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VOLUME 24 | ISSUE 7 2021

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- ADIPEC preview
- Focusing on diversity, equality and inclusion
- Reinventing refineries
- ADNOC review
- The benefits of High Throughput Satellites
- Valves for demanding applications
- Driving value with digital transformation

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Oil Review

Oil · Gas · Petrochemicals

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Embracing the energy transition

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- Reinventing refineries
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→ Editor's note

AS OIL REVIEW goes to press, COP26 is getting underway, underlining the urgency of stepping up action to address the climate emergency and limit global warming to 1.5°C. The energy transition, decarbonisation and achieving ESG and sustainability goals are at the top of the agenda for oil and gas companies now, and will feature strongly at ADIPEC, which takes place as an in-person event in Abu Dhabi in November. Our ADIPEC Preview section contains news and views from some of the major exhibitors at the show (p42).

With the introduction of a new conference on hydrogen, ADIPEC will provide a forum to share perspectives on how hydrogen can deliver a clean, integrated approach to the MENA region's energy sector (p50). Clearly, the region has clear competitive advantages standing it in good stead to become a major hydrogen producer and exporter (p26). We also discuss how ADNOC is embracing the energy transition (p12), and how a focus on Diversity, Equality and Inclusion is needed to respond to industry challenges (p16).

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Front cover: Adobe Stock

OPITO adopts a standardised training approach

AHEAD OF THE United Nations Climate Change Conference (COP26) in Glasgow, OPITO, the global safety and skills body for the energy industry, has reconfirmed its intention to identify commonalities between existing energy skills training and assessments to support global standards for hydrogen, carbon capture usage and storage (CCUS) and floating offshore wind.

Opito's established emergency response frameworks, for on and offshore, will act as a basis for the development of hydrogen-specific, CCUS and floating offshore wind workforce training.

Andy Williamson, head of energy transition at Opito, said, "The Government's plans to create a thriving green economy in the UK over the next ten years will create thousands of jobs. OPITO's leading role in energy skills, development and competency mean we recognise the importance of our highly skilled oil and gas workforce and the role they can play in a low carbon economy, both domestically and further afield."



Opito will develop hydrogen-specific, CCUS and floating offshore wind workforce training.

QatarEnergy and Shell partner to invest in hydrogen solutions

QATARENERGY AND SHELL have partnered to pursue joint investments in blue and green hydrogen projects in the UK.

The partnership is aimed at targeting integrated and scalable opportunities in key sectors where hydrogen could help decarbonise, especially around industrial cluster development and also for the transport sector, with a focus on the London metropolitan area. The collaboration will exploit both companies' expertise in delivering large and technically complex energy projects.



The partnership will work to enable hydrogen to help decarbonise key sectors.

The agreement was signed on the sidelines of the UK Global Investment Summit, hosted by HM The Queen and the Prime Minister and attended by the world's leading businesses and investors in the UK.

This follows the rebranding of Qatar Petroleum to QatarEnergy as part of the efforts by the company concentrating on energy transition, ahead of the COP26 climate summit in Glasgow. QatarEnergy chief executive Saad Sherida Al Kaabi said that becoming QatarEnergy reflects the company's understanding of the global changes and its response to the need to protect the planet and its environment.

Action needed to reduce methane emissions

AN INTERNATIONAL PUSH is needed to bring down methane emissions from fossil fuel operations, particularly oil and gas, where leaks can often be prevented easily at little or no cost, according to a report by the International Energy Agency (IEA), 'Curtailling methane emissions from fossil fuel operations: Pathways to a 75% cut by 2030'.

The IEA estimates that more than 70% of current emissions from oil and gas operations are technically feasible to prevent, and around 45% could typically be avoided at no net cost because the value of the captured gas is higher than the cost of the abatement measure. This share would be much higher at the moment, given the record highs in natural gas prices.

The report provides crucial insights and guidance for governments, regulators and the energy industry in the lead-up to the COP26 Climate Change Conference and beyond. Building on the estimates of emissions and options for addressing them in the IEA Methane Tracker and Regulatory Roadmap and Toolkit, the report identifies and quantifies a range of measures, including policy and regulatory actions, voluntary industry initiatives, and improvements in emissions measurement and reporting.

Stryde expands global presence with new locations and senior hires

STRYDE, A SEISMIC technology provider, has expanded its global presence with the opening of two offices in key oil and gas regions, Houston and Dubai.

Stryde said that this is in response to an increased demand for its innovative nodal systems, which boasts the smallest, lightest autonomous node on the market, with more than 400,000 STRYDE nodes delivered for high-density seismic acquisition projects across 17 countries.

Over the last few months, the technology provider has signed a deal to provide Africa Geophysical Services LLC with 150,000 nodes for seismic projects – the largest deal for the company in the region and the highest ever nodes used for seismic acquisition in the Middle East in any one



400,000 STRYDE nodes are now in operation delivering high-density seismic projects across the globe.

project to date, the company says.

In North America, Stryde was awarded a two-phased carbon capture underground

storage (CCUS) project in August as the momentum for the development and construction of CCUS projects in the region continues.

Stryde has said that to continue to fuel its fast growth, the company has made two strategic senior hires, appointing Camilla Lapierre as chief technology officer and Kevin O'Connell as head of field operations.

Lapierre will be based at the company's Asker office and will work to continually evolve the technical capabilities of the nodal system. In his role as head of field operations based in Dubai, O'Connell will work with customers out in the field, enabling the company to better serve its growing customer base in this key market and others around the world.



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Landmark clean energy partnership launched between ADNOC and EWEC

HH SHEIKH KHALED bin Mohamed bin Zayed Al Nahyan, member of the Abu Dhabi Executive Council, chairman of the Abu Dhabi Executive Office and chairman of the Executive Committee of ADNOC's Board of Directors, has launched a clean energy partnership between the Abu Dhabi National Oil Company (ADNOC) and Emirates Water and Electricity Company (EWEC).

The strategic partnership, which is the largest of its kind in the oil and gas industry, will see up to 100% of ADNOC's grid power supplied by EWEC's nuclear and solar clean energy sources, making ADNOC the first major oil and gas company to decarbonise its power at scale through a clean power agreement and strengthening the company's position as one of the world's least carbon-intensive oil and gas producers.

Simultaneously, EWEC will benefit from long-term electricity offtake for its current and future renewable and clean power sources, which include solar

and nuclear power, enabling continued investment in transformative innovations to decarbonise the energy sector.

This progressive approach supports the UAE Net Zero by 2050 Strategic Initiative and enhances ADNOC's pathway to decarbonisation while enabling sustainable future growth. It also underpins the UAE's bold and strategic approach to enable a lower carbon future.

His Highness Sheikh Khaled bin Mohamed bin Zayed Al Nahyan said, "The Clean Energy Partnership between ADNOC and EWEC brings together two major UAE entities to unlock mutual value as they harness the nation's energy resources to drive economic progress, in support of the UAE's 'Principles of the 50', outlined by the leadership to chart a strategic roadmap for the nation's new era of economic and social growth over the next 50 years."

Baker Hughes breaks ground on its oilfield services hub at SPARK

BAKER HUGHES has celebrated the commencement of construction of its Oilfield Services (OFS) regional hub located at King Salman Energy Park (SPARK).

SPARK is located at the heart of the energy market in Saudi Arabia's Eastern Province. Baker Hughes' investment is a significant milestone for SPARK, which is a 50 sq km energy city megaproject that will position Saudi Arabia as a global energy, industrial and technology hub.

SPARK's ecosystem will capture the full economic value from energy-related goods and services in the Kingdom and throughout the region, providing investors with an integrated environment that will contribute more than US\$6bn annually to Saudi GDP, generate up to 100,000 jobs and stimulate socioeconomic advances across all levels of society.



Image Credit: Baker Hughes

The 300,000 sq m regional hub will support Baker Hughes' OFS operations and customers across the Middle East.

PGS and Mit-PFN Energy to provide AI solutions for subsurface structure analysis

PGS HAS SIGNED a MoU with Mit-PFN Energy Co (MPE) to jointly develop and commercialise Artificial Intelligence (AI)-driven solutions to image subsurface structures.

Analysis of subsurface images is required across the energy sector including oil and gas, carbon capture and storage, as well as areas in the renewable energy sector, such as geothermal energy and offshore wind power.

Under the terms of the agreement, PGS will contribute seismic data from its global MultiClient data library along with technical expertise, while MPE will lead the AI algorithmic development to be constructed within a modern, scalable compute infrastructure. The collaboration aims to significantly reduce turnaround time needed to generate images of subsurface structures while improving accuracy. It is the intention to apply the technology into clean energy businesses, contributing to the global effort to reduce carbon emissions.



Image Credit: PGS

The goal is to efficiently deploy AI methods to strengthen data processing and interpretation workflows.

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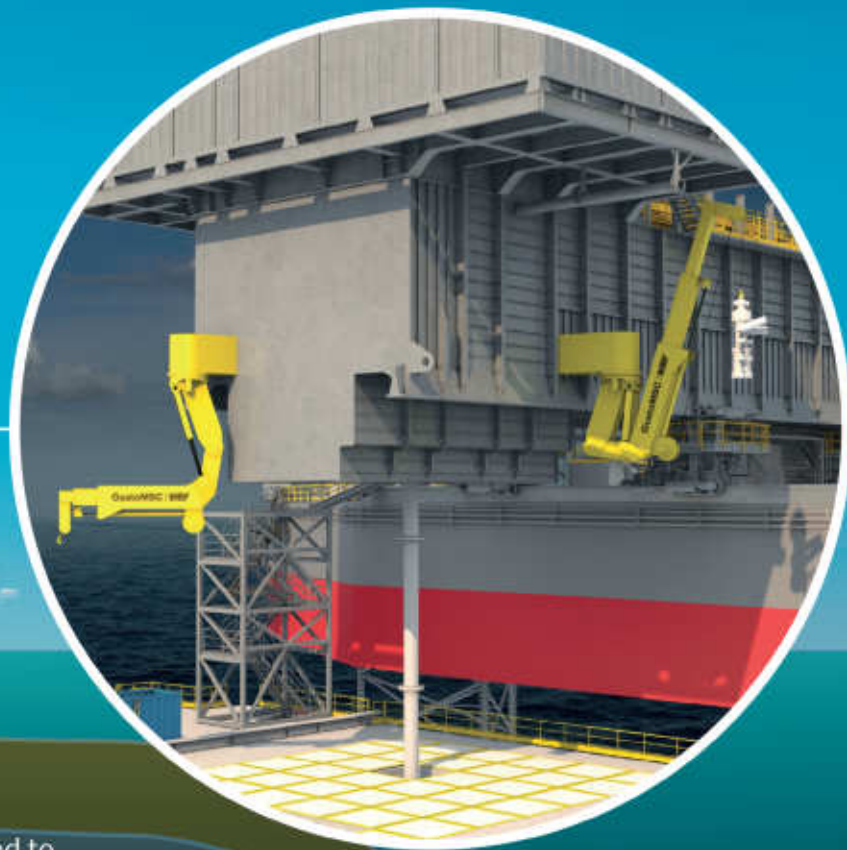
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Streamline Innovations enters Middle East market with EMDAD partnership

STREAMLINE INNOVATIONS, INC. (Streamline) and EMDAD LLC, an Abu Dhabi-based integrated solution provider for the energy sector (EMDAD), have announced a collaboration to market and set up Streamline's environmentally advanced treatment solutions for H₂S and CO₂ to EMDAD's clients in the UAE.

While EMDAD is an Integrated Service Provider to the Energy, Utilities and Industrial sector in the UAE and the region, Streamline Innovations aims to eliminate pollution through technology. The company helps heavy industry around the world achieve environmental performance objectives, improve sustainability, and transition to a sustainable, low-carbon economy.

Under the terms of the Agency Agreement, EMDAD will represent Streamline in the UAE with prospective clients. The initiative comes at a time when the global energy industry is moving towards the goal of achieving net-zero emissions and eliminating the routine flaring of natural gas. In response to growing momentum to improve Environmental, Social and Governance (ESG) performance, UAE and other oil producing nations in the Middle East are transitioning into more sustainable and environmentally-friendly operational practices.

Instead of flaring H₂S-contaminated natural gas that is produced in association with crude oil, producers in the region are seeking innovative cost-effective methods to treat contaminated gas and employ it for beneficial uses. Streamline technology destroys H₂S and converts it into simple elemental sulfur, which is listed with the Organic Material Review Institute (OMRI) for use in organic production.

"We are excited to partner with EMDAD to bring our innovative, environmentally forward solutions to the clients and citizens of the UAE, accelerating our growth into one of the world's most important oil and gas producing countries," said David Sisk, CEO of Streamline Innovations. "Our solutions can help oil and gas producers achieve their ESG mandates, eliminate routine flaring of contaminated gas and reduce emissions, typically while generating additional revenue," he added.

"The establishment of this relationship with Streamline Innovations comes at an opportune time for both our clients and our company," said Mohammed Juma Al Bawardi, chairman of EMDAD. "Our clients are seeking new, innovative approaches that not only help them achieve their environmental performance goals, but also generate more revenue. Streamline's solutions are aligned with these objectives, and we anticipate their technologies will be a key factor in strengthening relationships with existing clients and attracting new business."

Streamline brings its technology based Valkryie H₂S treatment solution and technical expertise to the partnership, while EMDAD brings local connections, existing client relationships and local knowledge of the UAE market, including ADNOC. This combination provides oil and gas producers in the region with proven solutions for treating H₂S and achieving ESG mandates.

Axora launches world's first industrial digital transformation community for energy and mining sectors

AXORA, THE DIGITAL solutions marketplace for industrial innovators, has launched the world's first digital transformation community for the energy and metals and mining sectors. The two sectors are responsible for most of the world's resource production, crucial for powering the global economy and the green energy transition. The Axora Community will connect industry innovators, share the latest market research on key digital trends, and initiate thought-provoking debates to help solve some of the biggest challenges facing these industries today.

"Professionals in these two sectors face some of the world's most dangerous environments while having to safely satisfy production demand and hit sustainability targets," said Ritz Steytler, CEO, Axora at the launch event in London in October. "By harnessing digital innovation, paired with knowledge sharing and collaboration, industry leaders can ensure worker safety, reduce environmental impact and improve return on investment. That's why we started the Axora Community."

Axora's two recent reports *Innovation Forecast: Mining and Metals* and *Innovation Forecast: Energy* revealed that 99% of senior decision-makers at energy and metals and mining firms across the world needed a global digital transformation community. The Axora Community will include metals and mining, energy industry professionals, as well as technology providers, associations, and academics.



Ritz Steytler, CEO of Axora

Dana Gas' 9M 2021 collections almost doubled in KRI and Egypt

DANA GAS, ONE of the leading regional private sector natural gas companies in the Middle East, has announced that its 9M 2021 collections from the Kurdistan Region of Iraq (KRI) and Egypt have increased 102% year-on-year to US\$256mn in the same period the previous year.

Dana Gas, which owns a 35% interest in Pearl Petroleum, saw its share of collections from sales of condensate and LPG and gas in the KRI jump 77% to US\$131mn in the first nine months of 2021 as compared to US\$74mn in the same period the previous year. In Egypt, Dana Gas collected US\$125mn during the first nine months of 2021, compared to US\$53mn received over the same period of 2020, representing a 136% increase.



Image credit: Adobe Stock

In Egypt, Dana Gas collected US\$125mn during the first nine months of 2021, compared to US\$53mn received in the same period of 2020.

Dr Patrick Allman-Ward, CEO of Dana Gas, said that the company focuses on improving its collections this year, which have been supported by a strong rebound in commodity prices.

"Continuing timely payment of invoices and the settlement of outstanding receivables is key to providing us with the confidence to carry on with our expansion plans in the KRI and Egypt."

The KM 250 project is the first stage of a two-train expansion project at Pearl Petroleum's Khor Mor plant that aims to boost total production capacity to approach 1bn scf/day. Pearl Petroleum recently signed a US\$250mn financing agreement with the U.S. International Development Finance Corporation to support the Khor Mor gas expansion project, which is on track for completion in April 2023.



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Aramco eyes sustainable future and expands emerging sector focus

THE SAUDI ARABIAN Oil Company (Aramco) has announced plans to expand its focus on emerging sectors and elaborated on its climate goals. Targeting net-zero emissions by 2050, and aiming for new investments in green hydrogen, sustainable tech solutions, digitalisation and non-metallic materials, the company has made it clear that its future is one of sustainability and innovation.

Emerging sectors that the company intends to focus on moving forward include hydrogen projects and alternative building materials. Amin H. Nasser, Aramco president and CEO, commented, "Our plans illustrate our focus on

developing innovative projects and investments, which support our long-term business strategy and aim to have a positive impact. Collaboration will be crucial in promoting economic development and creating new opportunities as we expand our portfolio, diversify our business, advance low-carbon energy technologies and develop sustainable solutions."

The company has confirmed five memoranda of understanding: a green hydrogen and ammonia project with Modern Industrial Investment Holding Group and Intercontinental Energy; two separate National Green Services Company for

nature-based solutions with South Pole Carbon Asset Management Ltd and YADGREEN; a localised advance building material R&D project with BFG; and localisation of digital technologies for oil and gas plan with ABB.

Of its climate-focused future, Nasser added, "As the largest provider of energy to the world, Aramco's ambition to reach net-zero greenhouse gas emissions across our operations in less than three decades is a historic step forward that will help tackle the most pressing challenge facing humanity. Our past success has not been measured by quarters or business cycles, but across generations."

JP Morgan tops oil and gas financial advisors

JP MORGAN HAS emerged as the top financial advisor for mergers and acquisitions (M&A) by both value and volume in the oil and gas sector between Q1 and Q3 2021.

As revealed in GlobalData's recent 'Global and Oil & Gas M&A Report Financial Advisor League Tables Q1-Q3 2021', JP Morgan alone advised on 22 deals worth US\$47.7bn.

The research analyst company noted that 1,257 mergers and acquisitions were announced in the same period.

Aurojyoti Bose, lead analyst at Global Data, commented of the findings, "JP Morgan has faced tough competition from Citi as these were the only two firms to advise on more than 20 deals while managing to cross US\$40bn. "JP Morgan advised on 10 deals valued more than or equal to US\$1bn, while Citi advised on eight such deals. JP Morgan's involvement with Saudi Aramco made all the difference."



Image Credit : Adobe Stock

JP Morgan topped the leaderboard for M&A advisors in Q1-Q3 2021.

BlackRock vouches for sustainable future

SPEAKING AT THE Middle East Green Initiative Summit, in Riyadh, BlackRock chairman and CEO Larry Fink predicted the next 1,000 global companies valued at more than US\$1bn will be sustainable companies.

Explaining, Fink commented, "It's my belief that the next 1,000 unicorns – companies that have a market valuation over a billion dollars – won't be a search engine or media company. They will be businesses developing green hydrogen, green agriculture, green steel and green cement."

"That's not to say that we are going to divest from hydrocarbons. In fact, it is essential that we work with them and are playing a role in the solution."

HRH the Crown Prince announced a series of regional programmes for climate action to an audience of dozens of heads of state at the event, and revealed that Saudi Arabia is aiming to achieve net zero emissions by 2060 through the Carbon Circular Economy approach.



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Fink estimates the next 1,000 billion-dollar businesses will put sustainability at their core.

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ADNOC embraces the energy transition

Abu Dhabi's national oil and gas champion is welcoming the challenges of the global clean energy transition with open arms. Martin Clark reports.



Natural gas is set to play a pivotal role in powering the UAE's economic growth.

Image Credit: Adobe Stock

SUSTAINABILITY, ENERGY TRANSITION and decarbonisation: these are all key themes playing out in the oil and gas world of today. But it was not so long ago that these concepts may have sounded strange, certainly in the context of a major oil and gas producer.

In common with other global energy leaders, Abu Dhabi National Oil Company (ADNOC) is getting to grips with all of these challenges in its own indomitable way.

In the past, the company's fortunes have been built squarely on the back of hydrocarbons. Like other Gulf states, the UAE is richly endowed with vast crude oil and natural gas deposits – and more continue to be found. Indeed, last year's Jebel Ali find, on the border between Abu Dhabi and Dubai, was deemed the world's largest discovery since 2005, containing an estimated 80 trillion cubic feet of gas.

So how to reconcile this in an age when fossil fuels are increasingly being squeezed out in the face of climate change concerns?

That is a complicated question, and one that the entire energy industry is grappling with right now, but ADNOC has shown that it is not one to shy away from big challenges.

“ We turned an environmental liability into a commercial opportunity.”

The group has long played a part in supporting the world's energy systems and that is something that won't change, according to its leadership.

