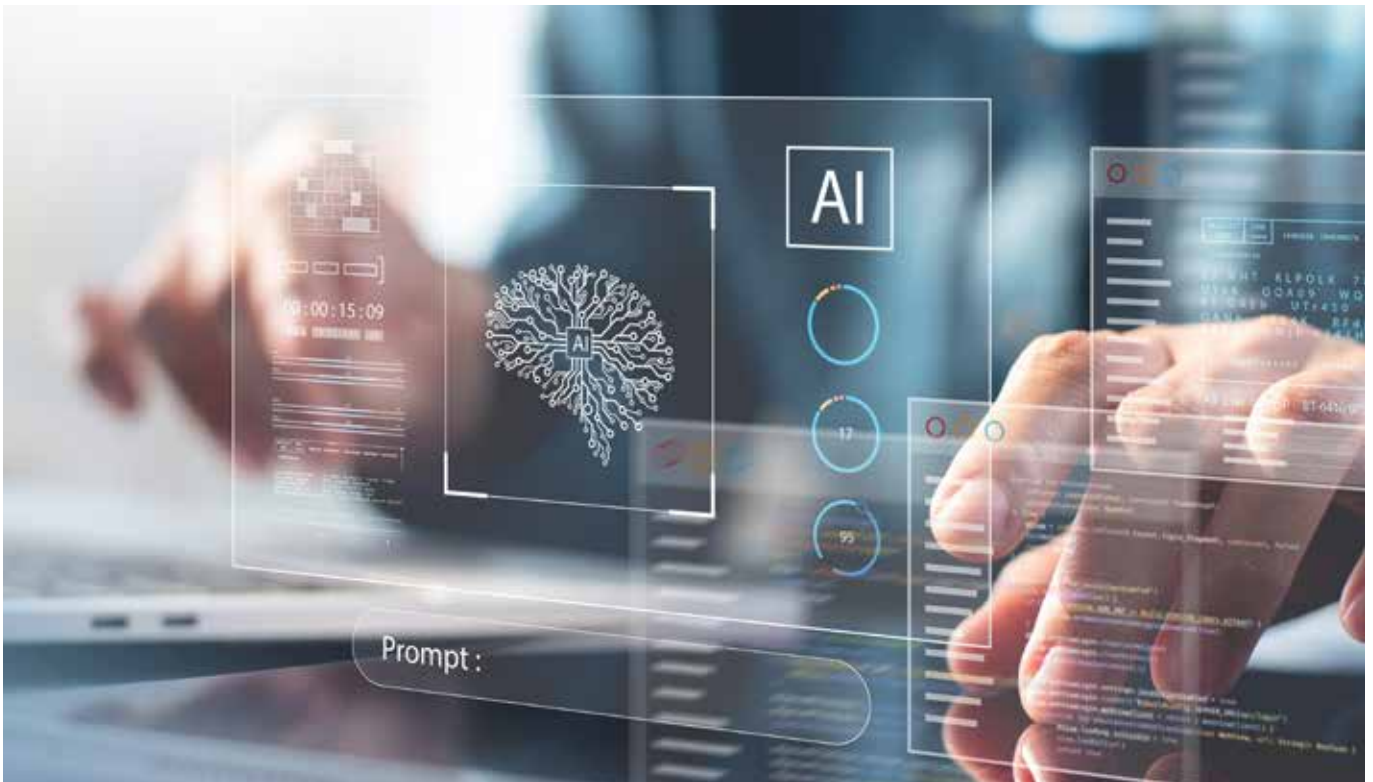
with exploration and enables companies to make more informed decisions, saving time and resources.

The scalability of Earth Insight also opens up new opportunities for widespread application across various energy sectors. From oil and gas to renewable energy, Truelevel's technology is adaptable to diverse geological environments, providing stakeholders with a flexible solution for both traditional and emerging energy needs.

Challenges and future directions

While AI-driven technologies offer substantial advantages, challenges remain. The adoption of AI in energy exploration requires high-quality data and reliable infrastructure. Integrating AI with existing systems and workflows can be complex, particularly in regions with limited digital infrastructure. However, Truelevel is addressing these challenges by working closely with governments and stakeholders to facilitate the smooth implementation of AI-powered exploration methods.

Furthermore, the regulatory environment can pose challenges to the adoption of innovative technologies. However, with growing interest in non-invasive and sustainable exploration, governments are beginning to see the value of AI solutions like Earth Insight, making the path for adoption smoother.

Championing AI in energy

Truelevel, through Earth Insight, is not only transforming the energy sector but also setting a precedent for how industrial AI can be leveraged for more sustainable and efficient resource management. By addressing both the

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opportunities and challenges, Truelevel continues to champion the use of AI in reshaping energy exploration for the future, enabling smarter, faster, and more sustainable discoveries.

wrench

INNOVATIVE TECH:
SOLUTIONS FULFILL THEIR PROMISES

Wrench SmartProject's AI-driven capabilities are helping companies achieve net zero or reduce carbon emissions across various phases of project management

On average, oil and gas projects experience cost overruns of 20-50%, according to the International Energy Agency, with some exceeding 100% in extreme cases, particularly for large, complex projects like deep-water drilling and LNG facilities.

Execution delays often necessitate extended use of high-emission resources and lead to inefficiencies, resulting in material wastage and energy overuse. As timelines extend, the overall carbon impact of the project escalates significantly.

In any oil and gas project, net-zero or carbon reduction goals should be considered from the conceptual phase. Early integration ensures carbon reduction principles are carried throughout the project.

Wrench SmartProject, an integrated Project Management Information System (PMIS), aids clients in achieving emissions target across project phases. It engages clients from the engineering design phase, encompassing engineering drawing management, technology selection, procurement deliverables, and construction management, offering a holistic approach to carbon reduction.

Wrench SmartProject can significantly reduce carbon footprints and support net-zero targets:

ENGINEERING DESIGN PHASE

• **Digital Collaboration:** Wrench SmartProject digitises all project documentation and communication, minimising paper usage and reducing the carbon footprint associated with printing and transporting physical documents.

• **Cross-Team Collaboration:** By integrating

operations, design, and procurement teams, redundant processes are minimised, contributing to more energy-efficient project execution.

• **3D Modelling and Virtual Reality (VR):** AI and 3D modelling tools within Wrench SmartProject assist in clash detection and simulate construction workflows, minimising design errors and reworks.

• **Digital Handover:** Fully digital communications and documentation processes reduce paper consumption, allowing site workers and engineers to access necessary documents without printing.

PROCUREMENT PHASE

• **Smart Vendor Selection:** The system aids in choosing vendors who meet ESG requirements and are closer to the project site, thus minimising transportation-related emissions.

• **Supplier Performance Analysis:** Wrench SmartProject evaluates supplier performance, ensuring materials are sourced from reliable, sustainable partners.

• **Procurement and Delivery:** AI streamlines procurement processes and optimises material delivery timing, reducing emissions from unnecessary transportation.

CONSTRUCTION PHASE

• **Lean Construction Practices:** Wrench SmartProject promotes lean construction by optimising workflows and resource allocation, reducing delays, and minimising carbon impacts.

• **Faster Project Completion:** AI-driven insights help

mitigate potential delays, ensuring quicker project execution, which lowers emissions generated by construction machinery and energy use on-site.

PROJECT MANAGEMENT PHASE

- **Dynamic Scheduling:** SmartProject optimises schedules in real time, preventing delays that lead to extended carbon-intensive operations.

- **Scenario Analysis:** AI-driven analysis allows project managers to simulate various scenarios, identifying the most sustainable and efficient paths.

- **Real-Time Monitoring:** AI controls within Wrench SmartProject predict potential delays and issues, allowing for early intervention to avoid inefficiencies.

- **Minimising Material Waste:** SmartProject forecasts material requirements precisely, reducing over-ordering and waste.

- **Predictive Maintenance:** By ensuring that equipment is efficiently maintained, Wrench SmartProject reduces energy consumption and carbon emissions.

- **Material Utilisation:** AI predicts the precise material needs, preventing over-ordering.

- **Defect Detection:** Wrench SmartProject analyses real-time data to identify defects early, preventing rework and reducing emissions.

- **Safety Monitoring:** Artifical Intelligence-powered safety systems predict potential hazards, ensuring safe working conditions and avoiding operational disruptions.

- **Lean Construction:** Artifical Intelligence helps implement lean practices by identifying waste and inefficiencies, optimising workflows and reducing consumption.

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG)

- **Carbon Tracking:** Wrench SmartProject enables comprehensive carbon audits, allowing teams to compare actual emissions against targets.

- **Continuous Improvement:** Each project can establish a baseline for future efforts, allowing teams to enhance carbon reduction strategies.

SUPPORTING NET ZERO TARGETS

By integrating Wrench SmartProject's AI-driven capabilities, project teams can incorporate sustainability principles, reduce emissions, and support climate mitigation, and net-zero targets. By streamlining workflows, optimising resources, and enabling data-driven decision-making, AI aligns project execution with energy transition goals.

YOKOGAWA

ACHIEVE NET-ZERO WITH ADVANCED TOOLS FOR EFFECTIVE CARBON MANAGEMENT

Yokogawa's Asset Health Insights software offers comprehensive, real-time monitoring of emissions and energy consumption throughout the plant operations

Yokogawa's Asset Health Insights Carbon Management solution is designed to support organisations in achieving their carbon neutrality objectives. By addressing challenges and partnering closely with our clients, we aim to mitigate greenhouse gas emissions and transition to cost-effective, reliable, and sustainable energy sources through the application of our proprietary technology and expertise. Yokogawa is committed to contributing to the establishment of a new recycling-oriented economy that harmonises with global environmental sustainability.

THE CHALLENGES

Most organisations currently utilise manual emission reporting systems that have limited capacity to effectively address Scope 1 and Scope 2 emissions. Besides, monitoring Scope 3 emissions is proving to be more challenging than anticipated, hindering organisations' ability to effectively manage, track, and report on these emissions. This delay poses a significant risk of non-compliance.

OUR SOLUTION

Yokogawa's Asset Health Insights software offers comprehensive, real-time monitoring of emissions and energy consumption throughout your plant operations. By providing accurate data and timely alerts, this solution empowers you to make informed decisions and optimise energy usage. Automated,
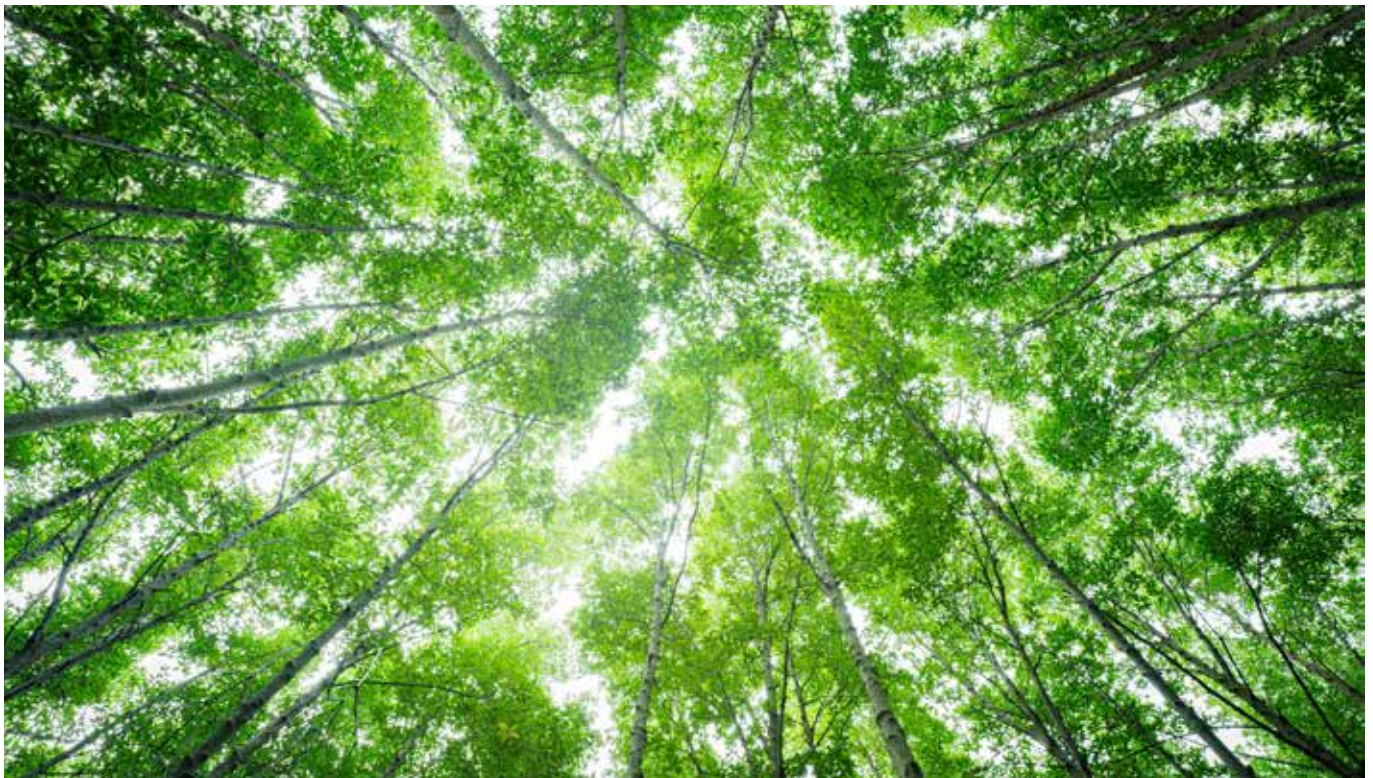
auditable reporting facilitates the analysis of Scope 1 and 2 emissions, enabling the identification and implementation of operational improvements that align with your energy savings and emissions reduction goals. Yokogawa's Asset Health Insights for Sustainability offers a comprehensive cloud-based platform designed to assist enterprises in achieving their climate action and net-zero goals. By providing pre-built tools for strategic planning, risk management, forecasting, monitoring, and reporting, this solution streamlines sustainability decision-making and facilitates efficient progress towards environmental objectives.

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Yokogawa's Asset Health Insights software offers comprehensive, real-time monitoring of emissions and energy consumption throughout your plant operations.

KEY FEATURES

- Comprehensive Scope 1, 2, and 3 reporting: Seamlessly generated with minimal configuration.

- Advanced climate modelling: Mitigates climate-related risks and potential financial losses.

- Carbon transition risk assessment: Facilitates a smooth transition to a low-carbon economy.

- AI-powered ESG sentiment analysis: Provides valuable insights into public perception of environmental, social, and governance initiatives.

- Sustainability twin carbon value chain simulation: Supports the development of effective enterprise decarbonisation strategies, encompassing Scope 1 to Scope 3 emissions.

- Strategic sustainability initiatives: Can significantly enhance organisational efficiency and reduce carbon emissions in a cost-effective manner.

BENEFITS

Yokogawa's Asset Health Insights provides the following practices and contributions that help in attaining carbon neutrality:

- Comprehensive CO2 reduction across the supply chain through operational and foundational solutions.

- Streamlined audit processes enabled by highly accurate measurement.

- Operational efficiency enhancement through real-time dashboard visualisation.

- Automated CO2 reduction facilitated by predictive and optimal control.

- Reduced management expenses through cloud-based solutions that extend from the head office to the site, encompassing the supply chain across various companies.

- Carbon management within Scope 3 utilising actual data.

- Continuous reduction achieved through premium consulting services.

- Effective maintenance ensured by 24/7 support.

AWARDS AND ACCOLADES

Yokogawa's leadership position is rooted in its exceptional performance across key criteria, including platform interoperability and integration, deployment options, asset health management and failure prediction, development environment, and information integrity. These achievements are a direct result of Yokogawa's unwavering dedication to technological excellence and innovative solutions, cultivated through collaborative partnerships with its customers under the OpreX™ brand.

PROVING TO THE WORLD THAT THE IMPOSSIBLE IS POSSIBLE

Abu Dhabi University to showcase groundbreaking Vi-Fi technology at ADIPEC

Our AI-driven project, Vi-Fi, represents a breakthrough in healthcare by leveraging the widespread presence of household routers as the foundation for non-invasive health monitoring. By utilising Wi-Fi signals and advanced AI algorithms, Vi-Fi can estimate heart and breathing rates in real time without the need for intrusive sensors. Although primarily designed for healthcare, Vi-Fi is a powerful example of how AI can drive sustainability across industries, including energy, by reducing the energy consumption typically associated with traditional monitoring systems and minimising carbon emissions through remote monitoring. We will showcase this technology at ADIPEC, where we aim to collaborate with industry leaders to adapt and apply such innovations to the energy sector, demonstrating AI's potential to enhance energy efficiency and sustainability.

Vi-Fi's primary value lies in optimising healthcare monitoring and improving patient comfort, but its contributions extend far beyond that. By shifting from conventional wired monitoring methods to Wi-Fi-based solutions, the project fosters a more energy-efficient healthcare environment. The non-invasive nature of the system reduces the use of disposable medical components, leading to less waste, while remote monitoring reduces the frequency of hospital visits, cutting resource usage and supporting broader sustainability efforts. Vi-Fi has already demonstrated significant improvements in energy efficiency within healthcare, and this approach can be extended to energy services, where AI-based solutions like Vi-Fi reduce energy consumption and optimise resource allocation.

> *Vi-Fi has already demonstrated significant improvements in energy efficiency within healthcare, and this approach can be extended to energy services, where AI-based solutions like Vi-Fi reduce energy consumption and optimise resource allocation.*

Economically, Vi-Fi enhances resource efficiency for healthcare providers, reducing costs compared to traditional methods. Socially, it improves patient experiences by allowing continuous monitoring in homes, facilitating early detection of health issues, and offering peace of mind for caregivers. Environmentally, it aligns with the UAE's sustainability goals by reducing energy consumption and emissions, contributing to the country's aim of a 20% reduction in emissions by 2030 and net zero by 2050.

Showcasing Vi-Fi at ADIPEC will open new opportunities for collaboration, driving the energy sector toward a more sustainable and carbon-efficient future. ADIPEC's role in fostering collaboration between industry leaders and innovators is essential in advancing AI-driven solutions and achieving global net zero goals. Vi-Fi is just like the beginning of any groundbreaking innovative technology that proves to the world that the impossible, is possible.

INTEGRATING DATA INTO A UNIVERSAL FORMAT

Al Ghaith Energy's Epslog CoreDNA: Game-changing technology for sustainable core analysis

Epslog CoreDNA technology is transforming the process of core sample analysis by digitalising cores at high resolution, creating comprehensive, continuous logs across multiple disciplines, including geology, petrophysics, geochemistry, rock mechanics, and sedimentology. This approach produces vast datasets with precise, collocated depth measurements, which can be seamlessly integrated with machine learning algorithms. Unlike traditional plug sampling methods, which yield only sparse measurements from select points, Epslog CoreDNA digitalises the entire core, providing a much richer and more detailed dataset. This full-scale digitisation represents a significant advancement in core analysis, enabling more accurate interpretations and a deeper understanding of the subsurface.

The true power of Epslog CoreDNA lies in its ability to integrate data from all these disciplines into a universal format known as Epslog CoreDNA facies. These facies serve as a common language that can be utilised by geologists, petrophysicists, and other core analysts alike. By standardising data across various fields, Epslog CoreDNA facies enable seamless collaboration and analysis, making it easier to correlate findings and develop more comprehensive models of the subsurface. The integration of this multidisciplinary data is straightforward, providing a unified framework that benefits everyone involved in core analysis.

Moreover, the Epslog CoreDNA facies can be calibrated with more complex and expensive laboratory measurements conducted on subsamples. However, due to the continuous nature of the Epslog CoreDNA logs, only a minimal number of subsample measurements are required to achieve accurate calibration. This continuity allows for an efficient and accurate upscaling process, reducing the need for extensive laboratory work. Additionally, Epslog CoreDNA offers a sustainable approach by preserving the maximum amount of core material, an invaluable resource for future generations. The ability to upscale with minimal subsampling is a game changer in the industry, saving time and resources while ensuring the preservation of core samples for ongoing and future research.

We are excited to participate in ADIPEC 2024 and look forward to engaging with industry professionals to showcase the potential of Epslog CoreDNA.

Book your delegate pass to attend

Visit: www.adipec.com/delreg

Email: delegate@adipec.com

Call: +9712 444 4909

AERZEN I STAND: **8832 I** HALL: **8**

SOLUTIONS FOR PROCESS GAS APPLICATIONS

AERZEN's AI-driven solutions allow continuous monitoring, enabling proactive maintenance and minimising downtime

In the rapidly evolving industrial landscape of the Middle East, AERZEN is pioneering advancements in process gas applications through innovative artificial intelligence (AI) and digitalisation technologies. Committed to enhancing efficiency, sustainability, and operational transparency, AERZEN is transforming how companies manage their compressed air and gas generation systems.
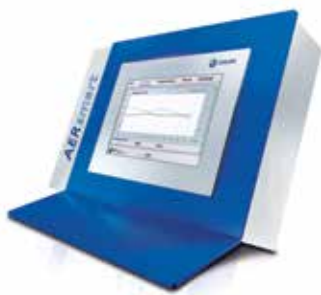
Central to this revolution is the integration of advanced digital technologies like AERtronic and AERprogress. These systems utilise real-time data collection and analysis to continuously monitor machine performance, enabling proactive maintenance and minimising downtime. By leveraging Internet of Things (IoT) solutions, AERZEN connects machines and sensors, allowing operators to gather critical insights and make informed, data-driven decisions.

One standout feature is AERZEN's AI-driven availability management system, which predicts potential failures before they occur. By analysing historical and real-time data, AERZEN's algorithms forecast maintenance needs, reducing operational costs by up to 50%. This predictive maintenance capability is particularly beneficial in the process gas sector, where equipment reliability is crucial.

Additionally, AERZEN's AERsmart and Load Balancing Control solutions significantly enhance energy efficiency by optimising the operation of blowers and compressors — key components in process gas applications. Continuous energy monitoring identifies inefficiencies, enabling energy savings of up to 8% and contributing to a reduced environmental footprint.

AERZEN's latest innovation, AERZEN Digital Solutions, is a self-developed IoT platform that enables comprehensive process mapping while integrating predictive maintenance and artificial intelligence. It empowers users to recognise causal relationships within processes, allowing for the optimisation of interconnected elements. This holistic approach enhances energy efficiency, reduces operational costs, and drives sustainable performance across your entire operation.

As the Middle East embraces digital transformation, AERZEN stands out with scalable, secure solutions tailored to the region's industrial demands. With a focus on sustainability and resource efficiency, AERZEN empowers businesses to enhance competitiveness while minimising their environmental impact.

In a world where operational efficiency and sustainability are paramount, AERZEN's innovative technologies position it as a trusted partner for companies in the Middle East striving for excellence in process gas applications.

AISUS I STAND: **8450 I** HALL: **8**

TECHNOLOGY THAT HELPS MAINTAIN GOOD HEALTH OF ASSETS

Experts in remotely deployed advanced inspection solutions, AISUS are proud to showcase their data management platform at this year's ADIPEC

AISUS has transformed the energy industry with our innovative data management platform, integrating AI and machine learning to provide clients with asset insights. By replacing traditional reporting methods with real-time data visualisation, clients gain greater control, optimise operational efficiency, and make more informed decisions. AISUS' data management platform is also our commitment to a low-carbon future by optimising asset efficiency and reducing environmental impact through smarter, more sustainable practices.

Specialising in remotely deployed advanced inspection solutions, AISUS leverages robotics and AI technologies to assess ageing assets. Data collected from inspections is immediately processed using our advanced computer vision software and analysed by our team of data scientists. Clients can access this data through our platform, which combines information from the splash zone, internal structures, and subsea areas. This comprehensive, integrated view of the asset, aids decision-making by offering a clear understanding of its condition in real-time.

Our user-friendly platform offers an immersive virtual reality experience, making it easier for clients to interact with the data and understand their asset's status. High-resolution inspection images are stitched together to create a variety of visualisation formats, including panoramas, 3D photogrammetry models, and accurately labelled defect sizing using AI. This eliminates the need for traditional, static reports, providing clients with an efficient, interactive alternative.

AISUS' believes AI is transforming the energy sector as our client's data is more manageable in a time conscious constraint, as clients can schedule proactive maintenance and enhance operational efficiency, safety and decision-making. This is all in the power of AI algorithms, as it classifies anomalies such as corrosion, cracks and welding weaknesses in real time, identifying defects early and reducing downtime. The platform also analyses historical inspection data alongside real-time data to predict future maintenance.

We are proud to showcase our data management platform at ADIPEC, a critical event that brings together professionals from around the world to exchange insights and innovations in the rapidly evolving fields of AI and digitisation. ADIPEC plays a vital role in fostering creative thinking and collaboration, without ADIPEC, the sharing of ideas and progress toward new technological solutions would be slower.

TRANSFORMING PLATE HEAT EXCHANGERS FOR ENERGY
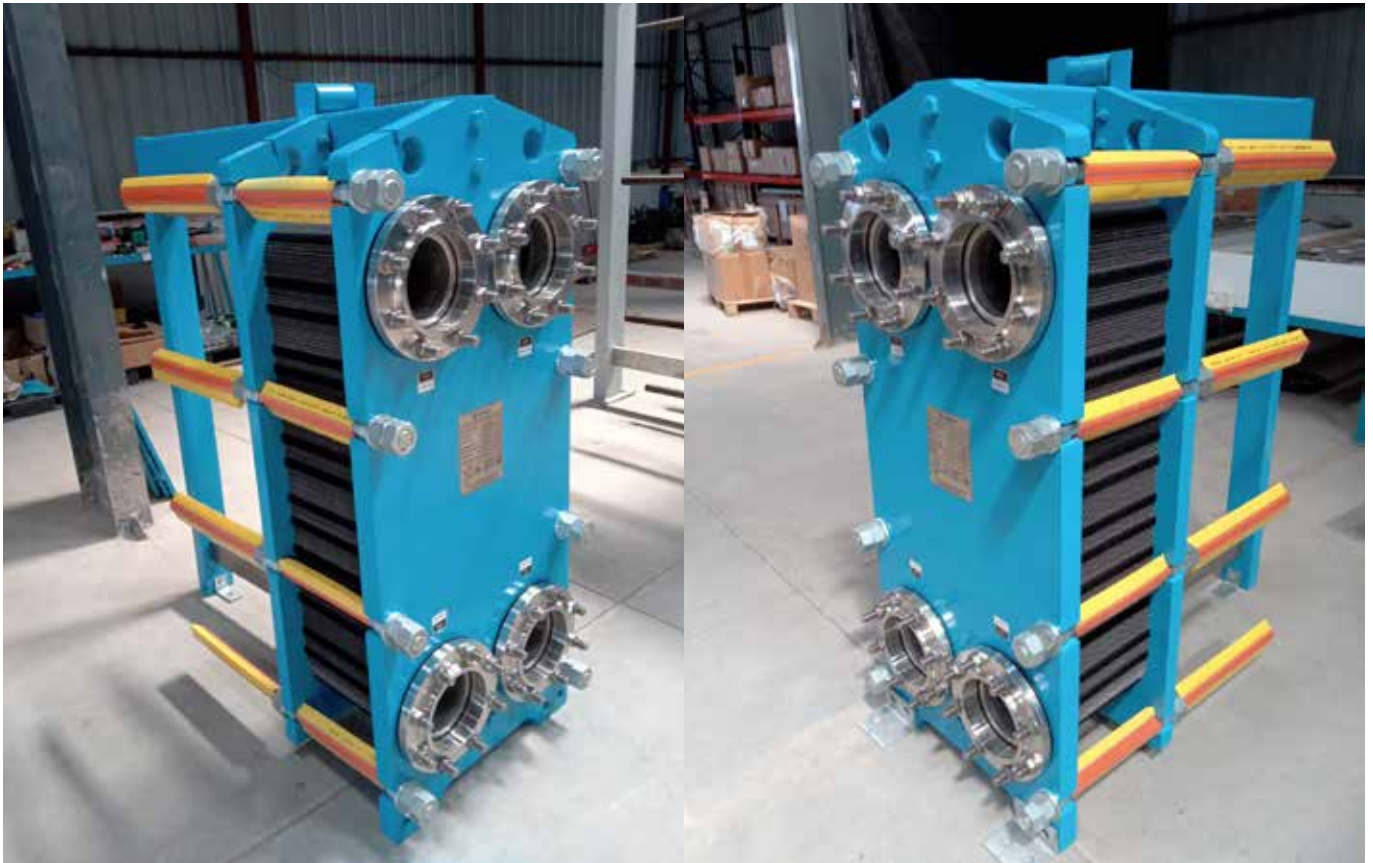
Adhiam's AI and digital solutions are enhancing the value of plate heat exchanger applications, leading to significant energy efficiency improvements

Adhiam is focused on providing artificial intelligence (AI) and digital solutions to clients across various process industries to minimise downtime. These innovations are also being integrated into our internal processes, including inventory management, production, and research and development.

AI and digital technologies are poised to transform nearly all industries, particularly the energy sector, helping organisations achieve net-zero emissions and meet climate goals. In the case of products like plate heat exchangers (PHEs), the role of AI and digital innovation is crucial in enhancing efficiency, reducing energy consumption, and cutting greenhouse gas emissions. Below are key areas where AI and digital solutions impact the energy sector and PHEs, illustrated with examples of energy service improvements.

AI & Digital Solutions in Plate Heat Exchangers (PHEs)

AI and digital applications significantly improve operational effectiveness and data-driven enhancements in plate heat exchangers. This is especially beneficial in energy generation, oil and gas industries, HVAC systems, and chemical sectors, where PHEs are frequently used for rapid heat exchange.

