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Advancing digital drilling strategies

Having built a significant presence in Oman, Nabors is delivering measurable results through integrated technologies, automation and collaborative execution – Page 4



Keeping data clean for effective insight

Clean data, AI, and smart meters are key to energy efficiency, but adoption gaps and data center power demands pose major challenges for the industry's future – Page 7



How jobs hold the key to global prosperity

As youth populations surge in emerging markets, leaders at the World Bank rally behind innovation, and inclusive policies to unlock millions of jobs and safeguard global stability – Page 16

BREAKING OLD MOULDS: THE RISE OF WOMEN IN ENERGY

By **ABDULAZIZ KHATTAK**

• **Women are forging bold new paths and changing the course of energy history**



Women are defining their place in energy

IN a sector long defined by hard hats, oil rigs, and a predominantly male workforce, women are beginning to reshape the global energy industry, and nowhere is this transformation more visible than in the GCC region.

Amid volatile oil prices, climate imperatives, and technological disruption, the energy sector is not merely adapting; it is being reinvented, and women are increasingly at the heart of that change.

According to the 2025 Global Energy Talent Index (GETI) report, representation of women in traditional energy sectors like oil, gas, and petrochemicals has inched upwards from 10 to 12 per cent over five years.

In transitional sectors such as power and nuclear, the figure stands slightly higher at 14 per cent, while renewables and future energy technologies report the strongest presence at 22 per cent. Though progress is slow, it signals a profound shift in an industry historically slow to change.

In the UAE, however, the momentum feels different; faster, more deliberate, and deeply rooted in national strategy.

Companies like ADNOC are not just pledging inclusion; they are investing in it. Initiatives such as "Women in Energy" are creating vital pipelines of female talent, enabling women to lead engineering teams, drive sustainability agendas, and shape digital transformations.

It is a reinvention powered not just by poli-

cy, but by a palpable cultural shift.

Venkatraman Mohan, Managing Partner – Oil & Gas Division at Innovations Group, notes the extraordinary impact diverse teams have on innovation and problem-solving. "I've personally seen how gender-diverse teams solve problems faster, collaborate better, and bring fresh energy into the room," he says. "As more Emirati women pursue STEM education and step into the workforce, they are not just participating, they are leading. And that changes everything."

Yet the global picture reveals enduring challenges. Systemic barriers, an ageing workforce, and competition from the tech industry continue to deter many women from energy careers.

The GETI report highlights that fewer young professionals, including women, aspire to roles in traditional energy, seeing greater allure in robotics, AI, and high-tech industries.

To counter this, energy companies must better showcase the technological dynamism within their own fields—such as unmanned

drilling and drone-based exploration—to inspire the next generation.

Mentorship emerges as a powerful tool in bridging the gender gap. Calls for structured men-torship programmes have risen sharply, reflecting a growing recognition that personal guidance and visible role models are crucial for attracting and retaining women.

Moreover, women working in energy are notably more motivated than their male counterparts by the desire to contribute to climate change solutions, an asset that aligns perfectly with the sector's urgent transition towards sustainability.

Flexible working arrangements, family support, and clearly defined career pathways remain critical if the sector hopes to accelerate this momentum.

Encouragingly, wage growth across the industry, including for women, suggests a shifting appreciation for technical competence and leadership. What is unfolding is more than just an energy transition; it is a human one.

Will AI's energy needs delay transition?

THE global boom in artificial intelligence (AI) is prompting some countries to delay their energy transition plans for fear of missing out on the economic potential of a rapidly evolving trillion-dollar industry, experts warned during Dubai AI Week.

In a session titled 'AI's Energy Future: Strategies for Sustainability', Zaid Al Ansari, Executive Director of EPRI Gulf, highlighted the soaring energy demands of generative AI tools.

"When you run a simple Google search through a model like ChatGPT, it consumes around ten times more energy than a traditional search," he said. "Some countries are extending the lifespan of fossil fuel plants just to meet AI-related energy needs, while others are holding back on their renewable transition goals to remain competitive in the AI race," he added.

Al Ansari stressed the urgency of integrating data centres with renewable energy sources, while Dr Mounir Boukadi, Regional Director, Oracle Energy & Water MEA, pointed to the UAE's strategic advantage: "The UAE generates approximately 166 terawatt-hours (TWh), while consuming around 158 TWh. This opens a major opportunity for regional energy trading, particularly for powering AI infrastructure."

Dubai, it was noted, aims to become a regional hub for AI-powered data centres running on 100 per cent renewable energy by 2033.

Mansour Belhadj, General Manager at Microsoft, said: "By 2026, data centres are projected to consume between 600 and 690 terawatt-hours of power. Around 60 per cent of this will be driven by the execution of AI, and 40 per cent by training models."

Prof Mohamed Dawoud, Senior Advisor at the Environmental Agency, Abu Dhabi, explained how AI can support arid-region water management: "We use AI to manage recharge dams and harvest rainfall efficiently."



Top executive calls for radical AI collaboration, open ecosystems

By **SREE BHAT**

A CALL for "radical collaboration" to fully realise the promise of artificial intelligence (AI) went out from AVEVA World, the flagship event of AVEVA held in San Francisco.

In his keynote address at the event, AVEVA CEO Caspar Herzberg urged companies, governments, and technology partners to move beyond traditional silos and embrace open ecosystems.

Hosted from April 8 to 10 at the Moscone West Convention Centre in San Francisco, experts at the event discussed how industrial intelligence is enabling companies to analyse, visualise, and contextualise their data to im-

prove decision-making, build resilience, and enhance sustainability across the enterprise.