Gas to play a pivotal role

For starters, the role of natural gas as a transitional fuel looks set to come into its own over the coming years. In fact, gas is set to play a pivotal role in powering the UAE's own economic growth over the next 50 years, according to Dr Sultan Ahmed Al Jaber, UAE Minister of Industry and Advanced Technology and ADNOC's managing director and CEO. Delivering the opening address at the Gastech industry forum, he said the UAE aims to strengthen its position in natural gas and the emerging blue hydrogen market, balancing economic growth with environmental responsibility.

The company's track record suggests that it always delivers on its promises. In 1973, the company stopped burning associated gas from all its operations, and instead captured it and shipped it.

“In short, we turned an environmental

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liability into a commercial opportunity,” said Dr. Al Jaber. “From that moment, when it came to gas, we never looked back.”

For now, liquefied natural gas (LNG) and broader gas markets globally are tightening, with demand outpacing supply, suggesting strong underlying demand. Dr. Al Jaber said the UAE is on track to achieve gas self-sufficiency as ADNOC leverages advanced technologies to expand into unconventional gas, tap into gas caps and unlock new reservoirs, as part of an integrated strategy launched in 2018.

“At the heart of this goal, is the expansion of our producing assets, like Shah and the development of new ones, like the unique Umm Shaif gas cap and the Hail, Ghasha and Dalma project.”

In June, for example, ADNOC awarded a contract worth more than US\$500mn to Italy’s Saipem to expand capacity of its Shah sour gas plant by 13%, to 1.45bn scf/d.

ADNOC has shown itself to be a pioneer in getting to grips with unconventional gas and challenging reservoir systems.

Today, gas provides almost one-quarter of the world’s energy supply, but looks set to play a critical role in the global energy system as it transitions to alternative fuels.

“No other fuel source can reliably supply the baseload power to heat and cool homes, drive heavy industry and expand economies, all while keeping emissions at a minimum,” said Dr. Al Jaber.

Work continues as ever in the field with ADNOC recently signing US\$1bn worth of agreements for engineering services across various projects with eight leading international contractors, including Technip and Fluor. The company also announced an investment of US\$764mn in integrated rigless services across six of its artificial islands in the Upper Zakum and Satah Al Razboot (SARB) fields to support its production capacity expansion to 5mn bpd by 2030.

Abu Dhabi is attracting new investment into its prized upstream sector too, recently signing an exploration deal for Offshore Block 5 with a consortium of four Pakistani companies. It marks the first time Pakistani companies will invest in and explore for oil and gas in an Abu Dhabi concession.

The move to zero-carbon fuels

At the same time, there is no doubt that major changes are on the horizon as climate change concerns mount. But even here, gas can play a vital, strategic role in the creation of cleaner fuels, with the UAE well placed given its state-of-the-art hydrocarbon refining and processing infrastructure. Abu Dhabi is already using its technological know-how to create zero-carbon fuels from the gas it produces, such as hydrogen.

ADNOC currently produces around 300,000 tons of hydrogen per year, but this is



A world-scale blue ammonia project is planned at TA’ZIZ industry ecosystem in Ruwais.

Image Credit : ADNOC

likely to expand significantly, said Dr. Al Jaber.

“By leveraging our existing gas infrastructure and commercial-scale CCUS capabilities, the UAE can and will become a major player in the emerging blue hydrogen market,” he said.

In January, ADNOC, along with Mubadala and ADQ, formed the Abu Dhabi Hydrogen Alliance to establish Abu Dhabi as a leader in green and blue hydrogen and accelerate the UAE’s development and use of hydrogen in major sectors such as utilities, mobility and industry. In July, Abu Dhabi joined the Hydrogen Council, an international organisation that aims to accelerate the global position of this emerging fuel.

“The sales represent a further milestone in a planned scale-up of blue ammonia production in Abu Dhabi.”

ADNOC also recently sold a cargo of blue ammonia to Inpex in Japan, following earlier sales to Itochu and Idemitsu. Ammonia can be used as a low-carbon fuel across a wide range of industrial applications, including power generation, transportation, refining and industries including steel, cement and fertiliser production. For Japan, in particular, hydrogen and its carrier fuels, such as blue ammonia, are expected to play a role

in the country’s ongoing industrial decarbonisation efforts.

The sales represent a further milestone in a planned scale-up of blue ammonia production in Abu Dhabi, which is expected to include a low-cost debottlenecking programme at Fertil. In June, it was also announced that Fertiglobe will join ADNOC and ADQ as a partner in a new world-scale 1 million metric tons per annum blue ammonia project at TA’ZIZ industrial ecosystem in Ruwais, subject to regulatory approval. The final investment decision is expected in 2022, and start-up is targeted for 2025.

ADNOC’s vast refining and processing empire continues to expand in other areas as well. Much of this is now being concentrated in the TA’ZIZ Industrial Chemicals Zone, adjacent to the established Ruwais Industrial Complex. The company recently signed an agreement with India’s Reliance Industries Limited to join a new world-scale industrial raw materials production facility at TA’ZIZ for chlor-alkali, ethylene dichloride and polyvinyl chloride (PVC). The integrated plant will produce 940,000 tons of chlor-alkali, 1.1mn tons of ethylene dichloride and 360,000 tons of PVC annually. The market for these chemicals is expected to enjoy steady growth supported by the needs of growing demand, particularly in Asia and Africa.

These new investments all underscore Abu Dhabi’s leading position as a global energy hub.

Whatever changes the energy transition may bring, whatever uncertainties the world may face, ADNOC will be at the forefront of delivering supply in the years to come, just as it has done for the past 50 years or more. ■

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Better problem solving with Diversity, Equality and Inclusion

A focus on Diversity, Equality and Inclusion (DE&I) is needed to respond to the unprecedented challenges the industry is facing, says Iman Hill, executive director, International Association of Oil & Gas Producers (IOGP).

WOMEN IN BUSINESS is a subject I'm pleased to see attracting more attention and energy. But any of us who are passionate about the power of difference know that the topic of Diversity, Equality and Inclusion (DE&I) is much broader and deeper than simply gender balance.

When I think of DE&I, what comes to mind is openness, inclusivity, understanding, sharing, fairness, access to varied perspectives, and a general curiosity on what is possible when we tap into the power of different frames of reference. Personally, I focus on inclusivity because we can look diverse but think, act, and make decisions in the same way because, for example, we have a similar background, upbringing, education, and privilege. Our goal should be to create a

culture of inclusivity – an inherent and pervasive culture of accepting and valuing differences and a consciousness about unconscious bias – that allows everyone, irrespective of colour, gender, creed, class, or sexual orientation to be their best and most authentic self at work, and to feel valued for it.

As an industry, we share the same values, and many of us have a similar science, engineering, or technical education. As humans the most comfortable thing is to surround ourselves with people who tick like we do. And this is one of the most prevalent unconscious biases in recruitment and advancement decisions. Well, it may be “safe”, but it leads to missed opportunities, and the challenges ahead of us do not allow for missed opportunities. Never has there been more urgency around the dual

“Our goal should be to create a culture of inclusivity.”

imperatives of decarbonisation and reducing emissions while continuing to supply the world's population with the energy it needs. There are billions of people who don't have access to clean cooking fuel or reliable and affordable energy; 800 million of those don't even have access to electricity at all. Fixing these gaps, a fundamental reflection and cause of poverty, is our responsibility.

Changing societal demands require new strategies, capabilities, and technologies; these, in turn, require new skillsets and ways of working, and availability of top talent is a growing risk for industry success. This is why it's so important that we create a culture of acceptance and the empowerment of individuals, making “being different” something to celebrate. Diversity is good for business, because different ways of approaching a problem lead to innovative solutions. Building and maintaining a culture of listening to and learning from each other is a key enabler for better decision-making, faster problem-solving, for increasing creativity and innovation, just to name some of the benefits.

Unprecedented challenges

Right now, the world is facing some unprecedented challenges. Can diversity, equality, and inclusion efforts help us in responding to the challenges posed by climate change? I firmly believe so. But are we truly listening to each other when it comes to climate change? The energy and climate debate has become highly emotional and partly free from facts in recent years. Those who do not – or are assumed not to – share the same opinion are dismissed and excluded from the debate. Claiming that there might be more than just one pathway to tackle the



Image Credit : Adobe Stock

Diversity is good for business, because different ways of approaching a problem lead to innovative solutions.

Image Credit: IOGP



Iman Hill,
executive director, IOGP.

problem? You are obviously ignoring the urgency of climate change. You represent oil and gas and dare to think that you could be part of the discussion, or even part of the solution? We won't talk to you at all – even if your expertise and resources could make the energy transition easier.

And what about ourselves? Are we always willing to listen to the concerns others have, just because we believe others simply underestimate the complexity of the problem? There is a dangerous tendency towards simplification: right or wrong, good or bad. Rigid beliefs paired with relentless fervour result in a lack of rational discussion when faced with complex challenges. It appears that complex issues bring out a desire for simple answers. We all need to do better. All voices need to be heard. If we are not even willing to listen to other opinions, we may end up with less than the best result. That's not what the world should be looking for. And the best thing the oil and gas industry can do here, in my humble opinion, would be to take a pioneering and inclusive role.

“ There is a dangerous tendency towards simplification: right or wrong.”

Iman Hill was appointed executive director of the International Association of Oil & Gas Producers (IOGP) in December 2020. She also serves as non-executive independent board director of Oil Spill Response Ltd. (OSRL) and as a non-executive director on the board of United Oil and Gas. Iman is a petroleum engineer with 30 years' experience in the oil and gas industry with extensive global expertise in the technical and commercial aspects of the petroleum business. She has served as senior regional adviser Africa to the E&P CEO and the chairman of Shell as well as GM Shell Egypt and chairwoman of Shell Companies in Egypt; SVP Brazil and SVP Developments and Operations at BG Group; VP Africa at Sasol; technical director, GM UAE and president Egypt for Dana Gas in the UAE. Iman is Egyptian.

The International Association of Oil & Gas Producers (IOGP) is the global voice of the industry, pioneering excellence in safe, efficient, and sustainable energy supply. Its members operate around the globe, producing more than 40% of the world's oil and gas. Together, they identify and share knowledge and good practices to improve the industry in areas such as health, safety, the environment, and efficiency. ■



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→ Executives' Calendar, 2021-22

NOVEMBER			
8-11	Africa Oil Week	DUBAI	www.africa-oilweek.com
15-18	ADIPEC	ABU DHABI	www.adipec.com
23	LEWAS Symposium and Awards	VIRTUAL	www.lewa-symposium.org
DECEMBER			
3	OWI Awards	ABERDEEN	https://offsnet.com/owi-awards
JANUARY 2022			
16-18	Intersec	DUBAI	www.intersec.ae.messefrankfurt.com
17-19	World Future Energy Summit	ABU DHABI	www.worldfutureenergysummit.com
23-25	SOGAT	ABU DHABI	www.sogat.org
24-25	Middle East Petroleum & Gas Conference	MANAMA	www.mpgc.cc
FEBRUARY 2022			
14-17	Me-tech 2022	DUBAI	www.europetro.com/event/380
14-16	Egypts	CAIRO	www.egypts.com
21-23	Int'l Petroleum Technology Conference (IPTC)	DHAHRAN	www.iptcnet.org
MARCH 2022			
28-29	Offshore Well Intervention Middle East	ABU DHABI	www.offsnet.com

Readers should verify dates and location with sponsoring organisations, as this information is sometimes subject to change.

LEWAS Energy Awards reveals 2021 finalists

LEWAS AWARDS, ONE of the most awaited energy awards of the year, has announced its 2021 finalists. With more than 150 high-calibre applications from across the energy spectrum, the 23 finalists had a common link – brilliance on and off the playing field.

The Awards, now in its seventh edition, continues to bring to the world's notice outstanding trailblazers – women, male champions, and organisations in energy from the Middle East. The finalists are high-profile individuals and committed organisations who were carefully selected for their drive and commitment for outreach, support; ensuring that they furthered the diversity and inclusion agenda through exemplary behaviours. They represent organisations including Saudi Aramco, Kuwait Oil Company, BAPCO, ADNOC Group, DEWA, Schneider Electric and many more. Award categories are Academic Achievement for Student Award; Academic Achievement for University Professor Award; Rising Star Award; Leading with Excellence Award; Woman of Achievement Award; Corporate Champion Recognition (Male Champion) Award; and Corporate Excellence Recognition Award.

Reem Al Ghanim, chair of LEWAS, said, "We've seen a steady rise in applications over the years. From receiving applications from technical backgrounds in oil and gas, we are now experiencing a massive shift. Over 50% of our applications this year are from renewables, finance, communications, and technology. The 2021 edition of the awards have clearly shown that despite going through a turbulent 18 months, the energy industry has bounced back – through its people, the values they have and the sheer grit to turn every weak spot into opportunities."

H.E. Shaikh Mohammed bin Khalifa Al Khalifa, Minister of Oil, Kingdom of



Image Credit: LEWAS

The Awards finalists.

Bahrain and patron of LEWAS will hand out the awards on 9 November at an in-person gala dinner at the Gulf Hotel, Bahrain.

The winners of the LEWAS Awards, will be invited to speak at the Annual LEWAS Symposium on 23 November 2021, virtually. The 2021 LEWAS Symposium will focus on re-engaging, re-learning and re-inspiring workforces, who have had to transform the way the work due to digitalization.

For more information on the LEWAS 2021 Awards, visit www.lewa-symposium.org or contact pamela@e3-worldwide.com.

To see the list of finalists, go to <https://www.lewa-symposium.org/lewas-awards-2021>

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Save the date for Offshore Well Intervention Middle East 2022

OFFSHORE NETWORK ARE hosting their seventh annual OWI ME conference to bring the well intervention community back together for a physical conference in Abu Dhabi, UAE, from 28-29 March 2022.

Expert speakers representing the UAE for the 2022 edition include ADNOC, Saudi Aramco and SNOOC who will discuss well integrity, the latest on plug and abandonment, and how to maximise production from mature wells.

Key themes for OWI ME 2022 include:

- **Market Status** – Discussions on the latest well intervention activity within the region.
- **Well Integrity** – Insights into the most effective ways of protecting the integrity of wells.
- **Well Productivity** – Participants can access new stimulation methods including EOR to maximise production from ageing fields
- **Technology** – Presentations on the latest cutting-edge rigless and downhole technologies to apply to integrity, production and P&A toolboxes
- **Plug and Abandonment** – Debates on the most cost effective strategies for well abandonment and decommissioning throughout the Gulf

OWI ME is the annual destination operators utilise to build their well intervention strategy for the coming year.

Join the other attendees to access two days of exclusive sessions, learn from 25+ expert speakers and network with 150+ well



Image Credit: Offshore Network

Attendees at the last live OWI MENA.

intervention decision makers.

Amir Alwazzan, production assurance & technology specialist, Dragon Oil, commented on the event, “Very well organised and a fantastic opportunity to learn more about existing and emerging technologies.”

Mohamed Muhiz Kuthubdeen, senior well intervention and integrity engineer, Dubai Petroleum, noted, “A great workshop that was managed perfectly between presentations and panel discussions.”

Speaker and sponsorship opportunities are now available. Reach out to Rachael Brand, project manager at Offshore Network for more details:

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World Future Energy Summit on the horizon

THE WORLD FUTURE Energy Summit, the world’s leading business event for clean energy and sustainability, returns to Abu Dhabi’s National Exhibition Centre (ADNEC) as part of the Abu Dhabi Sustainability Week (hosted by Masdar), from 17-19 January 2022.

It will bring together the world’s most innovative technology leaders with the most powerful investors and deal makers from the Middle East and Africa. This will be the first opportunity since the 2020 event for the clean energy and sustainability community to meet in person to network and share knowledge.

In the previous edition, the World Future Energy Summit hosted 34,000 attendees from 125 countries and featured an incredible 840 exhibiting companies and brands.

The 2022 edition will host exhibitions and forums across clean energy and sustainability and will host Climate Innovations Exchange (CLIX) which connects global start-ups to investors. A dedicated Sustainability Business Connect programme will help connect exhibitors to qualified buyers from the Middle East and North Africa.

For further details please visit: www.worldfutureenergysummit.com

The summit will host exhibitions on clean energy and sustainability.



Image Credit: Adobe Stock

Offshore Network assemble North African well intervention decision makers

OFFSHORE NETWORK HAVE delivered three exclusive days of unique content for the Mediterranean region, with a focus on the huge North African well intervention opportunity.

At the virtual event, attendees were able to learn about production enhancements, ageing asset management and the latest transformative technologies across four packed sessions.

Expert speakers from leading oil and gas companies such as BAPETCO, ENI, Repsol and Shell provided detailed insights into the challenges and opportunities of the region and attendees were provided the chance to network with fellow well intervention decision makers.



Image Credit: Unsplash/ Constantinos Kollias

OWI MED will return face to face to Athens, Greece in September 2022.

Key features of the conference included:

Production Enhancement – Overviews on some of the new techniques and technologies shaping best practice for production enhancement.

Ageing Assets – Assessments of ageing assets; allowing attendees to determine rejuvenation and abandonment candidates to increase the future commercial viability of their portfolio.

Plug and Abandonment – Observations on the benefits of implementing a standardised decommissioning and abandonment process to minimise risk and reduce cost for future campaigns.

Well Integrity – Discussions dedicated to changing perceptions of well integrity management from a production obstacle to an essential, cost-effective way of boosting production.

OWI MED will return face to face to Athens, Greece in September 2022. Reach out to Erin Smith, global accounts & Australasia regional manager at Offshore Network for more information:

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Reinventing refineries

Sonia Sanchez, conference executive, Euro Petroleum Consultants and Stefan Chapman, vice president, Euro Petroleum Consultants discuss the complex environment for refiners, and how they are addressing the challenges and opportunities of the energy transition.



The demand for petrochemicals has increased drastically.

Image Credit: Adobe Stock

DURING THE PAST few years, we have seen a number of refineries shut down, convert to logistics terminals, or convert – partially or totally – to biofuels. These changes were market driven. Today we have the added parameter of the Covid-19 pandemic. We have seen that the lockdowns, due to the pandemic, have resulted in a decrease in transportation fuel demand but an increase in demand for petrochemicals. This has led to an increase in investment for petrochemical projects including in crude oil-to-chemicals (COTC) facilities.

The demand for petrochemical products, which include everything from water pipes to nail polish, has drastically increased, and it is predicted to keep growing due to the increased demand for plastics in developing countries, along with the maturing demographics. Petrochemicals will account for more than a third of global oil demand growth by 2030 and nearly half through 2050, the International Energy Agency predicts. In order to meet future petrochemicals demand,

naphtha yields in refineries will have to increase from current levels of 12% to 19% by 2040 – a growth driven by both rising demand and slower natural gas liquids supply growth (IHS Markit).

The drop in demand for transportation fuels, combined with other factors such as the growth of electric vehicles, has led to forecasts that gasoline demand will continue to decrease, which will result in the unavailability of the "by-product" naphtha. Refineries will then have to be reconfigured to increase naphtha and other petrochemical feedstocks and products, and that can be done in two ways:

- New greenfield projects, designed with petrochemical yields of more than 40%, such as the current COTC project recently built in Asia, to be discussed later on.
- Brownfield investments in existing refineries, with technologies that enable increased petrochemicals production, either by retrofitting existing units, such as FCCs and hydrocrackers, or by using newer technologies being developed for repurposing existing refineries (IHS Markit).

There is no doubt that today, more than ever, refining companies are facing a more challenging and complex market environment. The growth of electric vehicles, as mentioned previously, together with the ongoing digital transformation being led by automation, analytics and artificial intelligence are all having a profound impact on downstream operations and market demands.

Furthermore, as the world is slowly transitioning to a low-carbon economy, the demand for oil products is evolving and pressure for carbon emission cuts intensely increasing. In order to stay competitive

“ In order to stay competitive, refineries must adopt low-carbon strategies.”

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Hengli Petrochemical	20	4.3	1.5	42	11.4	2018
Zhejiang Petroleum and Chemical (ZPC) Phase 1	20	4	1.4	45	12	Est. Q2 2019
Hengyi (Brunei) PMB Refinery-Petrochem	8	1.5	0.5	>40	3.45	2019
Zhejiang Petroleum and Chemical (ZPC) Phase 2	20	4.8	1.2	50	12	2021
Shenghong Refinery and Integrated Petrochem	16	2.8	1.1	60	11	2021
Aramco/SABIC JV	20	-	3	45	20	2025

The current status of COTC plants. Source: IHS

against this backdrop, refineries must adopt low-carbon strategies. Using more sustainable feedstocks and disruptive decarbonising technologies will be fundamental to long-term profitability. However, companies will need to consider when to more fully embrace these opportunities while at the same time managing the changing risks.