Predictive Maintenance

AI models leverage data from sensors in PHEs to monitor real-time information, assessing risk factors and potential performance issues. For example, AI-driven predictive maintenance can reduce unscheduled maintenance by up to 30%, yielding cost and energy savings through optimised performance.

Energy Optimisation Using AI

AI can analyse operational data to further refine the heat exchange process, adjusting flow rates and temperatures for peak efficiency while minimising energy consumption. For instance, AI-controlled systems that continuously adapt operational parameters based on real-time conditions can help reduce energy use in heat exchangers by approximately 5-10%.

Conclusion

AI and digital solutions are vital for enhancing the value of plate heat exchanger applications, leading to significant energy efficiency improvements, operational cost reductions, and progress towards net-zero targets. This presents an opportunity to focus on carbon emission reductions, increased heat recovery, and sustainable energy management — key levers for industries striving towards climate objectives and a greener future.

TAILOR-MADE SOLUTIONS FOR THE MARINE INDUSTRY

Aries Marine leverages artificial intelligence to optimise workflows in marine design and inspections

Aries Marine has harnessed the power of artificial intelligence (AI) to optimise workflows in marine design and inspections. Our aerial and underwater survey teams use AI software to analyse hours of video footage from remotely operated vehicles (ROVs) to identify defects. Additionally, AI is used for identifying and dimensioning ship structures and marine components captured through 3D laser scanning. This approach achieves high accuracy compared to manual processes while saving 90% of the time.

Our digitalisation initiatives feature 3D laser scanning to create accurate digital replicas of marine platforms, significantly improving upon traditional manual measurement methods. This advancement allows Aries to offer higher quality designs to clients at lower costs. We also utilise 3D modelling software to simulate post-production conditions, employing mixed reality devices like HoloLens. This technology allows asset operation teams to 'walk through' 3D models, gaining valuable insights to enhance the design phase. These measures have led to over a 75% reduction in design errors and minimised production rework, providing clients with optimal design solutions.

Our VAM (Visual Asset Management) system offers a comprehensive digital replica of assets, facilitating effective data management for clients.

Aries 4.0 is dedicated to reducing the carbon footprint of marine assets. We offer asset owners tailored solutions that meet stringent regulatory requirements while maintaining fleet operational capabilities. As a global leader, we have successfully completed over 4,200 projects worldwide. We invite you to visit our pavilion to experience this technology firsthand.

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LEVERAGING AI TO DECARBONISE MARITIME SECTOR

Artemis Technologies designs, develops, and manufactures vessels that operate at zero emissions

Artemis Technologies is at the forefront of the maritime industry's push towards decarbonisation. The company designs, develops, and manufactures vessels that operate with zero emissions.

The revolutionary Artemis eFoiler® electric propulsion system, featuring a high-voltage battery energy storage system and ultra-high power density electric drivetrain, is setting new standards in maritime transport.

Professor Katrina Thompson, Director of Government Programmes at Artemis Technologies, outlines the company's commitment to data-driven innovation and its future use of AI: "At Artemis Technologies, we understand that harnessing the power of data is vital to achieving our mission of decarbonising the maritime industry. That's why our state-of-the-art test vessels are equipped with a broad range of cutting-edge sensors, meticulously monitoring everything from speed to battery state of health. As we continue to commercialise our vessels and technology, we are pioneering groundbreaking initiatives that leverage AI in exciting ways."

Using onboard AI models, the company continuously analyses real-time sensor data, ensuring optimal vessel health for its customers. This data is streamed to its servers for further processing, tracking key performance indicators such as energy efficiency and comfort, which allows us to make performance guarantees. This is an essential component of predictive maintenance.

Artemis Technologies is also developing a groundbreaking collision avoidance system that leverages AI to provide augmented situational awareness for rapid decision-making based on vessel dynamics. This advancement not only enhances safety but also propels the company towards the future of autonomous operations.

"Digital Twin technology, which combines models of varying fidelities, is at the heart of our design process. We believe there is considerable potential for the use of AI in high-fidelity simulations, both structural and fluid, thereby reducing the time taken to solve highly complex physics problems.

"These AI-driven projects are just a glimpse into Artemis Technologies' commitment to pushing boundaries. As we evolve further, we will be looking at even more innovative solutions aimed at enhancing vessel performance, boosting productivity, and delivering unparalleled value to our customers," Professor Thompson added.

AI IS SET TO TRANSFORM BOTH THE METALLURGY AND ENERGY SECTORS

Axellect: Digital solutions as a foundation for a low-carbon future

Countries in the GCC, such as the UAE and Saudi Arabia, have been heavily investing in low-carbon aluminium and steel for some time, and this trend continues to grow. To stay competitive and sustainable, metallurgical companies are turning to digitalisation as the most impactful and cost-effective solution. Digital innovations, like AI-driven energy optimisation, predictive analytics, and advanced automation, are set to transform both the metallurgy and energy sectors.

At Axellect, we specialise in Industry 4.0 solutions that boost energy efficiency and reduce carbon emissions. One of our key innovations is the development of real-time smart advisors for industrial operators. These AI-powered systems optimise processes by adjusting parametres in real-time, directly reducing energy consumption and contributing to carbon neutrality daily.

For one client facing high energy costs, we implemented IoT sensors and integrated them with a digital advisor. The system used machine learning to suggest optimal process settings, resulting in a 1.4% reduction in energy consumption, which directly impacted the company's CO2 emissions.

We also believe that decarbonisation should be accessible to all companies, not just those with the resources for costly projects. With that in mind, we developed a blockchain-based platform that allows companies to trade carbon credits. By tokenising physical assets and incorporating Web 3.0 technology, this platform makes carbon trading simple and accessible, helping businesses reduce their carbon impact with just a few clicks.

Looking ahead, we're excited about trends like AI-driven energy optimisation and blockchain integration, which will significantly impact the energy industry by enabling more efficient, sustainable, and scalable solutions. These innovations will be crucial in helping industries meet their net zero targets while improving cost-efficiency and operational performance.

BARTEC I STAND: **13640 I** HALL: **13**

SUSTAINABLE AND DIGITAL SOLUTIONS FOR HAZARDOUS AREAS

BARTEC's advanced technologies are contributing towards a more sustainable and digital future

BARTEC is one of the global leaders in safety technology and digital solutions for hazardous areas, offering customised Ex solutions.

Green hydrogen is quickly emerging as a pivotal component in the topic of sustainability driving our global economy toward a carbon-free future. As the demand for sustainable and clean, new energy solutions grows, we see a significant demand for safe hydrogen solutions supporting the climate goals and contributing to the net zero goals. To accompany our customers with technical expertise and the right applications in the best possible way, BARTEC is positioned as a facilitator, enabler, and trusted partner for the whole hydrogen value chain. We support our customers in safe energy production, transport, and industrial consumption of hydrogen. We have already successfully helped electrolyser OEMs to design ex-protected units, while our components are part of the world's biggest ever-realised Hydrogen Production site. Around 90% of our products are hydrogen ready. You can see some of our best solutions in our booth, which can form a crucial part of the hydrogen value chain, like HYGROPHIL F 5674 Process Trace Moisture Analyser and Self-Regulating Heating Cables.

To drive our digitalisation efforts, we recently launched BARTEC SP9EX1 Smartphone and BARTEC SC9EX1 Smartscanner certified for ATEX, IECEx Zone 1/21 and pending NEC Class I, II, III, Division 1 which you can see in-person in our booth. With more than 1,000 dedicated components ensuring EX protection, the smartscanner offers unparalleled accuracy with its seamlessly integrated Zebra® scan engine, while the smartphone already has a pre-installed iTAG XM app for worker location tracking in hazardous areas.

With these two devices and further connectivity solutions, BAR-TEC empowers customers to reap the benefits of connectivity and digitalisation – improving efficiency and productivity, while reducing the carbon footprint of energy operations and improving resource management. As part of our digitalisation strategy, we acquired Extronics, now a BARTEC Connectivity & IoT brand. Our combined portfolio is now the most comprehensive in the market and allows our customers to implement industrial IIoT networks and mobile devices. We are pleased to invite you to our booth where you can experience the full range of our portfolio and hear more about our solutions.

BRENNTAG I STAND: **14585 I** HALL: **14**

MAKING CO2 EMISSIONS TRANSPARENT AND MEASURABLE

Brenntag: **Creating CO2e emission transparency, enabling action and reporting compliance**

Combatting climate change is a major global challenge, and businesses are under increasing pressure to do their part in reducing CO2e emissions.

CO2Xplorer, a Brenntag award-winning digital innovation, offers a comprehensive solution that enables us and our business partners to achieve visibility of CO2e emissions throughout the entire value chain, while meeting regulatory reporting requirements, such as those mandated by the EU with the Corporate Sustainability Reporting Directive (CSRD).

CO2Xplorer is backed by TUV Rheinland certified calculation methodology, which enables the assessment of CO2e emissions and their environmental impacts for chemical products, by including data related to products, transportation, warehousing, and packaging. Leveraging a credible and TÜV-certified calculation methodology, it provides businesses with precise, reliable, and up-to-date data to support their sustainability transparency needs.

For internal use, CO2Xplorer 'core' offers detailed carbon footprint calculations, enabling Brenntag to benchmark CO2e emissions of different products and related sourcing, as well as various supply chains—including transportation modes and packaging alternatives—for over 2,100 materials.

For our valued business partners, CO2Xplorer 'on-demand' provides an on-demand, subscription-based service that grants access to carbon footprint data for over 1,400 individual CAS.

What does this user-friendly platform offer?

• **Cost-effective solution:** By incorporating extensive databases for chemical products and leveraging real Brenntag business data for transportation, warehousing, and packaging, CO2Xplorer offers a cost-effective solution for calculating carbon footprints.

• **Easy-to-use interface:** CO2Xplorer combines multiple databases to provide accurate and up-to-date CO2e information, making it simple for businesses to access and analyse the data they need.

• **Regulatory compliance:** CO2Xplorer helps businesses meet the requirements of the Corporate Sustainability Reporting Directive (CSRD), ensuring compliance with Scope 3 emissions reporting. The data is fully compliant with the latest ISO standards, such as ISO 14067:2022.

By making CO2e emissions transparent and measurable, CO2Xplorer empowers our customers to make informed decisions and take action toward a more sustainable future. This includes identifying areas for improvement, setting ambitious sustainability goals, and implementing effective strategies to reduce environmental footprints—ultimately supporting the fight against climate change.

CADMATIC **I** STAND: **14410** I HALL: **14**

COMPUTER-AIDED DESIGN INDUSTRY HAS MUCH TO GAIN FROM AI

Cadmatic is integrating generative AI into its operations to deliver superior services and multiple choices to customers

Integrating artificial intelligence (AI) into the complex computer-aided design (CAD) software environment presents both challenges and opportunities. While AI integration is becoming common across industries, the CAD sector requires a nuanced approach that addresses the intricacies of design processes. At Cadmatic, our goal is to simplify AI technology.

Three key areas where AI can deliver value to our customers are:

 - **Enhance design and engineering solutions:** AI-driven tools are reshaping design processes to meet client-specific needs and regional requirements. AI, for instance, can help create multiple versions of a vessel or industrial plant with minimal human oversight.

 - **Improve data management processes:** AI is set to transform data management, making information access as easy as having a conversation in your native language. This enhancement not only accelerates workflows but also reduces the learning curve traditionally associated with data management systems.

 - **Integrate AI assistants for specialised advice:** AI assistants, embedded within CAD tools and equipped with proprietary data, can offer specific guidance, accessible via desktop or through voice commands using devices like Microsoft HoloLens. This support improves decision-making processes.

Implementation phases of AI at Cadmatic

Phase 1: Natural language workflow and AI-driven design
Our focus is on enabling natural language commands for designing complex components, providing engineers with natural language customisation. This capability is currently in action at Cadmatic, demonstrated by our eShare assistant that assists with transforming natural language prompts into precise regular expression outputs. This capability is being extended to in-house scripting, such that the Cadmatic assistant will transform natural language prompts into specific Cadmatic scripting, eliminating the need to learn the Cadmatic-specific scripting.

Phase 2: Enhanced prompt-based engineering
Our technology now suggests alternative designs, allowing engineers to choose the best options based on technical and geographical considerations.

Going forward
We anticipate more comprehensive AI integration that could automate entire design processes or offer real-time, intelligent feedback on engineering modifications. As AI technology progresses, Cadmatic's strategies and solutions will evolve, ensuring that we remain leaders in the industry and help our customers maintain their competitive edge.

POWERING THE DEEP HOLE DRILLING MACHINERY WITH AI

CHETO offers a range of products and services for the mold production industry, all geared to make the processes smoother, efficient, and less time consuming

At ADIPEC 2024, CHETO is thrilled to showcase its innovative hybrid, multi-function deep hole drilling machines that are transforming the energy sector.

CHETO built up to seven-axis multifunction machines to increase the accuracy and decrease the costs of complex mold production. These are faster, cleaner, reliable, and energy saver, increasing the efficiency of a mold manufacturer and streamlining their machine operations. CHETO hybrid machines can perform different functions in a single setup, performing deep hole drilling, radial drilling, milling, tapping, and boring.

The patented Automatic Gun drill Tool Changer with a tool length up to two meters stands out in the market. This allows the reduction of human intervention and drilling time, increasing the efficiency and available running hours without stop.

Following the concepts of the industry 4.0, the company has also implemented CHETO Service App, offering the customers the possibility to contact the Technical Assistance Service team directly. This digital platform also allows CHETO team to provide remote assistance using augmented reality, where the images can be edited in real time.

CHETO is always developing and innovating its product range and last year launched a new model, the INL inline. It is used for gun drilling and

> *The patented Automatic Gun drill Tool Changer with a tool length up to two meters stands out in the market. This allows the reduction of human intervention and drilling time, increasing the efficiency and available running hours without stop.*

BTA tools up to 6 meters, dedicated to the production of round bars. This model machine has sensors positioned in key points, collecting data, and sending it to AI-powered system control, machine learning.

The role of ADIPEC in advancing these innovations cannot be overstated. As a premier platform for industry leaders, the event fosters collaboration and knowledge sharing, allowing companies like CHETO to present cutting-edge technologies. This collaborative environment accelerates the adoption of AI-driven processes, empowering the energy sector to achieve its sustainability goals more effectively.

Visit us to discover how CHETO is shaping the future of the energy industry through innovation and commitment to a low-carbon future.

PROMOTING SUSTAINABILITY IN FASTENER INDUSTRY

From solar energy to recycling programmes, China Special Alloy Group integrates environmental advocacy into its manufacturing processes

China Special Alloy Group Ltd. is a reputable company established in 2008. As our company continues to grow, we are committed to our goal of providing the best service to our clients. We have a large plant, spanning 50,000 sqm, which includes a smelting factory, an alloy products manufacturing facility, and an export and logistics company. This facility was built in April 2018. Our products are widely used in oil and gas, electrical power, offshore and shipbuilding, nuclear, automotive, and chemical industries across Europe, America, the Middle East, Southeast Asia, and the domestic market.

As a fastener and manufacturing company, our primary goal is to produce high-quality products that meet the needs of our customers. However, we also recognise the importance of environmental sustainability and the impact our operations can have on the environment.
We are committed to incorporating environmental advocacy into our business practices.

Here are some ways in which we practise environmental advocacy in reducing carbon emissions and helping to meet global climate goals:

We are consistently researching and investing in new technologies that can help us minimise our environmental impact. For instance, we have transitioned to renewable energy sources such as solar, wind, and hydroelectric power. We are continually finding ways to reduce energy consumption, investing in energy-efficient equipment, implementing energy management systems, and exploring renewable energy options. We have also established recycling programmes for scrap materials and waste reduction, and we are developing new production processes. We implement proper waste management practices, such as recycling and safe disposal, to help minimise our environmental footprint. Additionally, we provide training in eco-friendly practices and encourage our employees to incorporate sustainable habits into their daily lives.

We collaborate with suppliers to ensure that raw materials are sourced sustainably, focusing on lower carbon emissions. Lastly, we work with the government and strictly adhere to environmental policies and principles, promoting sustainable best practices in our decarbonisation efforts. We are partnering with local organisations to support environmental initiatives and organise educational events on sustainability, reaching out to the communities in which we operate to promote environmental advocacy.

HOW LAIO IS SHAPING THE FUTURE OF LNG PLANTS

Chiyoda Corporation's LNG Plant AI Optimiser integrates predictive algorithms with physical models, delivering significant improvements in production efficiency

LNG Plant AI Optimiser (LAIO) is a cutting-edge digital solution that leverages advanced AI algorithms, combining physical models with machine learning to enhance the efficiency of liquefied natural gas (LNG) plants. By optimising operating parameters in real-time, LAIO significantly improves production efficiency and reduces energy consumption, supporting net-zero and climate change goals. Chiyoda Corporation is showcasing this innovative tool at ADIPEC, highlighting its potential to make LNG production more sustainable and economically viable.

The implementation of LAIO has led to substantial improvements in the efficiency of liquefaction. LNG plants utilising LAIO have reported up to a 5% increase in production and a reduction in energy consumption per unit of LNG produced. This dual benefit is achieved without changing the hardware, making it a cost-effective solution.

The real-time predictive and self-learning capabilities of LAIO allow for continuous optimisation of plant operations, reducing operational burdens and enhancing overall profitability. These tangible results underscore the significant impact digital solutions can have on improving the efficiency and sustainability of the energy industry.

Among the most anticipated digital innovations in the energy sector are advanced AI-driven optimisation tools like LAIO. These tools are expected to revolutionise the industry by providing actionable insights that enhance operational efficiency and sustainability. Additionally, trends such as the integration of first-principles physical models with data-driven algorithms are gaining traction. This hybrid approach allows for more accurate and adaptable solutions, capable of globally optimising operations beyond past operational ranges.

The impact of these innovations is profound, as they enable energy companies to operate more efficiently, reduce costs, and contribute to global sustainability efforts. As these technologies continue to evolve, they are poised to play a crucial role in shaping the future of the energy industry.

In summary, digital solutions like the LNG Plant AI Optimiser are at the forefront of transforming the energy industry. By enhancing efficiency, supporting sustainability goals, and driving innovation, these tools are paving the way for a more sustainable and economically viable energy future.

INTELLIGENT SOLUTIONS FOR A GREENER TOMORROW

Chongqing Hongbao's suite of AI-driven products is allowing companies to take a leap into a digital future and streamline operations

The energy industry is undergoing a profound transformation into a fully digitalised era to address the pressing global imperatives of energy security, rising emissions, and carbon neutrality. Faced with challenges such as workforce reduction, efficiency enhancement, and the shift towards a low-carbon economy, Hongbao Technology, a leading national high-tech company in China, is at the forefront of this evolution.

Harnessing the power of cutting-edge technologies, Hongbao has developed two innovative solutions: Feimu, a comprehensive intelligent site management platform, and Youlong, an integrated aerial and ground inspection system. These pioneering advancements not only streamline operations but also position the industry towards a more sustainable future.

In early 2023, the Weiyuan Operation Area of CNPC Chuanqing Drilling's Shale Gas Project Department explored the adoption of an AI-driven approach to establish intelligent well stations aimed at alleviating the mounting pressures associated with safety management and labour shortages. Hongbao Technology implemented the Feimu intelligent station at the Weiyuan H202-H16 gathering station, which aggregates IoT data from well stations, establishes automated inspection processes, and enhances supervision of personnel behaviour on-site. This initiative resulted in an 800% increase in inspection frequency, a 94% reduction in inspection time, and a significant improvement in safety management, all while freeing up valuable manpower.

Additionally, Hongbao launched the Youlong air-ground integrated pipeline intelligent inspection solution. Utilising a suite of emerging AI technologies, this solution is designed for the energy production sector to improve inspection efficiency and reduce production-related risks. It enables companies to transition from costly, inefficient manual methods to an advanced system featuring drone imagery, AI-driven alerts, and real-time processing.

As one of the world's top three oil and gas exhibitions, ADIPEC showcases cutting-edge products, technologies, and services within this sector, while promoting sustainable development concepts globally. Looking ahead, we aspire to leverage advanced AI technologies collaboratively to facilitate digital transformation among oil and gas industry clients in their journey towards sustainability.

INNOVATIONS FOR A SUSTAINABLE FUTURE

ClampOn's products and solutions employ digital technologies to foster climate resilience, support energy transition, and achieve net zero goals

At ClampOn, we are at the forefront of technological advancements, leveraging digital technologies to drive climate mitigation, energy transition, and support net-zero targets. Our latest innovation, the ClampOn BIRD (Battery-operated Intelligent Remote Detector), exemplifies our commitment to sustainability and efficiency.

The ClampOn BIRD: Revolutionising Condition Monitoring
The ClampOn BIRD is a state-of-the-art wireless acoustic sensor designed for the downstream, unconventional, and renewable energy markets. This non-intrusive instrument is crucial for monitoring the condition of pipes, flowlines, valves, and structures. By measuring, analysing, and reporting acoustic noise and vibration, the BIRD provides early warnings of potential weaknesses, enabling proactive maintenance and reducing the risk of failures.

Advanced Technology for Enhanced Performance
The BIRD incorporates the latest in energy-efficient Digital Signal Processing (DSP), a low-power RF node, and a sub 1 GHz programmable ultra-low power mode. These technologies allow the sensor to operate for over a year on a single power module, significantly reducing maintenance costs and environmental impact. Its wireless communication capabilities eliminate the need for expensive cabling and complex wiring, making it an ideal solution for remote and rural installations.

Digital Transformation in the Energy Sector
Digital technologies are transforming the energy sector. At ClampOn, we believe these technologies can predict equipment failures and enhance operational efficiency. By analysing vast amounts of data in real-time, digital algorithms can identify patterns that human operators might miss. This predictive capability helps in preventing downtime, reducing maintenance costs, and ensuring the smooth operation of energy infrastructure. Digital insights also support the integration of renewable energy sources, balancing supply and demand, and ultimately contributing to a more resilient and sustainable energy system.

Commitment to Net Zero Targets
ClampOn's technologies are designed with sustainability in mind. The BIRD's real-time measurement and reporting capabilities help operators make informed decisions that align with their decarbonisation goals. By providing reliable data and insights, our solutions support the industry's efforts to achieve net-zero targets and promote a greener future.

CLEOPATRA ENTERPRISE I STAND: 14415 I HALL: 14

ADVANCED PROJECT MANAGEMENT TOOLS THAT BOOST EFFICIENCY

Cleopatra Enterprise's solutions support transition to renewable energy, facilitating management of both traditional and sustainable energy projects

Cleopatra Enterprise's Work Package Management streamlines project planning and cost management by optimising resources, reducing delays, and improving communication. It integrates tools for the entire project lifecycle, offering a centralised location for data and seamless third-party system integration, which results in smoother workflows and better decision-making. Cleopatra also ensures safety and quality standards through transparent work package planning, providing visibility into safety and QA/QC requirements.

Features like real-time collaboration and automated workflows reduce human errors and improve efficiency across teams in fields such as energy production and plant maintenance. The agility provided by Cleopatra's digital tools allows companies to quickly adapt to changing environmental regulations, ensure compliance and enhance environmental stewardship. These functions align with the growing emphasis on sustainability and efficient resource use in power generation projects.

Cleopatra's solution not only simplifies project execution but also supports the transition to renewable energy, facilitating the management of both traditional and sustainable energy projects. The software also allows standardising processes and improving communication among stakeholders, further contributing to reducing operational carbon footprints.

After implementing Cleopatra Enterprise, one of the reputable nuclear power generation companies improved cost estimates within six months, saving 50% of the time. The software streamlined the estimating process, enhanced collaboration, and made it easier to detect errors and omissions.

We look forward to showcasing this innovative solution at ADIPEC and connecting with industry professionals to discuss how Cleopatra can advance their sustainability and efficiency goals. We are particularly excited about innovations in digital twin technology, AI-driven predictive analytics, and the increasing use of integrated cloud platforms.

Book your delegate pass to attend

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HELPING COMPANIES GET THE MOST OUT OF THEIR DATA

Cognite's suite of industrial software helps companies gain a better understanding of their processes and make more informed decisions

Cognite is an AI company that delivers industrial software to improve the production efficiency of energy, process manufacturing, and other industrial companies. We liberate siloed data and deliver AI-powered solutions that make data easier to find and use so process engineers, field workers, maintenance teams, and other data consumers can make the right decisions at the right time — empowering our customers to solve some of their most complex business problems.

Cognite delivers an Industrial DataOps platform that liberates siloed data. The solutions we enable drive innovative new ways to approach data exploration, digital operator rounds, production optimisation, turnaround planning, and root cause analysis. Cognite is also leading the charge in helping energy companies deploy industrial AI and recently launched Cognite Atlas AI to help its customers deploy AI agents at scale.

Cognite has a proven 400% return on investment from solving the industrial data problem and enabling efficiencies that can generate tens of millions of dollars in business impact for our customers. For example, quicker turnarounds of a chemicals plant or improved root cause analysis for an offshore oil rig.

Cognite does this by automating and scaling industrial data contextualisation of various sources (such as time series, engineering diagrams, equipment logs, maintenance records, 3D facility models, images, large point clouds, and more). We use AI and other tools to find and map meaningful relationships between the data across these various sources. In addition, we provide intuitive tools such as Industrial Canvas and Charts that enable efficient use of analytics and automated workflows, as well as prebuilt AI capabilities and a low-code industrial agent builder, Cognite Atlas AI, that enables AI to carry out more complex operations with greater accuracy.

Cognite Data Fusion is the only purpose-built platform for messy industrial data. We can handle billions of streaming time series data, enable interactive engineering diagrams, and more. Cognite Data Fusion is fully open with a single, stable API and well-documented Software Development Kits, so you can continue to use your favourite tools and applications or build your own solutions where necessary while benefitting from the efficiency and scalability of an out-of-the-box solution. Along with our software, we provide deep domain expertise. Cogniters are highly skilled in solving unique problems that industrial companies face and are dedicated to exceeding customer expectations. At the same time, you can work with any partner from our growing ecosystem to quickly connect off-the-shelf applications or develop new solutions to meet real-world demands.

When companies have their data foundation in place, Cognite Data Fusion enables them to scale out their use cases for exponential value growth and form the data foundation to deploy AI agents for even greater efficiency gains. Take for example, an industrial agent for document parsing built using Cognite Atlas AI. This document parsing AI agent is fine-tuned to read technical documentation and unstructured input such as PDFs and data sheets to find relevant information and fill out specific data in a structured form. Automating data extraction eases the workload for process engineers. AkerBP is deploying this document-parsing AI agent to automate equipment registration as part of its digital transformation journey. This agent is forecasted to save AkerBP more than 10,000 engineering hours.

Cognite is all about open collaboration and bringing together partners from across the entire value chain and ecosystem, which is crucial to helping drive the adoption of AI and DataOps solutions to ensure a low-carbon future. Events like ADIPEC are crucial in enabling AI and digital innovations for a sustainable future and will feature a wide range of Cognite's customers and partners, such as Saudi Aramco, SLB, and AkerBP.

OPTIMISE, FORECAST, INTERPRET: SIMPLIFYING THE NET-ZERO JOURNEY

Computer Modelling Group's AI and digital solutions, CMOST, ShaleIQ, and InteractivAI, are helping drive progress towards net zero goals

Artificial intelligence (AI) has the potential to revolutionise the energy sector by automating processes, improving decision-making, and enhancing operational efficiency. FLIR Systems Trading Belgium offers a range of AI-enhanced solutions that can detect leaks in real time, optimise maintenance schedules, and reduce human error in hazardous locations.

Its advanced predictive maintenance solutions, such as the FLIR Si2x-Series Acoustic Imagers and the FLIR Gx-Series Optical Gas Imaging (OGI) cameras, play a crucial role in enhancing the energy sector's efficiency and safety while supporting net-zero and climate goals. These tools enable leak detection and precise gas identification in hazardous environments with the help of features like AI-driven functionalities and cloud-based analytics and reporting.

The new FLIR Si2x-Series Acoustic Imagers offer rapid, user-friendly gas leak detection, even in challenging conditions like wind and turbulence. Utilising machine learning for real-time, on-device results, the Si2x-Series helps reduce downtime and enhance safety by identifying leaks as small as 0.0032 L/min at 2.5 metres, up to 10 times faster than traditional methods.

For enterprise customers, it provides efficient digital solutions, including seamless data export, fleet management tools, automatic uploads, online storage, and API integration for real-time asset health monitoring and enhanced decision-making.

The FLIR ADGiLE solution utilises advanced digital features by offering continuous, autonomous optical gas imaging (OGI) for methane leak detection. Leveraging the uncooled FLIR GF77a Optical Gas Imager, ADGiLE integrates seamlessly with customers' digitisation platforms for environmental reporting and monitoring. Its autonomous operation and precise alarming capabilities ensure that operators in sectors like oil and gas can efficiently meet safety and environmental standards while preparing for evolving regulations, making it an ideal solution for real-time methane leak management.

By leveraging AI, energy companies can predict equipment failures, improve emissions control, and enhance safety protocols, ultimately reducing operational costs while supporting the transition to greener, more sustainable energy systems.

We are excited to showcase our cutting-edge technologies at ADIPEC, demonstrating their impact on reducing carbon footprints in energy production and their role in regulatory compliance with leak detection and repair (LDAR) programmes.

TECHNOLOGY THAT MONITORS CORROSION, INCREASES ASSET LIFE

Cosasco's solutions help minimise unplanned downtime, improve the efficiency of energy operations, and drive progress towards the climate objectives

Artificial intelligence (AI) is revolutionising the energy sector, especially in corrosion monitoring and asset management. With machine learning algorithms, AI and digital technology-enabled systems analyse vast datasets to detect corrosion trends and predict potential failures. This data-driven approach allows operators to make informed decisions, improve safety, reduce operational costs, and prevent leaks, all while supporting sustainability and resource optimisation.