"Radical collaboration means transcending business-as-usual to connect information and insights in new ways – working across silos, across organisations, across value chains. It's about sharing across domains, bringing a multidisciplinary approach to problems, and tapping into systems thinking. It's about finding the signal in the noise and seeing with fresh eyes," said Herzberg.

"I call it 'radical' because it represents a departure – it's not how we did things before. It means recognising that sharing information doesn't diminish its value. On the contrary, sharing enhances it. And it's 'collaborative' be-

cause it involves finding synergies throughout the operational lifecycle and with other groups – even with rivals."

Herzberg said the 21st century has been defined by accelerating connectivity – across information, supply chains, economies, and people – but warned that these advances are increasingly challenged by global fragmentation.

"We're living in an era where connection and division are happening at the same time," he said. "Financial markets, information systems, companies – we're all more interdependent than ever before. And yet, we also see de-globalisation, polarisation, and increasing isolation. These twin forces are creating a new kind of complexity."

In this climate of paradox, Herzberg said in-

dustry must evolve – not by clinging to outdated models, but by embracing new ways of thinking, powered by intelligent systems and deep collaboration.

Contrary to the common mantra that industry must "do more with less," Herzberg argued that today's environment actually offers abundance: data, ideas, innovation, and a collective desire for progress.

"This isn't the era of doing more with less – we can do more with more," he said. "We are living in a period of explosive innovation, driven by technology. Amid these advancements, there's a wealth of opportunity to make common cause – to do things together that we couldn't achieve on our own, to scale rapidly, to do more."

CYBERSECURITY TOP PRIORITY IN REGION'S ENERGY OPS

Leaders must ensure no device is left unguarded and no door unlocked. With layered defences and a culture of vigilance, the digital oilfield can remain resilient and secure, Osama AlZoubi, MEA Vice President, Phosphorus Cybersecurity, tells **OGN**

Inside

Digital Transformation

Advancing digital drilling through strategic alliances	4
Digitisation will help attract talent: AVEVA CEO.....	6
The need to keep data clean and true for effective insight.....	7
APAC needs to unearth value in business data, and quickly.....	8
AI powering efficiency and growth in African mining.....	8
Unlocking new possibilities with Ethernet-APL.....	9
Lummus acquires NAPCON to expand digital offerings	10
Energy firms battle rising data chaos	11
AIQ forges partnerships to advance AI in energy sector.....	10
Miros boosts OSD system with cloud capabilities.....	10

DRONE TECHNOLOGY

Is drone tech the future of industrial asset inspections?

WOMEN IN ENERGY.....

Breaking barriers: Women transform energy leadership

Women in energy: Slow but steady shift towards inclusion

WORKFORCE DEVELOPMENT & TRAINING.....

How jobs hold the key to global prosperity

Future-proofing workforce with AI-driven analytics

CRC Evans set to create 10 Scotland apprenticeships

StormGeo's learning platform to raise weather safety awareness

Emirati talent leads nuclear ambitions

REGIONAL NEWS

Teledyne FLIR thermal tech boosts Mideast energy efficiency

Adnoc Drilling secures \$1.63bn contracts

WORLD NEWS

Global nuclear power capacity to reach 494 GW by 2035

Global electricity demand is up 4.3pc in 2024

AFRICA FOCUS

India boosts energy efforts in Africa as markets shift

China makes foray into Africa's nuclear sector

PRODUCTS & SERVICES

Clariant and Technip Energies launch low steam-to-oil catalyst

New Wartsila 50DF solution reduces methane slip by 75pc

EVENTS.....

OPES 2025 to drive innovation & growth

Vision Golfe 2025 to boost France-GCC ties

HSE summit to explore safety solutions

BUSINESS

Master Gas System Expansion - Phase 3 - Packages 2 & 8

EXPO NEWS.....

ME-TECH to address challenges in downstream sector

By **ABDULAZIZ KHATTAK**

OIL and gas fields across the Middle East are undergoing a rapid digital transformation.

Companies are deploying advanced sensors, Industrial Internet of Things (IIoT) devices, and high-speed networks to monitor and control operations in real time.

This digital oilfield revolution is boosting efficiency, enabling engineers to track well output from a control room in Dubai or adjust a pipeline valve hundreds of kilometers away.

Countries in the GCC are experiencing significant technological progress, particularly in energy, driven by initiatives like Vision 2030 and mega-projects such as Neom.

But this innovation also has a downside. Every new connected device and remote access point expands the potential cyber-attack surface.

In an industry that forms the backbone of national economies, the stakes for cybersecurity have never been higher.

Middle East oil and gas companies are embracing IIoT sensors and real-time data to optimise production.

This digital transformation brings great benefits, but also new cybersecurity challenges, as every connected device becomes a potential target.

THE DIGITAL OILFIELD: BENEFITS & HIDDEN RISKS

From drilling rigs to refineries, the oil and gas sector is now saturated with smart devices.

IIoT sensors measure pressure, temperature, and flow rates on pipelines and offshore platforms.

Wireless transmitters transmit data from remote wellheads to central databases.

Field engineers use tablets to check pump performance, and even autonomous robots inspect equipment in hazardous areas.

These connected technologies enable faster decision-making and safer, more efficient operations.

Engineers can predict equipment failures before they happen, and managers can get a live view of production across multiple sites.

But the same connectivity that delivers efficiency can also invite danger.

Every sensor, connected valve, or camera is a computing device – and each one could be an entry point for attackers.

Oil and gas facilities traditionally relied on isolated operational networks (OT) walled off from the internet.