Undoubtedly, the industry has a clear role in this energy transition. While decarbonisation can seem complex, several solutions are evolving, such as biofuels from waste, carbon capture utilisation and storage (CCUS), crude oil-to-chemicals (COTC) and hydrogen.

1. Biofuels from waste

Following the threat of closure that some refineries are facing, some have opted for a different alternative: converting plants to produce biofuel by processing vegetable oil and waste oils. BP, TotalEnergies and Eni, have all outlined in recent months, plans to grow their biofuel capacities by two to five-fold by 2030, while reducing their global oil refining footprints. The very first conventional refinery in the world to be converted into a bio-refinery was the Venice bio-refinery owned by the Italian refiner Eni, which has been in operation since 2014. Eni has also developed Europe's most innovative refinery, opened in 2019, the Gela Bio Refinery, which can process vegetable oil, frying oil, fats, algae and waste by-products for the production of quality biofuel. A new plant (Biomass Treatment Unit), within the same bio refinery, was launched in March 2021 and aims to create a zero-kilometre circular economy model for the production of biodiesel, bio-naphtha, bio-LPG and bio-jet fuel.

Eni's continuing development in the field of advanced fuels produced from waste will look

to the possibility of obtaining pyrolysis oil from the treatment of end-of-life tyres (ELTs), and bio-oil from OFMSW (organic fraction of municipal solid waste), which can be used directly as a low-sulphur fuel for maritime transport or refined to obtain high-performance biofuels (Eni).

“Most of the COTC projects are based in China and the Middle East.”

2. Carbon Capture, Utilisation and Storage (CCUS)

Carbon capture technologies will enable refineries to make CO₂ available for either storage (CCS) or use (CCU), integrating the sector into a circular economy. Maximisation of chemicals production with integrated carbon capture and utilisation can lead to major reduction in emissions.

There are three main approaches to carbon capture: pre-combustion capture, post-combustion capture and oxy-fuel combustion. The chosen technology depends on whether the facility is a new or retrofit plant. Other considerations include capital and operating costs.

3. Crude oil-to-chemicals (COTC)

Crude oil has conventionally been used to produce transportation fuels such as gasoline, diesel, and other fuels. As petrochemical demand is expected to increase, refiners and downstream players are now looking to prioritise chemicals over fuel production, by

targeting the integration of petrochemical production capability in one facility.

While most refineries convert ~5%–20% of crude into petrochemicals, according to the Gulf Petrochemicals & Chemical Association, some existing refineries now have up to 45% of the output as chemicals, including olefins, aromatics, glycols, and polymers.

The below listed three strategies are being predominantly used in COTC plants:

- Direct processing of crude oil in steam cracking:

The steam cracking technology has developed over time in order to process different feedstock i.e., naphtha, gas oil, and ethane. Using crude oil directly in the steam cracker to produce light olefins leads to the formation of coke and fouling of the crackers. However, some technologies have been developed recently. ExxonMobil for instance, has implemented a technology which preconditions the crude oil before using it directly in the steam cracker, to produce ethylene, propylene, and related products.

- Integrated hydro-processing/de-asphalting and steam cracking:

The hydro-processing/de-asphalting step produces highly paraffinic, de-asphalted and de-metallised stream, which can later be processed in the steam cracking unit.

- Processing of middle distillates and residues using hydrocracking technology:

This type of processing involves hydrocracking of diesel and products from the vacuum distillation unit to produce naphtha range stream, which can later be processed to produce aromatic compounds (Future Bridge).

Most of the COTC plants / projects that have started operating or are planning to start operations are based in China and the Middle East. China's new mega refineries can convert

as much as half of their crude oil into petrochemicals, according to the *Economic Times*, which is attracting global investors to the region. The plants based in China are more focused on the production of paraxylene, whereas Saudi Arabia's project is more focused on olefins.

Aramco, partnered with Chevron Lummus Global (CLG) CB&I (now McDermott), plans to commercialise its thermal crude to chemicals process that aims at converting 70-80% of crude oil to chemicals.

4. Hydrogen

Depending on the production process, hydrogen is classified as either grey, blue or green.

The cost of making 'clean' hydrogen is still relatively high and for it to be used, the price needs to drop substantially, which could be achieved either by finding places with cheap renewable energy, such as Chile and Saudi Arabia, or relying on improved technology. The blending of hydrogen into the existing natural gas pipeline network has the potential to help with the variable output from renewables. If implemented under appropriate conditions and at relatively low

hydrogen concentrations (less than 5–15%), this strategy of storing and delivering energy may require only minor modifications to the operation and maintenance of the pipeline network. Ammonia is another alternative, where its cracking can reproduce hydrogen closer to the end-user.

It is safe to say that refiners have officially begun the long journey of "reinventing" their business; whether it is by using biofuels from waste; CCUS; COTC (through key technology components such as resid hydrocracking, hydrocracking, hydrotreating, and steam/thermal cracking); or looking to hydrogen as the fuel of the future.

COTC can surely help refiners to tackle the current market dynamics and remain profitable; however, it requires immense capital investment. Therefore, the refining industry is challenged by the unclear nature of its future. There remains uncertainty as to how the refining industry will adapt to these changing trends. How much capacity will be rationalised and how much of it will be repurposed? And how much will be integrated into petrochemicals?

Join us at ME-TECH 2022 – Middle East Technology Forum for Refining &

Petrochemicals (14-17 February, Dubai) where leading refining and petrochemical professionals will discuss and share their valuable knowledge on the very latest industry innovations, market trends, challenges and the continued importance of integration for competitive advantage.

For more information, visit metech.europetro.com. ■

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Racing to lead in the global hydrogen trade

As the world's major energy exporters look to accelerate the energy transition, mastering the hydrogen trade could make a difference, says energy consultancy Wood Mackenzie, with the Middle East being one of the regions best placed to become a big exporter.

THE GLOBAL ENERGY market was worth an eye-watering US\$2 trillion in 2020, contributing to more than 9bn tonnes of carbon dioxide equivalent (CO₂e) emissions. In the same year, the top five energy exporters – Saudi Arabia, Russia, Australia, the USA, and Indonesia – produced more than half of all energy traded.

Wood Mackenzie research director Prakash Sharma said, “The global energy trade is set to see its largest disruption since the 1970s and the rise of the Organization of the Petroleum Exporting Countries (OPEC).

“In addition to investing in renewables to slash emissions and enhance energy security, countries and industries are now looking to electricity-based fuels and feedstocks, and hydrogen could be the gamechanger. A key differentiator is hydrogen’s massive potential in traded energy markets. Low-carbon

“ In the burgeoning green hydrogen space, nearly 60% of proposed export projects are located in the Middle East and Australia.”

hydrogen and its derivatives could account for around a third of the seaborne energy trade in a net zero 2050 world.”

Between now and 2050, Wood Mackenzie forecasts global demand for hydrogen to increase between two- and six-fold. Under its AET-1.5 scenario (1.5°C warming), low-carbon hydrogen demand reaches as much

as 530 million tonnes (Mt) by 2050, with almost 150 Mt of that traded on the seaborne market. Low-carbon hydrogen import demand from Northeast Asia and Europe could account for around 80 Mt, equivalent to 55% of seaborne hydrogen trade, and 23 Mt (16% of total seaborne energy trade), respectively.

Hydrogen megaprojects

Several countries are hoping to benefit from developing export-oriented hydrogen megaprojects, with blue and green hydrogen projects being developed in Russia, Canada, Australia, and the Middle East. In the burgeoning green hydrogen space, nearly 60% of proposed export projects are located in the Middle East and Australia, principally targeting markets in Europe and Northeast Asia. Over the last 12 months, there has been

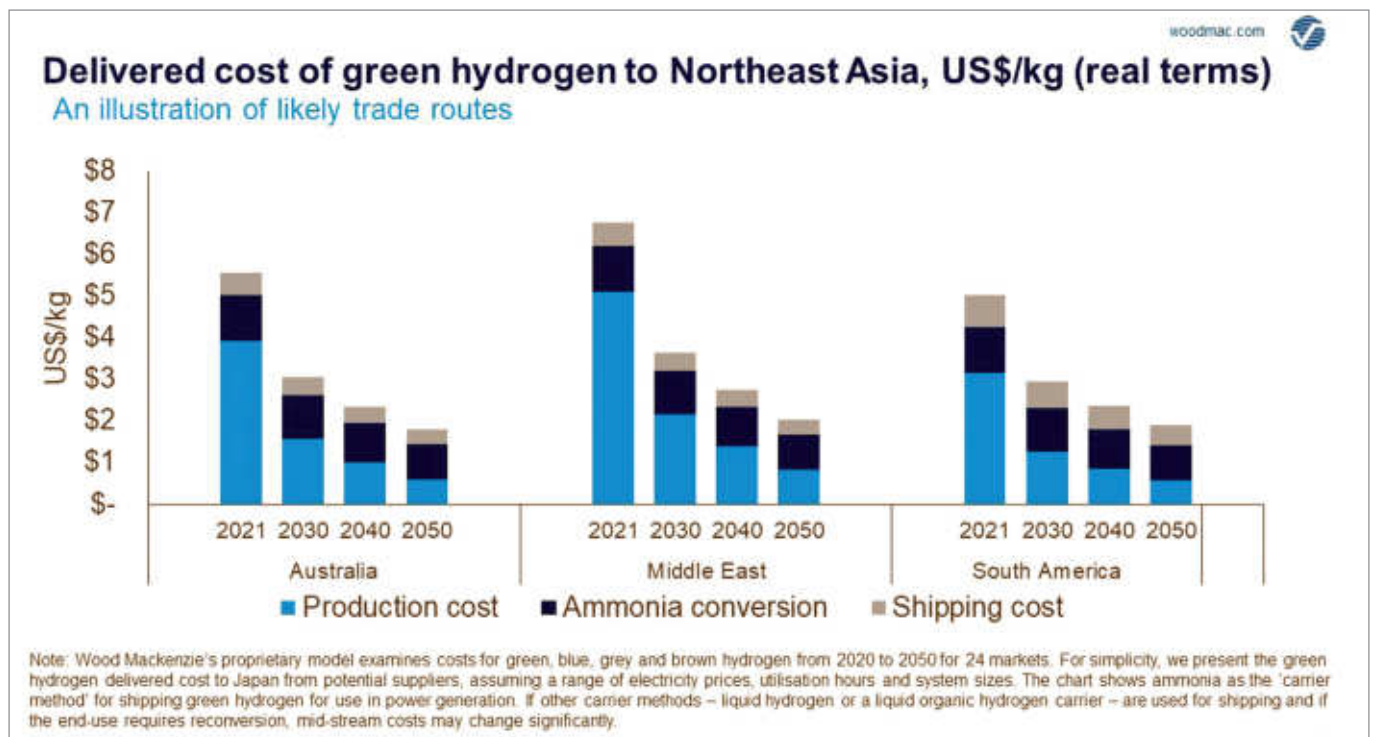
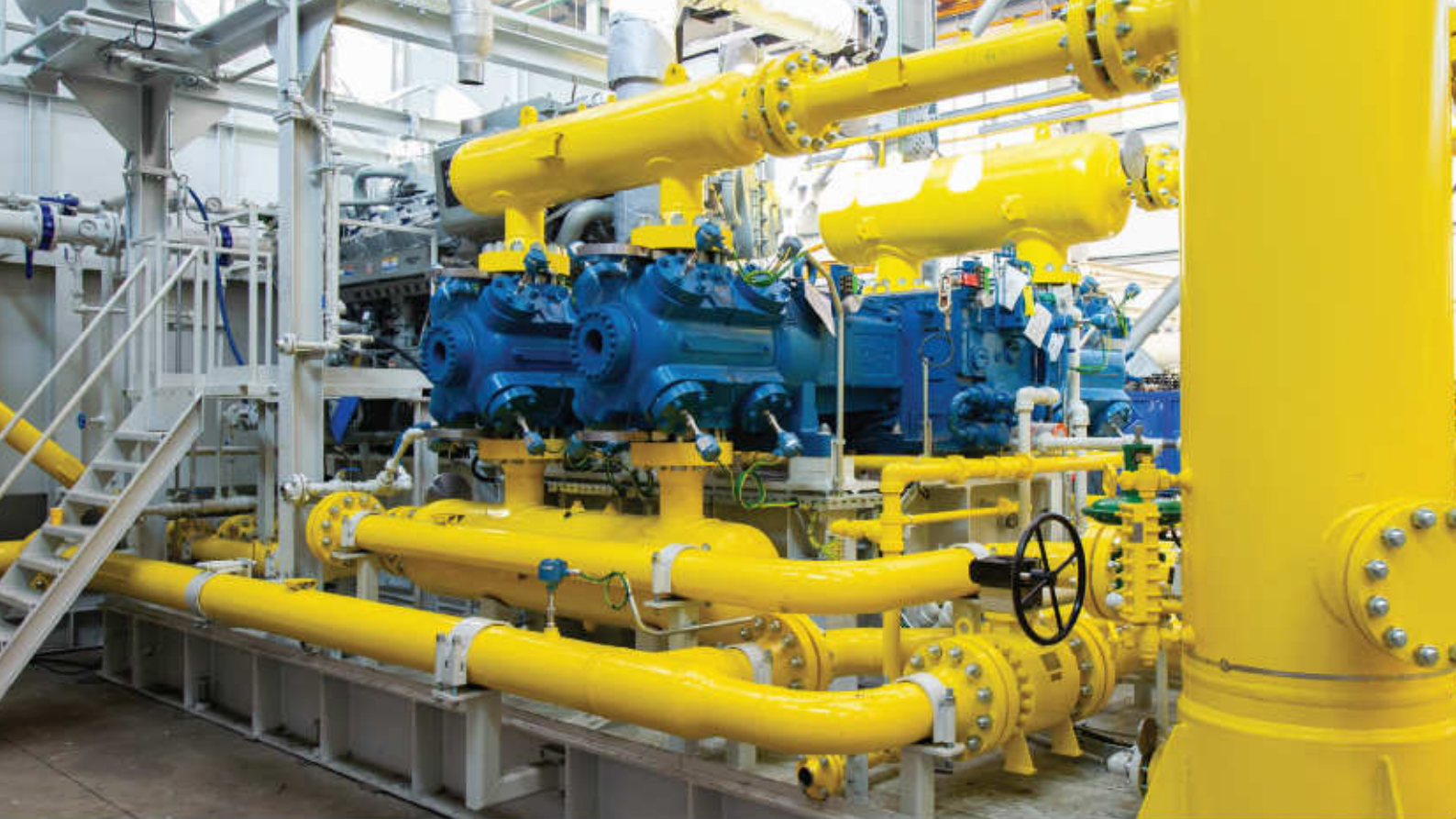


Image Credit: Wood Mackenzie



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a 50-fold increase in announced green hydrogen projects alone.

Project developers, lenders and buyers will be drawn to locations with a proven track record of exporting natural resources, suitable conditions for low-cost renewable electricity and the potential for large-scale carbon capture.

Several countries are hoping to snatch a slice of the hydrogen trade pie. Saudi Arabia, Brazil, Chile, Oman and Kazakhstan have all announced megaprojects targeting the export market, while others, such as Russia and Canada, have vast low-cost gas resources and plenty of carbon capture and storage (CCS) capacity.

Vice chairman Gavin Thompson said, “While no two hydrogen export projects look the same, the most obvious difference in proposed projects is between blue and green hydrogen. But portraying this as an either-or choice is an over-simplification.”

While current costs of green hydrogen production are typically more than three times higher than those of blue hydrogen, green hydrogen costs are expected to fall as electrolyser manufacturing technology improves and renewable electricity costs decline. An expected drop in costs will support a longer-term pivot from blue to green hydrogen. However, each market has unique characteristics, and cost declines will not be uniform.

“A one-size-fits-all approach will not work.”

Thompson said, “The reality is that the world needs both to achieve the required pace of global decarbonisation. Blue hydrogen production has a scalability advantage over green hydrogen at present and can already be developed in the requisite volumes, although lead times are longer.

“Most proposed projects are currently a combination of the two. A blue hydrogen exporter in Australia or the Middle East, for instance, could establish a market position while expanding into green hydrogen as costs decline over time and capacity becomes available. Producers could thus build out their low-carbon hydrogen supply chains as green hydrogen becomes more competitive over time.”

Suppliers with access to major, low-cost gas resources and carbon capture and storage (CCS) have a natural advantage for blue hydrogen exports. Regions such as the Middle East, Russia, and the USA, with competitive onshore drilling costs, appear best placed to develop an interregional export position. Countries able to exploit existing ammonia infrastructure will also be on the front foot.

Similarly, suppliers with access to low-cost

renewables will tip the scales when it comes to green hydrogen production. Based on Wood Mackenzie’s analysis of future costs, Australia and the Middle East sit in the top echelons for solar irradiance and offer massive green hydrogen potential. With conversion and transport costs making up as much as two-thirds of the delivered cost of the interregional hydrogen seaborne trade, proximity to market will also be important.

Sharma said, “A one-size-fits-all approach will not work. In a nascent market, hydrogen participants will need to adopt robust but flexible strategies and business models that support a potentially transformative development in the global energy transition. Today, a number of countries have the opportunity to harness their resources and, through hydrogen, become dominant exporters and players in low-carbon energy trading.

Thompson added, “Nonetheless, while the scale of these countries’ ambition and success will affect global energy systems in an unprecedented way, the irony remains that the dynamics of the future global trade in hydrogen are likely to look similar to those of traditional fossil fuels. Northeast Asia, including China, and Europe will be the big importers of hydrogen; Australia, the Middle East and, possibly, Russia and the USA have the greatest potential to be big exporters.” ■

Scaling up hydrogen development

A HIGH-LEVEL MINISTERIAL panel on hydrogen was held on the opening day of Gastech 2021, the world’s foremost gas, LNG, hydrogen and energy event which took place in September in Dubai. The panel session focused on what more needs to be done by policymakers to ensure the rapid expansion of the hydrogen supply chain and what impact regulations will have on facilitating the pivot towards green and blue hydrogen. Ministers from leading energy markets participated in the panel.

H.E. Udaya Gammanpila, Sri Lanka’s Minister of Energy, said, “While electrification using solar, and wind can help replace fossil fuels in the longer term, not all energy intensive applications can be readily electrified (e.g. aviation). We therefore believe hydrogen can be the fuel of the future, by tapping further into Sri Lanka’s abundant wind and solar potential. Indeed, hydrogen is likely to make Sri Lanka self-reliant in energy and possibly a net exporter.”

For the first time this year, Gastech featured a dedicated hydrogen zone, Gastech Hydrogen, which featured a series of dedicated conference sessions focused on the potential of hydrogen in creating a cleaner, more sustainable energy future and for GCC hydrocarbon producers to reduce methane emissions and drive the development of the hydrogen economy.

Hydrogen Zone attendees heard how hydrogen presents Gulf energy producers with a globally significant opportunity to remodel their business practices and lead the transition towards net-zero energy. Although scaling up projects, infrastructure and end user accessibility will present huge challenges, the production of both green and blue hydrogen offers a unique chance to deliver on climate commitments and drastically reduce CO2 emissions. The event also discussed what must happen by 2030 if hydrogen is to overcome existing barriers to widespread adoption and achieve the vision of the hydrogen economy.

In the Gulf region, substantial natural gas reserves are seen as an opportunity to produce hydrogen. Work is already underway on



A ministerial panel on hydrogen took place at Gastech 2021.

megaprojects to expand the UAE’s hydrogen economy, including a two gigawatt green ammonia project by Taqa, the Abu Dhabi National Energy Company, and Abu Dhabi Ports which will use green hydrogen as feedstock to produce liquid ammonia for use in ships as bunker fuel and for export.