Cosasco harnesses the power of digital technologies in corrosion monitoring to drive progress towards the energy industry's net-zero and climate objectives. Our Microcor® ER technology provides real-time data on corrosion rates, allowing for proactive maintenance and reducing the risk of leaks or failures.

Cosasco's Microcor® high-resolution ER technology offers a suite of advanced digital solutions that significantly impact the energy industry and support global net-zero and climate goals. As a leader in corrosion monitoring, Cosasco is committed to enhancing the energy sector's resilience and sustainability through innovative technology. We look forward to connecting with industry peers and showcasing our solutions at ADIPEC.

Our cutting-edge corrosion monitoring systems have significantly improved operational efficiency. In a recent project, clients using our Microcor® technology saw a 30% reduction in maintenance costs and a 25% increase in asset lifespan. By predicting corrosion-related issues before they escalate, we help minimise unplanned downtime and optimise resource allocation, ultimately improving the efficiency of energy operations.

At ADIPEC, we will demonstrate how these solutions enhance asset integrity, minimise emissions, and promote more sustainable energy practices.

ADIPEC serves as a critical platform for fostering collaboration among industry leaders, innovators, and policymakers in AI and digital technologies. The event offers a unique opportunity to share best practices and advancements, particularly in corrosion monitoring. By connecting key stakeholders, ADIPEC accelerates the adoption of innovative corrosion management solutions that align with climate and sustainability goals.

TRUSTWORTHY DIGITAL AND AI SOLUTIONS

DNV builds and operates robust digital and AI solutions for industrial applications

The energy sector has been digital for decades, using advanced automation and control systems to manage complex facilities and power grids. Machine learning is now being applied to optimise maintenance and production. However, while digitalisation is well-established, we have only begun to explore the potential of recent technological advancements, particularly in artificial intelligence (AI). Implementing AI-driven solutions in high-consequence industries like energy requires a different approach, as AI presents distinct risks compared to traditional systems.

DNV collaborates with leading energy companies, platform providers, and technology vendors to build and operate robust digital and AI solutions for industrial applications. While many companies recognise the importance of AI, its adoption remains limited. In a recent survey of 1,300 global executives and senior leaders, only 14% identified as advanced users of AI, while 70% were still in development or pilot stages. When asked about barriers to adoption, the top five obstacles were: resistance to change, cybersecurity risk, data quality/management issues, the cost of digital transformation, and lack of digital skills.

To build trust in AI for high-consequence industries like energy, a different risk management approach is essential. AI evolves continuously, so assurance measures must be built in from the start. Comparing AI outputs with physics-based models can also reduce the risk of "hallucinations" or incorrect results.

Looking ahead, companies must consider key questions when investing in digital and AI technologies: Are they ready to make critical decisions based on digital information? Do they have clear AI and cyber risk management strategies? Can they generate a meaningful return on investment? Is the organisation prepared to integrate digital assets into workflows? And are they ready for upcoming regulatory changes?

At DNV, we combine technical domain knowledge with deep digital insights, offering advice and independent assessments of digital twins, data quality, and AI. Join us at ADIPEC 2024 to learn more about how we can help you manage digital transformation while balancing risk and cost. We look forward to seeing you there.

MAKING THE DRILLING RIG A SAFER PLACE

Drillmec is showcasing an innovative system at ADIPEC for continuous circulation drilling that enhances accuracy and automation

Drillmec, an international leader in the manufacturing and distribution of drilling rigs for onshore and offshore applications, presents an innovative system for continuous circulation drilling that leverages a camera system and artificial intelligence (AI) to enhance accuracy and automation.

Personnel are no longer required on the drill floor, as operations are remotely controlled from the driller's cabin. The automated system consists of a clamp, trolley, mud diverter manifold, vision system, HMI, and PLC control skid. Both the trolley and clamp can be operated remotely, allowing the driller to align the clamp with an external valve and adjust its position within a +/-10° angle in all three spatial directions.

The software minimises human and system errors, while carbon capture and storage (CCS) technology has advanced to be compatible with the latest drilling rigs. This fully automated system ensures safe operations without operators on-site, allowing for continuous drilling while meeting safety standards. The cameras are equipped with a calibrated lighting system to function effectively in challenging conditions.

The system's valve detection capabilities facilitate the start of continuous circulation, significantly improving drilling efficiency and safety. By reducing the need for human input, AI enhances decision-making and operational savings, providing a competitive edge over traditional methods.

Additionally, with fewer personnel involved, those on-site possess higher skill levels, further increasing safety.

Overall, this is a new frontier in drilling technology, showcasing how automation and AI can transform well-drilling processes, optimising efficiency and ensuring safety in operations.

We are excited to be participating at ADIPEC this year, which is a crucial platform for promoting AI and digital innovations in sustainable energy. The event facilitates networking, showcases cutting-edge technologies, encourages knowledge sharing, influences policy, and attracts investments, creating a hub for developing innovative solutions to address sustainability challenges in the energy sector.

AI TECHNOLOGIES TO RESHAPE THE ENERGY SECTOR

Dragon Oil will be presenting several AI solutions at ADIPEC 2004, including one of their flagship technologies, AI-Driven Fleet Management

At Dragon Oil, we are deeply committed to the integration of AI technologies to reshape the energy sector, aligning with net zero and climate goals. Our AI-driven solutions are designed to enhance efficiency, reduce waste, and minimise environmental impacts, with a primary focus on sustainability. This year at ADIPEC, we will be showcasing several innovative AI Solutions aiming to enhance our operational efficiency and reduce the carbon footprint to support global sustainability efforts.

One of our flagship solutions, AI-Driven Fleet Management, is being presented at ADIPEC through paper SPE-222659. This project focuses on optimising the operations of marine vessels in the Cheleken Contract Area of the Caspian Sea. By employing AI to analyse complex factors such as channel depth, weather conditions, and vessel load capacities, we've been able to optimise fuel usage and minimise maintenance costs. As a result, the solution has significantly reduced fuel consumption and CO2 emissions, contributing directly to our environmental sustainability goals.

In addition, we're also driving innovation through several other AI-powered projects. AI Drilling ChatGPT has transformed our drilling operations, leveraging natural language processing and machine learning to optimise processes, reduce energy consumption, and lower the overall environmental impact. AI Well Trajectory Builder has enabled us to design more efficient well paths, minimising corrective drilling operations that can often harm ecosystems.

> *AI-Driven Fleet Management solution employs AI to analyse complex factors such as channel depth, weather conditions, and vessel load capacities, to optimise fuel usage and minimise maintenance costs.*

Furthermore, AI Reservoir Sweet Spot is helping us maximise resource extraction while minimising the number of wells drilled. This ensures sustainable production and a reduced ecological footprint. Lastly, AI Surface Network Production Prediction and Optimisation, offers precise control over energy output, further optimising resource use and reducing waste.

We believe that AI is the key to transforming the energy sector by driving efficiency and promoting a more sustainable future. ADIPEC plays a vital role in facilitating these innovations, offering a platform to showcase breakthroughs that align with global climate targets. By integrating AI into core processes, Dragon Oil continues to lead the charge toward a more environmentally conscious energy landscape.

AI IS CHARTING A NEW COURSE FOR THE MARITIME INDUSTRY

A DP World company, P&O Maritime Logistics, is using technology to transform its operations and make them more sustainable

The energy industry is undergoing significant transformation, driven by AI and digital solutions supporting net-zero and climate goals. P&O Maritime Logistics, a DP World company, is at the forefront of this transformation, utilising technologies like route optimisation for cargo delivery to reduce environmental impact and enhance operational efficiency.

By implementing AI-driven solutions that analyse vast data—including traffic patterns, weather conditions, and fuel efficiency metrics—P&O Maritime Logistics' algorithms identify the most efficient cargo transportation routes. This approach has led to remarkable fuel consumption reductions between 20% and 40%, cutting operational costs and contributing to global efforts to reduce carbon footprints, aligning with international sustainability objectives.

Beyond route optimisation, AI in energy services includes predictive maintenance to foresee equipment failures, reducing downtime and costs, and enhancing grid management by balancing supply and demand. By integrating renewable energy sources more effectively, these innovations result in more reliable services and further energy savings.

AI holds immense potential to transform the energy sector towards sustainability. It enables more accurate energy demand forecasting, facilitates the integration of distributed energy resources, and supports smart grid development. AI-driven analytics help make informed decisions that enhance energy efficiency and promote renewable energy use. AI is critical in achieving long-term climate goals by optimising operations and enabling smarter energy management.

The integration of AI and digital solutions is revolutionising the energy industry, offering practical pathways to achieve net-zero emissions and combat climate change. Companies like P&O Maritime Logistics demonstrate the tangible benefits of these technologies through significant reductions in fuel consumption and enhanced operational efficiency. As AI evolves, its role becomes increasingly vital. Platforms like ADIPEC are instrumental in promoting these advancements, ensuring the industry moves collectively towards a sustainable and innovative future.

EMDAD ❙ STAND: 2430 ❙ HALL: 2 ❯❯

THE WORLD'S FIRST AI ASSISTANT FOR ENGINEERS

EMDAD's cutting-edge AI solutions are committed to enhance sustainability, empower efficiency, and foster a greener tomorrow

EMDAD is excited to return to ADIPEC this year to unveil a myriad of solutions pertaining to artificial intelligence (AI) and digitalisation for the energy industry. Some of our select partners, Gain Energy, KaarTech, and DWL, will be joining EMDAD to discuss the world's first AI assistant for oil and gas (O&G) engineers, digitalising from analysis to assets, and AI-enhanced technology for both the office and site. Aside from visiting the booths, guests are welcome to attend the spotlight theatre presentation complemented by a Q&A session.

Pledging to implement more green operations across the value chain, the niche solutions provided by EMDAD aim to do exactly that. UPSTRIMA, the O&G AI assistant, will aid in technical information and analysis for upstream-related inquiries. Digitalisation of production and delivery can provide an estimated 5% improvement in return on assets and a 25% improvement in the first-time fixed rate. HONOR's AI technology will allow automatic and multilingual notetaking for international business meetings. AI software for drilling can eliminate geological uncertainty and improve geosteering for completion optimisation.

The energy sector is constantly evolving towards a less resource-intensive direction, emphasised by the UAE Energy Strategy for 2050. Through AI-empowered technologies, man-hours are drastically reduced thanks to improved efficiency and accuracy, resulting in various other resources being saved in the process. Traditional workflows can be automated, enabling the achievement of higher HSE targets and directing focus towards new challenges.

EMDAD is grateful to ADNOC for hosting a conference with themes centred on a sustainable future. Indeed, ADIPEC plays a pivotal role in the energy sector by serving as a platform for connecting and educating global stakeholders. Concentrating industry competitors together encourages the showcasing of novelties, and EMDAD's offerings are continually evolving to align further with the UAE's vision for innovation. ADIPEC signals to the world that the UAE's energy market is dynamic, driving advancement at every corner of the industry.

ENERWHERE ❙ STAND: CN34 HALL: CONCOURSE ❯❯

PRACTICAL SOLUTIONS FOR REAL-WORLD ENERGY CHALLENGES

Enerwhere designs, builds, and operates advanced micro-grids that power off-grid applications using its flagship digital solution Enlite

In the global drive for sustainability, the oil and gas sector must significantly reduce emissions and achieve net-zero targets by 2045. Companies are focusing on cutting methane emissions, improving operational efficiencies, implementing carbon capture and storage, and using on-site renewable energy sources, while also leveraging practical artificial intelligence (AI) and digital solutions. A major challenge is powering off-grid applications — such as drilling rigs, artificial lift stations, and mobile camps — reliably and sustainably.

For over a decade, Enerwhere has designed, built, and operated advanced microgrids to power such off-grid applications using its flagship digital solution, Enlite. At ADIPEC 2024, Enerwhere will showcase Enlite, a monitoring platform designed to help businesses optimise energy management and reduce their carbon footprint. Enlite is a powerful AI-driven tool that provides real-time insights into energy systems, allowing users to streamline operations and make data-driven decisions.

The Enlite portal integrates real-time data from energy assets like solar inverters, diesel generators, and batteries, offering clear insights into system performance. A key feature is its ability to track critical KPIs, such as fuel consumption, CO_2 savings, and solar penetration. This transparency enables users to optimise diesel generator runtime and increase reliance on renewable energy.

In recent projects, Enlite has helped customers reduce diesel fuel consumption by up to 40% through improved generator efficiency and reduced unnecessary runtime. This not only lowers costs but also cuts CO_2 emissions in microgrids that depend on diesel for backup power.

We believe the most immediate benefit of digital tools in energy management lies in streamlining operations and automating key decisions based on real-time data. For example, Enlite monitors energy systems to ensure diesel generators are used only when necessary, prioritising renewable energy to reduce carbon footprints.

At ADIPEC, we're looking forward to showcasing Enlite and discussing how our data-driven approach to energy management can help businesses transition to cleaner, more efficient power systems. Visit us to see how Enlite can simplify energy monitoring and contribute to a more sustainable future.

ETHERNET-APL BRINGS INTELLIGENCE TO PROCESS AUTOMATION

This technology by Endress+Hauser can simplify customers' digitalisation needs and increase profits

Field level connectivity and data access are crucial to support trends like digitalisation and Industry 4.0. However, established technologies have limitations such as low speed and limited bandwidth. They also face the complexity of required protocol conversions.

Introducing Ethernet-APL
Ethernet-APL is not a protocol. It is a physical layer designed to connect field devices. Through the Ethernet-APL switch, field devices are directly connected to the Operational Technology (OT) Ethernet backbone. The Ethernet-APL switch provides communication and power to the field device via a two-wire cable in the Ex area. Integration into the OT backbone can be achieved via RJ45 or fibre optic connections with redundant ports. The protocols available include PROFINET, and soon Modbus TCP and Ethernet/IP.

Advantages of Ethernet-APL
1. Ethernet serves as a data highway, eliminating the limitations of proprietary protocols. This functionality allows for the simultaneous transmission of measured values to the controller and the use of configuration software through the same connection.

2. The configuration of Ethernet-APL does not require I/O hardware or scaling setup, which reduces setup time and minimises chance of failure.

3. Ethernet-APL is based on 2-WISE (2-wire intrinsically safe Ethernet; according to IEC TS 60079-47), which enables Ethernet over a single wire-pair in hazardous areas.

4. The backbone OT Ethernet offers 1 Gbit/s speed.

5. Ethernet connection to the field device removes the need for protocol conversion and its associated limitations.

Who Developed this Technology?
Ethernet-APL was developed by leading organisations: FieldComm Group, ODVA, OPC Foundation, and PI (Profibus and Profinet International), as well as major suppliers of process automation. Ethernet-APL is designed to be open, future-proof, and ready for the Industrial Internet of Things.

Endress+Hauser is proud to announce its partnership with the Single Pair Ethernet System Alliance (SPE Alliance). This strategic alliance underscores the company's commitment to simplifying customers' digitalisation needs and investing in the future of automation.

We are excited to showcase Ethernet-APL at ADIPEC this year. This technology solution can significantly reduce operating expenses (OpEx), maximise profitability, and ensure a competitive edge in the energy sector.

AI-DRIVEN SOLUTION TO REVOLUTIONISE ASSET MONITORING

Energy Robotics' advanced AI application Skills, enables operators to take early preventative measures

The AI-driven autonomous inspection solution from Energy Robotics is revolutionising asset monitoring in the energy sector by enhancing performance and safety while reducing costs at the same time.

Advanced AI applications, known as Skills, transform inspection data captured by robots into actionable insights. These timely insights and alerts enable operators to take early preventive measures, thus minimising downtimes and eliminating plant shutdowns.

Furthermore, our cutting-edge advancements in robot navigation through AI-driven semantic understanding enables autonomous inspection robots to dynamically adapt to unforeseen environmental changes. This ensures precise navigation and reliable inspections, significantly reducing costs and minimising human exposure to hazardous conditions.

AI Skill examples demonstrating how efficiency has been improved are as follows:

- Analog Gauge Reading: This AI Skill accurately detects gauges, precisely reads its value (temperature, pressure etc.) and sends alerts when the readings of one of these devices is outside a predefined range.

- Floating Tank Fluid Level Estimation: This Skill analyses RGB, and thermal images of oil tank roofs captured by drones and estimates the amount of water accumulated on them. This enables operators to initiate immediate action when the water level is above a defined threshold.

- Handle Valve Reading: This Skill detects open and closed positions of over five common different handle valves used in the oil and gas industry.

Other AI Skills include detectors for lube oil level, fire-extinguisher, fence defects, person with face-blurring, to name a few.

AI Skills can help in the transformation of the energy sector in the following ways:

- Higher efficiency through predictive maintenance: AI processing of inspection data delivers business insights to the fingertips of operators, who initiate immediate action and take proactive steps leading to predictive maintenance.

- Enhanced worker safety: Reduced exposure of operators to potentially dangerous environments by deploying robots for daily inspection rounds, even in dynamic environments.

Autonomous robotics, powered by AI and Digital Twin technology, will play a key role in scaling and maintaining the energy systems of the future. ADIPEC, being the world's most influential energy fair, fosters synergies between asset owners, policy makers and solution providers, thus unlocking the future of many digital innovations including AI-driven robotic inspection.

EMSTEEL I STAND: **5352** I HALL:**5**

PIONEERING INITIATIVES DESIGNED TO SUPPORT NET ZERO

EMSTEEL are excited to spotlight the latest 4.0 technologies, enhancing efficiency and the environment

As the industrial sector shifts towards sustainability, EMSTEEL is at the forefront with innovative AI and digital solutions designed to support net zero and climate goals. This year at ADIPEC, we are excited to showcase how our adoption of the latest industry 4.0 technologies has not only enhanced our operational efficiency but also driven significant environmental impact.

EMSTEEL's pioneering initiative - the world's first AI-led Green Steel Monitoring & Certification System was created in partnership with Sentra World and leverages their cloud-based software. We are now

technology company SAP, enhances the Group's operations with streamlined processes, a more sustainable supply chain, and automatic upgrades to new technologies.

Additionally, EMSTEEL leverages the advanced capabilities of IBM Envizi ESG Suite software to streamline the sustainability reporting process through revolutionised data utilisation and insights as part of its digitisation strategy to capture value and increase productivity and efficiencies. The strategic implementation of Envizi marked a pivotal moment for EMSTEEL to drive its digital infrastructure modernisation efforts forward using the power of digitalisation to enable data-driven decisions and reporting.

As leaders of digital transformation within the industrial sector, our

equipped to calculate emissions at the heat level, ensure blockchain-enabled traceability, and even provide a digital wallet for carbon credits. With the capability to monitor ongoing decarbonisation initiatives such as CCUS and renewable energy integration in real-time, we are proud to offer steel products with reduced carbon emissions.

EMSTEEL further future-proofed its operations by consolidating them under a single, unified cloud-based enterprise resource planning (ERP) solution, while simultaneously increasing the resilience and sustainability of its supply chain. The solution, created by global

adoption of Industry 4.0 technologies was recognised with five prestigious 'UAE Industry 4.0 Digital Leader' titles from the Ministry of Industry and Advanced Technology (MoIAT). This recognition reflects our commitment to integrating advanced digital solutions that have assisted EMSTEEL in reducing carbon emissions, enhancing safety protocols, minimising plant downtime, seamless mechanical troubleshooting, cost-effective production and streamlining operations. ADIPEC is a benchmark platform to showcase these advancements and promises great potential for strategic collaboration vital to accelerating energy transformation and net zero initiatives globally.

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DRIVING SUSTAINABLE OFFSHORE OPERATIONS

Enviros is using artificial intelligence to accelerate the energy sector's transition to net-zero

We are Enviros, a global leader in geophysical and geotechnical site investigation for offshore operations. We harness the power of artificial intelligence (AI) and digital technologies to support the energy sector's transition towards net-zero and climate goals.

With powerful AI solutions such as Copilot and ChatGPT, we have streamlined, automated, and significantly improved our operational processes in geophysical investigations, environmental studies, and marine surveys, making operations more efficient and sustainable.

Our use of specific and detailed prompts in AI tools and software has helped reduce survey time, energy consumption, and carbon emissions. The way we use AI ensures compliance with international regulations, enhancing both accuracy and sustainability in our services.

AI has already delivered significant improvements in efficiency. For example, our AI-driven prompts have cut downtime by 20% in data reporting processes for our geophysical and geotechnical operations.

By integrating real-time data with AI, we've increased safety, reduced disruptions, and improved the reliability of our energy services.

> *ADIPEC plays a vital role in advancing these innovations, bringing together industry leaders to collaborate on digital solutions that will shape a sustainable, net-zero energy future.*

As the energy industry transforms, this technology is critical in driving the change. From improving exploration precision to minimising environmental impact, AI enables smarter, data-driven decisions that boost operational efficiency and sustainability.

ADIPEC plays a vital role in advancing these innovations, bringing together industry leaders to collaborate on digital solutions that will shape a sustainable, net-zero energy future.
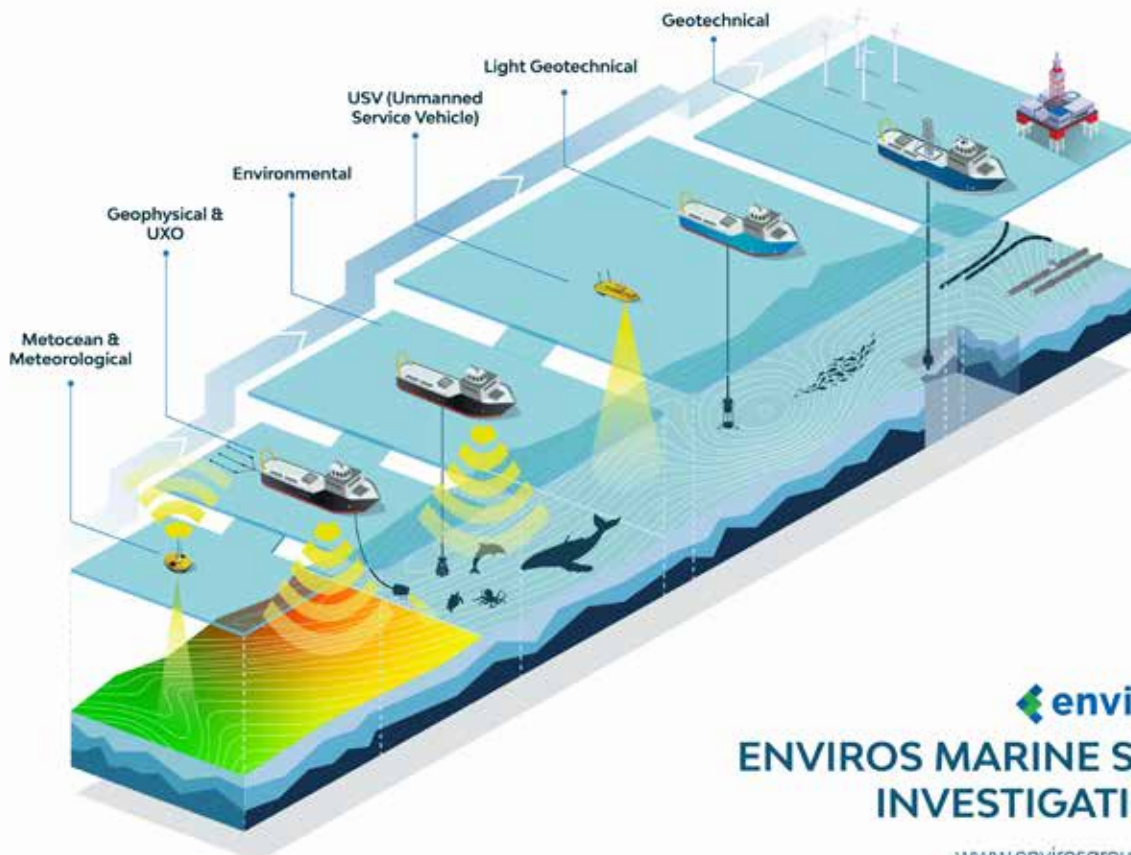
ENVIROS MARINE SITE INVESTIGATION

www.envirosgroup.com

EMISSIONS.AI: ECONOMICALLY AND ENERGY EFFICIENT

During ADIPEC, ERM will be presenting a range of digital products available directly to their clients

From AI readiness assessments to ready-to-leverage tool sets, ERM has been developing AI capabilities for years, and continues to innovate, solving our client's problems with solutions that make sense to your people, your processes, and your ambitions.

ERM will be showcasing digital products that codify ERM intelligence and ways of working into software solutions available directly to our clients.

For example:

- emissions.AI is a cloud-based artificial intelligence SaaS to enable companies to optimise operation of complex industrial facilities for lower carbon emissions. By enabling the optimisation of areas including process configurations, operating procedures, plant start-ups and shutdowns, and equipment performance, emissions.AI delivers continuous, autonomous surveillance to monitor energy use.

- ESG Fusion is an AI-enabled service that provides on-demand ESG ratings and analysis to help investment professionals make better decisions.

- Libryo by ERM: Using AI to review and synthesise data, Libryo makes it a quick and easy task for organisations to stay on top of their compliance management.

Emissions.AI suggests new ways to reduce emissions while keeping production secure. An emissions.AI client used emissions.AI to support temperature trials that led to optimisations in steam use across 4 complex process areas.

They could see results immediately. The Hydraulic Submersible Pump Heater switched off (9% reduction in steam demand), the seawater temperature reduced by 3.5°C (4% reduction in steam demand) with negligible reduction in oil heater steam demand.

Overall, there was a 5% reduction in steam demand and associated fuel demand. The client stated: "emissions.AI helped us to save $6.5 million in energy and emission cost, inside an ageing infrastructure."

AI technology like emissions.AI will deliver continuous, autonomous surveillance to monitor energy use, by enabling the optimisation of areas including process configurations, operating procedures, plant start-ups and shutdowns, and equipment performance. AI will allow the energy sector to make energy efficiency decisions that were humanly not possible to do in real time. Net zero ambition will only succeed if technology and Artificial Intelligence is applied.

Climate change will involve new ideas, new technology and new collaborations. ADIPEC 2024 is important in creating an environment in which to share knowledge, bring to market new innovations and allow long-term partnerships to form.

REVOLUTIONISING OFFSHORE ENERGY WITH AI AND DIGITALISATION

Esgian's digital technologies like Greenpact Live are reshaping energy consumption, optimising emissions, and helping companies achieve their net zero goals

At Esgian, we lead the offshore energy sector towards a low-carbon future with Greenpact Live, our cutting-edge Energy and Emission Management Software. At ADIPEC 2024, we aim to demonstrate how our digital technologies are reshaping energy consumption, optimising emissions, and helping companies achieve their net-zero goals.

Our intelligent software and hardware solution collects detailed energy production and consumption data independent of the existing technology on board offshore rigs. The data is recorded with high frequency, aggregated, contextualised, and analysed to provide real-time insights into mitigation opportunities. These insights not only allow operators to make immediate adjustments but also support long-term learning and verification of strategies.

The platform offers actionable insights by integrating real-time data, rig activity, and operational input from clients. This data-driven approach highlights immediate ways to reduce emissions and allows companies to benchmark emissions, plan future reduction targets, and track progress toward their decarbonisation goals. By turning energy and emission data into actionable insights, Greenpact Live ensures drilling rig managers, asset owners, and operators have the tools to make informed decisions that align with net-zero objectives.

Proven Efficiency Improvements
One of our recent deployments on a Keppel Fels B jack-up rig demonstrates the tangible benefits of our software. In one year, the system enabled significant reductions, including 127 MT of fuel, 414 MT of CO2e, and 751 fewer engine running hours. These results were achieved using the system's most basic configuration and have raised awareness across the workforce, leading to more energy-efficient operations. With this data, rig owners are also better equipped to plan and implement emission reduction systems tailored to their specific rig type and activities.

The Role of AI in Transforming Energy
As the energy sector evolves, the role of AI becomes increasingly crucial. AI and advanced software solutions are essential for handling the vast data sets collected in modern offshore operations. Without these technologies, managing such data manually would consume excessive resources. AI-driven insights optimise current operations and lay the groundwork for more sustainable practices and future innovations.

FRONIUS I STAND:**14316** I HALL: **14**

FLIR SYSTEMS I STAND: **1005** I HALL: **1**

LEARN TO WELD THE EASY WAY

Fronius' Welducation Simulator allows welders to learn and refine their skills in a realistic yet safe environment, free from costs associated with materials, gases, or wear parts

Fronius, a family-owned firm from Austria, operates in over 60 countries and is renowned globally for its photovoltaics, welding, and battery charging technology. The company is committed to creating products and solutions for a sustainable future, offering customers a comprehensive package that includes advanced planning, consulting, ongoing monitoring, and tailored repair services.

One of Fronius's key offerings is the Welducation Simulator, a popular tool that allows welders to learn and refine their skills in a realistic yet safe environment, free from costs associated with materials, gases, or wear parts.

The virtual training provided by the Welducation Simulator is ideal for practising complex processes and challenging scenarios without any risk or resource waste. The latest version employs augmented reality for the first time, integrating digital elements into the real world, whether through screens or glasses. By using genuine welding equipment, Fronius ensures an authentic training experience.

> *The virtual training provided by the Welducation Simulator is ideal for practising complex processes and challenging scenarios without any risk or resource waste.*

Training options encompass three welding processes (manual arc welding, MIG/MAG, and TIG), various materials (steel, stainless steel, and aluminium), and different material thicknesses, along with multiple welding positions. The simulator also offers three difficulty levels — easy, medium, and difficult. Standard practice workpieces and adjustable welding parameters create a realistic environment, simulating the tasks required before, during, and after welding.

With its integrated Welducation Campus platform, the simulator provides a complete teaching concept comprising theory and practical training units, which can be supplemented by the instructors as desired. The training tool provides a clear overview of results and learning progress.