Today, that wall is pierced: IT and OT systems are increasingly interconnected. This convergence bypasses the OT air gap, meaning threats that once were confined to office IT systems can now find their way into industrial systems.

A remote access link for vendor maintenance or a rig's satellite connection can become a malware target if unsecured.

Simply put, the attack surface – all the pumps, valves, workstations, and wireless nodes that hackers could target – has exploded.

In this expanded oilfield, you cannot



Osama AlZoubi

protect what you don't see. One major challenge is visibility: Companies may not be aware of every connected device.

Shadow IoT devices, like a forgotten sensor or a contractor's laptop still plugged into a control network, can exist unseen.

A study found that 40 per cent of organisations had, at least, one OT asset insecurely connected to the internet, and about 31 per cent had an internet-exposed device with a known critical vulnerability.

These sobering statistics suggest that many companies have blind spots, which skilled attackers are only too happy to exploit.

SURGE IN THREATS TO ENERGY INFRASTRUCTURE

The rise in connected devices has been matched by a rise in threats. What was once a theoretical risk has become very real.

In the past year, oil and gas companies worldwide, including those in the Gulf, have faced an onslaught of cyberattacks ranging from ransomware to espionage.

Attackers, from profit-driven gangs to state-backed hackers, see the energy sector as a high-value prize. A successful hack can yield ransom, disrupt revenues, or serve as political leverage without firing a shot.

Industry research found that 67 per cent of energy (oil and gas) and utilities organisations were hit by ransomware in 2024, the same rate as in 2023.

One report recorded nearly 1,700 ransomware attacks in 2024 – an 87 per cent increase – and one in four affected firms had to suspend operations. Even a brief outage can cost millions and ripple across supply chains.

Beyond ransomware, stealthy intrusions are rising. Some attacks are aimed at disrupting physical processes, not just stealing data.

Malware targeting pipeline control software and refinery equipment shows that infrastructure is in the crosshairs.

Nation-state groups are becoming sophisticated with obscure ICS devices and protocols, eroding the old "security by obscurity" advantage.

Indeed, basic security lapses are often to blame. Many breaches involve default passwords or outdated firmware.

An attacker can exploit a default password on a smart sensor or field camera from halfway around the world.

Something as simple and ordinary as a contractor's CCTV camera or office printer can become a hacker's point of entry. In cybersecurity, the weakest link often determines the fate of the chain.

OIL & GAS IS PRIME TARGET

Hackers target energy companies because they represent critical infrastructure and economic lifeblood.

Attacks promise disruption and extortion opportunities. A major outage can spiral global prices, a perfect pressure point for ransom.

Energy firms are also vulnerable due to their interconnected operations. An attacker can move laterally across upstream, midstream, and downstream systems.

OT systems were built for reliability, not security. Once accessed, disruptions can have a cascading effect. Malware that closes a pipeline valve can trigger shutdowns elsewhere.

Geopolitics also looms large. The Middle East has long been a hotspot for cyber operations.

Destructive malware campaigns and espionage targeting regional utilities have been tied to state-linked groups.

These tactics continue to evolve with global conflicts spilling into cyberspace, and observers noting that hackers are positioning themselves for future geopolitical triggers.

In this climate, oil and gas firms are not just crime targets – they're chess pieces.

DEFENCE IN DEPTH

Cybersecurity must be treated as a core

Continued on page 3

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Data centres in advanced economies will drive more than 20 per cent of the growth in electricity demand between now and 2030, putting the power sector in those economies back on a growth footing

Data centre power demand to exceed Japan's use: IEA

ARTIFICIAL intelligence (AI) has the potential to transform the energy sector in the coming decade, driving a surge in electricity demand from data centres around the world while also unlocking significant opportunities to cut costs, enhance competitiveness and reduce emissions, according to a new report from the International Energy Agency (IEA).

The 'Energy and AI' report offers comprehensive, data-driven global analysis to date on the growing connections between energy and AI.

It draws on new datasets and extensive consultation with policy makers, the tech sector, the energy industry and international experts.

The report projects that electricity demand from data centres worldwide is set to more than double by 2030 to around 945 terawatt-hours (TWh), slightly more than the entire electricity consumption of Japan today.

And AI will be the most significant driver of this increase, with electricity demand from AI-optimised data centres projected to more than quadruple by 2030.

In the US, power consumption by data centres is on course to account for almost half of the growth in electricity demand between now and 2030.

Driven by AI use, the US economy is set to consume more electricity in 2030 for processing data than for manufacturing all energy-intensive goods combined, including aluminium, steel, cement and chemicals.

In advanced economies more broadly, data centres are projected to drive more than 20 per cent of the growth in electricity demand between now and 2030, putting the power sector in those economies back on a growth footing after years of stagnating or declining demand in many of them.

A diverse range of energy sources will be tapped to meet data centres' rising electricity needs, according to the report – though renewables and natural gas are set to take the lead



Data centres to drive growth in electricity demand

due to their cost-competitiveness and availability in key markets.

"AI is one of the biggest stories in the energy world today, but until now, policy makers and markets lacked the tools to fully understand the wide-ranging impacts," says Fatih Birol, IEA Executive Director.

"Global electricity demand from data centres is set to more than double over the next five years, consuming as much electricity by 2030 as the whole of Japan does today. The effects will be particularly strong in some countries. For example, in the US, data centres are on

course to account for almost half of the growth in electricity demand; in Japan, more than half; and in Malaysia, as much as one-fifth."

The report emphasises the significant uncertainties that remain, from the macroeconomic outlook to how quickly AI will be adopted.