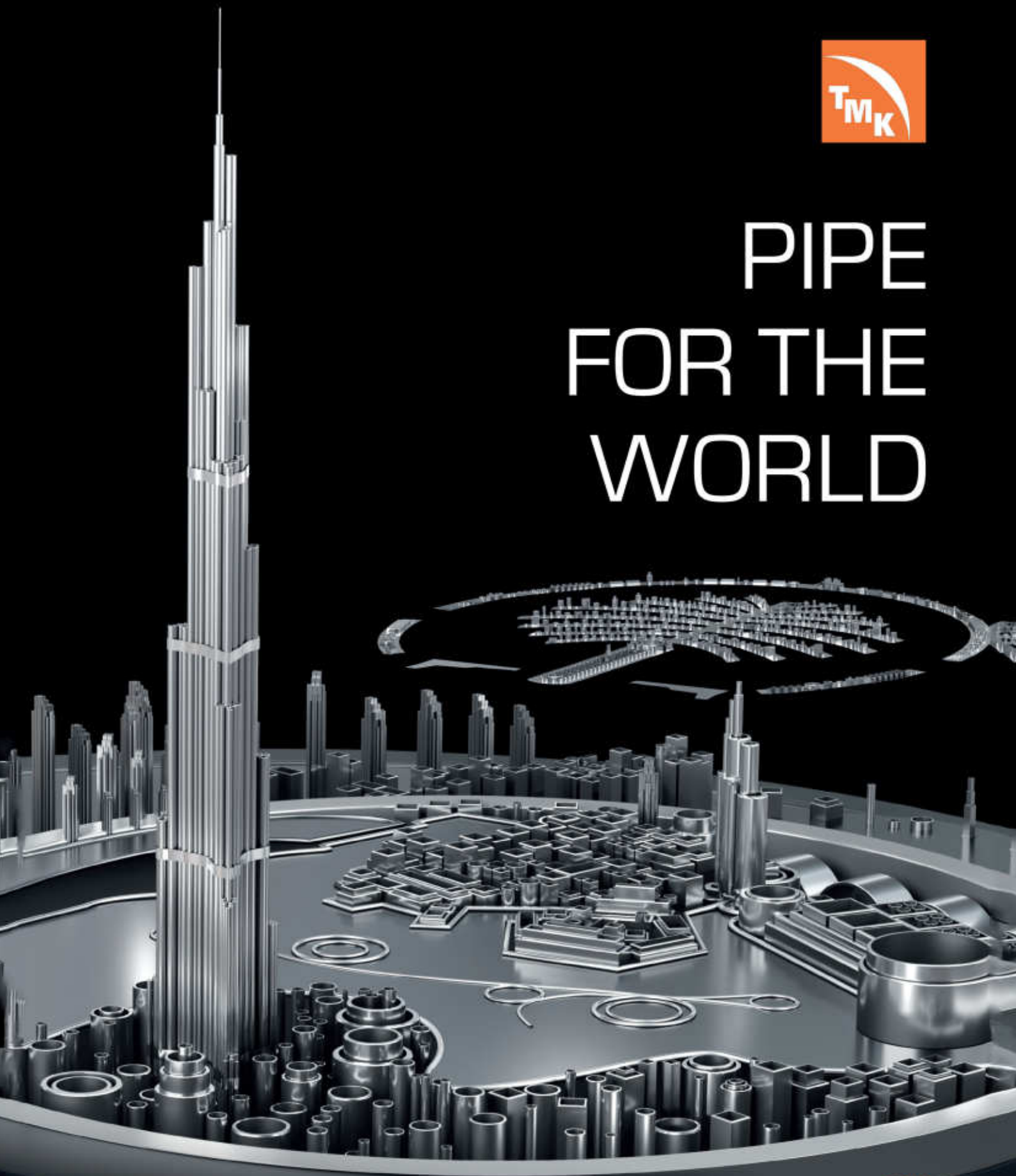
Meanwhile, the Khalifa Industrial Zone Abu Dhabi (KIZAD) has announced plans for a US\$1bn green ammonia plant, which will produce 200,000 tonnes of green ammonia from 40,000 tonnes of green hydrogen. In addition, Masdar has partnered with Siemens Energy, the Abu Dhabi Department of Energy, Etihad Airways, Lufthansa, Marubeni Corporation and Khalifa University to develop an electrolysis facility to produce green hydrogen for the transport industry.

And, in Ruwais, the Abu Dhabi National Oil Company (ADNOC) is developing an ammonia project, using blue hydrogen, derived from methane, as a feedstock, at its downstream industrial hub and formed an alliance with ADQ and Mubadala to accelerate the use of hydrogen in key economic sectors, including utilities, transport and industry.

Elsewhere in the Arabian Gulf region, Oman has announced a US\$31bn green hydrogen factory to be built in the Al Wusta governorate, and Saudi Arabia plans to invest US\$5bn in the futuristic city Neom to produce green hydrogen from both wind and solar-powered electrolysis by 2025.



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MENA – a prospective market and trendsetter

Dmitriy Goroshkov, director, sales and business development, Energy Sector, AO Severstal Management, discusses developments in large diameter steel pipes.

WHILE IN MANY other regions the number of complex projects using large diameter pipes has been decreasing for several years, in the Middle East the opposite is true. Therefore, the region has long been an established market with its own specifics, requirements and standards.

Large diameter pipes: permanent competition

Due to the fact that the number of upstream and downstream construction projects is constantly growing, companies are looking carefully at the choice of suppliers of large diameter pipes, and the choice is no longer as obvious as it used to be. For the reason that the quality of products is very comparable for all major suppliers nowadays, other competitive advantages are becoming more important factors for choosing a manufacturer of large diameter pipes.

An important factor in the formation of the high cost efficiency of some metallurgical companies in Russia is vertical integration (the full production cycle from raw materials to finished products) and strategic access to the most important logistics channels. It allows to control not only the quality of products at all stages of production, but also the timing, sometimes significantly exceeding the expectations of the customer.

It allowed our company to significantly expand its large diameter pipe (LDP) export pool, with the addition of Egypt, the USA, Bangladesh and UK, followed by Peru, Bulgaria and Brazil in 2021. The company also continues to develop partnerships with international companies, including ones from the Middle East, aiming to start deliveries in this region as soon as possible.

To date, we have successfully completed a number of well-known projects in Europe – “Turkstream” and “Polish-Slovak Gas Interconnector”, that called for implementing tailored solutions.

1. For Turkstream, a large volume of 260,000 tonnes of pipes for offshore section has been delivered, where increased requirements for the geometry have been met



Dmitriy Goroshkov, AO Severstal Management.

and a solution to reduce the cost of the project has been implemented.

2. For the Polish-Slovak Gas Interconnector, more than 11,500 tonnes of large diameter pipes have been shipped in total. The application of 18m long pipes enables cost reduction for the construction of pipelines and enhances reliability and efficiency. To deliver the pipes to the client, a multimodal transportation logistics solution has been implemented, including pipes transportation by road, sea, and rail.

New technology opens new frontiers

Since we mentioned innovation, I must say that the steel pipe industry is constantly undergoing changes, and the number of projects requiring very specific products is constantly growing, especially in offshore projects. A company should be able to modify its product specification to fit all and every

customer's needs, from the very beginning of the manufacturing process. Our company, for example, produces some very specific items to work under non-standard conditions, such as large-diameter LSAW pipes for sour service made of steel grades able to prolong the service life of pipelines transporting hydrogen sulfide-containing substances, and CO₂-containing substances.

MENA is characterised by the execution of some very specific projects, where top-tier technology is required. This makes the construction of pipelines somewhat similar to the Russian conditions, where manufacturers are constantly forced to develop additional measures to protect the pipe and, as a result, have achieved great success in this.

ESG is an essential element for business

Large industrial companies always experience increased public scrutiny for corporate responsibility and safety issues. It is for this reason that Russian industry strives to be deeply integrated into the world community and its standards. For this, the necessary certificates are obtained, and companies take part in ratings to show investors and society serious intentions to ensure the sustainable development of the industry and society.

Our company is systematically implementing measures to reduce greenhouse gas emissions. One of the stages of this work was the definition of a medium-term goal to reduce the intensity of CO₂ emissions by 10% by 2030 from the level of 2020. These activities will help reduce the intensity of CO₂ emissions from 2.063 tons per ton of steel in 2020 to 1.857 tons per ton of steel in 2030, which will allow us to enter the top 15 best steel producers with the lowest greenhouse gas emissions in the world.

LDP is a very complex and important market, but thanks to modern approaches to work, modernisation of production, widespread use of innovations and high profitability, Russian metallurgical companies are today among the leaders in the world market for large diameter pipes. ■

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Solving big data problems with edge computing

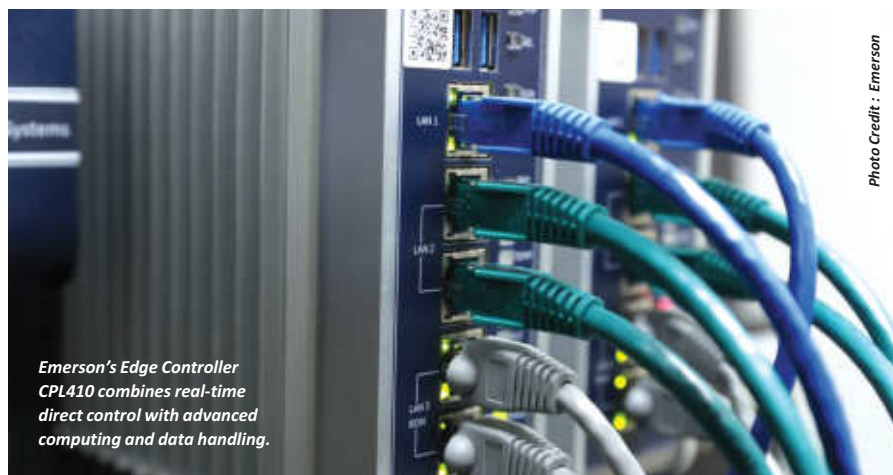
Dieter Gebert and Luigi Ballerio, application engineers for machine automation solutions at Emerson, shed light on the benefits and applications of edge computing in big data problems.

MANUFACTURERS KEEN TO exploit the full potential of their plants are increasingly looking at how 'big data' can help them create operational efficiencies. Big data, defined as extremely complex and large data sets, presents a number of opportunities for organisations, not just in supporting predictive maintenance strategies, but also in identifying issues, bottlenecks and areas of underperformance.

However, large and complicated data sets, accumulating at an incredibly fast rate, require the implementation of new advanced technology to gather the data, perform the analysis, and then present useful insights that can subsequently be acted upon. This is where the Industrial Internet of Things (IIoT) enters the fray. The IIoT makes use of a vast array of existing and new sensor technology monitoring devices, equipment, machines, production lines and processes, connected via a variety of data communications networks to high-performance computer processing and analysis software to interpret and then present this data.

Implementing technology to process and analyse big data can be a major problem when companies try to tackle it all at once. A better approach may be to start smaller and concentrate on known problems with defined parameters, which could be described as 'little data'. Data produced by field devices is analysed by a field-located controller to generate insights.

Edge computing is essentially a distributed computing paradigm that brings computing processing and data storage closer to the location where it is needed, to improve response times and save bandwidth. As devices get smarter, they produce more analytics to generate insights into equipment health and performance. Edge computing technology is doing this at or near the source of the data, instead of relying on the cloud and the computing power within data centres. With the latest edge controllers, embedded processing brings those insights closer to the plant floor,



Emerson's Edge Controller CPL410 combines real-time direct control with advanced computing and data handling.

Photo Credit: Emerson

whilst also making them more widely available via the cloud.

OEMs and manufacturers can use edge computing to evaluate equipment breakdowns and eliminate common issues. It can be used to provide feedback to development teams on machine performance to help them optimise future products. It can be used to answer questions on how the machine is actually used, the quality issues, and if the costs have to be reduced without affecting performance. Comparisons can be made between machines, processes and entire plant, as well as raw materials in terms of yield, quality and scrap.

The latest edge controllers, such as the PACSystems RX3i Edge Controller from Emerson, offer both deterministic and non-deterministic control in a single compact device. These devices effectively have 'two sides of a brain', with the left side being where intelligent sensor data is gathered and real-time deterministic control is provided. Meanwhile, the right side has a software stack running on Linux to deliver the data processing and analytics, dashboards, data logging, and remote monitoring and diagnostics.

Imagine a single control unit, technically an industrial PC with multicore architecture, then separate it into two brains. The left side

performs the typical functions of a controller, including reading inputs, executing logic in real-time and writing outputs. In addition, the left side is also able to prevent any problems the right side might incur from affecting the control functions.

The right side, which runs a Linux-based open operating system, has the ability to manage multiple loops and routines locally, collect data and interface with standard programmes for the IT world, such as Python or Java.

A typical application is anomaly detection at the edge. This requires historical data from a database such as InfluxDB or SQL Lite, and a machine learning algorithm created in Python or other tools like Prometheus. A selected data sample is taken and cleaned, removing all outliers, and then the ML programme is trained. The test dataset can then be applied, and then eventually the live data from the machine and relevant instruments. The ML algorithm can then spot an anomaly, were it to occur, record it or raise an alarm for an equipment operator. This helps issues to be identified before they become real problems, and a shutdown of the machine or operation can be scheduled, necessary parts ordered and downtime minimised, ultimately reducing the cost impact. ■



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Intelsat 33e, one of Intelsat's high throughput satellites.

Image Credit : Immarsat



HTS support for oil and gas operations

Joel Schroeder, director, Land Mobile, Intelsat, speaks to Deblina Roy about the benefits of High Throughput Satellites (HTS), the growth of the hybrid connectivity approach and Intelsat's Flexmove managed service.

What has HTS enabled that was not available before it arrived?

HTS satellites have been designed to meet the booming demand in connectivity, since they can provide far more throughput than existing wideband satellites, with increases in throughput of up to 400%. The use of focused spot beams enables enhanced performance, coverage footprints, and connectivity efficiency. Combined with wide-beam satellites, users benefit from improved performance not only in bits per second per Hertz, but also in the aggregate MHz available and the geographic area covered, enabling bandwidth-hungry applications anywhere, anytime. Research organisation NSR predicts that demand for HTS capacity for land mobility should reach 24 Gbps by 2028, up from less than 1 Gbps in 2017.

Why is demand for HTS capacity from mining and oil and gas companies still strong, given the continuing spread of terrestrial connectivity?

Oil and gas companies, as well as mining

companies, operate in harsh environments and hard-to-reach areas, and with the IEA expecting global oil demand to rise every year through 2026, oil and gas companies are exploring new areas, on land and at sea. Whether it is to inspect facilities, monitor leaks, service equipment or monitor workers travelling between locations, they require always-on network availability. With its ubiquitous service footprint and high network uptime, satellite communication is the best way to deliver broadband connectivity to the oil and gas industry on a global basis. 70% of respondents to a recent survey conducted by Intelsat amongst oil and gas executives say "support for remote operations" is one of the

top three benefits of satellite connectivity in supporting mobile vehicles and/or temporary site operations. More specifically, HTS can help improve operational efficiency and performance, enabling technologies such as IoT and AI, and allowing the workforce to make value-based real-time decisions. Despite the spread of terrestrial connectivity, many of the areas where the industry operates are unconnected, and satellite technology provides a powerful, cost effective and easy to install solution to the oil and gas industry's connectivity challenges.

Which bands are we talking about – Ka? Ku? C-band? Are there still issues around attenuation (the effect of heavy rain on Ka, for example)?

There have long been discussions on the topic of Ku- and Ka-bands. When it comes to rain, Ka-band is much more impacted by heavy rainfall that can lead to a weaker signal or even its complete loss – not ideal for the oil and gas industry that requires robust connectivity at all times, regardless of the location.

“ HTS satellites have been designed to meet the booming demand in connectivity.”






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Global constellations of Ku-band satellites such as operated by Intelsat combine wide-beam and spot-beam, ensuring a depth of coverage that provides end users with resiliency and redundancy unavailable in Ka-band. Switching between these Ku-band options to direct capacity to where it is needed most is possible because of the open architecture compatibility between Ku-band HTS and wide-beam satellites.

Therefore, when selecting a satellite solution, the oil and gas industry should assess link budget, network uptime / availability and the needs of some applications or end users that might require a very high uptime which could be impacted by rain fade.

How much bandwidth is available on satellite services? I assume there's a lot more to play with than there would have been 10 years ago?

With its multiple layers of redundancy making it available at any time, Ku-band remains an ideal solution for oil and gas users who operate in off-the-grid locations. But, with the industry looking for optimal connectivity solutions, the past few years have seen many ground-breaking innovations. For example, High Throughput Satellites (HTS) have pushed the boundaries further by providing far more throughput than traditional satellites, while two Mission Extension Vehicles (MEV-1 and MEV-2) have given five years of extra life to two satellites. LEO constellations are being launched and will be operational in a few years. Also, new managed services such as Intelsat FlexMove enable connectivity on-the-go, meeting the requirements from on-site oil and gas exploration to the trucks and vehicles traveling hundreds of miles through unconnected areas.

We are already working on defining the connectivity of tomorrow, with a new class of incredibly powerful software-defined satellites that will launch over the next few years. They will allow capacity to be instantaneously reconfigured and repositioned in response to ever-changing customer demand, significantly improving the economic equation for customers, and making networks even more flexible, accessible, relevant, and cost-effective for them.

What applications might an oil company use HTS for in remote contexts?

Oil companies are increasingly relying on bandwidth-hungry complex applications to operate and have started introducing technologies such as IoT and AI to help them improve operational efficiency and performance. For example, such applications will help address leak and flow issues that can affect well integrity, the dynamic nature of leak and flow events requiring constant monitoring to capture their intermittency.



Image Credit : Intelsat

Joel Schroeder, director, Land Mobile, Intelsat.

And how would an oil company use a hybrid connectivity approach to cover both its remote and local needs?

Recent advancements in satellite connectivity are making it possible to use high-throughput satellite connectivity in a cost-effective way in combination with terrestrial wireless services, creating a "network of networks" hybrid solution that can provide organisations with remote operations and on-the-move site workers with easy-to-deploy communication options that can help quickly scale operations where and when they're needed most. Where cellular/fibre networks aren't available or are cost-prohibitive, oil and gas companies can switch to satellite connectivity anywhere needed to ensure operations and data continues to run seamlessly.

“ Oil companies are increasingly relying on bandwidth-hungry complex applications to operate.”

Intelsat blankets the earth with multiple layers of wide-beam and spot-beam capacity, ensuring the network not only provides high-density coverage where it is needed most, but also a high-degree of redundancy should bandwidth become constrained or an asset encounter anomalies. The Intelsat global network has one of the highest network uptime, operating consistently at 99.9% availability which makes it attractive for remote operations such as oil and gas.

Satellite is still a more expensive option than cellular. Do you see competition and/or standardisation bringing hardware and connectivity prices down?

Intelsat is continuously working on making satellite connectivity simpler and more cost-effective. Our HTS solutions' higher performance means a lower cost per bit, while enabling smaller, more affordable, and easier to install terminals, reducing upfront costs. Also, our network's open infrastructure means that customers can use their existing infrastructure. Our managed service FlexMove has been designed to make it easy for oil and gas operations to benefit from speeds up to 10Mbps for a fraction of the cost when compared to narrowband satellite services. The next generation, software-defined satellites, in which Intelsat is actively investing in, will further improve the economic equation for customers. With the solutions we've put in place and the innovations we are working on, oil companies are future proofing their investment.

Is the "network of networks" hybrid solution you refer to completely seamless or is there still work to be done for a data call on the move (say) to intelligently seek satellite signals when a terrestrial signal is unavailable or too weak?

The Intelsat FlexMove network is paired with a portfolio of pre-configured, fully integrated terminals which enable an array of comms-on-the-move and comms-on-the-pause applications including autonomous and remote vehicle operation as well as real-time video streaming for advanced site security. This is made possible because of the easy-to-deploy design of these very compact, highly portable and mobile terminals. For instance, our portable connectivity solutions have auto acquisition of satellite signal capabilities that enable any user to connect to the internet, complete VoIP calls and run data-intensive applications in under five minutes.

How do you see Intelsat FlexMove evolving?

Intelsat FlexMove is the first HTS solution for Land Mobility users and enables robust, reliable internet access via public internet or private IP connection to support access to a private network for users in remote, hostile, emergency, or temporary locations. FlexMove creates the ultimate connectivity safety net by enabling bandwidth-hungry applications at speeds up to 20x faster than narrowband satellite solutions, relying on Intelsat's global network. With "difficulty of network setup and management" cited as a top drawback of satellite adoption for Land Mobility organisations surveyed by Intelsat, we believe that FlexMove will play an increasingly important role as it helps overcome this barrier. ■



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Valves for demanding applications

AS-Schneider describes how its DBB valves are being successfully used at the Amal oilfield in Oman.

BOOSTING RECOVERY FROM ageing oil fields is a major challenge in oil production. As production starts to taper off, oil companies must employ enhanced oil recovery (EOR) techniques. Using EOR technology, production can be increased to keep the field economically viable. EOR can help extract up to 60% of a reservoir's oil – compared to 40% using primary and secondary extraction methods. In the Middle East, steam injection has been successfully used as an EOR technique for the recovery of heavy viscous oil. Steam is injected into the reservoir to heat up the subsurface oil. The process boosts recovery due to viscosity reduction, vapourisation and thermal expansion of the oil.