Trainee welders can also use courses to acquire knowledge and skills in their own time, as the ranking of their own welding performance encourages them to realise their full potential.

SOLUTIONS THAT ENHANCE ENERGY SECTOR'S EFFICIENCY AND SAFETY

FLIR Systems' AI-driven functionalities and cloud-based analytics and reporting help leak detection and gas identification in hazardous environments

Artificial intelligence (AI) has the potential to revolutionise the energy sector by automating processes, improving decision-making, and enhancing operational efficiency. FLIR Systems Trading Belgium offers a range of AI-enhanced solutions that can detect leaks in real time, optimise maintenance schedules, and reduce human error in hazardous locations.

Its advanced predictive maintenance solutions, such as the FLIR Si2x-Series Acoustic Imagers and the FLIR Gx-Series Optical Gas Imaging (OGI) cameras, play a crucial role in enhancing the energy sector's efficiency and safety while supporting net-zero and climate goals. These tools enable leak detection and precise gas identification in hazardous environments with the help of features like AI-driven functionalities and cloud-based analytics and reporting.

The new FLIR Si2x-Series Acoustic Imagers offer rapid, user-friendly gas leak detection, even in challenging conditions like wind and turbulence. Utilising machine learning for real-time, on-device results, the Si2x-Series helps reduce downtime and enhance safety by identifying leaks as small as 0.0032 L/min at 2.5 metres, up to 10 times faster than traditional methods.

For enterprise customers, it provides efficient digital solutions, including seamless data export, fleet management tools, automatic uploads, online storage, and API integration for real-time asset health monitoring and enhanced decision-making.

The FLIR ADGiLE solution utilises advanced digital features by offering continuous, autonomous optical gas imaging (OGI) for methane leak detection. Leveraging the uncooled FLIR GF77a Optical Gas Imager, ADGiLE integrates seamlessly with customers' digitisation platforms for environmental reporting and monitoring. Its autonomous operation and precise alarming capabilities ensure that operators in sectors like oil and gas can efficiently meet safety and environmental standards while preparing for evolving regulations, making it an ideal solution for real-time methane leak management.

By leveraging AI, energy companies can predict equipment failures, improve emissions control, and enhance safety protocols, ultimately reducing operational costs while supporting the transition to greener, more sustainable energy systems.

We are excited to showcase our cutting-edge technologies at ADIPEC, demonstrating their impact on reducing carbon footprints in energy production and their role in regulatory compliance with leak detection and repair (LDAR) programmes.

USING AI & DIGITALISATION TO DRIVE PERFORMANCE AND SUSTAINABILITY

Expro are excited to showcase iTONG in action at ADIPEC, which not only advances operational efficiencies, but contributes to a net zero future

As the energy industry advances toward net zero goals, digitalisation and artificial intelligence (AI) are playing pivotal roles in transforming operations. At Expro, we are at the forefront of this digital revolution, developing cutting-edge AI solutions that enhance operational efficiency, improve safety, and support the industry's shift toward sustainability. One of our flagship technologies, the iTONG™ system, is an excellent example of how digital innovation is driving performance improvements and reducing environmental impact.

AI & Digital Solutions Supporting Net Zero Goals

Our AI-driven solutions are designed to meet environmental targets while delivering superior performance. The iTONG™ system, for

> *Efficiency gains are crucial in energy services, and our digital tools are proving invaluable. The iTONG system saves operators nearly 50 hours of rig time and US$2 million annually per installation by enabling seamless tubular make-up and break-out operations with the push of a button.*
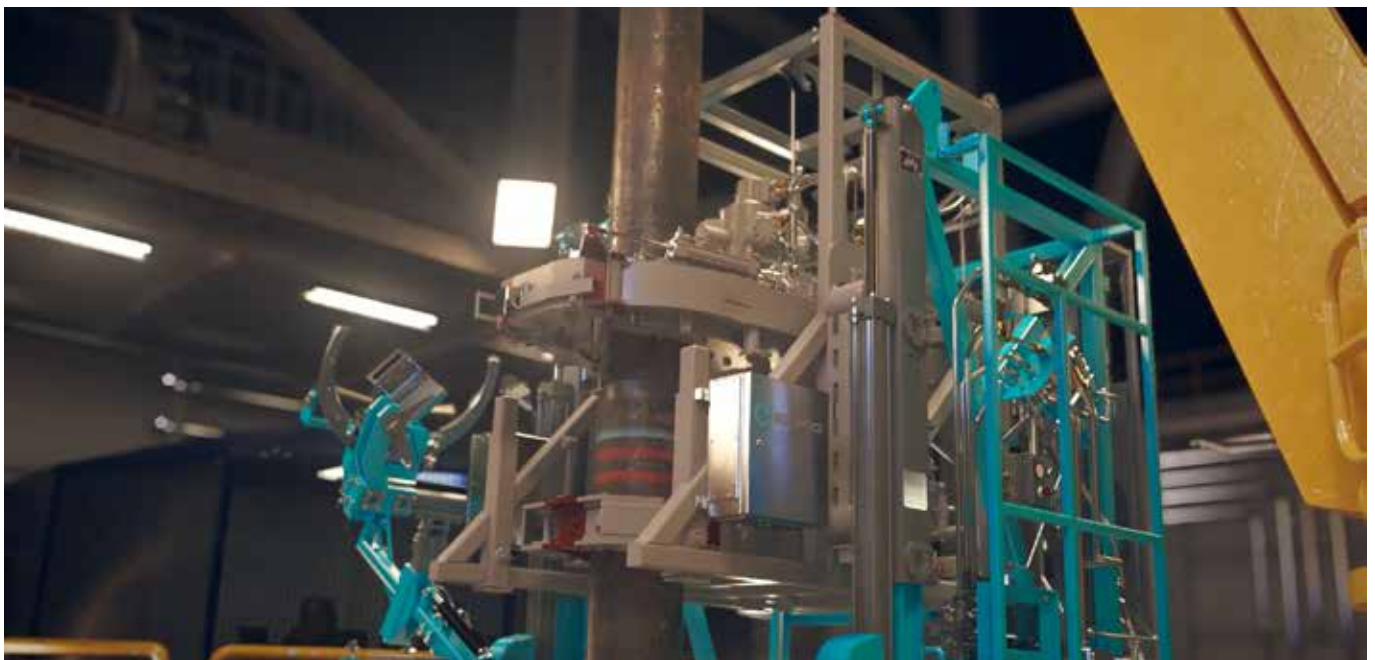
instance, reduces emissions by an estimated 146 tonnes of CO_2 annually, equivalent to 58 transatlantic flights. By automating tubular running services (TRS), traditionally labour-intensive, iTONG minimises personnel on the rig floor, decreasing emissions related to travel and accommodation. This innovation not only aligns with net zero goals but also enhances operational safety by reducing human intervention.

Improved Efficiency in Energy Services

Efficiency gains are crucial in energy services, and our digital tools are proving invaluable. The iTONG system saves operators nearly 50 hours of rig time and US$2 million annually per installation. It achieves this by enabling seamless tubular make-up and break-out operations with the push of a button, eliminating manual errors and ensuring optimal torque. The integration of AI into the iCAM® system further drives efficiencies, as it makes real-time data-driven decisions, ensuring the success of each tubular connection.

AI's Role in Energy Transformation

AI is transforming the energy sector by optimising processes, reducing risks, and enhancing data-driven decision making. From well integrity to emissions measurement, our AI solutions contribute to operational excellence while meeting sustainability targets. The future of energy lies in fully autonomous systems, and it's our long-term focus on automation (and more recently on digital and artificial intelligence), to reduce risk and increase the efficiency and safety of offshore operations that has helped us maintain market leadership for many decades.

ADIPEC's Role in Innovation

ADIPEC provides an ideal platform to showcase our innovations, allowing us to engage with industry leaders on how AI can create a more sustainable future. Our presence at ADIPEC underscores our commitment to leading the digital transformation of the energy sector.

KEEPING THE HEALTH OF OLD MACHINERY IN CHECK

FutureMain will be showcasing its flagship solution ExRBM, at ADPIEC 2024

FutureMain, a leader in AI-driven industrial machine management solutions, is excited to showcase its latest advanced system ExRBM. Offering real-time condition monitoring, risk assessment, and automatic fault diagnosis for ageing equipment, ExRBM ensures optimal management while maximising operational efficiency. FutureMain will also present the ExRBM Portable, a real-time diagnostic tool that measures equipment data onsite, allowing users to easily assess the condition of machinery across various industrial environments.

Ageing equipment is known to emit up to 20 times more carbon than well-maintained systems. For example, in dust collection systems, failure to replace filters on time due to wear and tear leads to the release of pollutants and carbon emissions. Additionally, as equipment ages, energy consumption increases. To address these challenges, FutureMain will introduce the ExRBM Portable, a new product designed to monitor ageing machinery in real-time, detect faults before they become critical, and ensure optimal maintenance by alerting users when to replace filters. This solution helps reduce carbon emissions from aging equipment, minimises accidents, and guarantees both

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operational efficiency and safety.

FutureMain CEO, Sun Hwi Lee, stated: "With ExRBM solutions, businesses can manage ageing equipment more efficiently. We recently completed a successful PoC (Proof of Concept) with Saudi Aramco, and through our participation in this year's ADIPEC, we hope to showcase our advanced AI technology to a wider audience."

DELIVERING TOP-TIER COMBUSTION EQUIPMENT

GBA SRL Engineering and Construction's evolving product range and technological capabilities are geared to meet the changing demands of the oil, gas, and petrochemical sectors

Founded in 1985, GBA SRL Engineering and Construction has established itself as a leading global supplier of combustion equipment to the oil, gas, and petrochemical industries. With decades of experience and a reputation for reliability, GBA offers a wide range of solutions designed to meet the industry's most demanding needs. The company specialises in the supply of Flare Packages, Thermal Oxidisers, Sulphur Recovery Units, and various tailor-made combustion equipment, all designed to reduce harmful emissions and comply with stringent environmental regulations.

Under the leadership of Lorenzo Magnavacca, Business & Innovation Manager, GBA has embraced innovation as a cornerstone of its operations. A key advancement has been the development of an AI-powered internal software system for sub-vendor management and quality control. This advanced tool enables GBA to monitor and evaluate supplier performance in real-time, providing vital insights into delivery schedules, material compliance, and quality standards. The software ensures that all sub-vendors consistently meet GBA's high expectations, minimising the risk of delays and supply chain disruptions.

Beyond managing vendors, GBA's AI-powered system plays a crucial role in improving internal quality control processes. By analysing data collected during production and testing, the software detects inconsistencies or potential defects early, helping to prevent errors before they impact the final product. This leads to increased efficiency and ensures that GBA maintains the highest quality standards in line with industry requirements.

In addition, the AI software also helps manage regulatory compliance and certifications, automating the tracking of certification renewals and changes in regulatory standards. This proactive approach ensures that GBA remains at the forefront of compliance with international environmental and safety regulations.

GBA is committed to continuously evolving its product range and technological capabilities to meet the changing demands of the oil, gas, and petrochemical sectors. With a strong focus on innovation, environmental responsibility, and operational excellence, GBA is well-positioned to support its clients in reaching their future goals while delivering top-tier combustion equipment.

FROM DAYS TO HOURS: INNOVATING EMISSIONS MANAGEMENT USING AI

GHGSat is transforming emissions management for the energy sector by integrating AI into its satellite technology

Climate change is a race against time, where every second counts. Winning this race requires more than just innovation — we need speed. At a time when timing and accuracy are critical, GHGSat is transforming emissions management for the energy sector by integrating AI into its satellite technology. By delivering actionable data within hours rather than days, GHGSat is helping the energy sector achieve its net zero targets faster and more efficiently than ever before.

In the past, tracking greenhouse gas emissions from space was a lengthy procedure that could take days to process data and address the issue at hand. However, that is now a thing of the past, thanks to AI solutions. GHGSat's advanced AI algorithms can automatically detect methane emission plumes from space, pinpointing emission sources down to the facility level. What once took days can now be accomplished in just a few hours, marking a paradigm shift in emissions management. This shift has not only accelerated delivery times but also increased the volume of data collected. These actionable insights enable operators to respond swiftly and manage emissions much earlier, thereby preventing them from worsening.
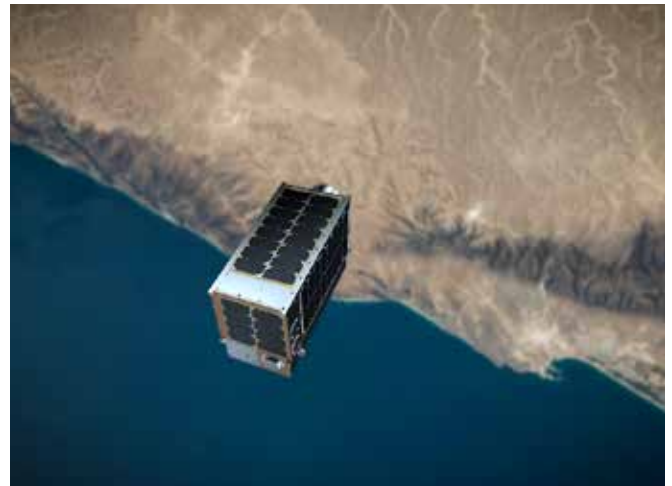
Since launching its first satellite in 2016, GHGSat has become a trusted partner to operators, providing historical emissions data and the ability to detect methane at the lowest proven threshold. In just the first quarter of 2024, GHGSat satellites helped prevent methane emissions equivalent to 730,000 tonnes of CO_2 — an impact comparable to removing over 50,000 gasoline-powered cars from the road for a year. By delivering emissions data at such rapid rates, companies can act immediately, improving operational efficiency and environmental outcomes.

GHGSat is expanding its satellite constellation, with nine more satellites expected by 2026, to collect more data and provide real-time site revisits. This growth means faster detection and mitigation of methane emissions, helping operators meet sustainability targets while staying in line with evolving regulations.

Events like ADIPEC create a platform to bring industry leaders together to discuss and adopt new technologies. For more information on emissions management, visit the GHGSat website or speak to them at Hall 12, Stand 12312.

DIGITAL REPORTING PLATFORMS ENABLE REAL-TIME ANALYSIS

GMCG's digital solutions are driving efficiency and sustainability in the energy sector

Global Maritime Consultants Group (GMCG) is leveraging digital technologies to enhance efficiency and sustainability in the energy sector. As a participant at ADIPEC 2024, GMCG will present its digital solutions that are helping clients navigate complex regulatory landscapes, reduce emissions, and optimise operations.

Showcasing Digital Innovation at ADIPEC 2024

GMCG is excited to showcase its latest digital innovations that streamline processes, enhance decision-making, and promote compliance. Using advanced digital tools, we help our clients achieve greater operational efficiency and reduce environmental impact. At ADIPEC 2024, we will highlight how our digital reporting platforms enable real-time data analysis, allowing energy companies to monitor compliance and optimise resource use effectively.

Improving Efficiency and Supporting Sustainability Goals

Our digital solutions are designed to help energy companies reduce their carbon footprints while maximising operational performance. For instance, GMCG's remote monitoring capabilities provide clients with continuous insights into their operations, helping them identify inefficiencies and implement corrective actions promptly. By digitising inspection and audit processes, we reduce manual workloads, minimise errors, and accelerate decision-making — all critical to achieving sustainability goals.

The Role of Digital Tools in Energy Transformation

We see tremendous potential in digital tools to transform the energy sector. Digitalisation enables companies to better manage resources, enhance safety, and ensure regulatory compliance. By harnessing data-driven strategies, we contribute to the global shift towards a more sustainable future.

Engaging with Industry Leaders at ADIPEC

ADIPEC 2024 is a vital platform for showcasing our digital innovations and engaging with industry peers. We believe that collaboration is key to driving forward-thinking solutions that support sustainable energy practices. GMCG looks forward to sharing our expertise and exploring new partnerships to advance the energy transition.

FULLY AUTOMATED, UNMANNED OIL AND GAS FIELDS

GOEasyFlow is revolutionising oil and gas automation with solutions that combine 5G, LoRaWAN, and AI-powered edge computing

GOEasyFlow is thrilled to participate once again in the ADIPEC 2024 Digitisation Zone. This year, we are unveiling our latest 5G solutions, which further enhance our robust LoRaWAN portfolio. These innovations are designed to drive the energy industry towards more efficient and sustainable operations by enabling fully automated, unmanned oil and gas fields.

Our wireless, battery-operated solutions significantly reduce the footprint of traditional infrastructure, minimising capital expenditure (CAPEX),

reducing commissioning time, and lowering carbon emissions. But we're not just about hardware. GOEasyFlow also provides stellar edge computing capabilities that can be regularly updated from a client's central AI server, ensuring optimal system performance. This powerful combination of 5G, LoRaWAN, and edge computing enables real-time data processing at the source, ensuring quicker and smarter decision-making.

GOEasyFlow also seamlessly integrates with live AI applications, delivering valuable operational data to enhance real-time monitoring and control. This data empowers AI-driven applications to optimise various aspects of the operation, from well management to facility automation, contributing to a truly intelligent and autonomous oil and gas field. Our solutions not only reduce the need for on-site human intervention but also help companies meet their sustainability goals by cutting logistics costs and carbon emissions associated with transportation and manual oversight.

At ADIPEC, we are showcasing how our AI-powered, fully automated solutions are already transforming the energy sector. By providing real-world examples of improved operational efficiency, cost savings, and environmental impact reduction, we aim to demonstrate the tangible benefits of integrating advanced wireless technologies, AI, and edge computing in the oil and gas industry.

GOEasyFlow is committed to shaping the future of energy through AI-driven innovations, and ADIPEC serves as the perfect platform to share our vision of a sustainable, efficient, and carbon-neutral energy future.

GORIZIANE I STAND: 1454 I HALL: 1 ❯❯

SIMPLIFY SHOP FLOOR AUTOMATION WITH MONITORING SOLUTIONS

Goriziane's AI-powered solutions for alignment of pipes enhances productivity, safety, and efficiency by significantly reducing the need for manual labour

Goriziane's Fabrication Innovation Technology (G-FIT) is a cutting-edge solution for the fabrication of jackets and platforms, particularly in pipe alignment processes. This automated system enhances productivity, safety, and efficiency by significantly reducing the need for manual labour. Designed to optimise the alignment of pipes — such as stubs and legs/piles — G-FIT enables precise and rapid operations, crucial for large-scale production.

At the core of G-FIT's innovation is its Smart Positioner, which offers six-axis movement for precise and repeatable alignment of stubs. The Smart Holder, equipped with four-axis movement, can easily adapt to different pipe diameters, providing flexible support for legs or cans. Additionally, the integration of a 3D laser system allows real-time measurement and analysis of pipe data. This automation ensures precise and repetitive pipe

positioning, eliminating errors and enhancing overall fabrication accuracy.

One of G-FIT's key advantages lies in its shop floor automation, which offers real-time monitoring and alignment checks. The system's user-friendly interface is designed for shop floor operators, making it easy to use and highly efficient. With enhanced quality control and integrated reporting features, G-FIT allows for continuous monitoring throughout the production process, aligning with specific customer requirements.

This innovative technology is particularly valuable for industries requiring mass production of jackets, where high-quality, repeatable processes are essential. G-FIT's automation and precision help manufacturers meet customer demands while maintaining stringent quality standards.

In summary, G-FIT leverages advanced AI and digitalisation tools to transform the jackets and monopiles fabrication process. By automating alignment and eliminating human error, it ensures consistent, high-quality results, making it an ideal solution for large-scale industrial applications.

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AI IS KEY FOR INNOVATION AND GROWTH

GTT introduces Ascenz Marorka, an AI-powered platform revolutionising energy in the maritime sector

AI and digitalisation are transforming all sectors. The energy and maritime industries are no exception. Ascenz Marorka's AI-powered platform provides innovative solutions that optimise vessels' economic and environmental performance, reduce emissions, and improve the crew awareness. By leveraging real-time data and predictive analytics, we support operational excellence at all levels, while ensuring compliance with the safety rules and the international environmental regulations. Our customers implement long-term sustainability strategies while enjoying immediate tangible financial results.

Our solutions have already demonstrated significant impact, reaching up to 15% energy savings with advanced voyage optimisation, for example. Among the customers we are proud to serve are ExxonMobil, Latsco, Navigator Gas, Gaslog, Technomar, Brunei Gas Carriers, JOVO, CMA CGM, and Clean Products Tankers Alliance. Depending on the type of ships and operations, we provide a wide range of solutions such as reporting automation, regulatory compliance, propulsion performance monitoring, weather routing, LNG cargo management,

electronic fuel monitoring, bunkering monitoring, machinery optimisation, trim optimisation, and TCE optimisation. Ultimately, our goal is to help customers improve their competitiveness with digital technology.

The energy sector has always been driven by safety requirements. Therefore, what is fascinating about AI in this sector, is the capacity to conduct multi-criteria and multi-objectives optimisation. While ensuring maximum safety during operations, AI finds ways to optimise the cost. After all, AI goes hand in hand with the human up-skilling. On one hand AI learns from human experience, and on the other, it augments the human capabilities. Subsequently, we talk about 'augmented workers.' We believe this is the future of work in general, and particularly in the energy and maritime sectors. AI holds the key for the next wave of productivity increase, innovation and growth.

ADIPEC provides a key platform for us to showcase our AI and digital solutions, bringing together industry leaders to explore the technologies driving a low-carbon future. Join us to learn more about how Ascenz Marorka is revolutionising energy with cutting-edge innovations.

SUSTAINABLE SOLUTIONS FOR THE OIL AND GAS INDUSTRY

GUANGZHOU DONGSU PETROLEUM D&E EQUIPMENT are leveraging AI to improve systems while helping the energy industry achieve its climate goals

Artificial Intelligence (AI) and digital solutions are revolutionising the energy industry, paving the way towards net zero emissions and climate goals. As a leading manufacturer of Blowout Preventer (BOP) control systems in China, we recognise the significant role that AI plays in enhancing operational efficiency and sustainability in the energy sector.

AI technologies are being deployed to optimise energy production from renewable sources like solar and wind, which now contribute approximately 30% of global electricity generation. By utilising machine learning and data analytics, energy companies can predict demand more accurately, manage resources efficiently, and reduce waste, thereby curbing greenhouse gas emissions. For instance, AI can detect leaks in pipelines, monitor flaring, and assess carbon footprints, leading to more sustainable practices across the industry.

Moreover, digital twins (virtual representations of physical assets) are becoming instrumental in the energy sector. These models allow for real-time monitoring and predictive maintenance of equipment, including BOP systems, ensuring that they operate at optimal efficiency while minimising environmental impact. By integrating AI into these control systems, we can enhance safety protocols and reduce the risk of operational failures, which is essential in the high-stakes environment of oil and gas extraction.

In addition to improving operational aspects, AI also supports the transition to a decentralised energy model. Technologies like blockchain enable peer-to-peer energy trading, enhancing the adoption of renewable resources and promoting energy independence. This shift not only empowers consumers but also encourages local energy production, aligning with net zero objectives.

As we advance our BOP control systems, embracing AI and digital solutions is crucial. Our commitment to innovation ensures that our products not only meet industry standards but also contribute to a sustainable energy future. By leveraging AI, we are not just improving our systems; we are playing a part in the global movement towards a greener planet. Together, with AI as a driving force, the energy industry can achieve its climate goals while ensuring reliable and efficient energy supply for generations to come.

BOOSTING ACCURACY AND SUSTAINABILITY IN LOGISTICS SECTOR

GWC's vision-picking technology offers an innovative digital solution for efficient, safe and sustainable warehouse operations

GWC, one of the fastest-growing companies in the Middle East and North Africa (MENA) region, is setting new benchmarks in the industry. It is the first company in Qatar to implement vision-picking technology, an innovative digital solution that is transforming logistics operations while supporting climate objectives.

Vision picking is a cutting-edge technology that harnesses computer vision systems, cameras, and augmented reality (AR) devices to streamline the picking process within warehouses. This revolutionary technology enhances both single and multi-order picking by providing staff with visual instructions that guide them in accurately and efficiently identifying and selecting items from warehouse locations.

The integration of vision-picking technology into GWC's operations has led to significant improvements in both efficiency and accuracy. By minimising human error, this technology boosts the precision of warehouse operations. Its real-time tracking capabilities also improve inventory management and visibility, allowing for more accurate stock control and reducing the risk of overstocking or understocking critical components.

The energy sector, in particular, reaps substantial benefits from these advancements. As the industry strives towards achieving net-zero emissions, logistical efficiency becomes increasingly crucial. Vision picking enables GWC to deliver energy services more swiftly and accurately, reducing delays and minimising the environmental impact associated with prolonged operations. The enhanced picking speed facilitated by this technology translates into faster order fulfilment, which is crucial for energy companies operating on tight schedules and high stakes.

Moreover, GWC's commitment to workplace safety is bolstered by the adoption of vision-picking technology. By automating significant portions of the picking process, the technology lessens the physical demands on workers, thereby reducing the risk of injury. This emphasis on safety, coupled with the technology's ability to integrate seamlessly with existing protocols, ensures a safer working environment for GWC's workforce.

GWC's adoption of vision-picking technology demonstrates its leadership in the logistics sector and its commitment to innovation. As the industry continues to evolve, GWC is well-positioned to tackle future challenges and set pioneering standards of excellence, particularly in the energy sector, where efficient and sustainable logistics are critical to achieving broader climate goals.

SHAPING A SUSTAINABLE FUTURE WITH INNOVATIVE PRODUCTS

HDMANN offers advanced AI and digital solutions, including state-of-the-art digital controllers, that optimise the production process

HDMANN, a provider of cable support systems and profile steel support systems, focuses on serving the offshore oil and gas development, mining, natural gas liquefaction, and other industries. We offer integrated bridge design and manufacturing services.

Our advanced artificial intelligence (AI) and digital solutions, including state-of-the-art digital controllers, optimise the production process. These controllers enhance energy usage and improve operational efficiency, directly supporting net-zero goals.

> *We believe that AI can revolutionise the energy sector by enabling real-time data analysis and smarter decision-making.*

Our digital controllers have resulted in a remarkable 25% increase in production efficiency by automating and fine-tuning processes in real-time. This not only reduces energy consumption but also minimises waste, leading to cost savings and a lower carbon footprint for our clients.

We believe that AI can revolutionise the energy sector by enabling real-time data analysis and smarter decision-making. By utilising AI-driven solutions like our digital controllers, companies can enhance production efficiency, integrate renewable energy sources more effectively, and proactively manage resources, all contributing to a more sustainable energy landscape.

ADIPEC is a crucial platform for driving discussions and collaborations on AI and digital innovations in the energy sector. The event brings together industry leaders from all over the world to share insights and best practices, fostering advancements that propel us towards a sustainable future and encouraging the adoption of technologies such as our digital controllers.

We will showcase these innovations at ADIPEC this year, highlighting their significant impact on sustainability.

A TRUSTED NAME IN BOLTING TECHNOLOGY

HYTORC offers a range of ground-breaking bolting solutions for the oil and gas industry

HYTORC is proud to unveil its LightningTM PUMP Series, a next generation bolting pump that combines speed, power, and intelligence, providing users with a smart and efficient solution for industrial bolting.

With its Smart Pump variant offering data collection, wireless connectivity, and automatic bolting operations, this series is built to enhance both safety and productivity.

Attendees at ADIPEC will get the opportunity to see live demonstrations of this groundbreaking pump, designed to reduce downtime and streamline operations across demanding oil and gas environments.

Key products transforming bolting in the oil and gas industry

Lithium Series II: A powerful cordless bolting system designed for maximum portability and ease of use. The Lithium Series II is perfect for oil and gas environments where fast, safe, and efficient bolting is critical.

HYTORC Washer Systems: Innovative fastening systems designed to eliminate external reaction points and associated hazards with added benefits of improved joint integrity, leading to safer, more reliable connections.

Connect App: This app delivers a fully digitalised bolting experience, providing real-time data management, job data capture, and enhanced control of bolting operations.

HYTORC Nut: A revolutionary three-piece mechanical tensioning nut delivers top-tier bolt tension accuracy and reliability, ensuring superior joint integrity and preventing thread damage.

MXT Plus: Known for its industry-leading durability and efficiency, this tool offers high torque output, specifically designed for the tough demands of oil and gas applications.

Stealth: A low-clearance hydraulic torque wrench engineered for tight spaces, providing fast, accurate bolting without compromising safety or performance.

HYTORC in the Middle East

For over 50 years, HYTORC has been at the forefront of industrial bolting innovation, providing oil and gas companies with tools and systems that improve productivity, increase safety, and minimise downtime. With dedicated regional hubs throughout the Middle East, HYTORC is well-positioned to support the unique challenges of the industry, offering tailored solutions, local expertise, and world-class service across the region.

At ADIPEC 2024, visitors can explore hands-on demonstrations of industry-leading products designed to solve the most complex bolting challenges in oil and gas.

JOURNEYING TOWARDS INDUSTRY 4.0

ILT Tecnologie is embracing digitalisation to enhance efficiency and innovation in the energy and aerospace sectors

For over 60 years, ILT Tecnologie has been manufacturing components for the hot gas parts of turbines used in the energy and aerospace markets. The specific application of these parts requires the use of nickel and cobalt-based superalloys such as Hastelloy® X, Inconel®, and Nimonic®. Throughout the decades, the company has maintained a strong commitment to innovation, culminating in the digitalisation of its production processes, which began in 2019.

One of the first steps in this process was the integration of production machinery into the company's network. Initially, a 5-axis CNC machine was connected, followed by a vertical warehouse for sheet metal management, allowing for real-time stock updates and workflow optimisation.

ILT then made further investments in plants and machinery compliant with Industry 4.0 standards, such as a laser machine, a parallel lathe, an extraction system, and a liquid penetrant inspection booth for the new testing area. These facilities and machines were interconnected to the company's network via cloud-based software. With the use of Internet of Things (IoT) devices and a unified interface, it is possible to monitor energy consumption and processing schedules in real time, enhancing productivity and ensuring simultaneous and constant control over all machines.