It also notes questions over how capable and productive AI will become, how fast efficiency improvements will occur, and whether bottlenecks in the energy sector can be resolved.

AI could intensify some energy security strains while helping to address others, according to the report.

Cyberattacks on energy utilities have tripled in the past four years and become more sophisticated because of AI.

At the same time, AI is becoming a critical tool for energy companies to defend against such attacks.

Another energy security concern relates to the expanding demand for critical minerals used in the equipment in the data centres that power AI.

The report provides first-of-its-kind estimates of demand from data centres for critical minerals, whose global supply is today highly concentrated.

While the increase in electricity demand for data centres is set to drive up emissions, this increase will be small in the context of the overall energy sector and could potentially be offset by emissions reductions enabled by AI if adoption of the technology is widespread, according to the report.

Additionally, as AI becomes increasingly integral to scientific discovery, the report finds that it could accelerate innovation in energy technologies such as batteries and solar PV.

"With the rise of AI, the energy sector is at the forefront of one of the most important technological revolutions of our time," says Dr Birol.

"AI is a tool, potentially an incredibly powerful one, but it is up to us – our societies, governments and companies – how we use it. The IEA will continue to provide the data, analysis and forums for dialogue to help policy makers and other stakeholders navigate the path ahead as the energy sector shapes the future of AI – and AI shapes the future of energy."

According to the report, countries that want to benefit from the potential of AI need to quickly accelerate new investments in electricity generation and grids, improve the efficiency and flexibility of data centres, and strengthen the dialogue between policy makers, the tech sector and the energy industry.

Cybersecurity top priority in region's energy

Continued from page 2

element of business continuity and national security.

There are proven strategies, but they require a defence-in-depth approach. No single tool is enough. Companies must combine layered technology, trained people, and robust processes.

The key elements include:

- **Network segmentation:** Separate corporate IT from OT systems. Rigs, pipelines, and plants should be on isolated segments with very limited and monitored pathways. Flat networks let attackers pivot freely. Firewalls and DMZs can contain breaches.

- **Zero-trust access controls:** Trust nothing; verify everything. Strong multi-factor authentication, strict access policies, and continuous verification are essential. Even inside the network, each access request must be scrutinised.

- **Real-time monitoring:** Use specialised OT IDS to detect abnormal activity. AI can help detect intrusions in real time. The goal is to detect in minutes, not weeks.

- **Employee training:** A human firewall is essential. From engineers to executives, everyone must know cyber hygiene. Run regular drills and simulations to build response muscle memory.



Energy firms are also vulnerable due to their interconnected operations

- **Asset management:** Keep an updated inventory of all connected devices no matter how small or obscure. Patch and secure everything, even badge readers and printers. Unseen

devices are unguarded doors. Use automated tools to discover and secure assets at scale. IIoT deployments often scale rapidly, meaning hundreds or even thousands of devices can en-

ter the network with minimal oversight

NO DEVICE LEFT BEHIND

Protecting infrastructure requires a holistic, end-to-end mindset. Every device, segment, and user must be governed by strong policies. Blind spots and default trust are dangerous.

Leadership must treat cybersecurity as operational excellence. This means regular cyber reviews, investing in defences, and creating accountability. A firmware update on a pump's controller is as critical as its mechanical maintenance.

Many companies are elevating CISOs, increasing OT security budgets, and sharing threat intelligence.

While no system is 100 per cent secure, a defence-in-depth strategy deters attackers and limits damage. Assume breaches will happen; but the goal is resilience.

Cybersecurity protects not just corporate assets, but the energy lifeline of nations. The digital transformation of oilfields is exciting, but its promise could be undone by a single incident.

Leaders must ensure no device is left unguarded and no door unlocked. With layered defences and a culture of vigilance, the digital oilfield can remain resilient and secure.

Advancing digital drilling through strategic alliances

Having built a significant presence in Oman, Nabors is delivering measurable results through integrated technologies, automation and collaborative execution, Kevin Almeida, Managing Director, Nabors Drilling Solutions (NDS) and Canrig, tells **OGN**

NABORS continues to advance its leadership in drilling automation, digital technology integration, and operational excellence across the Middle East, and Oman is no exception.

At this year's Oman Petroleum & Energy Show (OPES), being held from May 12-14, visitors will see firsthand how Nabors is shaping the future of well construction by integrating advanced technologies through automation, digitalisation, and expanding in-country capabilities.

A GROWING FOOTPRINT IN OMAN

Nabors has built a significant presence in Oman, backed by decades of successful operations in the country.

Its long-standing strategic relationship with a supermajor in Oman underscores a strong, collaborative approach and a commitment to supporting Oman's economic development.

Currently operating in Oman, Nabors continues to deliver consistent results through its dedicated efforts.

Over the years, Nabors Oman has achieved substantial improvements in operational efficiency by leveraging close technology convergence and digital workflows.

This approach has enabled the operator to reduce well cycle times by more than 20 per cent over the past three years.

This measurable success highlights the evolution of Nabors' relationship with its customers, from a traditional operator-contractor model to a solution-oriented, performance-driven partnership.

In 2024 and early 2025, Nabors Oman set multiple drilling records across its fleet, including milestones in specific well sections and extended lateral wells, while maintaining a strong safety culture and achieving a zero hurt rate for the year.

These accomplishments reflect Nabors' commitment to excellence and safety, while supporting customers in lowering both cost and carbon footprint per barrel.

Aligned with Oman's Vision 2040 and global sustainability goals, they further highlight Nabors' focus on reducing environmental impact.

Additionally, the combined efforts of Nabors and Halliburton have yielded impressive results in Oman, optimising drilling performance and reducing well construction time.