Traditionally, natural gas is burned to produce the EOR process steam. The oil and gas industry, however, is under increasing public and regulatory pressure. Solar thermal energy for steam generation is a clean and environment-friendly alternative to burning natural gas. This method uses mirrors to reflect and concentrate solar radiation on to receivers that convert solar energy to heat. The clean energy is then used for the EOR process steam generation. The solar thermal approach not only reduces the carbon footprint of the extraction process, but also lowers the cost of extraction. An increasing number of Gulf state oil companies are working on replacing natural gas-based steam generation. A solar steam process is part of their environmental agenda.

A prime example is the solar steam generator at the Miraah Solar Plant in Oman, which is one of the largest solar plants in the world. Boasting a solar thermal capacity of 1,021 MW, the plant has a daily steam output of up to 6,000 tons. That translates into annual gas savings of 1.6 TWh and annual CO₂ emission savings of 300,000 tons. The 6,000 tons of solar steam generated daily at Miraah constitutes a substantial portion of the EOR steam requirements at the Amal oilfield operated by Petroleum Development Oman (PDO). The steam EOR increases the well productivity at Amal by 300%.

High temperature requirements for steam injection

The design temperature for steam injection wells is typically in excess of 400° C. At these high temperatures, the hardness of the valve material is reduced and its fatigue-resistance is compromised. Small cracks may appear which can propagate across the section causing failure. Valves with O-rings and thermoplastic seals are unsuitable for use in this temperature range. High-temperature, high-pressure applications demand that valves have a specialised design and construction.

“High-temperature, high-pressure applications demand valves with a specialised design and construction.”

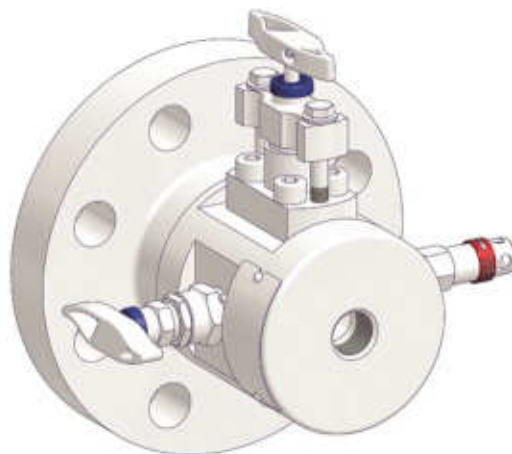


Image Credit: AS Schneider

High temperature CBB valve.

Metal-to-metal seated ball valves, with a larger bore and fire safe graphite sealing, are generally used as isolation valves in steam EOR application. These valves are constructed from special alloys and are protected with a heat, corrosion and wear-resistant coating/cladding, applied using a specialised process. Some valve manufacturers can take several weeks to supply such valves. A ball-set (ball + seat) must be ordered from third-party suppliers. In the event of an unplanned shutdown, procurement and replacement of these special purpose valves can become a challenge for the maintenance team. The cost of using these valves can be high, both in terms of the procurement cost, and the production loss suffered while waiting for a replacement to arrive.

Maintenance and safety protocols demand periodic service and replacement of critical valves. In steam injection wells, pressure transmitter/pressure gauge (PT/PG) isolation valves are of critical importance. Based on customer demand, AS-Schneider has developed a bigger bore globe-type needle valve in Double Block and Bleed (DBB) configuration that is ideally suited to this application.

For high temperature and pressure applications, such as steam EOR, AS-Schneider offers the DCZ series of DBB valves. The valves are designed with a large 14 mm bore, needle type block in DBB configuration that is rated up to 550° C. It is a compact and tough design built to last in extreme applications. The innovative design of the valve head allows smooth low-torque operation and gives the valve a long service life. The standard rating of AS-Schneider DBB valves is 420 bar, but valves can also be produced with a 689 bar rating for high-pressure applications.

The series contains monoflange and dual flange models with specialised process and instrument designs. The valves are readily available, as they are faster to produce and do not require special third-party components. ■

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Gangway length:	25m
Footprint:	6.3 x 7.2m
Weight:	39mt

L-type



Compensation:	2m Hs
Gangway length:	13m
Footprint:	4.4 x 6.6m
Weight:	8mt

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Engaging customers and employees with techoration

Erdem Soyol, vice president Middle East and Africa, Barco, discusses how technology and imagination can transform your business-as-usual.

MANY MANY COMPANIES talk about the ability to wow existing and potential customers by giving them an unforgettable experience, but few actually have the technology to back that up.

According to the influential Harvard Business Review article *The Age of Continuous Connection*, "A seismic shift is under way. Thanks to new technologies that enable frequent, low-friction, customised digital interactions, companies today are building much deeper ties with customers than ever before."

What if you could make an instant impression as soon as your client walks onto your premises? What if, instead of the

same old 'business as usual', your technology and imagination could transport them into a new reality?

In the visualisation space, more organisations are exploring new possibilities through strategic "techoration" that literally elevates the creative placement of display screens into an art form.

First coined in 2008 by interior decorator Doug Wilson, techorating is the intersection of technology and interior design and most commonly refers to the application of display technologies or video walls as a canvas for engaging, informative and entertaining content in public settings. As more organisations begin evaluating new and differentiating avenues to capture

attention, reposition their brands and regain traffic, innovative and creative techoration is seeing a resurgence everywhere from public spaces to office buildings.

"Techoration is about creating an experience that energises and enthuses people once they are drawn in," said Erdem Soyol, vice president Middle East and Africa. "Whether it's building excitement for guests waiting in a reception or offering stimulating visuals to individuals passing through Apple's corporate headquarters, digital content offers the potential to combine information and entertainment. Through creative techoration, we can do so in ways that are surprising and memorable."

Creating interactive and immersive experiences

Above all else, techoration offers a new and exciting way to invite customers and employees into digital experiences that forge connections and interaction with organisations and brands. Techorated facilities in turn can become modern brand managers that elevate inspired passers-by into customers and advocates.

“Techoration is about creating an experience that energises and enthuses people once they are drawn in.”

As the modern world dives deeper into the potential of techoration, it also is drawing the lines of where techoration makes the most sense and can deliver the greatest impact. Despite the potential to engage and inspire via the "cool factor" of visual technology, techoration projects must still feel aesthetic and natural to truly

Erdem Soyol, vice president Middle East and Africa, Barco.



Image Credit : Barco

be effective. Target audiences are more likely to pay attention to images and messages that blend into and feel part of their surroundings than a series of screens that is awkwardly placed or out of line with the tone of their environment. For a techorating project to succeed, it must carry out an organisation's creativity from vision to execution without feeling forced.

Recent years have seen businesses transform high-visibility areas – such as reception areas – as their first foray into techoration. With broader potential to discover, present and collaborate, techoration now helps such organisations refine how they create memorable first and last impressions.

"The Barco video walls have helped us impress visitors and highlight our brand,"

“ A “techoration” is only as good as its continued performance.”

said Gordon McNair, project manager for HP. "In addition to HP graphics and specialist content, we use the walls to display high-resolution images of iconic places around the world, such as Red Square and Times Square. The walls provide the perfect high-tech backdrop."

Techoration: Where to begin

While a potentially new concept for businesses seeking that extra edge, the process of evaluating how to initiate "techoration" is no different than that of any other technology decision.

When choosing what a technology overhaul might look like, start with the business case. What kinds of content do you plan to feature? Which audiences are you looking to engage? Most often, a tiled LCD or direct-view LED video wall (or series of video walls) represent the building blocks.

Next, evaluate your surroundings. Do you need a display image quality that is perfect in both dimmed and high-brightness modes (for example in reception areas with a lot of daylight)? Video artifacts typically arise on fast-moving content, so

you may need a screen with no image tearing or video hiccups. Calibration helps with uniformity and image perception, while automatic alignment reduces complexity, damage potential and installation challenges.

Similarly, you may need both LCD and LED video walls and meeting room smart screens to be set to the highest light output, alongside an advanced colour sensor that continuously measures the primary colour levels of the entire wall to ensure all walls are functioning to the highest possible standard. The emergence of AV-over-IP is also driving versatile video walls, enabling any source to be activated at any time and in any place.

Aside from meeting the viewing experience requirements, predictable, reliable, and worry-free installation, operation, and maintenance are also key ingredients to secure a targeted return on investment.

Ultimately, a "techoration" is only as valuable as its continued performance, and users need to feel confident in their ability to uphold their systems against changing environmental and audience needs. ■

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Opportunities to share knowledge and forge relationships

Christopher Hudson, president of dmg events, discusses what's in store at ADIPEC 2021, which takes place from 15-18 November at the Abu Dhabi National Exhibition Centre (ADNEC).

How significant is it that ADIPEC is taking place as an in-person event, and what opportunities will it offer to global energy professionals to re-connect and establish new business relationships?

After over a year of lockdowns, restrictions and virtual sessions, the message we have received from the industry is clear: it is eager to again meet in person, share knowledge, and find new opportunities that simply could not happen virtually. The industry thrives on relationships – and as we know, conversations are always more productive in person. ADIPEC 2021 provides the best opportunity for these long-awaited discussions. An in-person event is also the best means by which we can give the next generation of energy professionals strategic and technical insights on the latest trends.

What role do you think ADIPEC will play as a knowledge-sharing platform to address industry challenges and set the agenda for the post-Covid era?

One of the primary industry challenges will be navigating the energy transition. ADIPEC 2021 will be the first major energy exhibition and conference taking place after the United Nations Climate Change Conference (COP26) – so it will serve as a crucial opportunity for the sector to come together and reflect on governments' positions on reducing global emissions. It will be the key forum where CEOs, government ministers and energy experts will set out the sector's future.

ADIPEC continues to be one of the world's most influential meeting places for the energy sector to convene on the major issues of the evolving landscape. There is a great amount



Image Credit : dmg events

ADIPEC 2021 is expected to host more than 8,000 delegates and 2,000 exhibiting companies.

to discuss this year for energy companies, governments, and stakeholders across the value chain, from the challenges posed by new emissions targets to the possibilities opened up by the world's ongoing economic recovery.

Having navigated the challenges of the past year, we are excited to see the industry accelerating its plans for the future. Our Leadership Roundtables will provide leaders with an exclusive forum in which to discuss and debate the energy sector's strategic issues. These invitation-only roundtables will be attended exclusively by government ministers and policymakers, CEOs and other C-suite executives, who will come together in our prestigious Middle East Energy Forum to tackle the major issues shaping the industry – including the actions being taken to address

the climate challenge and opportunities to find growth over the next decade.

What is the anticipated attendance, in terms of visitor and exhibitor numbers etc?

More than 2,000 companies have already booked their stands as exhibitors, including 51 NOCs, IOCs, and IECs. 26 international country pavilions from across the world have also booked at ADIPEC, where exhibitors will display their innovative approaches to investing in and collaborating with the energy sector.

Across the four days, we'll host more than 8,000 delegates, including some 1,000 ministers, CEOs, policymakers and influencers, while more than 800 technical experts will come together for 160 sessions

“ ADIPEC 2021 will be the first major energy exhibition and conference taking place after COP26.”



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 Bureau Veritas Middle East

on the latest and most exciting forms of energy technology.

To what extent will innovation be showcased at ADIPEC?

Innovation will be an extremely important – and particularly exciting – focus at this year’s exhibition. ADIPEC 2021 will present a comprehensive overview of those new technologies enabling the energy sector not only to respond and adapt to decarbonisation, but also to unlock more value at all stages of the value chain.

The exhibition will enable our visitors to experience, at first-hand, those digital advancements and engineering breakthroughs that will enable the industry to thrive in increasingly competitive markets. I am looking forward to seeing more than 100 specialist companies showcase how they are realising the potential of drones, artificial intelligence, robotics and smart manufacturing across the exhibition floor. We’ll see how such technology is enhancing operations from upstream to downstream, improving efficiency in analytics, and bringing down costs for end users.

“ Our Smart Manufacturing Zone will provide a new platform from which to outline the potential of Smart Tech.”

Digital is certainly going to be a major focus – so how can visitors see the new technology on offer at the show? Are there any new features this year you’d like to highlight?

I would strongly encourage our visitors to explore the Digitalisation Zone, a key area of the exhibition which will offer insights on everything from big data to cloud and



A Global Business Leaders session at ADIPEC 2019.

machine learning. CTOs and industry leaders from some of the world’s biggest tech and engineering firms, including Microsoft, Nokia, Koch, and AWS, will be onsite exploring the latest ways digitalisation can enhance the energy value chain.

Our Smart Manufacturing Zone will provide a new platform to outline the potential of Smart Tech. Bridging the gap between energy, manufacturing and high-tech sectors, the Zone will detail what significant changes across the energy value chain will look like across the supply chain and logistics, computer-aided manufacturing, nanotechnology, ‘Materials Management 4.0’, and much more.

I am particularly keen to see all those in the running for this year’s ADIPEC Awards. Now in their 11th year, the Awards will be presented to the energy industry’s leading innovators, the projects, companies, and individuals exploring possibilities that can reshape our world.

What measures are being taken to ensure that ADIPEC is a Covid-safe event?

Our primary commitment is to the health and safety of all our visitors, delegates and

speakers. We want to provide opportunities for those on both the production and consumer ends of the value chain to come together and network at ADIPEC in a safe and secure way. We want them to be able to unlock millions of dollars worth of new business and to discover the range of products, solutions and cutting-edge technologies without fear or discomfort.

That is why we have put in place robust safety guidelines, and offer all our international visitors regular, up-to-date travel advice so that they can stay informed of all entry requirements ahead of their visit to Abu Dhabi. We are in constant and close contact with the UAE authorities, including the National Emergency Crisis and Disaster Management Authority, Abu Dhabi Health Services, and ADNOC, to ensure we remain ahead of developments and can offer all our visitors the most secure experience. We would also refer our visitors to our own dmgevents ‘All Secure’ framework, which provides a detailed set of enhanced health and safety measures that are practical, effective and widely considered to be best practice for the events industry. ■

Image Credit : dmgevents



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Bureau Veritas' Achieving Net Zero Solution



Image Credit: Bureau Veritas

Emissions reduction is a key concern for oil and gas companies.

CLIMATE CHANGE IS one of the main challenges of our era, with regulators, businesses and society as a whole increasingly calling for a swift energy transition. To achieve this, carbon-intensive industries are adopting ambitious net zero targets that will steer them toward reduced emissions and greener operations.

In accordance with the greenhouse gas (GHG) Protocol, emissions fall into three scopes. Scopes 1 and 2 are direct and indirect emissions generated by an organisation. Scope 3 encompasses emissions produced outside of an organisation, but within its value chain.

While there are many routes, Bureau Veritas' integrated, five-step Achieving Net Zero solution enables partnership with oil and gas companies to reduce their emissions across all three scopes. We help clients accelerate their transition to net zero, providing an initial, targeted approach to minimising Scope 1 and Scope 2 emissions, while preparing for Scope 3 improvements that is a challenge requiring in-depth collaboration with suppliers and across the supply chain.

“Achieving Net Zero emissions is essential to advancing the energy transition. The journey begins with evaluation of your Carbon Footprint.”

Measure, implement, monitor, off-set, and communicate all form part of our five-step solution. Before taking any action, companies should **MEASURE** by conducting a thorough assessment of their carbon footprint for reliability of their emissions data from the broadest to the most granular level. This vital evaluation determines a starting point for improvement, identifying asset hotspots, and, once actions have been implemented, measuring progress.

Once emissions hotspots are identified and analysed, and data verified, energy providers can develop and **IMPLEMENT** a strong, achievable, company-specific decarbonisation roadmap. Bureau Veritas provides end-to-end support to onshore oil and gas companies, offshore providers, and marine stakeholders.

It is important to **MONITOR** specific assets and overall operations after implementing actions. Regular and accurate monitoring enables businesses to measure their progress, helping meet sustainability targets and allowing them to adjust plans, where necessary.

Not all GHG emissions produced by businesses can currently be eliminated, but this does not mean compromising on sustainability. Bureau Veritas plays a key role in supporting clients' carbon **OFFSETTING** requirements by validating and verifying projects that generate carbon credits through internationally recognised schemes, or directly within the value chain.

By verifying all collected emissions reduction data with an independent third party, companies can provide proof of their efforts and progress toward achieving net zero and **COMMUNICATE** their progress to both stakeholders and society at large.

Learn more: <https://middle-east.bureauveritas.com/>



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Leading the way in an evolving energy market

Sherif Foda, chairman of the board and CEO of MENA oilfield services company NESR, shares his thoughts on business prospects and the company's role as an ESG leader.

How do you view the oil market and business prospects in the region generally, and to what extent do you think the market has recovered from the impact of the COVID-19 pandemic?

Following nearly two years of softer activity during the pandemic, NESR expects the MENA region to lead the international upstream activity recovery, and to be a primary driving force of oilfield activity growth globally. In the near-term, COVID-19 constraints on labour (travel restrictions) and supply chain (inflation) could hamper the pace of the recovery, but NESR and industry pundits expect these transitory headwinds to give way to robust growth in 2022. The current upcycle will be unique, as incremental activity and oil production growth will come from the lowest-cost Middle East resources, specifically, rather than from shorter-cycle unconventional in North America.

Given this macro backdrop, most of our key MENA customers are positioning for substantial production growth that will be critical to meeting future global oil and gas demand, as they remain the most reliable suppliers to the world, rather than for lower growth that will maintain a delicate balance between global demand for oil and gas and North America shale oversupply.

What plans do you have for developing your business further in the Middle East?

The NESR growth platform is unparalleled in upstream energy, and is multi-faceted across 1) organic growth, 2) M&A, and 3) technology development and partnerships.

Organically, the company will continue to

add capacity to expand into new services & geographies. The M&A pipeline remains healthy, although NESR will continue to be disciplined with respect to valuation and capital structure. Finally, NESR's open technology platform offers perhaps the most exciting growth avenues, specifically across those technology-rich D&E service lines in which NESR is partnering to bring next-generation drilling tools to MENA. And let's not forget our in-house R&D investment; we are very excited to showcase our coming state of art tools in the near future. Finally, the ESG Impact segment encompasses vast opportunities across water, emissions, flaring, geothermal, and other nascent commercial paths tied to the broader energy transition and decarbonisation of upstream.

You have agreed to a number of partnerships and collaborations recently. How important are such collaborations in bringing best-in-class technologies to the Middle East?

Historically, oilfield innovation has been driven by the large, international oilfield service providers through robust R&D programmes, but the current market paradigm has disincentivised such spending. The small service companies in the region do not have the same scale as NESR, so ours is perhaps the only open technology platform that can streamline the import of disruptive upstream technologies from around the world, into MENA. Furthermore, NESR's focus on ICV & localisation places our valued customers as a third partner in this technology development strategy. NESR's aim is to both bring new technologies, and also allow local engineers to train and co-develop the implementation.

With ESG and climate change concerns coming to the fore, what importance do you attach to sustainability in your operations, and to what extent is it a concern for your clients?

Internally, NESR has established itself as an ESG leader, having published its inaugural



Image credit: NESR

Sherif Foda, chairman of the board and CEO, NESR.

ESG report in 2021, and is moving quickly to improve the environmental footprint and sustainability across all departments and operations. Externally, we want to play a vital role in the energy transition by providing the tools and the technologies for the oil companies to continue to be the reliable source of energy in a sustainable manner. We put a lot of focus on Water, and we believe the industry could become one of the largest providers of water resources in remote areas, and we can use all the unused energy or flared gas to power internally those plants or provide power to villages. There are a lot of initiatives that we are working on with our customers, who are laser focused on climate change carbon neutrality.

How do you hope to benefit from your participation at ADIPEC?

We are very excited about ADIPEC this year, especially after not being able to gather physically in 2020. We are showcasing our groundbreaking technologies at our booth and have invited our board directors, executive management and our international partners to participate alongside us, and look forward to meeting other industry leaders in Abu Dhabi. ■

“ Incremental activity and oil production growth will come from the lowest-cost Middle East resources.”

Big benefits from composite solutions

Vincent Ribouleau, sales manager Middle East at 3X ENGINEERING, discusses pipeline repair using composite solutions.

Composite repair is now well established in the oil and gas industry. How would you describe the key features and benefits of this technology?

Actually, the non-metallic market in the oil and gas industry is simply an innovative and cost-effective way to offer many benefits to extend the life of the assets such as strength, corrosion resistance, light weight, design flexibility and durability over the years.

In your opinion, what are the challenges for pipeline owners today?

Today, for many pipeline owners, the challenge is no longer how to expand the pipeline network but how to maintain in service all those ageing assets. What is the strategy to extend the life of the network by reducing the time of maintenance and reducing the risk and cost of heavy equipment mobilisation?