The digitalisation process also simplified the management of employees' working hours, eliminating the need for paper timecards. Using the Tdox app installed on tablets, along with the integration between the company's management system and Tdox, employees can record their working hours via barcodes or QR codes found on production documents. The data collected by the Tdox app is directly transferred to the management system, enabling real-time monitoring of work cycle progress.

Artificial intelligence (AI) represents the next goal for ILT Tecnologie with its application to machinery and management systems. Integrated into the company's network and production processes, AI will optimise machine performance through predictive analysis and preventive maintenance. This will improve operational efficiency and reduce downtime and maintenance costs. Additionally, AI will be able to analyse large amounts of data, automatically identify anomalies, and suggest improvements in real time.

In conclusion, the digitalisation journey undertaken by ILT Tecnologie is not just a step towards greater efficiency and innovation but also a strategic choice to successfully tackle the future challenges of the market.

DIGITAL TWINS: GROUNDWORK FOR AUTONOMOUS SYSTEMS

Hexagon's solutons enable real-time monitoring, predictive maintenance, and the optimisation of operational systems

Hexagon Asset Lifecycle Intelligence is at the forefront of leveraging artificial intelligence (AI) and digital solutions to revolutionise the industry and support global net-zero and climate goals. Hexagon has been a trusted partner in the energy sector for many years, helping to deliver over half of the world's oil and gas products more efficiently. Our solutions address critical challenges by driving operational improvements across industries, including optimising resource use and enhancing sustainability. Our commitment to sustainability is reflected in the innovative technologies we develop, which improve efficiency, reduce emissions, and promote cleaner energy practices.

In the Middle East, Hexagon has built a strong presence, collaborating with leading energy companies to optimise operations and reduce environmental impact. We offer tailored solutions to meet the unique needs of the region.

Hexagon Asset Lifecycle Intelligence has been instrumental in integrating AI and digital solutions to improve efficiency in energy services. One of our flagship initiatives is the deployment of a digital backbone, also referred to as a digital twin or Smart Digital Reality™, which creates a virtual replica of physical assets and integrates the majority of the asset's solutions. This digital twin enables real-time monitoring, predictive maintenance, and the optimisation of operational systems, resulting in significant cost savings and reduced asset downtime. We go beyond a simple physical replica to create a comprehensive digital solution.

For instance, our collaboration with leading EPCs on Advanced Work Packaging (AWP), Smart Materials, and Smart Completion has demonstrated remarkable results in various projects. By utilising AI-driven analytics and digital workflows, we have streamlined project production management (PPM) and automation in project material management, leading to reduced project timelines and decreased material wastage.

AI has the potential to transform the energy sector in several ways:

• **Predictive maintenance:** AI algorithms can analyse data from sensors and equipment to predict failures before they occur. This proactive approach minimises downtime and maintenance costs, ensuring continuous and efficient energy production.

• **Energy optimisation:** AI can optimise energy consumption by analysing usage patterns and adjusting operations accordingly, leading to significant energy savings and a reduced carbon footprint.

• **Renewable energy integration:** AI facilitates the integration of renewable energy sources into the grid by predicting energy generation from sources like solar and wind, ensuring a stable and reliable energy supply.

• **Smart grids:** AI-powered smart grids enhance the efficiency and reliability of energy distribution. They can dynamically balance supply and demand, detect faults, and optimise energy flow, reducing losses and improving overall grid performance.

At ADIPEC this year, Hexagon Asset Lifecycle Intelligence is showcasing solutions that drive sustainability and efficiency in the energy sector. The event facilitates knowledge exchange, networking, and partnerships, accelerating the adoption of AI and digital technologies. By participating in ADIPEC, Hexagon remains at the forefront of industry trends and contributes to shaping a sustainable energy future.

Hexagon's Asset Lifecycle Intelligence division is committed to leveraging AI and digital solutions to transform the energy industry and support net-zero and climate goals. Through initiatives such as smart digital reality, predictive maintenance, and smart grids, we drive efficiency, reduce emissions, and promote cleaner energy practices. Our collaboration with industry leaders and participation in events like ADIPEC further strengthens our commitment to a sustainable future.

By embracing AI and digital innovations, we are not only improving the efficiency of energy services but also paving the way for a greener, more sustainable world. Together, we can achieve our net-zero goals and create a brighter future for generations to come.

INNOVATIVE AI AND DIGITAL WAREHOUSING FOR SUPPLY CHAINS

Immensa will showcase its AI-enabled digitisation service at ADIPEC 2024, as part of its end-to-end digital manufacturing solution, aligning with the energy sector's global net zero climate goals

Through the company's proprietary digital warehousing platform, Immensa360, and its localised, on-demand additive manufacturing capabilities, Immensa optimises energy companies' spare parts supply chains and enables them to significantly reduce carbon emissions, warehousing costs, and supply chain inefficiencies. The first step of this digital transformation process is Immensa's AI-powered inventory assessment.

Transforming Spare Parts Supply Chains with AI and Digitisation
Immensa's AI-powered inventory assessment streamlines how energy companies manage spare parts. It can evaluate 500,000 parts in less than 24 hours and determine which parts can be digitised and produced on demand through advanced, additive manufacturing (AM). This AI-driven solution assesses the technical feasibility and commercial viability of digitising spare parts, enabling companies to transition to a more sustainable, on-demand supply chain.

Immensa then creates digital twins of the viable spare parts and stores them in a digital warehouse for on-demand production, eliminating long lead times, reducing storage costs, and cutting down emissions for both manufacturing and logistics. Studies have shown that adopting AM can lower carbon emissions by 12.39%, supporting the energy sector's net zero goals.

Immensa's innovative approach leverages AI and digital warehousing to localise production and reduce the environmental impact of traditional manufacturing, driving efficiency and sustainability across supply chains.

ADIPEC's Role in Sustainable Innovation
As one of the world's largest energy events, ADIPEC provides the ideal platform to push the industry's transformative AI and digital innovations forward. Immensa's participation underscores its commitment to the global climate goals by championing sustainable and innovative manufacturing solutions for the energy sector.

ASSISTING CLIENTS ON THEIR DIGITALISATION JOURNEY

INTECH Automation & Intelligence's digitalisation drive - practical applications of AI and digitalisation in the energy industry

INTECH has positioned itself as a premium integrator of choice for the world's largest oil and gas companies since the early 2000s, with extensive project management and brownfield upgrade expertise in industrial automation and control solutions. We utilised our 30-plus years of project delivery and problem-solving experience to develop solutions that can really help address the challenges that the energy industry faces today. Two of these solutions are the highlight of our AI and digitalisation spotlight for this issue.

EmpowerGPT – The AI Partner to Help Energy Companies Work Smarter
EmpowerGPT is an advanced AI application built by INTECH's dedicated Industrial Intelligence product division. This application utilises proprietary AI models trained on enterprise data and NLP algorithms to provide a secure and organisation-specific AI chat assistant. This assistant combines enterprise data and world knowledge for real-time insights and accurate answers to everyday queries. Our application prioritises safety and accuracy of enterprise data, using GDPR-compliant data protection to protect both customers' enterprise data and their generated output.

Our current deployments of EmpowerGPT have helped customers speed up their decision-making and dwell times significantly, resulting in noticeable boosts in productivity across all functions that used our application.

Smart-Industry and Digitalisation Consulting
The Smart-Industry Readiness Index (SIRI) is a popular framework for industrial digitalisation that helps industrial manufacturers assess their digital maturity and make progress in their digital transformation journey. More recently, the Kingdom of Saudi Arabia has adopted this index for the digitalisation of their industries under the Future Factories program. As experts in industrial control and automation, INTECH's core expertise has been in OT systems and processes that are critical to successful industrial digital transformation. To help our clients on their digitalisation journey, INTECH's OT have experts trained to become consultants for SIRI and have helped INTECH become a Future-Factories-registered consultant for PLCs, SCADA, and cybersecure digitalisation.

CREATING VALUE FOR CUSTOMERS AND WEALTH FOR SOCIETY

Jiangsu Golden Gate Energy & Equipment Co. is committed to providing users with diversified and advanced energy equipment solutions

Over the past 30 years, Jiangsu Golden Gate Energy & Equipment Co., has provided high-quality services and complete sets of equipment to major petrochemical enterprises, as well as onshore and offshore oil fields in China and around the world, which has gained recognition and praise from all users.

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The corporation is a designated production enterprise of three major companies, Sinopec, PetroChina, and CNOOC

For over 30 years, the company has focused on research and development, design and manufacturing, installation guidance, and commissioning of chemical equipment for onshore and offshore oilfield petrochemical enterprises, ensuring that each project can meet the technical indicators stipulated in the contract. The corporation is a designated production enterprise of three major companies, Sinopec, PetroChina, and CNOOC. Its main products include three-phase separator skid, electric desalter and dehydrator package, water jacket heater, phase change heater, metering skid, complete set of equipment for oily wastewater treatment, natural gas gathering and purification equipment, heavy fuel oil electrostatic processing line, various skid mounted equipment, heat exchangers, columns, and other pressure vessels. It is widely used in the three major oil companies in China, as well as in countries such as the Middle East, Africa, and South America.

Right now, solutions are developing rapidly, and humanity is constantly advancing. Standing at a higher starting point, the future is still a long and arduous task. As we move forward, Jiangsu Golden Gate Energy & Equipment Co., will uphold the corporate spirit of 'integrity, unity, innovation, and dedication,' remember the corporate mission of 'creating value for customers and wealth for society,' persevere, forge ahead, and strive for the revitalisation of national industry and the creation of first-class enterprises.

DIGITALISATION FOR SUSTAINABLE DEVELOPMENT

Jana Marine Services LLC, a marine and offshore services company, offers smart technologies based on data-driven models, data analytics, and prognostics

Sustainable development challenges us to meet the needs of the present without compromising the future. At Jana Marine Services LLC (JMS), a marine and offshore services company based in Al Khobar, Saudi Arabia, sustainability is at the core of our business ethos. To lead the way, JMS has embraced digitalisation and SMART technologies, making history with the world's first ABS SMART-compliant self-propelled jack-up barges, JANA 503 and JANA 504, introduced into Aramco service in 2024.

Our adoption of SMART technologies, based on data-driven models, data analytics, and prognostics, provides us with enhanced tools for safety and sustainability. This approach minimises unplanned downtimes and reduces environmental impact by delivering real-time insights into the health of machinery and structures. By monitoring conditions and analysing historical data, we empower AI models to make increasingly accurate predictions.


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By monitoring conditions and analysing historical data, we empower AI models to make increasingly accurate predictions.

Through data-driven digitalisation, JMS achieves real-time, micro-level monitoring of vessel systems and components. This includes fuel consumption tracking for each diesel generator, optimising operational efficiency. For instance, we now map power requirements for our jack-up barges with precision, eliminating the need for manual oversight. This data enables us to refine day-to-day operations and continuously improve through each feedback cycle.

Digitalisation also enhances visualisation through digital twins and mixed-reality technology, streamlining maintenance processes and optimising operational expenses (OPEX). As a result, environmental sustainability naturally follows business sustainability. The robust data we collect allows for more precise specifications for new builds and acquisitions, ensuring the smooth integration of energy transition components. By mapping vessel system performance, JMS is progressing towards zero-emission targets — driven by reliable data gathered from Jana-owned SMART-compliant vessels

UNLOCKING EFFICIENCY WITHOUT INTERVENTION
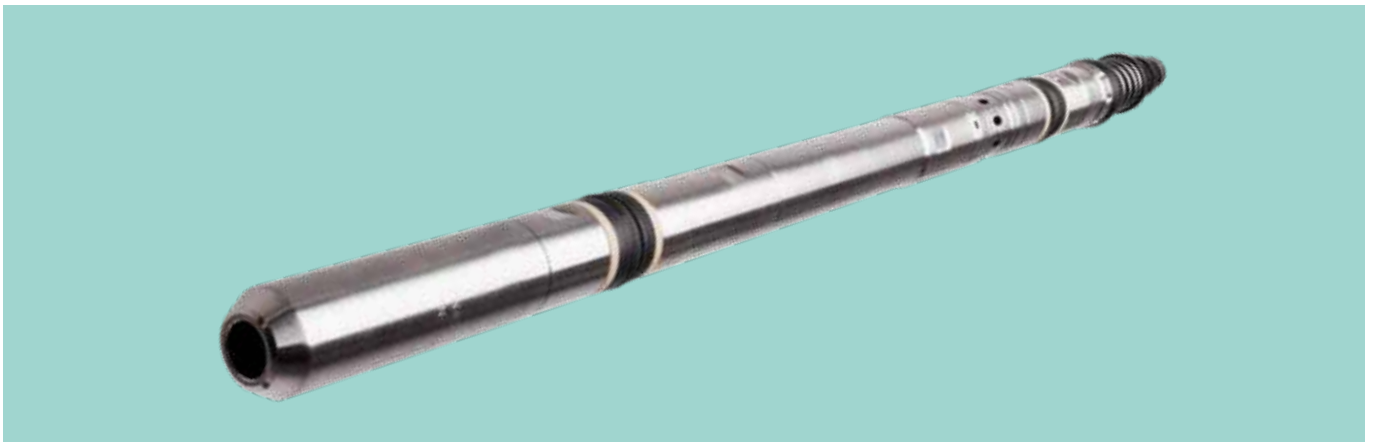
Interwell's Adaptive Gas Lift System allows continuous online optimisation throughout the life of the field, maximising production and reducing project payback time

The Adaptive Gas Lift System (AGLS) is a retrievable digital gas lift system that primarily utilises field-proven technology. AGLS is the world's first electric gas lift system qualified to internationally recognised standards. It is based on industry-leading Interwell Gas-Lift technology and Emerson's Roxar Integrated Downhole Network and sensor technology.

Challenge

Conventional gas lift systems are designed to optimise the initial production phase when tubing pressure is high. However, as production conditions change over time, adjustments to the orifice size and injection depth are required to maintain efficiency. Closing each injection pressure-operated (IPO) valve requires a drop in casing pressure, which can limit the injection depth and potentially reduce additional production. Manipulating casing pressure and dealing with IPO temperature uncertainties often leads to multi-pointing, resulting in ineffective gas lift and loss of production. Well interventions are expensive and can be particularly challenging if the well has flow assurance issues. These issues can complicate valve retrieval, leading to additional downtime and increased operating expenses (OPEX).

Solution

The Adaptive Gas Lift System offers the ability to adjust port size and change the injection depth to deliver optimal injection rates as conditions change. This adaptability addresses future uncertainties in modelled reservoir conditions. Deeper injection is possible as the valves can be closed without reducing casing pressure. Continuous online optimisation throughout the life of the field maximises production and reduces project payback time. Furthermore, AGLS reduces the instability associated with conventional gas lift systems by optimising the injection rate and port size. AGLS is compatible with e-field and i-field technologies, offering the potential for autonomous production optimisation.

System specifications

Designed and qualified to: API 19G1 (V1), 19G2 (V0) and AWES 3362-36

- Set and retrieved using conventional wireline methods

- Run on a single TEC line, up to 32 nodes on an Emerson Electric network

- The Side Pocket Mandrels accept both electric and conventional Gas Lift Valves (1.5")

- 4.5" and 5.5" mandrels in 9-5/8" casing (other sizes can be made available upon request)

- Temperature range: 4-150 C°

- Valve working pressure: 10,000 psi, 15,000 psi absolute

- Adjustable variable choke allows fractional port size variation from 10/64" - 32/64"

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TRANSFORMING THE ENERGY INDUSTRY WITH AI-BASED TECHNOLOGY

Kairos looks forward to showcasing their unique Emissions Radar at ADIPEC 2024

Kairos improves emissions, production, and safety of oil, gas, and petrochemical assets. Our unique AI-based technology provides real-time forward-looking advice in the control room and enables a culture change in operation where emissions and energy optimisation can be prioritised, along with safety and production. We will be showcasing our Emissions Radar, which optimises power consumption and emissions from an asset, something that we believe will be exceedingly important in the energy industry.

Kairos captures the knowledge from conventional oil and gas operation and brings it forward into the new energy systems. We offer solutions for engineering, monitoring, and operator decision support based on qualitative explainable AI technology, which accelerates the discovery of undesirable phenomena in production processes. The benefits are increasing production efficiency by 3-7%, reducing energy consumption, reducing emissions, and reducing maintenance cost by more than 10%.

We believe that AI can transform the way we work in the energy industry. We can train AI-based on previous incidents and teach it to recognise the steps that led to them. This will make it easier for operators to run their assets safely and with the least possible impact on emissions.

As one of the largest energy conferences in the world, ADIPEC is important in bringing people together to discuss and come up with new solutions and innovations. The connections we create during ADIPEC will enable us to work with new companies and allows us to create better solutions for a more sustainable future.

> *Kairos captures the knowledge from conventional oil and gas operation and brings it forward into the new energy systems.*

SMART MANUFACTURING FOR A SUSTAINABLE TOMORROW

Kwik Flex Industries has integrated AI and digital solutions into the production of hoses, hose couplings, and instrumentation fittings

At Kwik Flex Industries, we're driving a new era of smart manufacturing in the energy sector. Our cutting-edge integration of artificial intelligence (AI) and digital technologies into the production of hoses, hose couplings, and instrumentation fittings is not just revolutionising our operations — it's propelling us towards a more sustainable future.

As the world accelerates its transition to cleaner energy, Kwik Flex is leading the way by embedding AI-driven innovation into every stage of our production process. From optimising designs to real-time monitoring, our systems are making manufacturing faster, more precise, and more sustainable than ever before. Thanks to AI-powered predictive maintenance, we've cut downtime by 20%, boosting efficiency and significantly slashing energy use.

We believe AI is the engine driving the future of sustainable energy. It's reshaping manufacturing, enabling smarter, cleaner production cycles, and pushing the entire industry towards a greener horizon.

We're excited to showcase these breakthroughs at ADIPEC 2024, where we'll unveil our state-of-the-art products that are manufactured while being environmentally cautious. These platforms automate quality checks, streamline decision-making with data insights, and reduce carbon emissions throughout our supply chain. With AI optimising our resource allocation, we're using materials more efficiently while minimising waste, making a tangible impact on the planet.

We believe AI is the engine driving the future of sustainable energy. It's reshaping manufacturing, enabling smarter, cleaner production cycles, and pushing the entire industry towards a greener horizon. Kwik Flex is proud to be part of this global shift, continually innovating to confront the pressing challenges of climate change.

Join us at ADIPEC 2024 to explore how AI and digitalisation are transforming the energy landscape and how together, we can power a sustainable tomorrow.

SEAMLESS TECH SOLUTIONS FOR THE VALVE INDUSTRY

The **LESER's** Digital ID is a durable, corrosion-resistant stainless-steel tag that grants easy access to data for new and existing valves

As a globally responsible pressure safety relief valve brand, we at LESER strive towards greater efficiency and sustainability year on year. In the process, going paperless has been a great leap. LESER perceives digitisation as a great means of environmental sustainability, cost efficiency, data security and ease of accessibility, not to mention improved workflow and collaboration with our partners and end users.

The LESER Digital ID provides access to the digital information of a safety valve, quickly and directly on the valve. The durable, corrosion-resistant stainless-steel tag, featuring a laser-etched QR code, grants access to all relevant digital data for the LESER Safety Valve.

The LESER Digital ID provides access to the digital information of a safety valve, quickly and directly on the valve.

LESER Digital ID advantages:
- Fast and direct access to all relevant information directly on the valve
- Access to valve data and documentation at any time and any place
- Easy digital capture of the information

To make it even more exciting, the Digital ID is not only available for new safety valves, but also for already installed safety valves. Order the LESER Digital ID, scan it, and input the details of the LESER safety valve you want to connect. Once the Digital ID is securely attached to the valve, all relevant information becomes easily accessible directly on the valve. Going paperless at LESER is as simple as that.

PRECISE PLANNING PROVES INVALUABLE

Mammoet's pioneering 3D engineering platform Move3D, enables stakeholders to visualise every aspect of their project

Mammoet is at the forefront of digital innovation in the heavy lifting and transport industry, leveraging advanced tools to enhance project efficiency, precision and safety. One such tool is Move3D, a pioneering 3D engineering platform that is transforming how complex lifting and transportation projects are planned and executed in the energy sector.
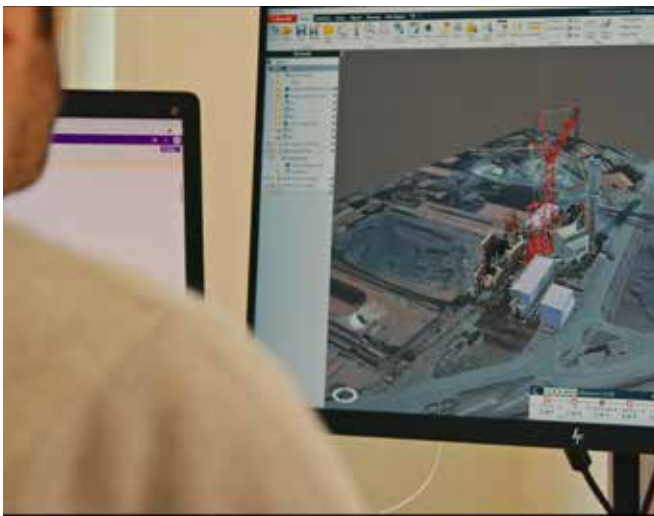
Move3D enables stakeholders to visualise every aspect of projects with exceptional clarity. By creating highly detailed 3D models, the system allows engineers to plan critical lifts, transports, and site operations long before they commence. This digital planning capability significantly reduces risks associated with unforeseen challenges, such as limited space or access constraints, helping project teams optimise their operations well in advance.

Safety is a key priority in the construction industry, and Move3D plays a crucial role in elevating safety standards onsite. The system enables project teams to visualise and assess lifting and transportation challenges, identifying potential hazards early in the process. With these insights, teams can address issues before they become critical, helping to prevent costly delays and ensuring all safety measures are well understood.

Move3D also allows stakeholders to explore projects from multiple viewpoints, ensuring that all aspects of the lift or transport are accurately planned. For example, operators can view the lift from different angles, allowing them to better prepare for tight or restricted spaces and plan accordingly to avoid complications during construction, turnaround and maintenance projects.

This system has been used successfully on hundreds of projects, including major energy installations where the precision and foresight offered by Move3D were key to maintaining project timelines.

This tool has already been applied successfully to several major projects, providing teams with greater foresight, reducing uncertainty, and improving overall safety. Move3D's ability to deliver precise planning has proven invaluable for staying on schedule and ensuring operations are executed smoothly, particularly in high-stakes energy installations, while safeguarding both personnel and assets.

SOOTHGPT AND THE FUTURE OF DATA-DRIVEN ENERGY SOLUTIONS

Mazrui Energy Services is helping companies unlock the power of data to drive a greener energy future

The energy industry is on the cusp of a significant transformation driven by digitalisation solutions, ushering in the next wave of innovation. As the sector faces mounting pressure to meet net-zero and climate goals, leveraging both structured and unstructured data is becoming critical. This data is key to optimising processes, reducing emissions, and achieving efficiencies previously unattainable. However, the challenge lies in processing and analysing the sheer volume and complexity of this data.

Generative AI models, like SoothGPT, offer immense potential for revolutionising the energy sector. These models can process vast amounts of structured and unstructured data, extracting valuable insights that drive decision-making and enhance efficiency. By analysing historical data, market trends, and operational performance, SoothGPT identifies optimisation opportunities, predicts future energy demand, and enhances grid operations.

Moreover, generative AI can elevate the customer experience in the energy sector. Utilising natural language processing capabilities, SoothGPT can provide personalised recommendations, answer customer inquiries, and assist with energy management tasks. This can help build stronger relationships with customers and increase satisfaction.

Digital innovation, powered by generative AI, is set to play a pivotal role in addressing the challenges and opportunities facing the energy industry. By harnessing the power of SoothGPT, energy companies can enhance efficiency, reduce costs, and contribute to a more sustainable future. As the world transitions towards a low-carbon economy, the benefits of generative AI in the energy sector are just beginning to be realised.

Soothsayer Mazrui AI, a joint venture between Mazrui Energy Services and Soothsayer Analytics, is a leading AI consulting firm specialising in building end-to-end, bespoke AI solutions. Our expertise spans AI strategy, implementation, and scaling, delivering transformative outcomes for companies globally. Our innovative approaches drive efficiency, optimise outcomes, and ensure data-driven success.

SUPPORTING NET ZERO GOALS OF THE ENERGY INDUSTRY

LabVantage's Analytics harnesses the power of AI and machine learning to provide real-time, actionable insights to companies

At LabVantage, we are driving innovation in the energy sector by offering cutting-edge artificial intelligence (AI)-powered digital solutions designed to support the industry's transformation and sustainability goals. Our flagship product, LabVantage Analytics, harnesses the power of AI and machine learning to provide real-time, actionable insights that help energy companies optimise their operations, reduce waste, and align with global net-zero targets.

The energy sector is under increasing pressure to reduce its environmental footprint and improve efficiencies across the value chain, from exploration and production to distribution. LabVantage Analytics plays a crucial role in this effort by collecting, analysing, and interpreting large volumes of laboratory and operational data, allowing energy companies to identify inefficiencies, optimise resource usage, and make more sustainable decisions. By improving process optimisation and resource management, LabVantage Analytics empowers companies to lower emissions, minimise waste, and comply with stringent environmental regulations—all essential for achieving net zero goals.

LabVantage Analytics is already making a significant impact in the energy sector, helping companies achieve improved efficiency and sustainability through AI-powered insights. One example involves a major oil refinery that implemented our solution to streamline its quality control processes. By automating data collection and analysis, the company was able to reduce unplanned downtime by 25% through predictive maintenance. LabVantage Analytics helped identify equipment malfunctions before they escalated, preventing costly production delays and reducing overall operational costs.

> *By improving process optimisation and resource management, LabVantage Analytics empowers companies to lower emissions, minimise waste, and comply with stringent environmental regulations —all essential for achieving net zero goals.*

In another case, a renewable energy company specialising in solar power used LabVantage Analytics to enhance its research and development efforts. The company needed to accelerate the testing of materials used in solar panels and relied on our AI-driven platform to automate and optimise the data analysis process. As a result, the company was able to reduce the R&D cycle by 20%, bringing its latest solar technology to the market faster. Additionally, the company saw a 15% reduction in material waste, contributing to both sustainability and cost-saving goals.

Through these examples, LabVantage Analytics demonstrates its ability to enhance decision-making, increase operational efficiency, and support energy companies in their transition to more sustainable practices.

PIPELINE DAMAGE PREVENTION 2.0

LiveEO is revolutionising risk management with artificial intelligence and satellite technology

At ADIPEC 2024, we are excited to showcase a next-generation solution designed to proactively prevent pipeline damage by mitigating third-party risks. This cutting-edge technology integrates satellite imagery with advanced artificial intelligence (AI), providing operators with actionable insights in near real-time. Unauthorised activities, encroachments, or environmental changes near oil and gas pipelines are detected early, enabling a swift response and reducing costly operational disruptions.

Enhancing Efficiency in Pipeline Monitoring
Our solution has already demonstrated its ability to drive significant operational gains in the sector. A leading Spanish energy operator with a vast pipeline network adopted our solution to address the inefficiencies of conventional methods like helicopter inspections, which were prone to false alarms and delayed threat detection.

Results from the implementation were compelling: 73% of pipeline threats that were previously missed by traditional methods were successfully identified by our solution. Additionally, the percentage of relevant predictions increased by 80% after just seven monitoring cycles, with expectations of improving it further. Moreover, by reducing the number of required software tools from four to three, the new system minimised manual operations, leading to a four-hour reduction in weekly workload and significantly enhancing operational efficiency.

AI's Impact on Energy Transformation
AI is playing a pivotal role in reshaping the energy sector. Our solution goes beyond detecting risks; it offers predictive insights that shift pipeline monitoring from a reactive to a preventive model. By continuously analysing satellite data, our AI identifies emerging threats early,

> *Our solution goes beyond detecting risks; it offers predictive insights that shift pipeline monitoring from a reactive to a preventive model. This data-driven approach not only improves safety but also supports climate goals by minimising unnecessary interventions and environmental damage.*

allowing operators to take preventative measures that avoid leaks or environmental hazards. This data-driven approach not only improves safety but also supports climate goals by minimising unnecessary interventions and environmental damage.

ADIPEC: A Catalyst for Innovation
As one of the world's leading energy events, ADIPEC serves as a crucial platform for advancing digital solutions that contribute to a sustainable energy future. This year, we are proud to demonstrate how our AI and satellite-powered solution is driving innovation in pipeline monitoring. By enabling operators to manage risks more effectively and reduce their environmental footprint, we're supporting the industry's transition to more sustainable practices.

SOLUTIONS THAT ALLOW MORE TIME AT SEA AND LESS EMISSIONS

MER Marine Technologies to showcase the GeoSwath 4 AI data processing solution at ADIPEC

In addition to well-known applications such as digital twins, there are several more niche workstreams that AI can improve. These include bathymetric surveying, which is essential for ensuring safe subsea engineering and offshore service vessel navigation.