This success is driven by the seamless integration of Halliburton's LOGIX™ automation and remote operations with Nabors' advanced solutions.



Team Oman celebrating Oman's long-standing history and successful operations

HALLIBURTON & NABORS: A PIONEERING COLLABORATION & RECOGNITION FOR DIGITAL INNOVATION

Nabors and Halliburton's groundbreaking collaboration is transforming drilling operations in the Middle East.

Together, the two industry leaders are deploying their suite of advanced automation and digi-

tal technologies, including Nabors' SmartROS® rig automation system, and RigCLOUD® digital platform alongside Halliburton's LOGIX™ automation and remote operations.

These integrated solutions have already proven their success in Halliburton's operations in Iraq and Oman, delivering improved drilling efficiency, and greater overall performance.

Nabors deployed its SmartDRILL® process automation, a key component of Nabors' SmartROS® rig digitalisation and automation portfolio alongside Halliburton's LOGIX™ automation and remote operations, successfully optimising the rate of penetration (ROP) and advancing rig operations and reliability.

Implemented across two non-Nabors rigs, the SmartDRILL® digital tool integrated with four distinct control systems, improving connection times, optimising slide performance, and reducing unplanned trips.

Eight wells were drilled with automation, delivering impressive results. The intermediate section saw a 43 per cent reduction in weight-to-weight time, while the production section achieved a 34 per cent reduction in weight-to-weight time, the key indicators of automation efficiency.

This successful collaboration demonstrated scalability and consistency across diverse rigs and operations.

The synergy between Nabors' SmartROS® rig



Rig 217's safe and successful rig move, marking the commencement of drilling services

automation platform and Halliburton's LOGIX™ automation and remote operations created a unified ecosystem, seamlessly integrating rig controls, subsurface data, digital twins, and remote operations for smarter, more connected workflows.

The integrated effort between Nabors and Halliburton continues to empower operations in the Middle East to overcome complex challenges, unlocking new levels of performance and efficiency. Their joint efforts were recently globally recognised when they were named Digital Enabler of the year at the 2025 Oil and Gas Middle East Awards – an achievement that highlights the successful integration of rig automation and digital operations into a cohesive solution setting new benchmarks for safety, performance, and consistency.

Beyond Oman, Nabors is also collaborating with industry leaders to scale high-performance drilling solutions globally, ensuring access to advanced capabilities that drive efficiency and innovation. Recently, Nabors expanded its strategic alliance with Corva AI, reinforcing the shared vision to accelerate digital transformation in the drilling industry.

Building on this strategic alliance, Nabors and Corva are extending their platform integration into the RigCLOUD® platform to advance drilling intelligence and broaden industry impact.

ENHANCED EQUIPMENT SERVICES WITH CANRIG

Canrig, the equipment, manufacturing, and aftermarket services division of Nabors, has been a trusted partner in the region for decades.

In 2024, Canrig expanded its footprint in Oman by opening a dedicated workshop facility, providing in-country support for equipment repair, recertification, upgrades, and rebuilds.

Since its launch, the facility has played a key role in strengthening local operations, enhancing service responsiveness, and improving turnaround times, quickly becoming a valued resource for customers across the region.

Whether you're seeking to optimise drilling performance, build a more digitally capable workforce and elevate your operations, Nabors is your partner in transformation.

Visit Nabors Stand 4210 at OPES to learn more.



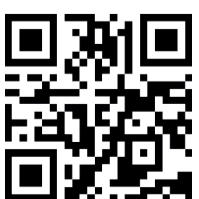
Nabors wins Digital Enabler of the year award



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Digitalisation will help attract talent: AVEVA CEO

Remote monitoring, AI, and predictive analytics aren't replacing people; they're enabling operations to continue when people simply aren't available, Caspar Herzberg tells **OGN**

BY SREE BHAT

Will Artificial Intelligence (AI) and digital technologies reduce job opportunities in the industrial and energy sectors, even as these industries are seen as vital job providers—particularly in developing economies?

OGN raised this pressing question with the CEO of AVEVA, a leading global industrial software company, during a media roundtable at the AVEVA World conference in San Francisco.

Caspar Herzberg, highlighting the importance of the question, said he doesn't see a contradiction in adoption of technology.

"There's a real shortage of engineers, particularly in hard-to-abate sectors," he noted. "Far from reducing roles, digitalisation helps industrial employers attract talent by making operations more efficient, safer, and more appealing."

Referencing a recent visit to a copper mine in Arizona, he recounted the challenges faced in staffing remote and hazardous sites. "They struggle to find enough staff. Remote monitoring, AI, and predictive analytics aren't replacing people – they're enabling operations to continue when people simply aren't available."

Herzberg echoed a powerful quote from the event's keynote speaker: "It's not that managers will disappear. It's that those who don't use AI will." Innovation isn't an option – it's an imperative, he said.

AVEVA World, a three-day global conference which brought together technology leaders, customers, and partners, served as a powerful platform for demonstrating AVEVA's impact on the future of industrial operations and sustainability. **OGN** was only invited publication at the conference from the region.

In an engaging and candid exchange with journalists, Herzberg shared insights into the company's global momentum, strategic focus, and commitment to empowering industries through cutting-edge digital solutions.

A GLOBAL GROWTH TRAJECTORY

AVEVA's current trajectory is one of robust growth, underpinned by surging global demand for digital transformation across sectors. "We're doing very well," Herzberg noted.

"Irrespective of the tectonic shifts we're seeing in global trade and supply chains, it's clear that businesses – both large and small – recognise the power of technology to drive efficiency. In sectors like energy, the gains in productivity are substantial enough to justify strong investments in digital tools.