Image Credit: 3X ENGINEERING

Non-metallics offer an innovative and cost effective way to increase the life of assets.

How is composite wrapping transforming the pipeline maintenance industry?

The maintenance market generally ruled by Emergency Pipeline Repair Systems (EPRS) divisions of the major O&G companies has converged to the development of a solution which has to be off the shelf, ready to be used with standardised design, applicable on any geometry with a minimum impact on service and production. This where composites have globalised the solution. We have reached a

level where a unique product is now suitable to reinforce a pipe suffering from external or internal corrosion, a dent, a leak, a weld defect, a crack, a delamination and much more, whatever the diameter, geometry, operating condition or environment.

What are the new challenges for a company such as 3X ENGINEERING?

Each repair is a challenge itself. Our product REINFORCEKIT® complies with ISO 24.817 or ASME PCC-2, so we are considering each single repair as unique with its own specifications. However, 3X ENGINEERING considers that the most challenging activity remains subsea repairs in harsh environments, with limited time of application to reduce as far as possible the cost of implementation. We have given the priority in our technical development to Innovation. Today we are proud to have an extensive range of products able to seal high pressure leaks on pipes (STOPKIT®) or tanks (TANKIT®) and even a solution to avoid corrosion under support (ROLLERKIT®).

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Put your data up front and centre

Chandra Yeleshwarapu, senior director, Digital Transformation and Business Development and Amanda Smith, head of R&D for Information Management and Platform Technology at Halliburton Landmark discuss how to gain greater control over your data with DecisionSpace[®] 365 on OSDU[™].

FINDING AND COLLATING data can be incredibly time consuming, taking up to 70% of an E&P professional's time. With 10 TB of data being created per well per day, the challenge continues to grow. If we are to make the most of our data, we need to put it up front and centre. It needs to be liberated from the applications and transitioned to Open Subsurface Data Universe (OSDU[™]).

Given the sheer volume of E&P data and the need to continuously enhance its quality, the ingestion process into OSDU needs to be high throughput, low latency and self-cleaning. This can sound like a daunting prospect but it doesn't have to be.

With intelligent workflows at your disposal, data can be subject to rigorous quality control before being transitioned efficiently and effectively to OSDU, creating a robust ingestion pipeline.

Getting ahead of the game

Over half the battle is getting the data organised and loaded. With that in mind, Halliburton Landmark made a commitment to OSDU to ensure that all Landmark products and services would be OSDU compliant.

DecisionSpace[®] 365 software as a service on OSDU provides an efficient and effective means of ingesting large quantities of data from a variety of sources. This has been achieved in conjunction with our partners, by combining Landmark's deep expertise in E&P data management and our partners' cloud technologies to develop new innovative workflows which are now available publicly with the R3 commercial release of OSDU. Once the data is loaded, DecisionSpace 365 cloud applications provide modular, open, and plug-and-play solutions, with intelligent workflows to drive efficiency and provide data driven insights.

On Your Marks...

To prepare and enrich log data for ingestion into OSDU, Landmark has contributed

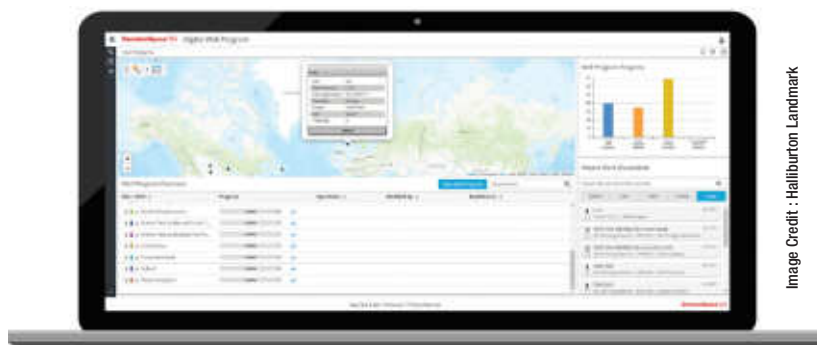


Image Credit : Halliburton Landmark

Working with data on OSDU using Digital Well Program, a DecisionSpace 365 cloud application.

additions to OSDU to support new binary storage capabilities to enable performant access to metadata, file data, and high precision measurement data.

Files are uploaded using a simple self-service interface. Machine learning is used to predict metadata based on previous results and checks for completeness, validity, and duplication. This helps ensure that data of known quality is available to users in petrotechnical applications including AI/ML models.

Once prepared, the data is ready to be submitted into OSDU as the system of record.

Get Set ...

Data can be ingested directly into OSDU or registered from external systems such as Engineer's Data Model[™] and OpenWorks[®] software. This means you can continue working with the applications you know and love such as Digital Well Program[®], a DecisionSpace 365 cloud application, as well as simultaneously integrating with third-party applications for end-to-end workflows.

Go!

With a rich set of data available in OSDU you can create new value-added capabilities. Data can be queried via the OSDU Search APIs for binary and drilling data via a Jupyter notebook to experiment and build a new AI/ML model.

OSDU master records can be queried to retrieve the required data and associated registered targets. You can then utilise delivery API's to retrieve the full data. This ensures you're getting the most accurate, updated data which can be quickly visualised in Jupyter notebook to build the models, making the data accessible to anybody, anywhere, in any application.

Streamline your data utilisation with DecisionSpace 365 on OSDU

Since 2019, Landmark's cloud-native microservices and workflows have been and continue to be OSDU compliant. We've made an OSDU instance available publicly in our OpenEarth[®] Community and created an OSDU reference implementation, which we continually optimise for performance and scale, and contribute changes and enhancements back to OSDU.

The workflows highlighted above are just a glimpse of a much more comprehensive solution for borehole, seismic, drilling, and subsurface data that will enable you to transition your data and applications to OSDU while enabling business continuity for your users. ■

To see these workflows in action, watch our demo today at www.datafrontandcenter.com



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ADIPEC throws the spotlight on hydrogen

ADIPEC will provide a forum to share perspectives on how hydrogen can potentially deliver a clean, integrated approach to the Middle East and North Africa (MENA) region's energy sector.



Green hydrogen is integral to the UAE's plans for a sustainable energy future.

ACCORDING TO A recent Goldman Sachs report, green hydrogen could meet up to 25% of the world's energy requirements in less than 30 years, with a market value in excess of US\$10 trillion. To emphasise the importance of hydrogen in a diversified energy sector and address the challenges and opportunities of producing green and blue hydrogen on a mega industrial-scale, ADIPEC has dedicated seven sessions to hydrogen during its Strategic Conference.

The sessions will focus on critical industry topics such as building a sustainable hydrogen economy, establishing a policy framework to promote hydrogen deployment, repurposing value chains, managing supply and demand dynamics, and up-scaling.

Christopher Hudson, Global Energy president, dmg events, said, "ADIPEC 2021 will enable the global energy industry to gain key insights from, and share knowledge with the policymakers, technologists, scientists and companies at the forefront of the hydrogen industry and identify the new business models and strategies required to unlock, create and maximise value from hydrogen's potential as a future clean energy source."

Expert speakers participating in the ADIPEC hydrogen sessions include Dr Samir

J. Serhan, COO, Air Products; Martin Houston, vice chairman, Tellurian; Dr Christoph Noeres, head of Green Hydrogen, Thyssenkrupp; John Kent, chief energy transition officer, Kent; Alicia Eastman, co-founder and president, InterContinental Energy; Paul Bogers, vice president – Hydrogen Shell; Andy Hemingway, president, Energy Optimisation & Innovation, Wood PLC; Brandon Spencer, president – Energy Industries, ABB; Daniel Teichmann, CEO, Hydrogenious; and Rod Christie, executive vice president of Turbomachinery & Process Solutions, Baker Hughes.

With governments across the globe implementing plans to decarbonise while ensuring affordable energy for all, ADIPEC provides an ideal platform for the UAE to showcase its commitment to net-zero carbon emissions by 2050 and its roadmap for a

sustainable energy future, with green hydrogen production integral to its ambitions. This comes as the UAE is positioning itself as a low-cost producer and exporter of blue and green hydrogen, as well as green ammonia.

Work is already underway on megaprojects such as the two-gigawatt green ammonia project by Taqa, the Abu Dhabi National Energy Company, and Abu Dhabi Ports. The project will produce green hydrogen and process it into liquid ammonia, used in ships as bunker fuel and for export.

Meanwhile, the Khalifa Industrial Zone Abu Dhabi (Kizad) has announced plans for a US\$1bn green ammonia plant, which will produce 200,000 tonnes of green ammonia from 40,000 tonnes of green hydrogen.

"According to a recent report by Forbes, industry commentators agree that a price around US\$2 per kilo of hydrogen could be pivotal," said Hudson. "In addition, the UN Green Hydrogen Catapult project, which includes Saudi Arabia's Acwa Power, has agreed to halve the current cost of a kilo of green hydrogen to below US\$2 by 2026 and increase the scale of production 50-fold."

"So besides major investment, some of the key issues to be discussed at ADIPEC are the price of producing green hydrogen from renewable energy as well as how quickly new technology can be developed," he added. ■

“ Green hydrogen could meet up to 25% of the world's energy requirements in less than 30 years.”

Leading in high-tech coiled tubing strings

ESTM IS THE only certified manufacturer of high-tech coiled tubing strings in Russia. We supply coiled tubing to more than 50 companies in Europe, the Middle East, Russia and CIS countries.

Coiled tubing (CT) is a continuously milled length of pipe used in advanced oil and gas production technologies. It is deployed in a well to perform workover and well intervention operations on oil and gas wells of various depth and direction. CT technologies are at the cutting edge of the petroleum industry as they have a number of key benefits over conventional drill pipes.

Coiled tubing avoids problems associated with connections and requires no assembly/disassembly of the drillstring. Also, pressure control equipment installed at the wellhead ensures safe operations under live well conditions.



The ESTM plant.

Image Credit: ESTM

Furthermore, continuous coiled tubing gives access even to long lateral and horizontal wells. The market of CT technologies is constantly expanding.

ESTM makes continuously milled coiled tubes 1 inch to 3-1/2 inches in diameter and up to 25,000 feet

long spooled on reels. The wall thickness ranges from 0.075 to 0.22 inch. We offer our clients both standard pipes and those featuring increased H₂S resistance.

ESTM Quality Management System is certified to API Q1 and ISO 9001:2015, and our products

are manufactured to API 5ST (API Monogram License No. 5ST-0010).

Coiled tubing is used in the following operations:

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Driving value with digital transformation

Digitisation is key to future-proofing the oil & gas industry and realising sustainability goals, say Alaa Elshimy, managing director and senior VP of Enterprise Business Group, Huawei Middle East, and Lv Gongxun, senior consultant, Global Energy Business Unit, Enterprise BG, Huawei.

GLOBAL DUAL-CARBON GOALS are bringing about change not only in energy, but also in the economic structure of energy-producing nations. They are driving changes in production technologies and lifestyles. They are also having a profound impact on the oil and gas industry, and are bound to trigger structural reforms on both supply and demand, propelling the industry's transformation and development.

According to the *BP Energy Outlook 2020*, global demand for primary energy will only continue to grow, and oil and gas will remain the primary energy source until 2035. Although the share of oil and gas consumption in all energy sources will decrease after that point, the total volume will remain relatively stable. We are confident about the future of the oil and gas industry.

At the same time, oil and gas companies still face significant challenges. First, in the context of the dual carbon goals, companies need to produce more energy at lower costs, while reducing carbon emissions. Second, oil and gas exploration targets are becoming increasingly difficult to achieve, with proven resources often falling short. Third, newly discovered oil and gas reserves are difficult to produce, which requires advanced exploitation technology. Fourth, in the medium and long term, the global oil and gas supply is already relatively sufficient, which means the low and median oil prices will remain.

Digital transformation is inevitable if the industry is to address these challenges efficiently and sustainably. Realising such change brings significant opportunities to oil and gas companies. Digital transformation can drive the reconstruction of business and management models and can facilitate the innovation of new models entirely. Ultimately, digitisation can help oil and gas companies evolve and increase value.

The oil and gas industry needs to further integrate digital technologies and fully realise



Image Credit: Huawei

its digital transformation goals to boost reserves and production, improve quality and efficiency, and reduce carbon emissions.

The industry has several requirements to enable this transition. Transformation necessitates a full-stack cloud platform, which can help energy companies migrate key business processes to the cloud and gain intelligence. Effective data governance is also needed. Data generated by the industry is high in volume and complexity. Therefore, a unified data lake is indispensable to support data sharing and smart Big Data analysis.

Furthermore, digital transformation requires a device-edge-cloud intelligent production system, where production data is collected from devices, and intelligent management and control of production is implemented on the cloud. Finally, it is paramount to have a professional service team that understands both the industry and digitalisation.

The digital and intelligent development of the global oil and gas industry is still in its infancy. The key fields being explored include smart exploration, smart oil and gas fields,

smart pipe networks, smart refining and chemicals, and smart sales.

Huawei will host the Global Oil & Gas summit at ADIPEC 2021 under the theme of "Drive Data to Barrel, Embrace Intelligence to Grow", where we will share the best practices for global leadership in digital transformation. Huawei will demonstrate how we plan to support oil and gas companies' digital transformation strategies and integrate digital technologies into core oil and gas business processes. Huawei will share the ins and outs of migrating oil and gas to the cloud, AI in E&P, computing power to increase reserves and production solutions, digital and intelligent oil and gas fields, and more.

Also at booth No. 3220, Hall 3, ADNEC, Huawei will showcase some of the most significant emerging technologies in the oil and gas industry, sharing innovative new ideas and ways to use digital technologies to reimagine energy systems. ■

<https://e.huawei.com/topic/2021-event-oil-gas-summit/en/index.html>

GustoMSC brings Chela Twins to the market

GUSTOMSC HAS BROUGHT the Chela Twins to the market, a cost-competitive pair of cranes improving safe handling underneath the cantilever and reducing total time spent on wells.

In 2019, the first Chela crane was delivered to Maersk Drilling and installed onboard the Maersk Invincible – an ultra-harsh environment GustoMSC CJ70 drilling jack-up design. It has proven its claims since, while operating offshore in the Valhall field for AkerBP. Last October, Velesto Drilling awarded GustoMSC the first two orders for the new and cost-competitive version of the Chela crane; the Chela Twins.

Two cranes are to be installed on NAGA-6, a GustoMSC CJ46 drilling jack-up design and owned by Velesto Energy Malaysia. These Chela Twins take the key elements of this first Chela to the South East Asian drilling arena. The cranes work around the well centre in pairs. With their telescopic arms, they provide significant coverage below the cantilever and, depending on the cantilever position, can reach main deck and pick up tools or x-mas trees, for example. The current offering of two telescopic cranes forms a cost-competitive solution that can be applied to the worldwide fleet of standard drilling jack-ups.

The GustoMSC Chela series of multifunctional arms offers an extra hand in operations. Due to its crablike motion characteristics, it can reach below the cantilever as well as reach towards the main deck, providing crane access to an area traditionally blocked by the cantilever when drilling. Chela thus provides a huge advantage in development drilling, infill drilling, and plug and abandonment operations. With this option, wireline operations can take place offline, on any other nearby well, while the derrick is engaged with other well construction operations.

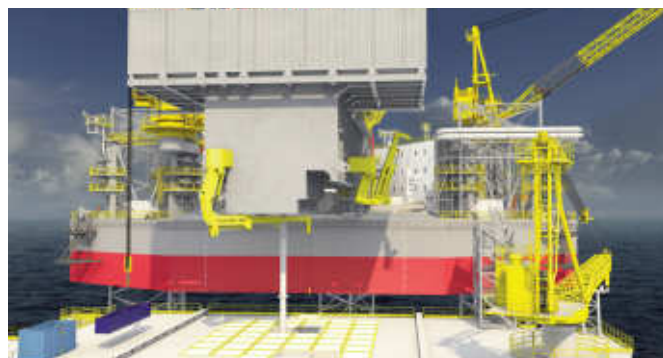


Image Credit : GustoMSC

Utilising Chela can save time and costs as well as reducing environmental footprint.

The primary field-proven feature of Chela relates to safe and efficient lifting of well-related parts and tools before and after well construction. With this functionality, a simultaneous operation with the activities performed by the drilling crew at the well centre is possible. Depending on the well programme, total time saved varies between 5% to 15% of total rig days per well.

This proven technology represents a robust opportunity to bring forward ROI for every well drilled. With fewer rig days per well, it directly reduces the industry's environmental footprint per well drilled.

For more information, see nov.com/products/chela-crane

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Expanding in the Middle East

compressor market

Euro Gas Systems (EGS), the largest compressor packager in Europe dedicated to the upstream industry, is expanding its operations and views the Middle East as a key growth market.

EGS'S STORY HAS been one of continual growth and expansion, as Marc Timis, specialist marketing at EGS, explains.

"EGS was registered as a business early 2010, and in less than one year we managed to ship our first compressor package out of the 1,200 sq. metre start-up facility. A new, 4,900 sq. metre purpose-built assembly plant was constructed and commissioned in 2012. EGS became an official distributor and approved packager of Ariel Corporation in 2013, and OEM for Waukesha and Caterpillar engines in 2014. Due to the company's continued growth in sales, the assembly plant was expanded to double its original size, reaching 9,800 sq. metres at the end of 2018.

"This year started with the commissioning of the most recent investment, a brand new 1,580 sq. metre fabrication shop for vessels, skids and other weldments. The new fabrication shop is fitted with the latest technology for cutting and welding steel fabrications. Currently we are going through the process of doing the architectural engineering for our next new manufacturing plant, which will be dedicated to manufacturing air cooled heat exchangers (ACHE). Plans are to start construction of this 3,160 sq. metre facility in 2021, with a 2022 completion date."

The company attributes its fast growth to the hard working, dedicated EGS team. Constant investments in employees, addressing current technical challenges, supporting innovation, and training to ensure a high level of professionalism has been EGS's number one priority.

"This strategy not only had a direct impact on the quality of the product build, but also made EGS customers fully aware that they are getting exactly what they need, when they need it and exceeding their quality expectations by having the full support of a team that today exceeds 180 employees, and continues to grow," says Timis.

He goes on to say that EGS has always been focused on customer needs, for both equipment supplied and aftermarket support,



Image Credit : EGS

EGS is expanding its facilities.

by providing on-time top quality products, engineered to customer specifications. The company has taken steps in developing new product lines and has successfully managed, in a short period of time, to rapidly gain market recognition and appreciation as a quality equipment provider, due to continuous investments in tooling, state of the art facilities and people. EGS also works with its customers to ensure proper interface engineering support for the installation of the supplied equipment. Today, its in-house expertise covers the full cycle of product design, manufacture and service support.

"All products are engineered using Autodesk Inventor 3D modelling software," explains Timis. "From the developed 3D model, an accurate Bill of Materials is imported into our ERP system and from there we can be assured all materials are available in time for scheduled production. During the lead time phase of the major components (compressor, driver, unit control panel), EGS

fabricate vessels, skids, piping, etc. so that upon arrival of the major components to our assembly plant we are ready for final assembly and test, which is typically accomplished in a four to six week period.

"Some important aspects established by EGS are the standards in product quality, safety and reliability, developed with a dedicated team, by supporting the customer during the sale and manufacturing with customised services whichever the country of installation of the equipment might be."

The Middle East region has been one of the main expansion markets for EGS, offering great potential and a constant business stream, even through challenging times.

"Being close to customers by providing full local support motivated us to open up an office in Dubai (UAE) back in 2019. The Dubai office carries both sales and aftermarket service and parts support functionalities, ensuring a more direct and prompt reaction to customer needs," concludes Timis. ■



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Efficient use of resources for a sustainable future

Interchangeability and sustainability go hand in hand for sand management, says Krzysztof Buchajczuk, senior application engineer, Tendeka.



Image Credit : Tendeka

The 7m jackets (left to right) are fitted with layers of the premium mesh screen jacket with an outer shroud on the outside and a drainage layer underneath.

THE ABILITY TO utilise interchangeable inventory has a major impact on the amount of equipment needed to address multiple projects simultaneously as well as the need for contingency planning, thereby minimising the amount of material used and optimising logistics.

To contribute to a sustainable future for the oil and gas sector, where efficient use of resources is vital, Tendeka has adopted an “inflow plug and play” approach to sand and inflow control with interchangeable equipment supply and fitting.

The process involves the standardisation of equipment while still maintaining flexibility in the design. This means that the same chassis can be used for multiple applications and customised prior to installation to optimise reservoir performance. A smart control framework to manage sand production and inflow control will consider the most efficient combination of screen filter size, type, and mechanical rating selection. The benefits of this approach include:

- Improved reservoir performance: flexible “plug and play” approach allows for final sand and inflow control design to be optimised at the rig site based on the latest reservoir and formation evaluation data
- Minimised tooling and machinery adjustments leading to improved manufacturing efficiency
- Minimised waste through repeatability and reliability

“ The process involves the standardisation of equipment while still maintaining flexibility in the design.”