Bathymetry is used in diverse tasks such as assessing water depth to ensure the accuracy of marine charts in hazardous, constantly changing environments. Bathymetric surveying can be expensive and time consuming. It also has its own carbon footprint caused by emissions from survey vessels transiting to and from shore and using conducting survey campaigns that may last for weeks or even months.
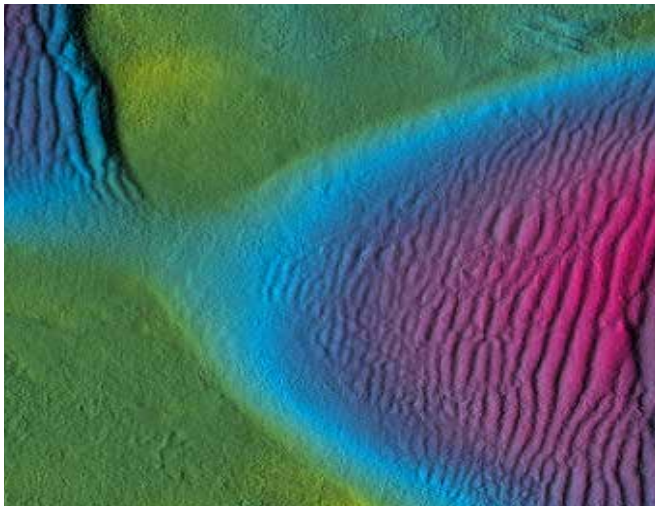
Any gains from improving vessel efficiency and speeding up the survey workflow are positive for maintenance budgets, and the environment. Within this context, MER Marine Technologies partner GeoAcoustics, a bathymetric sonar and sub-bottom profiler manufacturer from the UK, is helping to save time and reduce fuel use during surveys by adding AI to its GeoSwath 4 bathymetric sonar.

The sonar features unique onboard AI processing that automates the existing software by removing surplus and undesired data autonomously; during acquisition, it logs clean data, without any user intervention, enabling better operational agility and decision support.

Because the processing happens in real-time inside the GeoSwath 4 deck unit, surveyors onboard the vessel can see what is happening in the moment, giving them the ability to make dynamic mission adjustments accordingly. This negates the need to return to the site from shore for a second survey, should it be found that the data is not of high enough quality during post-processing.

The goal is to ensure that marine survey contractors can make the most of their time at sea, which results in their ability to produce high quality data using less fuel and producing less carbon emissions. Added value comes from the fact that the acquired data is quality controlled by the time the vessel returns to shore, also saving time and money in post-processing.

SUSTAINABLE, SMARTER TUGBOAT TECHNOLOGIES

Med Marine meets the growing demand for eco-friendly maritime technology with VoltRA's tugboat innovation

Step into the future of marine innovation with VoltRA, Med Marine's pioneering 100% electric and hybrid tugboats. As the maritime industry shifts toward sustainability, Med Marine leads by embracing digitalisation, furthering its commitment to reducing carbon emissions and enhancing operational efficiency.

VoltRA is a groundbreaking solution, designed to meet the growing demand for eco-friendly maritime technology. These advanced tugboats, ranging from 21 to 30 metres in length, offer battery capacities between 2900 and 6780 kWh, enabling powerful and efficient performance with zero emissions. Bollard pull capabilities from 50 to 90 tonnes make VoltRA versatile enough to handle various operational needs. VoltRA not only cuts down carbon emissions but also significantly lowers operational costs for operators by offering an energy-efficient alternative to traditional tugboats.

Over the past five years, Med Marine has successfully delivered 13 tugboats to the UAE, cementing its reputation as a trusted partner in the region. With the launch of VoltRA, Med Marine is now taking the lead in digitalising the maritime industry.

At the core of VoltRA's design is digitalisation. Med Marine has integrated advanced digital systems that continuously monitor and optimise battery usage in real time. These systems ensure that energy is used efficiently, maximising battery performance while minimising waste. Continuous data collection allows operators to track energy consumption, leading to longer battery life and reduced costs.

Digitalisation also improves maintenance efficiency, reducing the need for unplanned repairs. With diagnostic systems in place, operators can predict and address maintenance needs before they disrupt operations. This minimises downtime, cuts repair costs, and keeps VoltRA reliable and efficient throughout its lifecycle.

Med Marine's commitment to a sustainable, low-carbon future goes beyond delivering environmentally friendly vessels. By incorporating digitalisation into every aspect of its operations, Med Marine is transforming the maritime industry and contributing to global net nero goals.

VoltRA reflects Med Marine's dedication to digital innovation and environmental responsibility. The future of maritime technology is cleaner, smarter, and more efficient than ever.

NOVELTECH I STAND: **15186** I HALL: **15**

TRANSFORMING THE ENERGY INDUSTRY WITH AI

Noveltech Surveys' INOV platform allows companies to embrace the digital transformation journey with cutting-edge services and solutions

Noveltech Surveys offers businesses and industries the chance to revolutionise operations by leveraging advanced technologies to boost productivity, decision-making, and innovation. A key element of this transformation is the integration of Cloud Point Data and Digital Twins to simulate, monitor, and optimise real-world assets and processes in a virtual environment.

We explain here these concepts and how they can be incorporated into a successful digitalisation strategy. Embrace this digital transformation journey and unlock the full potential of your operations by leveraging Cloud Point Data and Digital Twins.

Cloud Point Data: Cloud Point Data refers to a collection of data points representing the external surface of an object in three-dimensional space. This data is typically gathered through 3D scanning technologies like LiDAR (Light Detection and Ranging) or photogrammetry, creating an accurate digital model of the object or environment.

Digital Twin: A Digital Twin is a virtual replica of a physical asset, system, or process, using real-time data to simulate its behaviour. It mirrors the performance and conditions of its physical counterpart, enabling analysis, monitoring, and predictive decision-making.

Noveltech specialises in precision laser scanning, intelligent 3D modelling, and "what-if" Digital Twin simulation for predictive analytics. We are transforming the energy industry with AI and digital technologies that support net-zero targets. One of our key innovations, the INOV platform, enhances asset management and operational efficiency by providing virtual tours of assets, reducing the need for site visits and lowering carbon emissions. INOV also offers automatic tag extraction and document linkage, allowing teams to collaborate remotely.

Cloud Point Data and Digital Twins: A Powerful Combination

The 3D precision of Cloud Point Data enhances a digital twin's ability to replicate physical assets, enabling detailed modelling, real-time monitoring, and predictive maintenance. Integrating these technologies improves accuracy, operational efficiency, and decision-making while reducing costs and environmental impact.

These solutions have been successfully implemented across various energy projects, reducing the need for physical inspections, cutting project costs by 20%, and increasing planning accuracy by 30%.

NAVARINO I STAND: **15187** I HALL: **15**

PRESERVING AND PROTECTING VITAL AREAS OF OUR PLANET

Navarino have pledged to plant 50 trees for every Starlink sold

Navarino is proud to announce our new Tree Hub Initiative which was introduced in the summer of 2024. The company has teamed up with Eden People+Planet to run the scheme, which will see Navarino plant 50 trees for every Starlink sold. The trees will be planted in a dedicated reservation in Honduras across a 96,500-hectare landscape restoration initiative, which is designed to protect water resources, prevent forest fires, restore landscape connectivity, and to strengthen climate resilience.

> *By choosing Navarino's Starlink, you're not just investing in reliable connectivity, you're also playing a vital role in environmental sustainability initiatives. We hope our partners will help us reach our initial target of having 135,000 trees planted.*

The reservation is comprised of a rich diversity of forest types, such as highland cloud forests, pine-oak, and broadleaf deciduous forests, and it integrates five protected areas, their buffer zones, and the biological corridors between them. By working across these different areas, the project directly secures water resources for over 1 million people, enhances biodiversity habitat, and develops sustainable livelihood opportunities for local communities.

This initiative is funded by Navarino's Starlink-related revenue and does not increase the end-customer price of Starlink terminals or their monthly fees.

Tassos Barbas, Navarino's CSR Manager said: "We are fortunate enough to be in the position to contribute to this important project, which will help preserve and protect vital areas of our planet. By choosing Navarino's Starlink, you're not just investing in reliable connectivity, you're also playing a vital role in environmental sustainability initiatives. We hope that many of our partners will find this initiative worthwhile and help us reach our initial target of having 135,000 trees planted."

MASDAR CITY I STAND: CN10 I HALL:CONCOURSE ❯❯

BUILDING A SUSTAINABLE FUTURE SUPPORTED BY TECHNOLOGY

Pioneering clean technology and AI, Masdar City demonstrates the power of digital transformation in decarbonising urban infrastructure

Climate change is an undeniable reality, and the need for urgent decarbonisation is urgent. Globally, buildings contribute 39% of energy-related carbon emissions: 28% from operations and 11% from materials and construction. Business leaders are under increasing pressure to decarbonise their models and infrastructure. In this context, digitalisation has emerged as a key tool to mitigate climate change and promote more sustainable energy use.

Through digital transformation, Masdar City is accelerating decarbonisation. Last November, it completed NZ1, the Middle East's first net-zero-energy commercial building, with more to follow, including the Masdar City HQ, future home to Abu Dhabi's Department of Energy, and other prestigious public, private, and non-government organisations.

Over the last 16 years, Masdar City has transformed from a clean-tech hub to a comprehensive innovation ecosystem. Key tenants, such as the International Renewable Energy Agency (IRENA), Department of Energy (DoE), Siemens Energy, researchers from institutions like the

Masdar City is committed to innovation and digital transformation, positioning itself as a hub for clean technology, artificial intelligence, and autonomous transportation. As part of these efforts, Masdar City is rolling out real-time energy, water, and waste monitoring across its buildings. Data will feed into a Command and Control Centre, offering insights into building performance and helping to optimise sustainability.

AI models will predict energy consumption patterns based on variables such as time of day, weather, and occupancy, among others. These models detect deviations and optimise usage in real-time, making AI the central "brain" of building operations.

Mohamed Bin Zayed University of Artificial Intelligence or the Technology Innovation Institute, focus on the benefits of digitalisation.

The UAE's commitment to renewable energy is exemplified by Masdar City's pioneering efforts. Today, the UAE hosts some of the world's largest solar energy plants, including the Al Dhafra Solar PV Project. The country also has bold plans for nuclear energy, with the Barakah Nuclear Plant set to meet 25% of its electricity needs and avoid 21 million tonnes of carbon emissions annually.

Masdar City remains at the forefront of the UAE's digital and sustainability ambitions, showcasing how digitalisation can drive a low-carbon future.

Book your delegate pass to attend

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PENSPEN I STAND: 8551 I HALL: 8

PIPELINE INTEGRITY MANAGEMENT IN THE AGE OF AI

Penspen's THEIA, powered by AI, establishes a new data baseline that supports operators through the energy transition and beyond

As regulations and operational costs rise, Penspen is leveraging over 70 years of experience to bring pipeline integrity management into the digital age. By harnessing artificial intelligence (AI), Penspen aims to set new standards for predictive asset maintenance.

Penspen's digital pipeline integrity management solution, THEIA, centralises, visualises, and analyses pipeline data on a single platform, offering instant access to years of information. Now, THEIA will incorporate AI-driven corrosion mitigation, using Senslytics' CausX AI technology. This tool offers predictive corrosion management, streamlining compliance and enhancing real-time analytical capabilities. This innovative AI solution is set to revolutionise corrosion management at a critical time for the industry.

THEIA, a data-agnostic platform, consolidates pipeline information and maps critical features to visualise pipeline conditions in a geographic context. It enables engineers to evaluate pipeline life expectancy or risk of failure with greater confidence. At ADIPEC, Penspen experts are available to discuss THEIA's capabilities.

As the energy transition progresses, digital solutions are delivering significant efficiencies, not only for hydrocarbon operations but also in assessing asset repurposing for hydrogen transportation – essential to

> *Penspen's digital pipeline integrity management solution, THEIA, centralises, visualises, and analyses pipeline data on a single platform, offering instant access to years of information.*

meeting net-zero targets. Assessments that once took months now take weeks, with personalised reports generated in minutes. For example, matching data sets for Corrosion Growth Rate (CGR) on a UK airport pipeline once took days, but with THEIA's Feature Matching & CGR module, the task was completed in less than 10 minutes.

Digitalisation in the pipeline industry reduces costs, lowers risks, and boosts efficiency. Penspen's THEIA, powered by AI, establishes a new data baseline that will support operators through the energy transition and beyond. AI and digital innovations are key to a sustainable future for the energy industry, and Penspen looks forward to engaging with clients and peers at ADIPEC to explore these advancements further.

ETHERNET-APL: EFFICIENCY AND FLEXIBILITY FOR THE FIELD

Pepperl+Fuchs is paving the way for future IoT applications in partnership with leading companies and associations

For the Ethernet standard to be accepted in process plants, it must meet requirements for long cable runs, robustness, and ease of installation. Explosion protection necessitates a physical layer with intrinsic safety, which is crucial in the design process. The Ethernet Advanced Physical Layer (Ethernet-APL) is a single-pair Ethernet (SPE) specifically designed to comply with IEEE and IEC standards, with intrinsic safety as an integral feature.

Ethernet-APL enables quick connections tailored for process automation. In these environments, numerous devices transmit minimal data—measured values, diagnostics, and alarms. Initial mass tests indicate that even with over 200 field devices on the Ethernet backbone, network utilisation remains low. These conditions allow network architects to design efficient structures.

The widespread adoption of Ethernet in offices and discrete manufacturing suggests that Ethernet-APL will be the preferred network for field applications in process plants. Its standardisation, completed in 2021, was supported by key organisations such as the Fieldcomm Group, OPC Foundation, and major industry players. Many equipment suppliers are developing field devices and infrastructure based on Ethernet-APL, and user interest is growing.

Conformity testing by user organisations ensures high interoperability levels. Manufacturers and organisations like PI, ZVEI, and NAMUR collaborate to define application scenarios and best practices, providing guidance to help users succeed with the technology. Network tests are currently in progress, showing promising initial results.

Ethernet-APL functions solely as a physical layer, using Ethernet-based industrial protocols throughout field devices, thus eliminating the need for protocol conversion gateways. This simplifies engineering, configuration, and servicing, reducing errors while allowing simultaneous access to complete device data. Modern field devices collect multiple process values, decreasing the number of required devices and potentially lowering planning costs. With Ethernet-APL, users gain real-time data for centralised monitoring, enabling early maintenance identification and preventing unscheduled downtimes.

In partnership with leading companies, Pepperl+Fuchs is paving the way for future IoT applications in the process industry with Ethernet-APL, addressing key requirements such as two-wire cables and interoperability. The latest innovation, the Ethernet-APL Rail Field Switch, facilitates simultaneous access to field information and diagnostics, ensuring high production quality and plant availability.

BRINGING TOGETHER THE BEST OF AI AND AUTOMATION

Peterson's Lighthouse ecosystem of software combines expert knowledge with automated solutions

Peterson Energy Logistics' ecosystem of software applications Lighthouse, digitalises the end-to-end logistics supply chain, illuminating the value of data in achieving cost and carbon efficiencies.

In-house logistics operatives and experts work together with technical teams to develop, evolve, and transform the 11 applications which blend seamlessly together and with third-party applications.

An algorithm-driven optimiser was recently added to its transport management system which is achieving exceptional results for operational teams and clients with an 88% acceptance rate through the use of historical and live data. It has dramatically reduced manual data handling hours; delivered an increase in trailer space utilisation and in average tonnes per hour; and led to a reduction in individual movements reducing fuel consumption and CO_2 emissions.

Jaye Deighton of Peterson said:

"We limit the costly movement of fresh air. This is an incredibly complex space and to work hand-in-hand with our operational teams highlight that the movement of offshore cargo is not only a science but an art. We can bring together the best of AI and automation with human understanding and intelligence.

We can now automate the transport cargo allocation process. Fleet utilisation has increased as a result of the computer-based, human originated, logic which in turn reduces CO_2 emissions and provides Peterson with enhanced data for future decision making."

Peterson is focussing on developing Lighthouse's position offering the product in a 'software-as-a-service' capacity and believe ADIPEC is an important event to engage with a market which could benefit from its capabilities.

Peterson is keen to expand its presence in the Middle East, further developing its global footprint. It currently works with multiple clients in Qatar. A consultancy project was undertaken with Lighthouse solutions deployed to implement more efficient, digitally driven solutions in its supply chain including a pool concept and Control Tower. The clients use multiple elements of Lighthouse and have achieved cost reductions of more than 20% and carbon efficiencies of more than 30% thanks to the effective use of data for the real-time capture, visibility, and reporting of all port vessel activities.

PURPOSE-BUILT APPLICATIONS FOR THE ENERGY INDUSTRY

Quorum's **Planning Space and Energy Components software help develop unique net zero strategies for companies**

Encountered on the path to net zero is the need for strategic decisions based on accurate emissions reporting and analysis. ADIPEC 2024's theme, Driving Global Energy Transformation and Decarbonisation, aligns with Quorum's Planning Space software for a low-carbon future. When paired with effective emissions management of Energy Components, it provides future forecasts.

With Planning Space, business planning activities and emissions forecasts facilitate the development of a strategy and the establishment of emissions targets. These targets are then used in Energy Components to monitor emissions — a cycle that continues as actual emissions captured form the baseline and are then used as input for the next period of planning, producing a new benchmark or target.

Planning Space's cloud-native data flow enables comprehensive collection of activity planning and emissions data with harmonised assumptions into a single data repository. It contextualises data from existing operations, future emission entities, and GHG reduction initiatives. This established baseline supports planning, target setting, performance tracking against a plan, and reporting.

Developing a net-zero strategy within the context of a company's portfolio requires evaluating numerous scenarios to identify the right combination along with trade-offs. Planning Space Portfolio is designed to help find the optimal outcome by using the optimiser to test theories and sensitivities for optionality. Its dashboard reveals consolidated business plan emission data and other important metrics, such as cash flow and capital, of all opportunities within the company.

Prioritising projects, including additional abatement initiatives, are framed within a mathematical optimisation context to achieve the most effective portfolio. This maximises net present value (NPV) while adhering to capital constraints and achieving the emissions reduction goal.

Looking ahead, emissions methodologies need to be dynamic and updated with evolving policies and best practices. The use of AI is likely to become integral for the analysis, forecasting, and optimisation of emissions. However, emissions reporting must adhere to regulatory policies, remaining rooted in accuracy and traceability. For a deeper dive into these topics, the Quorum team would be delighted to connect with you at ADIPEC to explore customised solutions for your emissions goals.

FULFILLING THE QUEST FOR A SUSTAINABLE FUTURE

Rajkot Diesel Machines **will be showcasing how their AI technologies are transforming the energy management at ADIPEC 2024**

Founded in 2003, Rajkot Diesel Machines specialises in electromechanical products for the marine and oil and gas industries. The company has expanded to four branches, including Rajkot Marine LLC and 4JB Automation & Power Controls. Rajkot offers a wide range of products and services, focusing on diesel engines, pumps, and generators. With dedicated technical sales engineers, they provide value-added solutions while prioritising quality and timely service without compromising on standards.

In the quest for a sustainable energy future, our company is leveraging AI and digital solutions to redefine efficiency and environmental responsibility. Renowned throughout the UAE and GCC for our high-quality products including gas compressor panels, system and integration of well service pumps, cementing pump units, ready to run engine control systems, marine machinery and skid and upfits solutions, we are committed to supporting net zero goals and improving operational effectiveness.

At ADIPEC this year, we will showcase how our AI technologies are transforming energy management. This innovative solution not only enhances fuel efficiency but also helps to reduce emissions significantly. In initial trials, our technology has achieved up to a 15% reduction in fuel consumption, illustrating its potential for positive environmental impact.

AI is crucial in the energy sector, especially for automating processes and optimising maintenance schedules. Our PLC and VFD panels incorporate machine learning algorithms to predict equipment failures, enabling proactive maintenance that minimises downtime. This not only maximises operational efficiency but also extends the life of critical machinery, fostering a more sustainable approach to energy production.

ADIPEC serves as a pivotal platform for showcasing these advancements. By bringing together key industry stakeholders, the event encourages collaboration and accelerates the adoption of AI-driven solutions. It highlights the pressing need for innovative technologies that align with sustainability objectives.

Our commitment to developing AI-enhanced solutions for our diverse product offerings—from high-pressure pumps to diesel dispensers—positions us as a leader in the drive for efficiency and sustainability in the energy sector. Our presence at ADIPEC reflects our dedication to fostering innovation and partnerships, paving the way for a cleaner and more efficient energy landscape.

CLOUD-BASED SOFTWARE TO HELP DIGITISE OPERATIONS

RigER is driving energy transition with its digital solutions whilst reducing the carbon footprint

In the rapidly evolving energy sector, the pressure to mitigate climate change and support net zero targets is intensifying. Companies are tasked with boosting efficiency while reducing their environmental footprint. RigER plays a pivotal role in this transition by providing advanced tools that optimise energy service operations, eliminate paper usage, and streamline processes.

RigER's cloud-based operations management software helps energy service and rental companies digitise their field operations, reducing resource waste and energy consumption. By using mobile field tickets and real-time data collection, RigER empowers companies to make smarter, more sustainable decisions on-site, reducing idle equipment and minimising unnecessary travel. Additionally, RigER eliminates the need for paper documentation, as all contracts, field tickets, and invoices are generated and signed electronically, further cutting down on environmental waste.

One of the standout features of RigER is its Health, Safety, and Environment (HSE) module, which plays a vital role in ensuring that companies meet stringent safety and environmental standards. The HSE module supports the documentation and tracking of safety protocols, incident reporting, and compliance management, helping companies reduce.

> **"**
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> *One of the standout features of RigER is its Health, Safety, and Environment (HSE) module, which plays a vital role in ensuring that companies meet stringent safety and environmental standards*

This also streamlines safety operations, ensuring that field workers can focus on efficiency without compromising on safety.

Furthermore, RigER supports the energy transition by enabling companies to adopt digital tools that monitor equipment health and manage assets efficiently. The platform's real-time reporting capabilities give companies valuable insights into their operations, enabling them to identify inefficiencies and take steps towards more sustainable practices. With these insights, companies can optimise maintenance schedules, extend the lifespan of their equipment, and reduce energy usage - all critical factors in mitigating climate impact.

CUTTING-EDGE SUBSEA ROBOTICS FOR THE OFFSHORE MARKET

Saipem's fleet of autonomous underwater drones, designed for complex inspection and intervention tasks, can operate wirelessly and without human presence underwater

Saipem is leveraging artificial intelligence (AI) and digital technologies to support the energy transition and achieve net-zero targets. As part of its commitment to green and digital transformation, Saipem engages in numerous projects aimed at fostering technological excellence and collaborating with universities, research centres, and industry partners.

The company aspires to be a key player in the shift from traditional energy models to low and zero-carbon systems, deploying cutting-edge subsea robotics in the offshore market. Saipem has developed an entire fleet of autonomous underwater drones designed for complex inspection and intervention tasks, which can operate wirelessly and without human presence underwater. This programme, named Hydrone, features vehicles capable of functioning autonomously at depths of up to 3km. Each drone can operate continuously for up to 12 months, alternating between 12 hours of work and recharging, facilitated by docking stations on the seabed.

The Hydrone platform focuses on advancing solutions such as Hydrone-R, Hydrone-W, and FlatFish.

Furthermore, Saipem has introduced a specialised decarbonisation digital solution to assist clients in achieving their net-zero emission targets. This tool, known as EmiRed™, is the result of extensive engineering experience and tech innovation, addressing emissions from client facilities and their supply chains. It adheres to the GHG Protocol and is certified by Bureau Veritas, a leader in assessing quality and environmental risks.

Additionally, Saipem has partnered with Honeywell to develop a 'digital twin' for its Snamprogetti™ Urea technology, enhancing urea production through virtual simulations. This solution fosters ongoing client engagement, even post-plant delivery.

AI also plays a crucial role in Saipem's broader sustainability strategy, enhancing safety across its sites. Smart cameras, installed at key locations on construction sites and vessels, utilise AI to monitor operations and prevent workplace accidents.

For more information, visit www.saipem.com.

SAMSON I STAND: 14150 I HALL: 14 ❯❯

SINO TECHNOLOGY
STAND: 10169 I HALL: 10 ❯❯

LEADING INNOVATION IN THE PROCESS INDUSTRY

Samson's joint venture company FOCUS-ON responds to the growing need for operational efficiency

FOCUS-ON, a joint venture between the German process technology leaders KROHNE and SAMSON, is addressing the key challenges in the process industry. With the introduction of FOCUS-1, The First Smart Metre Valve, FOCUS-ON is bringing real-time data analytics and autonomous control to the process level. This solution responds to the growing need for operational efficiency, especially in an era of skilled labour shortages.

FOCUS-1: Integrated Cutting-Edge Technology
FOCUS-1 combines SAMSON's 3241 control valve with KROHNE's state-of-the-art flow metre, pressure and temperature sensors, and a powerful industrial-grade computer. This all-in-one device simplifies both the collection of process data at the operational level and the control of key variables.

Streamlined Installation for Superior Performance
Traditional process installations often require multiple components, including various sensors, control valves, and a Distributed Control System (DCS) to manage control algorithms. FOCUS-1 integrates all these functions, simplifying installation by reducing the need for multiple flanges, cables, and I/O points. This consolidation results in a reduction of CAPEX by nearly 33%.

Thanks to its integrated computing capabilities, FOCUS-1 enhances accuracy and provides advanced control features. It can independently operate as a flow controller, pressure regulator, pressure reducer, and even manage external control processes, such as temperature regulation.

Enhanced Uptime with Advanced Data Insights
FOCUS-1's onboard computer is pre-configured with sophisticated analytical tools. Unique features, such as cavitation and flashing detection, as well as setpoint deviation monitoring, allow for the early identification of external process issues, leading to more efficient process management. Internal deviations are also quickly identified and addressed with the help of the integrated digital twin. Should a measurement drift due to changing process conditions, FOCUS-1 recalculates the affected value using available measurements. This allows for continuous operation without immediate intervention. Often, by the time routine maintenance occurs, the issue may have resolved itself. If not, FOCUS-1's modular design allows for easy component replacement.

Since its launch, FOCUS-1 has demonstrated its effectiveness across a range of applications, from heat exchangers to complex electrolysis processes. With standard installation dimensions and compatibility with major industrial communication protocols, FOCUS-1 is easy to implement, accelerating the shift toward a more efficient, digitally driven process industry.

SOLVING TECHNICAL PROBLEMS WITH ECO-FRIENDLY IMPACT

Sino Technology are helping to lead the energy industry in a sustainable direction with their energy saving solutions and products

Sino Technology Co., Ltd is a wholly owned subsidiary of Sino Science and Technology Co., Ltd. Registered in Qingdao in 2018, with a paid-up capital of US$13.9 million, Sino is a comprehensive equipment manufacturing company that integrates research and development, design, manufacturing, construction and service. The main products include an integrated device for oil, gas and water post processing, and self-gas cycle multi-stage pressure gas floats, etc.

The company has developed into one of the top engineering, high technology service enterprises in the domestic energy sector. The customers include major players such as PetroChina, CNOOC, National Pipeline, and Sinopec International Petroleum. As of today, the company has completed more than 150 overseas projects in 37 countries and regions.

Sino has continuously worked hard to develop energy saving technologies and environmentally friendly products. For example, our integrated and intelligent comprehensive post-processing device of oil, gas, and water, performs much more efficiently, allowing zero emissions. In addition, we have also developed a self-optimising digital pulse power supply, which utilises the characteristics of high-frequency pulses and digital intelligent control. The power supply can apply a higher electric field between electrodes while avoiding short-circuit breakdowns, realising that the power supply is not affected by changes in the water content and physical properties of the liquid. The operation energy consumption can save more than 70%, and the efficiency can reach around 96%. At the same time, it also has the advantages of traditional electric desalination and high-pressure characteristics to ensure the stable water distribution effect and solves the technical problems of difficult crude oil dehydration such as shale oil, poly-thick oil, and ultra-thick oil.

ADIPEC plays an important role in promoting AI and digital innovations for a sustainable development. It provides a platform for participants in the energy industry to exchange the latest applications of AI and digital technologies and accelerates the application of these new technologies in the energy sector. Through ADIPEC, energy companies, technology suppliers, research institutions and other participants can learn from each other, and hopefully lead the energy industry to a more efficient and sustainable direction

AI-DRIVEN TECH TO SUPPORT THE ENERGY TRANSITION

From optimising renewable energy generation to improving the efficiency of traditional oil and gas operations, Sensoteq enables industries to operate more sustainably

Sensoteq are at the forefront of transforming the energy industry with our AI-driven and digital solutions, designed to enable smarter, more efficient operations while aligning with net zero and climate goals. Our innovative wireless condition monitoring systems leverage advanced AI algorithms to predict equipment failures, optimise maintenance schedules, and minimise unplanned downtime. By continuously collecting and analysing real-time data, we empower companies to reduce energy consumption, extend the life of machinery, and significantly lower their carbon footprint. These innovations directly contribute to achieving sustainability targets by improving operational efficiency and reducing waste.

In terms of tangible results, our AI and digital solutions have delivered significant efficiency improvements across various energy sectors. For instance, our predictive maintenance tools have helped clients reduce machine downtime by up to 30%, lowering operating costs and enhancing energy efficiency. In one case, we worked with a power generation company that saw a 15% improvement in operational efficiency after implementing our condition monitoring system. This translates not only to financial savings but also to a reduced environmental impact, aligning with broader sustainability goals.

AI plays a crucial role in the transformation of the energy sector by enabling smarter, data-driven decisions. It helps to optimise energy production, reduce waste, and facilitate the integration of renewable energy sources. As the sector moves towards decarbonisation, AI can provide the insights needed to balance supply and demand while maximising efficiency and minimising environmental impact. ADIPEC plays a pivotal role in fostering innovation, especially in AI and digital solutions for sustainability. It serves as a global stage for showcasing technologies that are critical to the future of the energy industry. By bringing together industry leaders, ADIPEC accelerates the adoption of digital innovations that drive sustainability and the energy transition.

SATURNAX 01: SUSTAINABLE WELDING SOLUTIONS

Serimax's innovative mechanised welding technology is reducing environmental impact and supporting local economies

Serimax is committed to minimising the environmental impact of its operations while fostering prosperity for communities and regions. At the heart of this commitment is the Saturnax 01 mechanised welding system, an innovative design and functionality in welding technology.