"What companies around the world are realising is that by investing in digitalisation – by truly understanding their data, production, supply chains, and key metrics – they can dramatically improve performance.

"Digitalisation is good for the planet also," Herzberg asserted. "Greater efficiency means more sustainability. That understanding is now global, and it powers our growth."

AVEVA has achieved nearly 15% growth in Annual Recurring Revenue (ARR), with over 80% of its revenue now recurring – a testament to the stickiness and value of its offerings. "We've grown organically by nearly half over the past three years," Herzberg added, citing strong uptake across engineering, operational intelligence, and data management solutions.

UNLOCKING THE POWER OF INDUSTRIAL DATA

AVEVA's growth is rooted in three core technology pillars: unified engineering, real-time operations management through PI System,



Caspar Herzberg (right) with panelists Erik Brynjolfsson (left), Director of Stanford University Digital Economy Lab at the Institute for Human-Centred AI, and Oliver Blum, CEO, Schneider Electric, at the opening panel discussion at AVEVA World

and scalable analytics powered by cloud and AI. "We offer more than three million data points through our digital twin technology – an unmatched ability to connect engineering and operations," he said.

He dismissed concerns that hyperscalers or cloud-native competitors could disrupt AVEVA's industrial data dominance. "On the contrary, we are disrupting cloud," he remarked confidently. "Our hybrid approach – keeping data on-prem while analysing it in the cloud – is unique. That's why we're partnering with Databricks, Microsoft, and others."

AVEVA's competitive edge lies in its ability to handle time-series data at scale and enable intelligent, bidirectional data flow between the edge and the cloud. "That's what powers our radical collaboration," Herzberg explained. "Even if you're a rival, we make it easy to integrate. Because customers want everything to work together seamlessly."

AVEVA CONNECT AND THE FUTURE OF AI

The future lies in Connect, AVEVA's unified platform designed to facilitate seamless data flow across applications and partners. "We're investing heavily in Connect and data services, and directing more than half of our R&D spend to new technologies," Herzberg said.

Artificial Intelligence plays a pivotal role in this vision. "We now have 19 AI-infused offerings across our portfolio," he revealed. "That's a significant shift and a market-leading position."

SUPPORTING THE GULF'S DUAL ENERGY MANDATE

Asked by **OGN** specifically about the Gulf region – where traditional hydrocarbons are being balanced with energy transition strategies – Herzberg acknowledged the region's leadership.

"Actually, several factors made oil and gas companies early adopters of digital technology. For one, they've always had a strong focus on both efficiency and, crucially, safety. This meant they recognised the value of digital tools quite early on.

"Because of this early adoption, they already had a head start compared to many other industries in terms of digitising their operations and assets. Furthermore, the nature of their work, with many remote assets like offshore platforms, made digitalisation even more appealing. It's simply more practical and safer to monitor and manage these distant locations digitally, as fewer people want to spend extended periods in such environments.

"This early investment in digitalisation has provided them with a solid foundation to effectively integrate their various assets. They can then leverage this integrated data to run sophisticated analytics and significantly boost efficiency. Interestingly, this increased efficiency can also lead to a reduction in carbon emissions per barrel of oil produced – a seemingly counterintuitive but very real outcome," he said.

"When you see how companies like ADNOC or Aramco utilise technology to manage and visualise their numerous and diverse assets simultaneously, it's truly impressive. Now, they're building on this foundation by integrating renewable energy assets, monitoring them, and applying predictive analytics and prescriptive maintenance. ADNOC, in particular, is making significant investments in these areas," he noted.

These companies will continue to be leaders in technology adoption and many of them are not just maintaining but actually increasing their use of solutions like AVEVA's across their operations. For instance, Aramco has now

adopted Unified Engineering as a standard for many of its assets, highlighting their commitment to these advanced digital approaches, said Herzberg.

AVEVA's regional footprint is well established, with offices in Dubai, Abu Dhabi, and Dammam. "We have about 150 to 200 employees in the Gulf, and that number is set to grow," Herzberg said. "Our customers here go beyond oil – they include mining, chemicals, and manufacturing giants like SABIC."

NAVIGATING GLOBAL DISRUPTION

Asked about the fluctuating tariffs, geopolitical instability and their impact on industrial customers and AVEVA, he said: "We're very focused on helping our customers make sense of whatever issue they're dealing with. The re-configuration of global supply chains has been underway for some time. This represents a major opportunity for us, because when new assets are built – often in entirely new locations – they need technology to function. And that's where we come in."

While acknowledging that the short-term impact of geopolitical events is hard to predict, Herzberg sees long-term growth in the form of large trade blocs restructuring and investing in resilient infrastructure. "Ultimately, as they build, we grow with them," he said.

This theme of adaptability and foresight flows naturally into AVEVA's ethos of radical collaboration, particularly in data sharing – a once-taboo topic in many industrial sectors.

"Just a few years ago, manufacturers were hesitant even about cloud adoption. That's changed. And now we're seeing increased willingness to share data – not just externally within the supply chain, but internally across siloed departments within companies," he noted.

A core differentiator for AVEVA is its commitment to openness. Rather than lock users into a proprietary loop, the company's Connect platform is designed for interoperability – even with competitors. "We even collaborate with companies whose solutions overlap with ours. But by having them on the platform, we drive more value for customers, and in turn, encourage deeper investments in our infrastructure. Everybody wins when we collaborate," Herzberg emphasized.