- Efficient supply chain and material management by using metallurgy suitable for producers and injectors
- Streamlined screen manufacturing process
- Flexibility due to re-use of raw materials when plans change.

Key to the process is supplying the equipment ready to house multiple solutions. Each joint of sand screen suitable for inflow applications comes supplied with between one and four tapped apertures that can be configured to have any combination of valves. These apertures can accept Tendeka’s

“ It is a game-changing ability for an industry focused on efficient, sustainable and optimum performance.”

FloSure autonomous ICDs, FloRight and FloExtreme ICDs, FloSure injection valves, FloCheck control valves, blanking plugs, or even fully open ports in some cases. These can be changed prior to mobilisation or on site depending on well conditions.

Tendeka’s approach is to standardise the lengths and material grades of the screen jackets utilising inflow control devices which constitute by far, most of the screens produced by the company. This significantly reduces manufacturing costs and waste created during construction.

As an example, by eliminating the necessity to change length and outside diameter (OD) of every 10 screens, the advanced completions and production optimisation specialist can build around 35% more screens per day than if a customised design was needed. Most notably, the percentage of custom-built screen designs beyond the proposed scope declines each year due to this “plug and play” philosophy.

This agile approach can enhance decision-making to select or swap, at the most appropriate interval, inflow, outflow or check valve devices to counter saturation, possible sand production, porosity, and permeability, at any time. It is a game-changing ability for an industry now more focused than ever on efficient, sustainable and optimum performance. ■

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Innovating in dynamic inflow profiling

Nadir Husein, general manager of Geosplit MENA, a Middle Eastern branch of a global technology company providing dynamic inflow profiling for production surveillance using nanomaterials and machine learning, discusses the encouraging prospects for its unique technologies in the Middle East.

GEOSPLIT IS HOPING for big things in the Middle East, having just completed the first pilot for its completion solutions in the region.

Giving some background on Geosplit's journey from an originally Russian high-tech startup to a global company, Nadir Husein explains that in 2013 the company began exploring the idea of incorporating nano tracers into ceramic proppant and sand used in hydraulic fracturing operations, to enable production profiling across each frac stage in horizontal wells. The journey from concept through proof of concept to first projects took almost four years, the first commercial projects being carried out in 2017 for the big players in the Russian market - Lukoil, Gazprom and Rosneft.

"From that point the company grew exponentially; by 2019 we had become a market leader in inflow profiling in Russia, and decided to go global and raise serious "B" funding, the initial focus being to expand in the Middle East and China," says Husein, the reason for targeting China being its focus on gas development and unconventional plays, which the company believed offered good prospects for its coated proppant solution.

This indeed proved to be the case; despite the timing of Geosplit's entry into China shortly before the beginning of the COVID-19 pandemic, the interest has been such that the company now has a full-fledged team, production and lab facilities there and has won multiple contracts with PetroChina and Sinopec for various oil and gas fields.

"In parallel, we opened our office here in the Middle East almost three years ago, enforcing our sales efforts, go to market and raising brand awareness, and we have just accomplished our first pilot for completions solutions in the Middle East in an offshore field for ADNOC - the first milestone for our growth in the Middle East." The company is also piloting its solutions in Saudi Arabia, Oman and India, and is engaged in discussions in Egypt to deploy tracers in downhole



Geosplit has invented a marked tape, which can be wrapped around tubulars on a wellsite.

Image Credit - Geosplit

completions in deepwater prospects.

"From Dubai, we also support the sales effort in other geographies in the western hemisphere, Americas and the Far East," adds Husein.

Developing the portfolio

Turning to the company's technology portfolio, he comments, "What we are focusing on today is developing our current portfolio, which is placing the nano tracers in proppant solutions and also in downhole completions, typically in open hole type conditions, for example with ICVs, so more complex completion types. We are also looking to position ourselves in the energy transition, potentially in the field of using tracers in the integrity monitoring of reservoirs used for carbon storage. It's quite a new domain, and it's something that can open new doors.

"We have also made first steps into the digital space, so we focus on incorporating the production data we provide to our end users into data-driven models, which would allow them to automate and optimise decision making, with the ultimate goal of more efficient hydrocarbon recovery. This could be another turning point for us, representing the evolution from a tracer company to a digital

data-driven company."

"It has been a learning experience and joint effort with clients in Russia, to solve their problems in complex well trajectories in horizontal and extended reach wells, where they were looking for an alternative to traditional methods such as coiled tubing and wireline for production logging. The key driver then was to reduce the operating cost of production surveillance, which we managed to do by using tracers. As clients developed the taste for getting more frequent data points because it has become so simple and affordable, it prompted us to use this data to start developing data-driven models."

Further elaborating on the competitive advantages of the company's chemical nano tracers in comparison with conventional production methods, Husein comments that in addition to the cost benefits, which had been the main driver originally, they also reduce operating and HSE risks, with the avoidance of unnecessary non-productive time.

"In addition, since you do not require a huge footprint of assets on the wellsite, you are also reducing the CO₂ footprint, once you place the tracers the only thing you need to do on the surface is take fluid samples."

"We've developed quite a different

technology to other players in the market, using nanomaterials and machine learning, which allows us to perform the analyses without shutting in the wells. That is one of the advantages we have compared to others,” he adds. “We are also the only company at the moment to my knowledge that supplies coated proppant solutions, which opens up for us the market of unconventional plays, primarily in Saudi Arabia, UAE and Oman in the Middle East, as well as in the USA.”

As part of a new R&D project the company is looking at increasing the number of unique tracers, currently 63, to several hundreds or even 1,000, potentially by mid next year.

“That would definitely open a wider scope for applications where we could target market segments such as deepwater and brownfields, where clients need to measure the flow profile of each well, hooked up into a production system.

“So, there are a couple of initiatives we have in the R&D space which we should be able to bring to the market soon.”

Key pillar

Husein stresses that R&D is a “key pillar” of the company, which benefits from its location in the

Skolkovo Innovation Center on the outskirts of Moscow, in close proximity to the R&D facilities of big corporates, as well as academia. “We have a strong relationship with SkolTech oil and gas university and access to their R&D facilities, which is important for us.” This focus is illustrated by the fact that 19 out of the company’s 100 employees work in R&D.

“The beauty of being a small player is agility, and the key step in the cycle is to listen to client needs and be able to respond to them fast,” Husein continues. “When the clients asked us to install tracer materials for downhole completion not in a workshop-controlled environment but rather on the wellsite, it took us only three months to re-invent the material and its form-factor, and now we use what we call a “marked tape”, a thick elastic cellophane-type material which you can wrap around tubulars, literally on the wellsite. Another exciting example is the gas tracing material. When a customer requested long term monitoring of a dry gas well, it took us a mere four months to develop a completely new type of a polymer material and five months later we were the first in the world to quantitatively monitor dry gas well inflow profiles back in October 2019. We’ve

really shortened the cycle between concept and commercialisation.”

Going forward, Husein sees “huge potential” in the Middle East, both for its completion solutions and in the market of unconventional plays, and expects to win a number of new contracts in 2022.

“The excitement is there, and we are now seeing the first indicators that activity will increase. As a new name in the region, our focus now is to increase brand awareness, following our efforts over the last two years to engage with the big players in the Middle East on a technical level. To support our group, we will be opening our analytical lab facilities in Abu Dhabi in Q1 2022, initially to support ADNOC, and regionally our first operations in the GCC.”

Husein is looking forward eagerly to ADIPEC, where the company will have a booth for the first time.

“It is the first time since Covid that we are able to take part in a face-to-face event, which will enable us to engage with existing and new partners and stakeholders. For us as a small and new company, we see this event as a key one to further introduce the Geosplit portfolio,” he concludes. ■

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Digital transformation for efficient and sustainable operations

Nagaraj Srinivasan – Senior Vice President, Landmark, Halliburton Digital Solutions and Consulting, discusses how Halliburton is helping oil and gas companies to transform their operations and workforces.

How is Halliburton Landmark helping companies to transform their upstream operations and maximise asset value? What are the main USPS of your solutions?

The Halliburton Landmark approach to digital transformation includes: 1) Co-innovation 2) Interoperability and open architecture 3) Talent transformation and 4) Ecosystem.

Co-innovation is about collaboration with our customers to find the optimal path to achieve digital transformation objectives. It starts with finding the sources of where opportunities to create value are missed. Halliburton Landmark achieves this through a precise methodology to diagnose the challenges faced by the business. With design thinking, we identify and iterate on ideas with key customer stakeholders to identify digital capabilities that drive step change improvement in our customers' business processes. We then translate those capabilities into an actionable digital transformation roadmap that guides structured execution of the digital opportunities. As an example, in a recent engagement with a large Asian national oil company, we co-developed a digital comprehensive transformation strategy for improvement opportunities across their exploration workflows. The entire process helped the customer define a common vision of transformation and envision a clear view of how digital technologies such as cloud and artificial intelligence can help create a more agile and efficient mode of exploration.

Open architecture is key to building fast cycle innovation capabilities while ensuring scalability and supportability. It is not enough to just have open software; it is important to

“Open architecture is key to building fast cycle innovation capabilities.”

*Nagaraj Srinivasan,
Senior Vice President,
Landmark, Halliburton Digital
Solutions and Consulting.*



Image Credit : Halliburton Landmark

have a software built on an open, industry accepted architecture to ensure innovation for years to come. DecisionSpace® 365 applications and our iEnergy® cloud fully embody this principal. Our customers prefer DecisionSpace 365 powered by iEnergy because it preserves their investments in their current technology while easily integrating them into emerging digital solutions.

Talent transformation is a growing priority for E&P companies globally. Operators must build and expand workforce skills on digital tools to apply these in their day-to-day work for the adoption of digital solutions. We have established several centres of excellence to help our customers strengthen and accelerate their digital competencies. For instance, we recently signed a deal with a large national oil company to help develop their workforce

competency on artificial intelligence and machine learning. Our Data Sciences Center of Excellence has already trained more than 100 petroleum engineers and geoscientists.

Finally, I want to discuss our ecosystem. We work with leading global technology and consultancy providers such as Honeywell, Microsoft, Accenture, AWS and Dell to bring a wide range of skills and expertise to support our customers' complex digital transformation initiatives, the specialisations for which are usually not available with a single vendor. Our transformative collaboration with Honeywell to execute a large digital oilfield engagement in Thailand is a great example. Similarly, we are collaborating with Accenture to execute a data management transformation initiative for one of our Middle Eastern customers.

Our key differentiators include leading

science and innovation, industry expertise to manage transformation and realise value, coherent open architecture, and a track record of delivering successful solutions to our customers globally.

How can digital twins be deployed to help companies gain insights into their operations, optimise processes and promote collaborative ways of working?

Digital twins are an integral part of benchmarking and enhancing the performance of every aspect of the subsurface, well, subsea and surface facilities to deliver step changes in outcomes. Digital twins are at the heart of Halliburton 4.0., the company's advanced, cross-functional way of operating across software, hardware, AI, machine learning, and downhole sensors for a new era of radical visibility, collaboration, and productivity. Through this approach to the oilfield, we developed a powerful digital capability that provides a virtual representation of a field, reservoir, well or piece of machinery that can be continuously updated with live operational data. When built and deployed properly, digital twins enable asset teams to rapidly simulate and evaluate a range of decision-making scenarios and identify opportunities for performance improvement.

For example, Digital Well Program®, a DecisionSpace 365 cloud application, delivers a live model of the well that continuously updates the well design with real time drilling and geological data, and helps well engineers improve the quality of the well design and reduce costs.

Digital Field Solver™, another DecisionSpace 365 cloud application, provides an orchestration platform to build a digital twin of the field that helps production teams identify bottlenecks or under-performance. It compares the actual performance of the field against the capacity of the production network and adjust the operating set points on wells, flow lines or equipment to maximise output.

In one of our recent digital oil field engagements, we built digital twins of their producing assets by incorporating machine learning models and data from advanced subsurface sensors on well heads and pipeline network. The digital twins improve the asset knowledge (e.g. reservoir, well, pipeline) behaviour and enable better field development planning and capacity utilisation.

To what extent are you finding sustainability a focus for oil and gas companies today, and how can your software solutions help companies to improve the sustainability of their operations and respond to ESG concerns?

Oil and gas companies are focused on reducing flaring and methane emissions, and initiating the overall decarbonisation of their

current oil and gas portfolio. International oil companies are committed, and national oil companies are rapidly following suit. With growing pressure from governments, the investment community, and society at large, the reporting standard around GHG emissions is a priority.

Our robust software toolset addresses many of these new technical challenges, particularly the subsurface and well construction technology associated with carbon sequestration, underground hydrogen storage, and geothermal energy. DecisionSpace 365 application suite addresses all aspects of planning, designing, monitoring and optimising lifecycle processes to mitigate emissions. By investing in novel science and deployment models, we innovate unique solutions to address the industry's carbon footprint and methane emissions. These digital solutions offers standardised portfolio sustainability reporting, insights to reduce emissions, and forecast and scenario planning throughout the asset lifecycle.

How receptive have you found Middle East companies to the potential for digital transformation of their oil and gas operations? Are there any use cases in the region you would like to highlight?

The Middle East by virtue of its vast oil and gas fields, has played a pivotal role in the world's energy supply chain. Although national oil companies in the region are known to be among the lowest-cost producers globally, they have been challenged in recent years by increased operational complexity, declining productivity of some of their prolific fields and ageing wells and facilities.

“The reporting standard around GHG emissions is a priority.”

These factors, along with price volatility and increasing competition from alternative energy sources such as renewables, have pushed Middle East oil and gas companies to take measures to improve their operational efficiencies, reduce cost per barrel, and lower their carbon footprint. We see companies in the region focus on digital transformation who work with technology vendors and consultancy companies to formulate their digital strategy. Some of our customers have planned, or already embarked on digital initiatives, to increase performance across the entire value chain. Some of the use cases that attract significant digital investment include production optimisation, well construction, and field development planning.

The Integrated Capacity Model, a current digital transformation initiative with a

customer, is one example where we built a digital twin of country wide producing assets to improve production planning and optimisation decisions. With DecisionSpace 365 capabilities, we added several automated workflows to keep the models up to date and quality checked, to reduce the burden on engineers' time on such activities.

Another example is where we implemented a strategic digital oil field programme with a customer that focuses on value creation in reservoir management, production operations, and pipeline monitoring. The operator deployed the solution via iEnergy Cloud and aims to transform engineering work processes and workforce productivity by incorporating digital twins, machine learning, and Internet of Things (IoT) technologies. Artificial intelligence (AI) is another space where we see a lot of action in the region. We have collaborated with a Middle East company to develop an AI-based model to predict the failure of their downhole pumps. With another customer, we are conducting a pilot to apply AI to predict the recovery from their reservoirs.

What do you think is the next frontier in terms of the digital transformation of oil and gas operations?

There are two specific areas that we expect to receive special focus in the future:

The first is scaling. The number of digital pilots in the industry have grown exponentially in the last few years as technologies have become more accessible and affordable. While new technologies like cloud, mobility and AI offer promising use cases, unlocking their full value requires tackling challenges such as data quality, workforce adoption and architectural elasticity. Once a digital solution moves from pilot stage to the field, it needs to walk the gauntlet of bad data, sceptical user groups, and ever evolving business needs.

Yet, we continue to see the tendency to rush into technology implementation mainly caused by hype and the promise of quick fixes by the vendor. In our view, the ability to scale the digital solutions will separate the winners from the losers.

The second area of focus will be the transformation of the workforce itself. E&P leaders must build digital readiness in their organisation to prepare their workforce for technology-led disruption. This requires a focus on the way technology is built and implemented but also how it is utilised and adopted, which requires intense focus on change management. The key to this lies in fostering a work environment that supports and incentivises the employees to develop their skills on digital technologies and apply those to their work. In Halliburton, we pride ourselves on reskilling our employees on new digital platforms that underpin our new operating model. ■

Emissions and odour control for a sustainable future

Oil Review Middle East sits down with Kai Sievers of German firm ENDEGS, developer of the world's first fully equipped autonomously operated, trailer-mounted vapour combustion unit, which has been awarded the TOP 100 seal 2021 as one of the 100 most innovative companies in the German SME sector.

SIEVERS EXPLAINS THAT the performance of ENDEGS VCU is scalable from 0.1 to 50 MW, with units available in 5, 10 or 20 MW capacity. Its emissions treatment technologies have been used over years – mainly tank and pipe degassing, VRU replacement and loading application – some of them lasting up to three years and involving the degassing of hundreds of liquid gas tankers or sea vessels.

Giving the background to the development of the VCU, Sievers says, “In 2007 I asked myself as an engineer how it might be possible to design a mobile device for reducing VOC & HAP (Hazardous Air Pollutants) of storage tanks, tanker ships and pipes during maintenance or in case of non-functioning of existing infrastructure. It seemed absurd to simply accept that gases and vapours had to be released to the atmosphere, thousands of tons a year, for lack of a suitable solution.

“In 2008 we developed the world's first trailer-mounted VCU for burning off hazardous gases. Since then, our leading-edge and patented technologies have enabled the on-site combustion of hazardous, explosive and/or toxic gas mixtures, safely and very nearly completely. Our systems reduce emissions by more than 99.99%. Thus, we make a substantial contribution to reducing emissions in Europe, North Africa and soon in the Middle East.”

“With any invention, you keep seeing ways to improve it,” Sievers continues. “So, we soon developed and patented a process that takes care of other pollutant streams (for example, from a vacuum truck or intermediate tanks) during tank degassing. Shortly thereafter followed a patent that reduces the consumption of operating resources and extends the scope of applications.

“In 2010 we were the first company in the world to start burning off ammonia with excellent measured results. Today we're in demand worldwide for degassing ammonia tanks. Further development work to the



Railcar loadings.

Image Credit : ENDEGS

“ Our systems reduce emissions by more than 99.99%.”

combustion chamber allows us to degas substances that tend to polymerise, without smoke or flame and without polymerisation, giving us another unique capability.

“We've also developed and certified systems for explosion group IIC products (such as hydrogen), so now we're the only provider of safe degassing for all hazardous substances of explosive classes – IIA, IIB, IIC.

“To be able to degas liquid and gas tankers on the Rhine in Germany, the company has brought forward suggestions to modify the authority's regulations. Today, ENDEGS cooperates with the Port of Duisburg to create the first legal option for environment-friendly degassing.”

ENDEGS frequently stands out as the market leader in industry comparisons, Sievers notes. “We score high on real-world testing too, like we did recently at the port of Rotterdam. The result was that we were 40% faster than others, meaning 40% less berth time for the tanker, which is a huge cost saving, and our emissions were lower than the competition by a factor of 20. Local authorities were delighted.