Designed to enhance both efficiency and precision, the Saturnax 01 represents a significant advancement in welding, contributing to reduced material waste and streamlined construction schedules. Its impact extends beyond operational improvements. By decreasing the carbon footprint of welding projects, it aligns with Serimax's broader environmental goals.

One of the standout features of Saturnax 01 is its digital training platform. This platform not only ensures high-quality welds but also promotes sustainability by minimising the need for extensive travel and the transport of specialised welders. By enabling local workforces to perform skilled welding tasks, the technology helps lower emissions and stimulates local economies by creating valuable job opportunities.

Saturnax 01 is integral to Serimax's strategy for delivering environmentally responsible solutions that benefit both people and the planet. The mechanised welding system is proving to be a game-changer in the industry, particularly in its support of net-zero goals. It is 40% more productive than manual welding for a 28-inch pipe, drastically cutting down the welding time from 72 hours with four welders to just 18 hours with Saturnax 01. This efficiency not only reduces the reliance on qualified manpower by 50%, addressing the ongoing welder shortage, but also optimises overall project execution.

Looking to the future, Serimax is excited about the integration of Artificial Intelligence (AI), Machine Learning (ML), and digital twinning in welding automation. These cutting-edge technologies are set to further revolutionise the energy industry, and our teams are keenly focused on exploring these digital solutions. Stay tuned for more advancements as we continue to push the boundaries of welding technology and sustainability.

SENSIA I STAND: 4210 I HALL: 4

SMART INFRARED IMAGING SOLUTIONS

SENSIA is revolutionising the technology for industrial emissions monitoring, preventive maintenance, and safety

In an unprecedented period of rapid industrial transformation due to advancements in AI and automation combined with the green transition and ever-increasing energy demand, SENSIA is revolutionising industry with smart infrared (IR) imaging for emissions reporting, preventive maintenance, safety and more. Based in Madrid, Spain and doing business in over 45 countries, SENSIA has over 15 years of experience developing proprietary AI monitoring and IR imaging technology for autonomous hydrocarbon gas detection and quantification at source and site-level, crucial for meeting decarbonisation goals.

Over the past 20 years, IR imaging has become a crucial tool in detecting leaks (optical gas imaging – OGI), identifying hot spots for preventive maintenance, and more. However, many applications still rely on human supervision. SENSIA's RedLook AI transforms traditional IR inspections into continuous, autonomous operations, making it indispensable for modern asset management, where traceability and sustainability are critical. It enables real-time detection of gas emissions, flames, and other critical elements, all powered by cutting-edge processors and proprietary, physics-based AI analytics.

SENSIA provides operators with the highest level of control over its solution, offering a unique added value in terms of performance, reliability and integration with customer digital ecosystems. We continue to push boundaries as a leader in smart IR cameras, delivering continuous monitoring benefits, including the first automated OGI-based solution. RedLook meets diverse decarbonisation and health, safety, and environment (HSE) requirements, ensuring accuracy, compliance with regulations, and improved safety.

As soon as RedLook is implemented, customers immediately gain real-time insights into their assets, uncovering intermittent or continuous emissions that were previously undetected. Uncontrolled emissions and incidents are automatically recorded, helping operators make informed decisions for more responsible and efficient management. RedLook smart cameras are indispensable in modern asset management, where autonomous, traceable and sustainable operation is essential.

ADIPEC 2024 provides an outstanding platform for operators to explore cutting-edge AI-powered technologies for decarbonisation and gain insight into the future of digital sustainability. We aim to strengthen our position in the region by supporting operators in their efforts to achieve more sustainable and efficient operations.

Book your delegate pass to attend

Visit: www.adipec.com/delreg

Email: delegate@adipec.com

Call: +9712 444 4909

RESHAPING THE ENERGY LANDSCAPE

SMEC Automation is excited to unveil innovations designed to boost operational efficiency, reduce emissions, and accelerate progress towards net zero goals

As the world shifts towards a sustainable energy future, SMEC Automation is driving the transformation with cutting-edge AI and digital solutions. Trusted by industry giants, SMEC has over two decades of expertise in automation, electrical, instrumentation, hydraulics, and electronics, delivering tailored solutions to power the future of energy.

AI & Digital Solutions for a Low-Carbon Energy Future

SMEC's AI-driven technologies are reshaping the energy landscape by integrating Industrial IoT (IIoT), predictive maintenance, and real-time monitoring. Recently, we helped a leading oil and gas client reduce downtime by 25% and cut CO2 emissions by 18% through AI-powered predictive maintenance.

AI: The Catalyst for Energy Transformation

AI is revolutionising energy management by predicting failures, automating operations, and optimising energy use. Our solutions help companies cut costs, improve efficiency, and reduce their carbon footprint while maintaining high system reliability.

> **SMEC has over two decades of expertise in automation, electrical, instrumentation, hydraulics, and electronics**

What You'll See at ADIPEC 2024

As the global energy industry gathers at ADIPEC 2024, SMEC is ready to showcase solutions for a low-carbon, sustainable future. Our smart automation, digital retrofitting, and AI-enabled solutions help reduce energy consumption and improve system reliability, supporting net zero emissions targets. Join us and experience how we are revolutionising the future of energy through AI & digitalisation.

SOPAN I STAND: 13630-16 I HALL: 13 ❯

DRIVING EFFICIENCY IN THE ENERGY SECTOR

Sopan is showcasing Compretech, Compressor Monitoring, and Mteamz+ AI and digital solutions at ADIPEC this year

SOPAN Compretech is revolutionising the energy sector with AI-powered platforms like MTeamz and IoT-based compressor monitoring. These solutions enhance real-time asset performance, predictive maintenance, and energy management, resulting in a 30% increase in efficiency and a 25% reduction in maintenance costs. As AI continues to play a critical role in sustainability and net-zero initiatives, SOPAN will showcase its cutting-edge innovations at ADIPEC, reinforcing its commitment to a more efficient and sustainable energy future.

At SOPAN, we are committed to advancing AI and digital solutions that drive efficiency and support global net-zero and climate goals. Our platforms, such as Compretech – Central Control Room, MTeamz, and Compressor Monitoring, are transforming energy services by enabling real-time monitoring, predictive maintenance, and data-driven decision-making. These solutions optimise asset performance, reduce downtime, and cut energy consumption.

AI & Digital Solutions Changing the Energy Industry
MTeamz has helped improve operational efficiency by up to 30% and reduce maintenance costs by 25%. With features like geofencing for assets, PM Scheduler, and automated ticketing, we've streamlined service processes, reduced carbon footprints, and enhanced maintenance precision.

AI's Role in Energy Sector Transformation
AI's role in transforming the energy sector is undeniable. It enables predictive analytics to foresee equipment failures, optimise energy use, and manage demand more effectively. AI's integration into renewable energy systems helps balance supply and demand, ensuring energy efficiency at the grid level. These advancements are key to achieving decarbonisation and sustainable practices in the energy industry.

ADIPEC's Role in Enabling Innovation
ADIPEC plays a vital role in showcasing such innovations. It brings together industry leaders, driving the adoption of AI and digital technologies for a sustainable future. For SOPAN, ADIPEC provides a platform to demonstrate how solutions like MTeamz are empowering organisations to meet net-zero goals while maintaining operational excellence.

At this year's ADIPEC, we look forward to showcasing our AI-powered solutions, highlighting their impact on operational efficiency, energy savings, and sustainability in the energy sector.

SPECIALIST VALVE SERVICES
STAND: 8450 I HALL: 8 ❯

SUSTAINABLE MODELS FOR BUSINESSES

SVS showcases its TVM Application at this year's ADIPEC

SVS (Special Valve Services) are working towards complete business digitalisation and reviewing conceptual AI technologies that we can integrate into our evolving Total Valve Management (TVM) application. We are aiming to capture all data at source, regardless of location (office, workshop or site) and have this data instantly available to SVS teams and client teams alike.

Our TVM application houses the clients' valve data, reconciles it into valve centric information, allowing us to optimise purchasing, planning and maintenance strategies. All this is visible to the clients via a dedicated portal. This concept can be driven to any serviceable product by simply manipulating the data set captured.

By presenting the unique information of a product in a clear interactive interface improves on efficiencies in both manpower and production and encourages sustainable models for the business encouraging a repair and reuse culture through better obsolescence analysis, enhancing the carbon reduction goals that SVS and our clients are striving to achieve. AI further enhances analysis by utilising technologies to quickly examine data, extracting and analysing key design information. It can also improve efficiencies by producing first drafts of key documents required for daily tasks, procures, risk assessments, and fault finding. AI technology is multilingual and therefore can be utilised seamlessly worldwide.

When we attend ADIPEC this year we will have a model whereby we can showcase inputs and outputs possible. This portal will constantly evolve as new technologies and customer input are obtained to actively improve efficiencies.

ADIPEC is an important platform for SVS to interact with in-country operators and EPCs to show this technology that complements our full-business offering. It is also an opportunity to discuss with clients where they see this enhancing their business as well as listening to areas where there may be options that we can enhance our portal to provide solutions to problem areas.

Collecting data in a single source point within a digital environment, with the aid of AI in relevant areas, provides concise useful information to drive an efficient business model, reducing resource, equipment and consumables leading to an overall carbon reduction output.

STIMLINE DIGITAL | STAND: 9151 | HALL: 9

STONE RIDGE TECHNOLOGY
STAND: 14268 | HALL: 14

UNLOCKING THE FULL POTENTIAL OF OPERATIONS

Stimline Digital's integrated platform provides an essential solution to the delivery of drilling and wells activities

In an industry where efficiency and accuracy are paramount, the adoption of digital technologies is not just an advantage, but a necessity. Stimline Digital's IDEX Collaboration Platform provides a cloud-based software solution designed to streamline and safeguard excellence over the entire lifecycle of drilling and well operations.

Operators have to navigate a challenging workflow during well operation planning and execution with key pain points such as too many systems, manual work with Word & Excel, no standard way of working, limited experience sharing and transfer, and poor data quality and access.

IDEX Collaboration platform has been developed with major international energy companies who wanted to achieve ambitious goals of reducing planning time by up to 75%, increasing accuracy of the time and cost estimates for each job and reducing the NPT seen on each job by as much as 20%, saving tens of millions of dollars per year, according to direct feedback.

This integrated platform consists of three key components: Planner, Performer, and Analyser, each specifically tailored to tackle distinct needs of the teams involved in the delivery of drilling and wells activities with unprecedented efficiency, transparency and ease.

Planner delivers value by providing a shared workspace for all engineers preparing drilling and well programs, which automatically drives them through the required steps, accessing best practices, risks and lessons learned to ensure the latest, best information is always being used, for all plans.

Performer provides a crucial link between planning and operations, creating detailed digital work instructions, automating reporting, aggregating and visualise all real time data from the job and capture contextual learnings.

Analyser unlocks the full potential of your operations delving deep into performance metrics, offering insights that pave the way for continuous improvement and operational excellence.

HARNESSING TECHNOLOGY TO AID HUMAN EFFORTS

Stone Ridge Technology's GPU-based reservoir simulator aims to enhance engineers' capabilities without overcomplicating the workflow

The integration of AI and digitalisation is transforming reservoir simulation, offering new possibilities for more efficient and accurate decision-making. At Stone Ridge Technology we have developed, ECHELON, an in-house full-featured reservoir simulator. It is the first and the industry's leading GPU-based simulator supporting both compositional and black-oil formulations, along with advanced well and reservoir management strategies.

By leveraging the immense computational power of GPUs, ECHELON enables faster simulations and more detailed modelling of complex reservoir behaviours, helping engineers tackle challenging scenarios with greater ease and efficiency.

Conversational GenAI Assistant for Reservoir Simulation: Building on the capabilities of ECHELON, we are developing an intelligent conversational chatbot powered by generative AI (GenAI) and large language models (LLMs). This tool assists reservoir engineers in setting up and developing models, guiding them through the simulation process, and helping them interpret results. The chatbot is designed to be a valuable assistant, making the often complex and time-consuming task of reservoir modelling more approachable. By providing real-time guidance and insights, it allows engineers to focus on making informed decisions and overcoming technical hurdles.

Advanced Machine Learning for Full-Field Reservoir Proxies: In addition to these advances, we are also exploring cutting-edge machine learning techniques such as neural operators to develop full-field proxies. These proxies are designed to address critical challenges like uncertainty quantification and optimisation, which are essential considerations in making reliable predictions about reservoir performance. Neural operators can efficiently approximate complex reservoir dynamics, significantly reducing the computational effort required for full-field simulations while maintaining accuracy.

This approach provides engineers with rapid evaluations of what-if scenarios, aiding in the optimisation of reservoir management strategies. Our efforts in integrating AI and digitalisation into reservoir simulation aim to provide practical tools that enhance engineers' capabilities without overcomplicating the workflow. By focusing on innovation that directly addresses key industry challenges, we are working towards a future where reservoir simulation is not just faster, but smarter, more accessible, and better equipped to handle the complexities of modern reservoir management.

THE POWER OF SOFTWARE IN OIL AND GAS INDUSTRY

Tenergy Equipment & Technology Co, will present their digital technology in pictorial form at ADIPEC 2024

The intelligent oil and gas team at Tenergy Equipment & Technology Co., Ltd (TENERGY) is actively performing research and development on software for logging, drilling, and directional wells. It developed a comprehensive logging operation system and relevant supporting software and completed the deployment of hundreds of sets of instruments, including a logging comprehensive drainage system, big data-based engineering alarm system, logging interpretation and assessment system, element remote transmission system, and logging parameter transmission display system. In the field of drilling, a software suite is being created to analyse comparable trajectory, friction, and torque. And also a RSS software is under development. In the production well informatisation, it has successfully developed the Liaohe Oilfield drilling supervision platform, a shale gas production management system, the Jidong Oilfield EISC platform software, and the Changqing Oilfield exploration information system.

Acceleration of industrial informatisation: ChatGPT easily understands and analyses unstructured data from various data sources (such as achievement data and log data) and converts it into structured data to

> *The advantages of ChatGPT technology help the oil industry to open new innovative areas, improve efficiency and productivity, and thus helps users obtain higher competitiveness and profit returns.*

facilitate query and analysis. It is canning accurate data matching.

The powerful advantages of ChatGPT technology helps the oil industry to open new innovative areas, improve efficiency and productivity, and thus helps users obtain higher competitiveness and profit returns.

ADIPEC is a very influential exhibition, not only in the UAE but also the world. There are many excellent companies and representatives from all over the country participating in the exhibition. ADIPEC 2024 not only has strong infectivity, but transmission too.

RESHAPING THE ENERGY SECTOR WITH THE POWER OF DATA

TROUVAY & CAUVIN's advanced solutions turn large datasets into actionable insights, helping companies optimise their resources and improve efficiencies

Artificial Intelligence (AI) and digitalisation are reshaping the energy sector, offering new opportunities for enhanced operational efficiency, optimised resource management, and sustainable practices. TROUVAY & CAUVIN continues to play a pivotal role in this transformation and is presenting two advanced solutions—SEQUOIA from MOÏZ and ROAV7—at ADIPEC 2024.

> *ROAV7 is a pioneering drone-based AI technology that collects and processes large datasets from critical industrial assets.*

ROAV7: Transforming Data into Actionable Insights Using AI

ROAV7 is a pioneering drone-based AI technology that collects and processes large datasets from critical industrial assets. Equipped with sensors, including RGB cameras, thermal imaging, and LiDAR, ROAV7's drones gather comprehensive data during inspections of infrastructure such as pipelines, railways, and photovoltaic panels. This raw data is transformed into actionable insights with AI, covering aspects like corrosion analysis, digital twins, and predictive maintenance. This enables industries to make informed, data-driven decisions that enhance safety and efficiency.

A key feature of ROAV7 is its use of spectrometric sensors for gas emissions monitoring. By mapping emissions in 3D, it allows companies to establish an accurate baseline of their carbon footprint, providing a factual basis for environmental monitoring and tracking progress in emission reduction.

SEQUOIA: Pioneering 5G-enabled, Battery-free Data Acquisition

SEQUOIA, developed by MOÏZ, is the first 5G-enabled, battery-free

acquisition node designed for industrial use. As large volumes of data are crucial for AI-driven systems, traditional sensors often face limitations such as high installation costs and energy consumption. In contrast, SEQUOIA utilises thermal energy harvesting to deliver a maintenance-free, battery-free solution capable of continuous data acquisition. This technology facilitates seamless integration of AI with 5G, ensuring a consistent flow of data essential for optimising energy use and improving operational efficiency.

One notable example of SEQUOIA's impact is its integration into a customer's SCADA system, which resulted in a 20% improvement in operational efficiency and a 15% reduction in energy consumption. By eliminating the need for batteries or wiring, SEQUOIA not only reduces costs but also supports net-zero and sustainability goals.

At ADIPEC 2024, TROUVAY & CAUVIN will showcase how MOÏZ and ROAV7 are setting new standards for operational excellence and sustainability in the energy sector.

INNOVATIVE SOLUTIONS FOR INDUSTRIAL DECARBONISATION

Kanoo Energy's partner Carbon Clean, is showcasing a range of carbon capture solutions for hard-to-abate sectors at ADIPEC

Carbon Clean is the point-source carbon capture expert, driving the decarbonisation of hard-to-abate industries for more than 15 years. Our next-generation technology has clocked more than 2.6 million operational hours. We are on track to achieve our mission of capturing one billion tonnes of CO2.

We have one of the largest project portfolios of any independent carbon capture business, with 50 technology references globally, and amassed 105 active patent assets across 18 patent families covering 30 countries.

CycloneCC: a pioneering combination of carbon capture and AI
Our breakthrough modular CycloneCC technology eliminates the two biggest barriers that have previously hindered widespread adoption of carbon capture: cost and space.

CycloneCC cuts the total installed cost by up to 50% compared with conventional solutions. The unit's footprint is up to 50% smaller than conventional carbon capture plants, with its largest equipment sizes reduced by a factor of 10.

At the heart of CycloneCC is a unique combination of rotating packed bed (RPB) technology and our proprietary APBS-CDRMax solvent. Carbon Clean-developed Artificial Intelligence (AI) maximises the solvent's performance and plays a key role in delivering CycloneCC's operations and maintenance (O&M) reductions. Increased availability, efficiency and reliability achieved through the application of AI has a transformational impact on cost and performance.

Carbon Clean's technology is revolutionising carbon capture. We are using AI to power the shift towards targeted predictive maintenance for carbon capture plants, which reduces downtime risks. We have also developed a proprietary digital technology platform for our operations to maximise data value and contextualise business decisions.

The combination of AI, digitalisation and carbon capture is compelling, bridging the gap between theoretical, ideal operating conditions and the reality of practical deployment. It is a powerful innovation that is accelerating decarbonisation goals and delivering exceptional carbon capture performance.

We're proud to exhibit at ADIPEC in partnership with Kanoo Energy and look forward to demonstrating how together we're helping hard-to-abate industries make real progress towards a net zero world.

TRANSLATING RAW DATA NEEDED TO SHAPE THE ENERGY FUTURE

Using AI to its full potential, THREE60 Energy are looking forward to showcasing their smart inspectors at ADIPEC

The energy industry is undergoing a transformative shift, with AI and digital solutions playing a pivotal role in driving efficiency and sustainability. At THREE60 Energy, we have developed innovative solutions that leverage the full potential of AI to help companies measure, optimise and enhance their operational performance. This technology is key to enabling more sustainable practices and accelerating the journey towards achieving net zero emissions.

At ADIPEC, we are showcasing our 'smart inspectors'— digital tools powered by data automation and AI models — that turn vast amounts of raw data into contextual, useful knowledge. We apply them across all phases of the asset lifecycle and across all disciplines.

Our smart inspectors drastically reduce the time spent seeking contextual information by automatically 'inspecting' the raw data that needs to be collected and translating it into meaningful information across any business process. Since this information is accessible automatically from anywhere through our cloud solutions, our clients are saving thousands of hours. They can now relocate engineering resources from seeking and reporting data to more efficiently planning and engineering new investments focused on achieving net zero goals.

AI is an essential technology to translate raw data into the knowledge needed to shape the energy future. However, for AI to be effective, it needs to be powered by the right data in the right context. AI-powered insights will help the energy sector produce more, at lower costs, and in a more sustainable manner. This technology will assist companies in planning and engineering new projects, focusing not only on operational and financial results, but also on ESG objectives and the commitment toward net zero targets.

ADIPEC plays a crucial role in enabling AI and digital innovations for a sustainable future. As a key event gathering companies from across the energy industry, it offers an extraordinary opportunity for energy companies, tech companies, and service providers to collaborate and discuss the best ways to scale AI and digital innovation. By partnering and working together, we can succeed in this exciting and transformative journey towards a sustainable future.

INNOVATIVE TECHNOLOGY FOR COMPLIANCE, SAFETY

Total Safety's tracking system provides real-time on-site visualisation of people, vehicles, and assets, enabling operational safety, security and efficiency

In the oil and gas industry, tracking and monitoring people and vehicles have always been crucial for ensuring safety and operational efficiency. Over the years, technology has significantly advanced, leading to improvements in these areas. These technological advancements not only boost safety but also enhance operational efficiency and minimise downtime.

At Total Safety, we're introducing TS SOLUTIONS, which offers a more sophisticated tracking and monitoring approach, real-time location systems,

and advanced GPS tracking. Total Safety's TS SOLUTIONS is customised to meet site-specific or customer requirements. Our system is designed to handle complex tracking of personnel and equipment, as well as proximity detection.

Some of the solutions for real-time people tracking include:

GPS Location, Electronic Badge In & Out, SOS Alert, No-Motion Detection, Gas Detection and Communication

Solutions for equipment tracking include:

GPS Location, CO2 Emission Monitoring, Proximity, Data Recordin & Driving Behaviour

For camera monitoring, solutions include:

• Non-AI Camera Monitoring (offline and online)

• AI Camera Monitoring (offline and online)

• Fixed and Portable Options

The tracking system captures data to provide management with real-time on-site visualisation of people, vehicles, and assets, enabling safety managers or officers to efficiently coordinate operational safety, ensure an effective emergency response, and maintain security during mustering and evacuation.

Truly, technology has come a long way and plays a vital role in ensuring safety in the oil and gas industry. As we look ahead, we are committed to leading the next generation of safety technology. We will continue to grow, innovate our safety solutions, and expand our global reach. We remain dedicated to our mission of protecting workers, keeping job sites safe, and ensuring compliance for businesses around the world.

At Total Safety, when safety matters, we're ready.

REDUCING THE CARBON FOOTPRINT WITH DIGITAL SOLUTIONS

Tritorc are performing live demonstrations of their advanced models by expert machinists at ADIPEC 2024, featuring data collection and pump control capabilities

At Tritorc, our AI-driven digital solutions are designed to optimise energy efficiency and support the transition toward net zero emissions. Our hydraulic torque wrenches and bolt tensioners ensure precise, safe operations across sectors such as oil and gas, renewables, and power generation.

Our tools enable precise bolt tightening, which minimises leakages in pipelines and equipment, helping to reduce emissions, particularly

methane, a significant source of greenhouse gases in the energy industry. With Bluetooth-enabled pressure gauges and wireless pump controllers, operators can make remote adjustments up to 60 feet away, reducing manual intervention and improving operational efficiency. The entire assembly job can now be performed by a single person rather than the typical two to three. Equipped with Wi-Fi and cellular capabilities for seamless data transmission to cloud servers, allowing real-time remote storage and analysis. Each bolt is automatically timestamped and geotagged with GPS, and traceability is further enhanced through integrated high-resolution cameras, barcodes, RFID, and Bluetooth technologies. This meets the increasing regulatory demands for data acquisition and traceability while helping to mitigate the high costs associated with accidents.

The durability of our tools further reduces the need for frequent maintenance, cutting down the carbon footprint tied to manufacturing and logistics. By integrating AI and IoT, we provide real-time monitoring and predictive maintenance, allowing companies to optimise workflows, reduce downtime, and prevent unplanned shutdowns. This technology also ensures accurate tracking of bolt tension and torque, reducing human error and improving job completion times by up to 20%. In one case, a major oil and gas operator saw a 15% increase in uptime using our predictive analytics to forecast equipment wear and schedule maintenance proactively.

ADIPEC serves as a critical platform for advancing AI and digital innovations in the energy industry. By showcasing our technological advancements, we aim to drive efficiency improvements and support the industry's net zero goals by 2050.

THE IMPACT OF ASSET PERFORMANCE MANAGEMENT ON EMISSIONS

During ADIPEC, Upstream Solutions are demonstrating their AI-based software with a live interactive demo highlighting the power of APM

Energy producers have increasingly turned to Asset Performance Management (APM) to enhance operational excellence. While this shift requires significant effort and organisational change, the results can be remarkable: up to 40% reductions in reactive maintenance and up to 10% lower inventory costs. However, as the energy industry faces the challenge of decarbonising, APM plays a crucial role in optimising asset reliability and efficiency, ultimately leading to lower emissions.

Early Detection and Predictive Maintenance

APM utilises near real-time data and predictive analytics to detect anomalies in asset performance. By identifying early signs of inefficiencies, APM helps prevent breakdowns that can lead to increased emissions. Features like Digital Twin comparison ensure assets operate within expected thresholds, allowing maintenance teams to optimise performance and reduce fuel consumption.

Efficiency Optimisation

APM focuses on maximising asset efficiency, meaning fewer resources are consumed to achieve the same output. This not only lowers emissions associated with energy and material use but also empowers organisations to deploy targeted strategies for asset improvement. Digitising related processes enhances overall efficiency.

Minimising Process Upsets

Unexpected equipment failures can cause emission spikes. APM's predictive capabilities help identify potential issues, allowing operators to take preventive actions. This foresight enables maintenance to be aligned with current operations, saving time and resources, and reducing the emissions associated with unnecessary travel.

Energy Consumption Reduction

APM also identifies opportunities to lower energy consumption by monitoring asset performance. For example, tracking the heat rate of assets can help power generators optimise maintenance schedules, thereby reducing fuel use and emissions.

Data-Driven Decision-Making

By providing comprehensive insights into asset performance, APM enables informed decisions about equipment upgrades and operational changes that impact emissions. It aggregates data from various systems, helping organisations achieve decarbonisation goals.

Aligning Operations with Emissions Reduction

Continuous monitoring and analysis through APM allow organisations to align asset operations with emissions reduction goals, fostering scalable and efficient processes for future needs.

Book your delegate pass to attend

Visit: www.adipec.com/delreg

Email: delegate@adipec.com

Call: +9712 444 4909

CUSTOM-BUILT SOFTWARE TO OPTIMISE PERFORMANCE AND CUT EMISSIONS

AI-powered software by VAIL-Plant® is redefining the industry's commitment to net-zero efficiency and reducing environmental impact

The energy industry promotes AI to empower a sustainable future. The path to net zero and climate goals demands innovative solutions to face forthcoming challenges. Our advanced VAIL-Plant® software integrates innovative AI capabilities within its Asset Integrity Management System (AIMS) and Asset Performance Management System (APMS) to not only transform operational efficiency but also reinforce optimised asset performance, reliability, and predictive capabilities for the efficient

physical testing, thus reducing resource usage and emissions.

The integration of AIMS within VAIL-Plant® has enhanced the overall efficiency of asset management services by utilising predictive analytics. The implementation of AIMS in an offshore facility significantly improved real-time monitoring and tracking of critical equipment, such as pipelines and pressure vessels. By predicting potential failures beforehand, AIMS supported the facility in achieving a 45% reduction in unplanned downtime, lowering maintenance costs and prolonging equipment lifespan.

APMS has assisted energy companies in optimising asset performance by constantly tracking, monitoring, and analysing real-time operational

management of industrial, energy, and mining assets. Our constructive approach to digitalisation and AI redefines the industry's commitment to net-zero efficiency and reducing environmental impact.

At ADIPEC 2024, Velosi is showcasing transformative solutions with VAIL-Plant® software, custom-built to optimise asset performance and cut down emissions.

Optimising Asset Efficiency and Reducing Emissions

VAIL-Plant® employs AI-powered systems, AIMS and APMS, which enable organisations to propel operations with optimised asset performance, prevent equipment failures, and reduce unplanned downtime without

data. The deployment of APMS in a power plant actively identified energy inefficiencies; by adjusting operational parameters, the power plant achieved a 35% reduction in energy consumption while retaining maximum asset performance. Moreover, the facility reduced both operational costs and carbon emissions, promoting sustainability and net-zero goals.

ADIPEC proactively engages in advancing AI and digitalisation through collaboration, showcasing cutting-edge technologies, and incorporating innovative sustainable solutions for the energy industry's future. We are excited to showcase our products at the event and interact with the industry leaders and participants.

COMPACT BATTERIES PERFORM IN HARSH ENVIRONMENTS

Vitzrocell is proud to showcase its cutting-edge high-temperature battery solutions at this year's ADIPEC

As the global demand for efficient and reliable energy management systems grow, Vitzrocell is at the forefront of innovation, providing solutions that cater to various industries, including oil and gas, renewable energy, and smart electric industries.

High-temperature batteries are designed to operate efficiently in extreme conditions, making them ideal for applications where traditional batteries may fail. Vitzrocell's proprietary technology enables these batteries to perform optimally in temperatures exceeding 150°C, ensuring longevity and reliability in harsh environments. This makes them particularly valuable in sectors such as oil drilling and intelligence pipeline inspections, where equipment is subjected to high heat and pressure.

The company's high-temperature batteries utilise advanced materials and engineering techniques, resulting in a lightweight and compact design without compromising performance. These batteries not only enhance operational efficiency but also contribute to reducing the carbon footprint of various applications. By integrating Vitzrocell's batteries, companies can improve their energy management strategies and transition towards more sustainable practices.