ETHICAL AI AND REAL-WORLD SUSTAINABILITY

Addressing questions on the ethical deployment of AI and the concrete steps AVEVA is taking toward sustainable industry practices, he said: "Our use of AI is energy-efficient and designed with sustainability in mind. Unlike many consumer AI models, our applications are lean, focused on optimising industrial operations rather than generating intensive computations."

Beyond technology, AVEVA is actively helping shape standards with customers, ensuring AI is deployed ethically and transparently across sectors. "In practice, AI helps drive efficiency and reduce wasteful energy consumption – which directly supports sustainability goals," he added.

The company's impact can be measured through what it calls its "software handprint" – the positive environmental footprint enabled by its solutions. "In fully digitised factories, we typically reduce energy consumption by 10 to 30 percent. In utilities, we help manage grid loads and optimise electricity delivery. And in shipbuilding, AI and cloud collaboration have accelerated sustainable ship design by up to 50 percent," Herzberg said.



Caspar Herzberg with Sree Bhat

Clean data, AI, and smart meters are key to energy efficiency, but adoption gaps and data center power demands pose major challenges for the industry's future, David Sheldrake, Global SVP of Sales360, POWWR, tells **OGN**

The need to keep data clean and true for effective insight

By **ABDULAZIZ KHATTAK**

DATA, data everywhere, and for the energy industry, it's a double-edged sword. Today, the total amount of data created, captured, copied, and consumed globally has reached nearly 150 zettabytes, with projections suggesting it will surge to 400 zettabytes within the next three years.

While more data can lead to deeper insights, its value hinges on quality and relevance, especially in energy, where inaccurate or inconsistent data can disrupt everything from grid stability to customer billing.

Artificial intelligence (AI) and machine learning (ML) are proving vital in turning this data deluge into actionable intelligence for energy suppliers.

These technologies excel at analysing complex datasets, spotting patterns, and predicting trends, enabling utilities to forecast demand, optimize supply, and maintain grid efficiency.

But their effectiveness depends on clean, well-structured data. In deregulated markets, where fragmented utility systems often lead to slow or inconsistent data exchange (EDI), errors can easily infiltrate workflows, causing costly downstream issues.

Ensuring that the right data is collected – not just in terms of volume but in context of accuracy too – is paramount. Yet, keeping data clean and true can be a real challenge for the energy industry.

This is especially true in regions where the sheer number of deregulated utility companies means that the electronic data interchange (EDI) can be slow and inconsistent. Once this bad data infiltrates the system, problems begin.

WHY SMART METERS ARE KEY

Not only are smart meters the key to a more sustainable future for all, but they are also the key to ensuring more accurate data in the future.

As we know, smart meters allow the energy industry to better manage what energy is needed, and where. This leads to reduced energy waste and us as a society becoming less reliant on traditional fossil fuels.

Smart meters are a valuable instrumental in helping mitigate the issue of bad data. Yet, despite the well-publicised benefits of smart meters in helping consumers better track their energy usage and get more accurate bills, their adoption is still lagging behind initial projections across many regions.

Here, it is still common for staff from utilities having to visit premises to physically read meters. This needs to change.

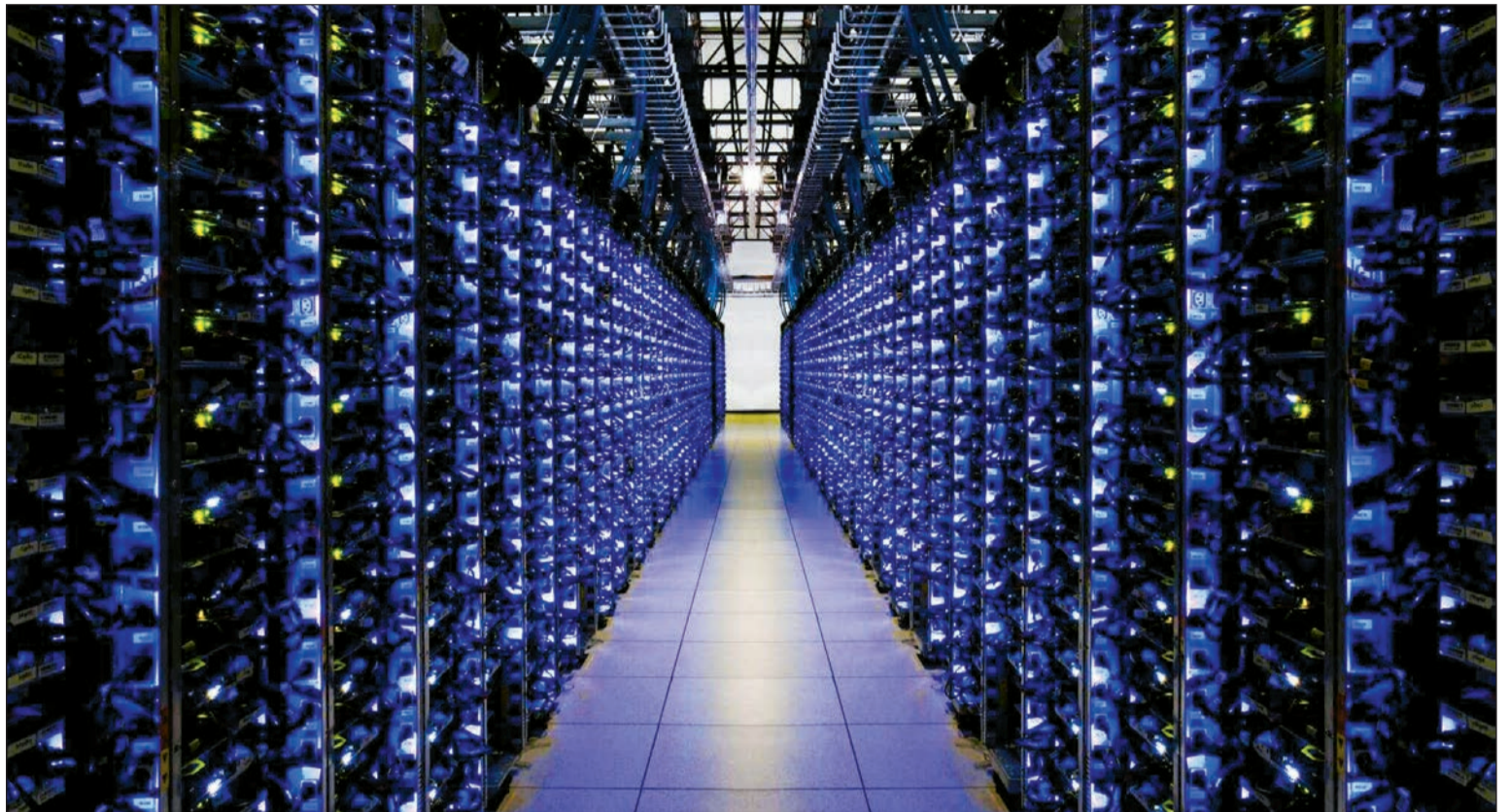
In these regions it is imperative that energy companies do what they can to educate consumers about the long-term benefits of smart meters and implement pilot programs to demonstrate their effectiveness.