Vitzrocell's commitment to innovation extends beyond just product development. The company actively collaborates with industry partners and research institutions to advance battery technology. By participating in key exhibitions like ADIPEC, Vitzrocell aims to share insights, foster partnerships, and drive the adoption of high-performance energy management solutions.

Visitors to ADIPEC 2024 can learn more about Vitzrocell's high-temperature battery solutions. The team will be on hand to discuss how these innovative technologies can address the unique challenges faced by the energy sector and explore potential collaboration opportunities.

As the industry moves towards a more sustainable future, Vitzrocell is poised to lead the way in high-temperature battery innovation, delivering solutions that not only meet current demands but also anticipate the needs of tomorrow's energy landscape.

SOLUTIONS FOR SUSTAINABLE INDUSTRIAL OPERATIONS

From real-time asset management to energy optimisation, WEG's hardware and software drive global energy goals

As industries worldwide focus on sustainability and efficiency, WEG continues to develop digital solutions tailored to optimise performance and reduce environmental impact. With over six decades of experience in manufacturing electric motors, drives, gearboxes, and automation systems, WEG has built a reputation for driving technological advancements that support global energy goals.

In line with this commitment, WEG's Motion Fleet Management (MFM) and WEGSEE+ software are changing the way industries operate. MFM is an advanced monitoring tool that enables real-time oversight of industrial assets, including compressors, fans, pumps, motors, drives, and gearboxes. Using cloud computing and the Internet of Things (IoT), MFM delivers valuable data insights that assist plant managers in making informed decisions, optimising asset performance, and preventing costly downtime.

The system's predictive maintenance capabilities, backed by artificial intelligence (AI), allow for automatic fault diagnosis, further enhancing operational efficiency across sectors such as power generation, mining, and water management.

Meanwhile, WEGSEE+ focuses on energy optimisation, providing users with a comprehensive platform to simulate and evaluate the energy impact of different equipment configurations. By analysing key performance indicators (KPIs) like energy consumption, return on investment (ROI), and CO_2 emissions, WEGSEE+ helps companies achieve greater sustainability and operational cost savings.

Its intuitive interface allows operators to assess the feasibility of energy-saving projects before implementation, supporting compliance with stringent energy regulations, such as the EU Ecodesign directive.

"Looking to the future, the digital innovations that excite us the most at WEG are those that drive smarter, more efficient operations. The Industrial Internet of Things (IIoT) is revolutionising how we manage assets by enabling real-time data collection and analysis, as seen in our Motion Fleet Management (MFM) solution," says Marek Lukaszczyk, European and Middle East Marketing Manager at WEG.

"AI-powered predictive maintenance is another trend helping industries prevent costly downtime and extend the lifespan of equipment. Digital energy management tools like WEGSEE+ are crucial for optimising energy use, reducing CO_2 emissions, and supporting global decarbonisation goals."

PUMP MAINTENANCE WITH REMOTE HEALTH MONITORING

Asystom, a Wika partner company, offers cutting-edge wireless sensor provides real-time health analysis, optimising maintenance and reducing downtime

In the era of industrial digitalisation, continuous machine monitoring is crucial for maintaining the health of industrial equipment. The WIKA partner Asystom is a leader in AI-assisted machine condition monitoring and has developed the world's most data-rich wireless sensor capable of analysing and diagnosing machine health remotely.

The Challenge: Optimising Maintenance and Reducing Downtime

Service and oil companies must maintain their production tools despite the harsh conditions and remoteness of offshore platforms or oil fields. They face challenges related to the high cost of accessing these remote places for emergency interventions and the need to conduct in-depth analyses of potential breakdowns or deviations remotely. This necessitates the provision of information remotely and the ability to request additional information without human intervention.

The Solution: Advanced Vibrational and Acoustic Monitoring

By combining acoustic (ultrasound), oscillation (vibration), and thermal (temperature) data, the multi-sensor enables complex machinery to be monitored autonomously. The battery-powered system transmits the measurement data via LoRaWAN, which greatly reduces the installation effort and costs compared to a wired installation. Sensors are deployed to continuously monitor equipment health, providing early detection of potential issues.

Quick and Simple Sensor Setup

The sensors are installed on pumps within a few minutes. After a short training period of a few days, the AI-based evaluation of the sensor data can begin. The system detects anomalies based on changes in the ultrasound signal.

The Result: Achieving Operational Efficiency and Cost Savings

Proactive maintenance: Early detection enables scheduled maintenance, avoiding unexpected downtimes.

Cost savings: Reduced emergency repair costs and improved efficiency.

Enhanced equipment longevity: Continuous monitoring extends equipment lifespan.

Summary: Effective predictive maintenance

This technology provides real-time insights into the condition of machines, eliminating the need for physical inspections. By identifying potential issues early, it reduces the costs associated with unplanned downtime and allows for timely interventions, preventing major failures.

INNOVATING FOR A GREENER TOMORROW

Wires&Bytes are empowering the energy sector with smart digital solutions

At Wires&Bytes, we are transforming the energy industry through efficient advanced digitalisation solutions that directly support net zero and climate goals agenda. Our smart fibre optic cables, powered by Distributed Fibre Optic Sensing (DFOS) technology, provide real-time monitoring of critical infrastructure and linear assets such as pipelines and wells. By equipping cables with innovative features in data acquisition, resulting in faults prediction and enabling early detection of leaks, temperature changes, and structural weaknesses across distances of up to 200 km, we help our clients prevent failures and reduce environmental risks, contributing to a safer and more sustainable energy future. Using our products the clients can plan and manage assets and operations, thus lowering the energy consumption and carbon footprint.

This year at ADIPEC, we are showcasing our latest solutions that not only enhance energy efficiency but also minimise carbon footprints. Our cables use light for operation and do not require power along the sensing fibre itself, and energy is only consumed at the measurement unit, making our technology highly energy-efficient and safe. A sophisticated AI technology-driven system manages, analyses and interprets large amount of data in real time, ensuring smooth operations, minimising downtime, and reducing maintenance costs. One recent implementation reduced energy consumption during well interventions by over 30%, while simultaneously lowering emissions and operational costs.

Digital solutions play a crucial role in driving the energy transition. By enhancing the ability to predict and prevent failures at a long distance, these tools help the energy sector minimise waste, improve safety, and optimise resource use.

At Wires&Bytes, we believe that digitalisation is key to decarbonising the energy sector and supporting the shift toward a low-carbon economy.

ADIPEC provides a vital platform for fostering innovation in digital technologies. The event connects leaders in the energy industry, creating opportunities for collaboration that accelerates the journey toward a sustainable, net zero future. Visit us to explore how our cutting-edge solutions can revolutionise your energy operations.

EMPOWERING BUSINESSES WITH REAL-TIME DATA INSIGHTS

Woodserv's DEAP Vision solutions help address health, safety, and environment challenges while promoting climate resilience

Woodserv's DEAP Vision is transforming the energy industry with artificial intelligence-powered Health, Safety, and Environment (AI-HSE) solutions, designed to support net-zero and climate goals. Our comprehensive platform integrates advanced AI and Internet of Things (IoT) technologies to enhance safety, optimise operational efficiency, and ensure compliance with evolving ESG regulations. As we strive towards a more sustainable future, our solutions proactively address HSE challenges while promoting climate resilience.

At ADIPEC this year, we are showcasing our AI-HSE solution and its

improvements for energy companies. For instance, our predictive analytics capabilities helped a major client reduce incident rates by 30% over six months. By identifying potential risks before they escalate, companies can allocate resources more effectively and prevent costly shutdowns. Additionally, our digital HSE passport system has streamlined compliance processes, reducing paperwork by 70% and enhancing audit readiness. These tangible results illustrate how AI can drive efficiency, safety, and sustainability in energy services.

AI is a critical driver in the energy sector's transformation. It empowers companies to move from reactive to proactive safety management, optimise resource allocation, and reduce operational costs. By leveraging real-time data and predictive insights, energy

transformative capabilities for the energy sector. Key features include predictive hazard detection, real-time monitoring, and advanced tracking of personnel health and safety. These functionalities improve on-site safety and minimise environmental risks. Predictive analytics provide actionable insights, enabling energy companies to make informed decisions that align with net-zero objectives.

Our AI-HSE solution has demonstrated remarkable efficiency

companies can make smarter, greener decisions that contribute to long-term sustainability and operational excellence. AI also plays a pivotal role in addressing climate change by minimising emissions and improving energy efficiency.

We look forward to connecting with stakeholders at ADIPEC to showcase how DEAP Vision's AI-HSE solution is driving positive change in the energy industry, paving the way towards a safer and more sustainable world.

ENHANCING SECURITY OF UNDERWATER INFRASTRUCTURE

WSense's solutions powered by the Internet of Underwater Things technology enable early detection and improve efficiency of energy operations

WSense is making significant strides in the energy industry and supporting net-zero and climate goals with its innovative Internet of Underwater Things (IoUT) technology for wireless subsea networks. Its multichannel networks of modems are decentralised and adapt dynamically to changing conditions, allowing WSense to achieve unprecedented levels of reliability at depths of up to 3km.

WSense integrates AI to analyse data collected, which enables early detection, reduces risk to environment, and improves efficiency of energy operations. The advanced monitoring wireless solutions help ensure safety and efficiency of underwater energy assets like pipelines, oil rigs, subsea production systems and electricity transmission cables, while collecting data on various types of pollution, including oil and gas leakage and underwater noise.

WSense's IoUT technology allows continuous assessment of environmental conditions of the infrastructure. This helps identify and mitigate potential environmental impacts, ensuring that energy projects are more sustainable and have a lower carbon footprint.

At ADIPEC, we are promoting our AI and digital solutions for underwater drones. WSense, in partnership with a global maritime company, is developing advanced wireless communication networks for subsea drones. This network uses multi-purpose intelligent nodes designed to interface with underwater drones, installing wireless stations underwater that allow resident subsea drones and ROVs to autonomously perform complex operations. These operations include inspection, maintenance and repair in deep water. The subsea network also supports data harvesting and positioning.

> *These innovations are set to revolutionise underwater operations by making them more autonomous, efficient, and environmentally friendly. ADIPEC could become the driver to empower offshore energy companies embracing this disruptive innovation, accelerating energy transition while measuring environmental impact.*

WSense uses AI to dynamically adjust paths, protocols, and settings based on current environmental and operational conditions. It ensures that the network remains reliable even in changing underwater conditions. The AI-driven networking intelligence can scale according to different operational conditions, supporting greater bandwidth and energy efficiency while maintaining high levels of data protection as required by energy companies. AI is used to create edge intelligence as close as possible to the subsea assets.

These innovations are set to revolutionise underwater operations by making them more autonomous, efficient, and environmentally friendly. ADIPEC could become the driver to empower offshore energy companies embracing this disruptive innovation, accelerating energy transition while measuring environmental impact.

DIGITALISATION DRIVING EFFICIENCIES TO REDUCE EMISSIONS

XAMIN Emissions by Xodus, creates a credible emissions reduction roadmap for organisations through its tailored software

As world leaders in the field of energy and emissions assessment and management, we are continuously developing our digital platform to drive efficiency and improvements in the areas of emissions forecasting, reduction planning and compliance reporting.

The innovative Digital ERAP (Emission Reduction Action Planner) module of XAMIN Emissions is a secure web-based solution, to digitally store, evaluate and manage Emissions Reduction Opportunities (EROs) and action plans for portfolios of assets.

To date, the software has been used to evaluate, cost and prioritise 555 emission reduction opportunities across 19 assets globally, managing an average of 279,000 teCO2e life of field emissions reduction per asset.

Applicable to emissions reduction planning globally, XAMIN Emissions is an innovative multi-user system that is fully auditable and easily updateable. This allows for regular updates to be made to align with regulatory/stakeholder requirements and drive engagement in emissions reduction across your organisation through:

Reporting Efficiency - standardised inputs alongside automated calculations, visualisation outputs and export reporting, all reduce the time burden on operators while ensuring compliance.

Accurate Scenario Analysis - grouping of opportunities into abatement scenarios, provides accurate emission reduction forecasting by modelling how opportunities interact with each other.

Emissions Communication & Engagement - intuitive comparison between scenarios and the ability to create sensitivities on key variables allows stakeholders to compare reduction pathways, promoting buy-in at all levels for the funding and actions necessary to meet the reduction targets.

Ranking & Tracking - this single source of Emissions Reduction Opportunities (EROs) enables consistent ranking to aid selection using customisable ranking scales and tracking of EROs to show progress for ongoing evaluation and implementation.

Designed to align with the stringent reporting requirements in the UK, XAMIN Emissions is applicable to emissions reduction planning globally.

INTEGRATING TECHNOLOGY IN EVERYDAY OPERATIONS

Zhongtian Technology Submarine Cable is leveraging advanced data models and production algorithms to streamline production management

The global shift towards sustainable energy solutions is not merely a trend; it is an urgent necessity. As the world grapples with the realities of climate change, the energy sector is undergoing a profound transformation. Central to this transition is the integration of artificial intelligence (AI) and digitalisation, which are revolutionising how energy is produced, managed, and consumed. A good example of this shift can be seen in the innovative practices of Zhongtian Technology Submarine Cable Co., Ltd (ZTTSC).

ZTTSC is leveraging advanced data models and production algorithms to create an intelligent platform that streamlines production management. By offering real-time insights into production plans, progress, raw material availability, and machine performance, the company enhances operational efficiency. This level of transparency allows for better decision-making, which is crucial in an industry where efficiency and sustainability are paramount.

Looking ahead, ZTTSC plans to take its digitalisation efforts even further by integrating its platform with the Zhongtian Energy Cloud System. The next phase will enable seamless data extraction from the cloud, facilitating automated analysis of energy consumption per unit. This capability is a game-changer, allowing for precise energy management throughout the production cycle. The integration of cloud technology will provide an invaluable tool for monitoring energy use, thus enabling companies to make more informed decisions that align with sustainability goals.

As the energy sector transitions away from fossil fuels, ZTTSC is striving to set a precedent for how AI and digitalisation can play pivotal roles in this process. By enhancing production management and resource utilisation, the company is helping to pave the way for a greener future.

With a strong focus on precision, optimisation, and sustainability, Zhongtian Technology remains committed to delivering superior products that meet the highest standards for its clients.

ADIPEC venue map

(1) – (15) Exhibition Halls

⭐ ADIPEC Booking

🟩 ICC Hall

🟫 Middle East Energy Club

🟪 Conference Room A

🟪 Conference Room B

🟩 Decarbonisation Zone

🟦 Maritime & Logistics Zone

🟥 Digitalisation Zone

🟧 Young ADIPEC

🟦 Capital Suites - Mezzanine level

🟨 Delegate lunch

M Media Centre

⬜ VIP Majlis - ICC (12)

S Speaker Room Locations

- ▪ Near Conference Room B
- ▪ Majlis
- ▪ Capital Suite 6, Mezzanine Level (SPE speaker room)

Conference Room A

Andaz Capital Gate Hotel

The Middle East Energy Club

Leadership Roundtables

Young ADIPEC

Chevron

Digitalisation

Al Khaleej Al Arabi Street

15 Car Park D

Water Front

Decarbonisation

Capital Suites

Car park B

VIP Majlis

ICC

Aloft Hotel

Car park A

10

09

11

08

12

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07

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06

13

05

A

Atrium

B **S**

04

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03

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14

02

01

Conference Room B
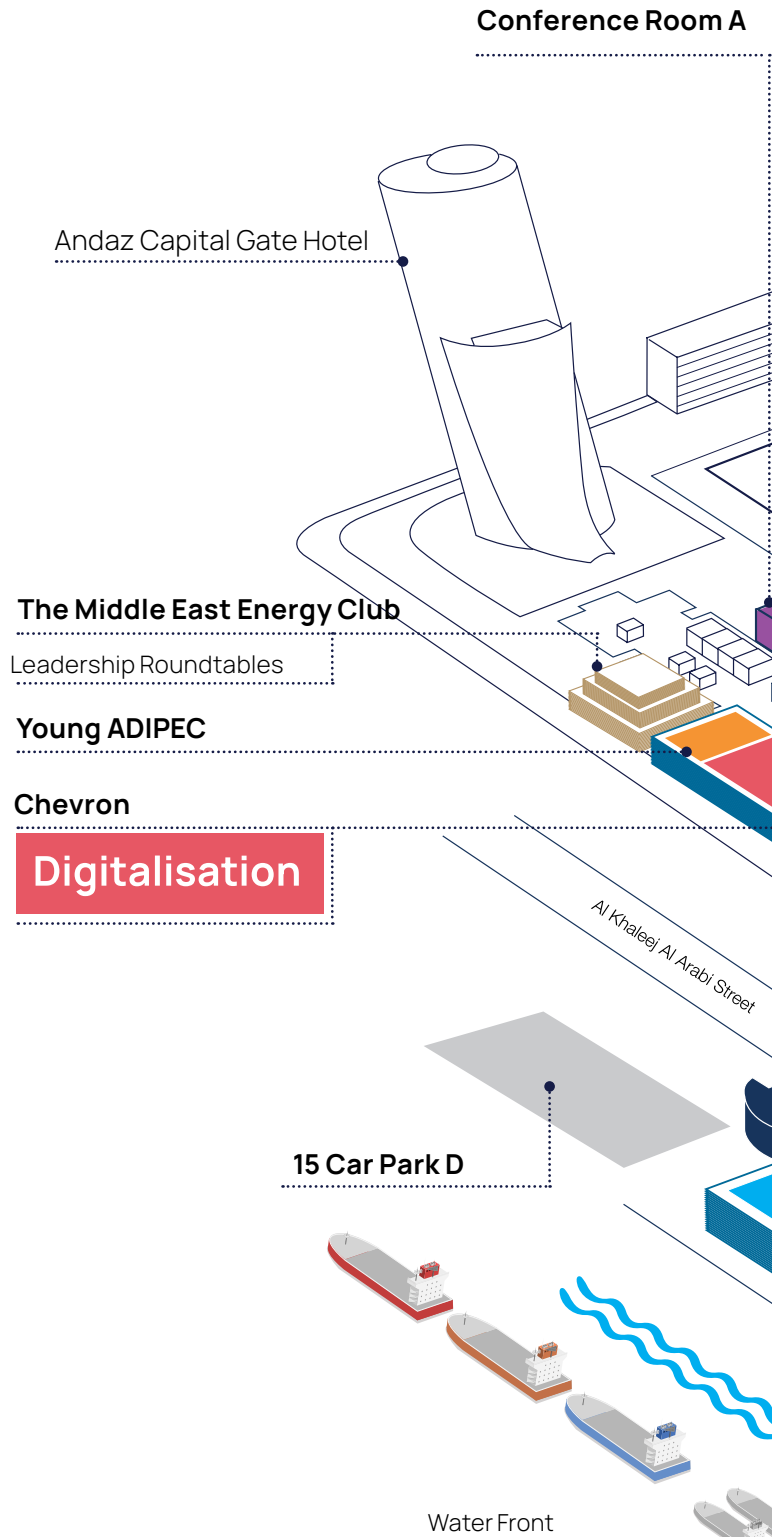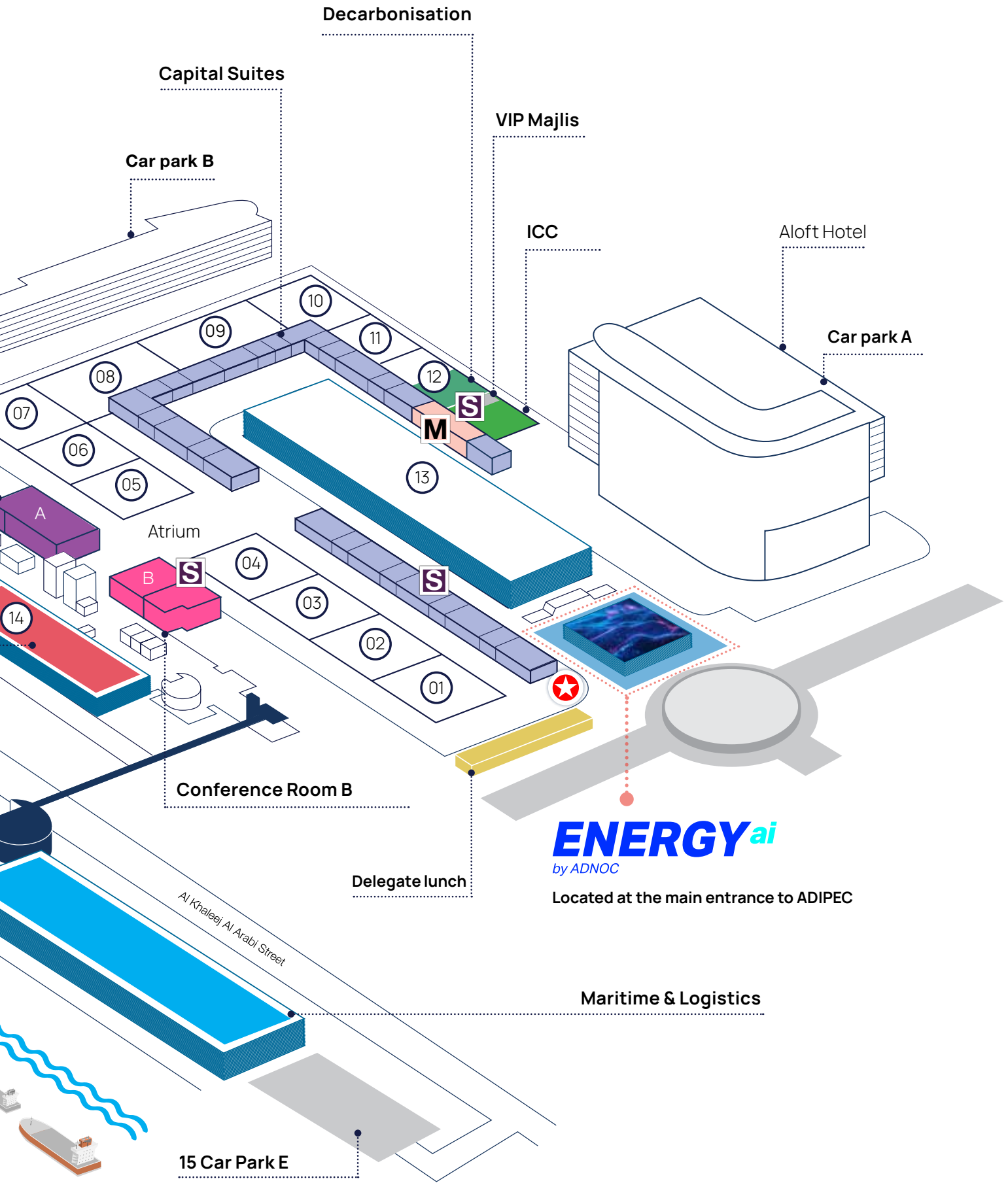
ENERGY *ai*
by ADNOC

Located at the main entrance to ADIPEC

Delegate lunch

Al Khaleej Al Arabi Street

Maritime & Logistics

15 Car Park E

Products & Solutions Guide

Page	Company	Hall number	Stand
43-87	**Area Sponsors & Sponsors**		
44	Avaxia	Energy ai by ADNOC	#AI-7
46	China Zhenhua Oil (Hong Kong)	Hall 3	#3220
48	CleanConnect.ai	Energyai by ADNOC	#AI-2
50	Emirates Development Bank	Energyai by ADNOC	#AI-5
52	eni S.p.A.	Atrium	#A300
54	Honeywell	Hall 4	#4150
56	Federation Of Indian Petroleum Industry	Hall 10	#10130
58	FS-Elliott	Hall 12	#12340
60	Gecko Robotics	Hall 14	#14477
62	Kent Group DMCC	Energyai by ADNOC	#AI-11
64	Microsoft Gulf	Energyai by ADNOC	#AI-16
66	National Marine Dredging Company	Hall 6	#6130
68	OMV Abu Dhabi Production	Hall 4	#4435
70	PTT Exploration and Production	Hall 5	#5220
72	Rock Rigid	Energyai by ADNOC	#AI-6
74	TechnipFMC	Hall 4	#4420
76	Tenaris Connections B.V	Hall 7	#7130
78	TotalEnergies UAE Services	Atrium	#A232
80	Tracy Energy Technologies	Energyai by ADNOC	#AI-4
82	Truelevel	Energyai by ADNOC	#AI-12
84	Wrench Solutions	Energyai by ADNOC	#AI-3
86	Yokogawa UAE Industry	Hall 14	#14135
88-153	**Exhibitors**		
88	Abu Dhabi University - College of Engineering	Hall 14	#14050
89	Al Ghaith Energy	Hall 5	#5120
90	Aerzen ME	Hall 8	#8832
90	AISUS	Hall 8	#8450
91	Adhiam Thermal Systems & Solutions	Hall 13	#13232
92	Aries Oil Field Services	Hall 2	#240
93	Artemis Technologies	Hall 15	#15047
93	Axellect	Hall 1	#1130
94	Bartec GmbH	Hall 13	#13640
94	Brenntag	Hall 14	#14585
95	Cadmatic ME	Hall 14	#14410
96	Cheto Corporation	Hall 14	#14613
97	China Special Alloy Group	Hall 13	#13797
97	Chiyoda Corporation	Hall 14	#14490
98	Chongqing Hongbao Technology	Hall 13	#13054
98	ClampOn AS	Hall 9	#9133
99	Cleopatra Enterprise	Hall 14	#14415
100	Cognite	Hall 14	#14113
101	CMG Middle East	Hall 12	#12302
101	Cosasco	Hall 4	#4210
106	DNV	Hall 9	#9157
102	Drillmec	Hall 3	#330
103	Dragon Oil (Holding)	Hall 4	#4345
104	DP World	Hall 15	#15164
105	Emdad	Hall 2	#2430
105	Enerwhere Sustainable Energy	Concourse	#CN34
106	Endress+Hauser Process Automation UAE	Hall 14	#14433
106	Energy Robotics	Hall 14	#14459
107	Emsteel Building Materials	Hall 5	#5352
108	Enviros Survey & Consultancy	Hall 13	#13250-10
109	ERM	Hall 8	#8450
109	Esgian AS	Hall 9	#9116
110	Fronius International	Hall 14	#14316
110	Flir Systems Trading Belgium	Hall 1	#1005
111	Expro North Sea	Hall 14	#14170
112	FutureMain	Hall 7	#7210-8
113	GBA SRL Engineering and Construction	Hall 1	#1160
113	GHGSat	Hall 12	#12336
114	Global Maritime Consultants Group	Hall 15	#15284
114	Go Easy Flow DMCC	Hall 14	#14210
115	Goriziane E&C	Hall 1	#1454
116	GTT (Gaztransport et Technigaz)	Hall 15	#15006
117	Guangzhou Dongsu Petroleum D&E Equipment	Hall 15	#15365
117	GWC Logistics	Hall 15	#15055
118	HDMANN Industry	Hall 13	#13533
118	Hytorc Unex	Hall 7	#7255
119	ILT Tecnologie	Hall 14	#14670
120	Hexagon PPM Middle East	Hall 14	#14530
121	Immensa	Hall 9	#9550
121	Intech Automation & Intelligence	Hall 5	#5120
122	Jiangsu Golden Gate Energy & Equipment	Hall 13	#13432
122	Jana Marine Service	Hall 15	#15065
123	Interwell	Hall 4	#4110
124	Kairos Technology AS	Hall 8	#8934
125	Kwik Flex Industries	Hall 13	#13133
125	LESER	Hall 8	#8851
126	Mammoet	Hall 11	#11310
126	Mazrui Energy Services (Soothsayer)	Hall 1	#1130
127	LabVantage	Hall 14	#14456
128	LiveEO GmbH	Hall 14	#14454
129	MER Marine Technologies	Hall 15	#15110
129	Med Marine Pilotage and Towage	Hall 15	#15285
130	Noveltech Surveys	Hall 15	#15186
130	Navarino	Hall 15	#15187
131	Masdar City Services	Concourse	#CN10
132	Penspen	Hall 8	#8551
133	Pepperl + Fuchs	Hall 14	#14213
133	Peterson	Hall 8	#8415
134	Quorum Software	Hall 14	#14470
134	Rajkot Diesel Machines	Hall 13	#13196
135	RigER Corporation	Hall 15	#15040
136	Saipem SPA	Hall 6	#6234
137	Samson Controls	Hall 14	#14150
137	Sino Technology	Hall 10	#10169
138	Sensoteq	Hall 8	#8415
138	Serimax	Hall 14	#14416
139	Sensia Solutions	Hall 4	#4210
140	SMEC Automation	Hall 13	#13630-6
141	Sopan Energy Contracting	Hall 13	#13630-16
141	Specialist Valve Services	Hall 8	#8450
142	Stimline Digital AS	Hall 9	#9151
142	Stone Ridge Technology	Hall 14	#14268
143	Tenergy Equipment & Technology	Hall 13	#13443
144	Trouvay Cauvin Gulf	Hall 9	#9350
145	The Kanoo Group	Hall 12	#12105
145	Three60 Energy	Hall 12	#12252
146	Total Safety	Hall 10	#10230
146	Tritorc Inc	Hall 12	#12323
147	Upstream Solutions	Hall 11	#11372
148	Velosi Asset Integrity and Engineering Consultancy Services	Hall 11	#11044
149	Vitzrocell	Hall 7	#7210-19
149	WEG	Hall 11	#11420
150	Wika Middle East	Hall 10	#10850
150	Wires&Bytes	Hall 14	#14312
151	Woodserv	Hall 1	#1130
152	Wsense	Hall 1	#1160
153	Xodus	Hall 8	#8450
153	Zhongtian Technology Submarine	Hall 10	#10452

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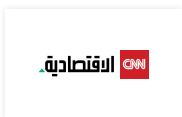
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27-30 October 2025

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