Regulatory support and incentives can also be instrumental in accelerating adoption rates and encourage more to transition to smart meter technology.

LOOKING BEYOND THE 1S & 0S

However, whilst smart meters help the industry know what energy is being consumed at any one time, it is important to look beyond the 1s and 0s.

Know your customer (KYC) guidelines require an energy supplier to verify the identity, suitability, and risks involved with maintaining a business relationship with a customer to help with debt and fraud prevention. Whilst this



Data centres are among the largest users of energy today



David Sheldrake

seems good on paper, it is not infallible.

Human error, or confusion, at point of input can be common. For example, the same customer could be entered as dave, Dave, david, David, Davd or more.

Each business, therefore, needs to decide how aggressively it scrubs its data to help eliminate false positives. It used to come down to time.

Thankfully, there are innovative tools now available that can help, so that bad data does not impact others further on downstream.

Using such tool, plus ensuring that the right steps and measures are in place so that everyone would input 'David' correctly in the first place can help keep the data error free.

ENSURING DATA CAN LEAD TO ACTIONABLE INSIGHTS

There is little doubt that artificial intelligence (AI) and machine learning (ML) are at the forefront of transforming data into actionable in-

sights for the energy industry.

These technologies excel in analysing complex datasets, identifying patterns, and predicting trends that would be indiscernible through conventional methods.

For energy suppliers, this means the ability to forecast energy demands and adjust supply with unprecedented precision, ensuring efficient use of resources and the stability of energy grids.

The ability to analyse complex datasets has also made AI the perfect technology to help scrub data of any inaccuracies.

To work effectively, it does need to be trained correctly, though, so that it understands that the same data field can be called different things in different databases, that is, surname, family name, or second name.

Therefore, energy suppliers must focus on implementing a robust data governance framework from the off to maintain data integrity, reduce noise, and avoid biases that could skew AI analyses and decisions further down the line. Otherwise, the technology will be blunted.

As AI continues to permeate throughout the entire industry, the future looks bright. Not only is the technology being used effectively to clean up bad data, but it is being used to improve customer service due to increasingly sophisticated chatbots, and smooth onboarding by accelerating the credit check process.

SURGE IN POWER CONSUMPTION

Of course, the irony here is that the very places needed to store all this extra data – data centres – are among the largest users of energy today.

These data centres are putting untold pressures on the grid across multiple countries. Energy suppliers are no strangers to shifting demand patterns, but the surge in power consumption from data centres is unlike anything the industry has faced before.

These facilities, the backbone of the digital economy, are expanding at a staggering pace, consuming more electricity than entire cities.

The rapid acceleration of AI for uses such as those detailed above is only exacerbating the trend, pushing energy usage to unprecedented

levels. In fact, according to Goldman Sachs, AI-driven data centres could increase global power demand by 165 per cent by 2030.

In the US alone, data centre electricity consumption is expected to double, reaching up to 8 per cent of national power demand. This surge is forcing suppliers to rethink how they forecast and manage load while protecting already tight margins.

A PIVOTAL SHIFT

Bad data and inconsistent data management practices has thus far hampered the industry's progress towards a greener future.

Because of this, there is more of a need than ever for precise and reliable data from the point of energy generation through to final consumption.

Challenges have typically arisen from the data either being fragmented or when the systems used to capture the data have been unable to cope.

At a time where data regulations have become increasingly stringent and potentially crippling fines have come in for noncompliance, it is not the time to take chances.

The good news is that in many respects it feels like we are turning a corner. Technology has become instrumental in reducing bad data entering the data chain and mitigating the effect should any slip through the net.

The likes of AI, ML, smart meters, and the Internet of Things (IoT) have all reshaping the landscape of energy data management.

Their integration across the energy sector signifies a pivotal shift towards more sophisticated and reliable data handling mechanisms, essential for the effective management of renewable energy resources.

However, this is not to say that humans should be removed from the process completely.

In my view, there should always be a human layer to any key business process. Automation is important for sure. But there will always be nuances within the data than only a human can correctly interpret.