“All of this makes me extremely proud, the more so as the Top 100 seal now also makes our innovativeness visible to all. And it's not just in Germany. Our technologies are greatly appreciated internationally as well. Customers let us know that they perceive us as unique. ■”

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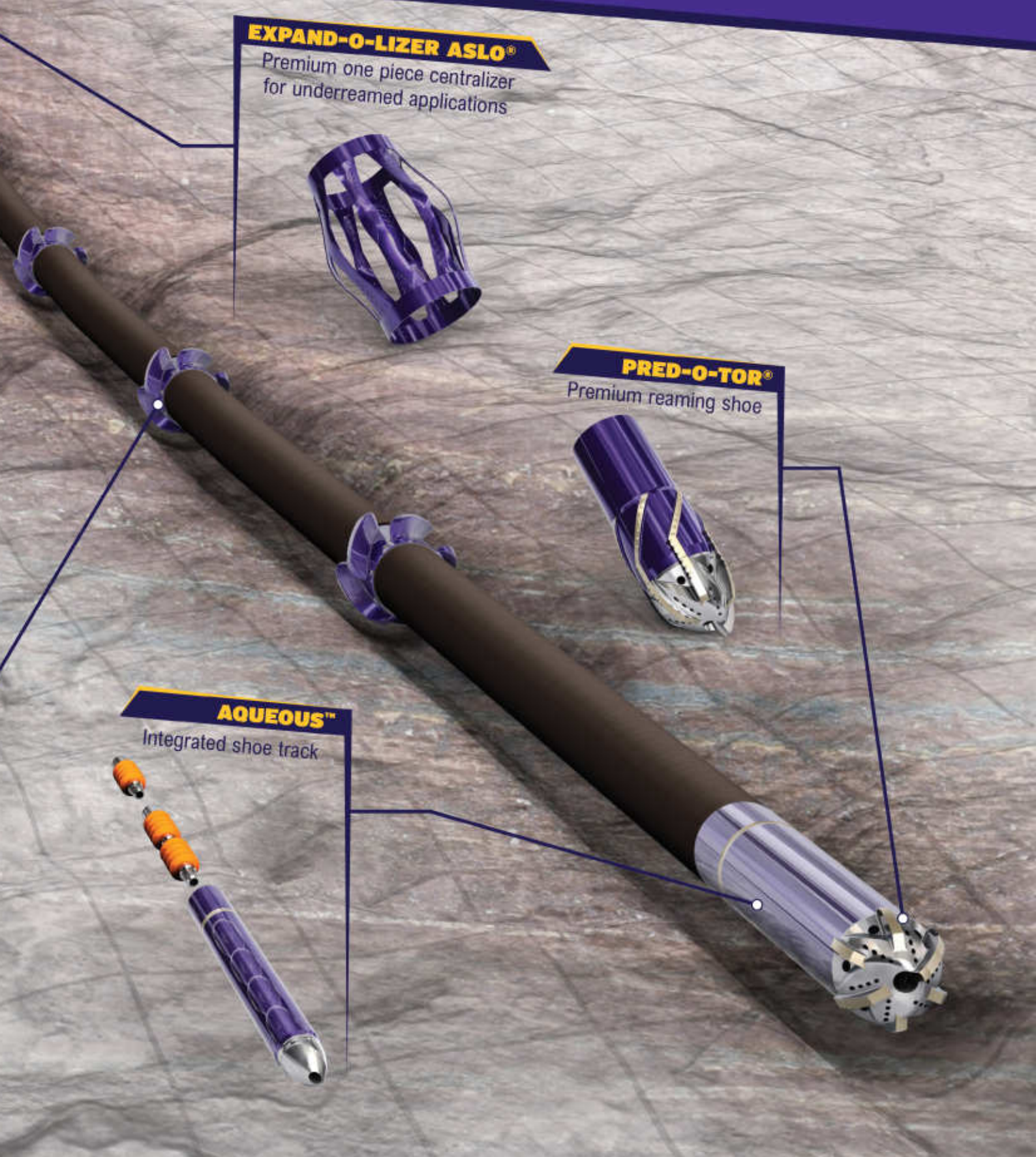
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Defining the global energy future

OMV, bp and the African Energy Chamber are among those helping to define the global energy future at the 2021 ADIPEC Leadership Roundtables.



Image Credit : Adobe Stock

Decarbonising the shipping industry will be one of the topics discussed at the Leadership Roundtables.

ADIPEC 2021 WILL gather ministers, C-level industry executives and policymakers to accelerate the recovery of energy markets and define the sector's future. Taking place over four days (from 15-18 November) the 2021 ADIPEC Leadership Roundtables will offer perspectives on the evolving dynamics of supply and demand and the new geopolitics of energy as the world continues to emerge from the pandemic's shadow.

Alfred Stern, CEO of OMV, commented, "The circular economy is no longer a buzzword but crucial to creating long-term value. At ADIPEC's 'Sustainability in Energy' Roundtable, sponsored by OMV, I look forward to seeing how R&D, investment, and innovations can support positive change."

Peter Herweck, CEO of AVEVA, said, "Digitalisation presents a significant opportunity for industries, government and technology companies to achieve the 1.5°C pathway and fast-track our journey towards a sustainable future. The ADIPEC Roundtables help enable the discussions necessary to drive these developments."

Alan Thomson, senior partner and managing director at BCG and global leader of BCG's Energy Practice, remarked, "It is our pleasure to

“ The circular economy is no longer a buzzword but crucial to creating long-term value.”

be the strategic insights partner of ADIPEC. With our commitment to moderate the Leadership Roundtables at the event, we look forward to engaging on the most pertinent issues facing senior management within the energy industry and beyond. The path ahead, post COP26, is at the top of the agenda. Climate and sustainability will be covered extensively, in addition to digital and new technology solutions that will impact the broader energy value chain."

Supporting positive change

Limited to 30 participants, each 90-minute Leadership Roundtable will be hosted by the Middle East Energy Club and held under the Chatham House Rule. A moderator will lead every session to ensure an interactive exchange to offer fresh and objective perspectives on the energy industry's main leadership challenges

and opportunities. Among the topics to be discussed will be:

- How governments and the energy industry can work together to tackle climate change
- The importance of balanced energy markets as global economies revive
- The future for energy companies in a low-carbon world
- How the future of transportation will change energy demand
- Africa's future ecosystem
- Decarbonising the shipping industry
- The impact of ESG on investment and long-term growth
- Creating value through the circular economy
- The role of technology and digitisation in reshaping businesses and driving the transition to net-zero carbon energy.

Christopher Hudson, president of dmg events, organisers of ADIPEC, commented, "The highly interactive and knowledge-rich sessions will enhance understanding of the trends which are changing the global energy landscape and access the insights and actionable best practices that will enable forward-thinking companies to position themselves in the vanguard of the energy transition." ■



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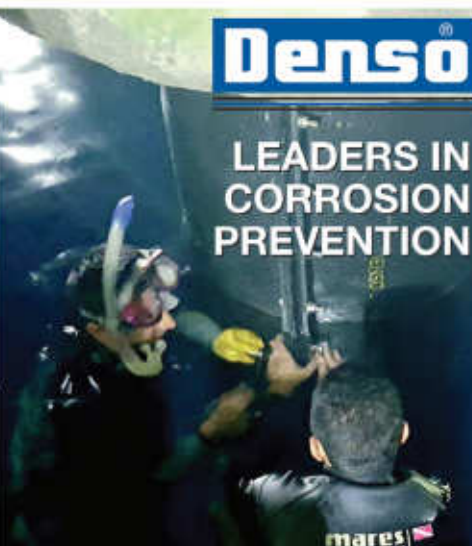
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IN THE
EXTREME

NETZSCH Pumps & Systems to present NOTOS® multiple screw pumps at ADIPEC

NETZSCH PUMPS & Systems will be exhibiting at ADIPEC, where it will present its NOTOS® multi screw pumps. These pumps are designed for the oil and gas sector to handle difficult media. Due to their high suction power, they are suitable for a wide range of applications.

NOTOS multiple screw pumps offer high suction power of up to 8 m.a.s.l. They pump safely and continuously low to high lubricant fluids, low to high viscosity, shear sensitive, or chemically aggressive media. Therefore they are suitable for tank emptying, for example.

In addition, these pumps require very low maintenance. They are hydraulically balanced, with low axial force, and enable continuous flow without pulsation or turbulence over the long service life. They work quietly and need only a small space for installation.

The NOTOS multiple screw pumps are



Image credit: NETZSCH

The NOTOS® multi screw pumps are available as two- screw, three-screw and four-screw pumps.

available as two-screw, three-screw and four- screw pumps.

If you have any questions, the NETZSCH team at booth 8850 is looking forward to advising customers.

NETZSCH Pumps & Systems has served markets worldwide for more than 60 years.

With NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, NOTOS multi screw pumps, grinding machines, barrel emptying systems, dosing technology and accessories, NETZSCH provides customised, sophisticated solutions for applications in every type of industry.

The lighting of the future: safe, sustainable, durable, practical

Sponsored Content

AS THE EXCITEMENT builds for the return to a live ADIPEC event in November, Zalux will be highlighting the remarkable efficiency and sustainability of its modern lighting solutions for use in hazardous environments.

When selecting luminaires for hazardous areas, it should not be a choice between safety and sustainability. Nor should there be compromise on lighting quality or durability. The latest LED technology and integrated smart controls, in solutions designed from the outset to meet EX standards, means customers can have it all.

Safety and durability

Zalux offers a full range of hazardous area lighting, suitable for use offshore and onshore. However, in harsh, corrosive atmospheres the choice of housing material is also crucial to long-term reliability and safety. By using PMMA housings, luminaires have a higher durability and require less maintenance than metal alloys. They ensure lighting is protected with high ingress protection ratings to ensure reliable operation with high levels of water or dust.

Sustainability

LED is the most sustainable, tested, and proven lighting technology available on the market today and can provide outstanding efficiencies, reaching values above 200 lm/W. This performance is two or even three times better than traditional lighting solutions such as discharge lamps or fluorescence and represents a remarkable 80% saving in energy. Combining the latest LED technology



Image credit: Zalux

Zalux petrochemical oil & gas EX lighting.

with smart controls will further improve efficiencies, netting around 50% more savings in energy costs compared with traditional lighting.

Practical

Alongside safety, sustainability, and durability, a lighting system also needs to provide high quality light to improve working environments. Zalux provides high quality lighting to meet the different working needs with designs that are lightweight and have accessories to ensure fast, easy installation.

Integrated into a communications network, smart sensors can also provide engineers with predictive maintenance information to ensure maintenance cycles and lifecycle costs are fully optimised.

The lighting of the future

It is by combining 40 years of experience in protected lighting with its knowledge of lighting technology and latest materials that Zalux is in a unique position to provide safe, sustainable lighting solutions for the future of the oil & gas industry.



EXTRAORDINARY IS OUR CHOICE

We have been pushing technological boundaries in the energy industry for over 60 years.

That's why we have developed S-PRINT: a proprietary, game-changing plasma technology that can re-melt the pipe base metal and the root pass, ensuring a defect-free and extremely smooth root profile.

S-PRINT enabled the first-ever offshore installation of a 36-inch CLAD pipe.



SAIPEM

Setting the agenda for the future of energy & manufacturing

A new addition to ADIPEC is the Smart Manufacturing Exhibition Zone and Conference, which will focus on the future of manufacturing and the development of smart manufacturing ecosystems.

AS THE FOURTH industrial era gathers pace, the future of manufacturing is changing, and the impact of smart technologies is being felt across the complete manufacturing ecosystem. The application of today's emerging technologies and the evolution of post pandemic government industrial strategies, along with the transition from a linear economy to a circular economy, will fast track the development of new industrial hubs and redefine the future of manufacturing.

In response to the myriad opportunities waiting to be captured as governments embrace smart industrial hubs, this year's edition of ADIPEC will host a dedicated Smart Manufacturing Exhibition Zone and Conference for the first time. The conference will act as a bridge between energy, manufacturing and the high-tech sector and provide a unique platform for the manufacturing industry to gain insights into the challenges and opportunities for manufacturing in the drive for a net-zero carbon economy.

The ADIPEC Smart Manufacturing Conference is supported by the United Arab Emirates' Ministry of Industry and Advanced Technology. It will bring leading local, regional and international manufacturers together with energy industry decision makers to focus on developing smart manufacturing ecosystems to build resilience, drive profitability, empower people, identify future growth opportunities and meet net-zero carbon targets.

During the ADIPEC Smart Manufacturing Conference, Ministers, policy makers, energy and manufacturing industry leaders will

“The impact of smart technologies is being felt across the complete manufacturing ecosystem.”



Image Credit: Adobe Stock

This year's event will have a focus on smart manufacturing.

address the future of manufacturing; the application of digital strategies; the transition from a linear economy to a circular economy; the evolution of post pandemic government industrial strategies; and the impact of smart technologies on the development of future industrial hubs.

Among the topics to be discussed will be the policies, frameworks and strategies being developed to spearhead change and industrial growth; the interdependencies between manufacturing and energy; Operation 300bn, which seeks to establish the UAE as a global hub for future industries; how the IIoT can support the development of logistics and circular supply chains, and the manufacturing skills gap.

Meanwhile, a Smart Manufacturing Zone has been added to ADIPEC 2021's exhibition. The zone will host a broad spectrum of digital technologies and solutions that are profoundly changing industrial production, ranging from the IIoT to computer-aided manufacturing, artificial intelligence and big data to cloud computing and cyber security, nanotechnology to industrial automation, robotics and lasers and advanced composites

to responsive smart materials.

Christopher Hudson, president of dmg events, organisers of ADIPEC said, "The ADIPEC Smart Manufacturing Conference and Exhibition Zone will accelerate access to today's rapidly evolving manufacturing strategies, operations and technologies that will enable companies to optimise their operations, enhance performance and find new market opportunities."

Realising the need to build local capabilities, stimulate sustainable economic growth and diversify economies away from oil and gas sectors, Middle East governments are adopting specific initiatives to transform the region into a leading manufacturing power.

Leading the way is the UAE, whose Ministry of Industry and Advanced Technology has launched a 10-year strategy to raise the manufacturing sector's contribution to AED 300bn (US\$81.68bn) from the existing AED133bn. The strategy seeks to increase the in-country value of its resources and products and drive inclusive and sustainable industrial development by focusing mainly on industries that implement advanced technology and 4IR solutions and applications. ■

Rockwell Automation to showcase automation solutions at ADIPEC

ROCKWELL AUTOMATION will demonstrate how digitalisation and automation can address the challenges faced by the oil and gas industry at ADIPEC.

This year, Rockwell Automation will be exhibiting with Sensia, the joint venture launched in 2019. Sensia combines the deep oil and gas domain knowledge of Schlumberger with Rockwell Automation's rich automation and information expertise. At the event, Sensia will present their portfolio of data-driven solutions, services, and products, that can help stakeholders across the oil and gas industry drive efficiency and increase safety, from the reservoir to the refinery.

Commenting on the event, Sebastian Grau, regional vice-president Sales at Rockwell Automation, said, "We are excited to be participating at this year's edition of ADIPEC in Abu Dhabi. Returning to the in-person format of the event after two years presents the perfect opportunity for our teams to reconnect with our customers and exchange ideas with industry colleagues.

"With our integrated asset management solutions, we drive efficiency, optimised

productivity and safety, with a consistent focus on sustainability."

Those visiting the Rockwell Automation and Sensia exhibition stand will have access to live product demos, customer success stories and be able to learn about the full portfolio of solutions offered by both companies.

While oil and gas organisations continue to grapple with the intricacies of recovery from the pandemic, global initiatives around digitalisation, sustainability and decarbonisation continue to gain momentum.

At ADIPEC, the teams from Rockwell Automation and Sensia will explain how companies can reduce operational costs, improve the safety and security of operations and drive action to reduce carbon emissions, all in alignment with the global transition towards a low-carbon economy.

"The needs of the oil and gas industry are evolving. Customers must manage costs, extract the most value possible from current assets, as well as ensuring safe, reliable operations. Effective technology is required to accomplish these goals. It's crucial in developing a connected enterprise and

operational excellence. From Edge to Enterprise, Sensia and Rockwell Automation bring a wealth of industry knowledge and expertise to help customers achieve the full potential of their oil and gas assets," said Allan Rentcome, CEO of Sensia.

"In an industry so easily susceptible to macroeconomic shifts, policy developments, and changing consumer attitudes and requirements, we place our clients' unique objectives at the forefront, helping them thrive in a period of rapid transition," added Emmanuel Guilhamon, EMEA sales manager, Strategic Accounts, Heavy Industries at Rockwell Automation.

"Digital transformation presents an attractive, yet largely untapped opportunity to address many challenges across the entire oil and gas value chain, from drilling operations to refinery. A robust digital blueprint can help implement and control processes from the onsite infrastructure to remote technologies and facilitate greater process efficiency.

"Ultimately our goal is to make a positive step change in efficiency and safety, while drastically reducing costs and downtime."



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The transformative influence of Surface Logging

Geolog's step towards technology is an example of how digital transformation has been influencing various industries. Processes such as 'surface logging' have proven to be crucial in obtaining valuable data, resulting in effective decision making within the industry.



GEOLOG INTERNATIONAL IS an oilfield services company delivering solutions to national, international and independent oil, gas and geothermal operators. Founded in Milan, Italy in 1982, Geolog has continued developing effective and alternative solutions to complex and expensive downhole measurement tools.

Numerous applications of artificial intelligence and machine learning are being implemented across the oil and gas industry, and amongst these applications are those which allow the prediction of formation petrophysical properties, borehole issues and stuck pipe prediction, identification of drilling dysfunction such as bit wear, and the optimization of drilling parameters. Taken together, these applications have the ability to allow improved performance whilst delivering improvements in safety outcomes.

Geolog says that the key element in all data-intensive projects is the original data, and the single point of failure in these projects is 'data quality' including all aspects of consistency, integrity, accuracy, and completeness. The clear challenge is to effectively query heterogeneous data sources, then extract and channel data towards one or more advanced machine learning models to effectively achieve a data-driven workflow that

leads to effective and correct automated decision making.

The company believes that data is generally considered to be of high quality if it is fit for its intended uses in operations, decision making and planning. Furthermore, data is deemed of high quality if it correctly represents the real-world construct to which it refers.

According to Geolog, within the oil and gas industry, a long recognised primary data source has been provided by surface logging, which has consistently proved to be a critical pillar, supporting applications in both conventional data analysis and the developing digital era. The increasingly widespread adoption of advanced data analysis techniques is enabling integrated surface-acquired data to return to the centre stage in understanding drilling operations and downhole environment issues in real-time.

“ A long recognised primary data source has been provided by surface logging, which has consistently proved to be a critical pillar.”

The ability to utilise surface-acquired data, delivered without downhole tool acquisition systems, can achieve potentially substantial cost savings, critical in the currently constrained environment of many operators. The ability to facilitate improved decision making and outcomes in environments where downhole systems are either cost-prohibitive in their deployment, or where the technical or financial risks associated with such systems call into question their use, will positively impact the economics of drilling operations.

Crucial to the utility of surface-acquired data derived through these methods is the quality of the original data sets. Without adequate control over the quality of the data inputs to the modelling process, unacceptable errors may be introduced into the outputs from the system. Regardless of the capabilities of newly developed data analysis methodologies, if the data they are built upon is fundamentally flawed by inadequate initial quality control, then the conclusions extracted will themselves be flawed: the old adage of garbage in – garbage out still applies. Therefore, the use of data captured via a fully QC'd source is critical in both the reliability and accuracy of data outcomes delivered using these new techniques. More than ever, a quality surface logging service delivers real value to the end-user. ■

Speedcast supports growth in Middle East LNG production

NATURAL GAS EXPLORATION and production is a high-stakes game because of the large investments involved and the associated health, safety and environmental risks. This also drives strict safety precautions during transport, purification and liquification. Advanced drill rigs and trains rely on reliable high-capacity communications for monitoring and management of facilities as well as support for construction and production crews.

To increase LNG production in a high-growth market, a Speedcast customer in the Middle East leveraged a US\$32bn investment to raise LNG output capacity from 77mn tonnes per year to 110mn tonnes over the past two years, achieved by increasing drilling operations from four rigs to 12, and expanding the company's purification and liquification infrastructure.

Speedcast was selected to design, build and maintain a private communications network leveraging satellite (VSAT) connectivity, interconnecting a fleet of 11 mobile drilling units as well as a number of support vessels. For the VSAT hubs, Speedcast uses UHP



Speedcast is boosting connectivity for an LNG customer in the Middle East.

router technology, the industry's first fully software-defined high-throughput VSAT router, which delivers high efficiency and reliability with a low cost of ownership. Installed and maintained by Speedcast's local service delivery team, the network receives 24x7x365 support from the company's global customer service centres.

Reliable, high-bandwidth VSAT service

provided by Speedcast delivers the connectivity needed to maintain this expansive, high-volume operation with voice circuits, email, video conferencing, and remote monitoring and analysis of key operating metrics. With the rise in industrial internet of things (IoT) applications and digitalisation, the service also supports health and safety monitoring, telemedicine and crew welfare applications and is equipped to handle adding a variety of IoT applications such as sensor monitoring and predictive maintenance notifications on the mobile rigs.

Despite high investment and growth in renewable energy, the world will depend on fossil fuels for much of its energy for years to come. This customer has demonstrated long-term commitment to expanding its natural gas capacity in the Middle East, and Speedcast is here to ensure that the endeavor is supported through highly secure, highly reliable connectivity solutions which enable constant communication, monitoring and performance analytics to maximise operational productivity and health and safety measures.

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Frigmaires Engineers launches mobile plants for lubricant production

FRIGMAIRES ENGINEERS' NEWLY developed ABB (Automatic Batch Blending) skid mounted and containerised plants are designed for firms wishing to enter the lubricant business. They are recommended for installations in remote and logistically challenged areas. These units can be installed indoors, as well as outdoors. A provision for connecting a generator to operate the entire system can be provided as an option to make it

independent of the local power supply.

The units are assembled and fully tested at the company's facility before being delivered in 20 or 40 FT containers with no need for on-site assembly, pipework, electrical wiring or mounting of components. These are simple plug-and-play units. The base oils are charged directly from flexitanks to be connected to the feed manifold.

The main components of the plant are the feed

manifold, feed and discharge pumps, load cell mounted blenders, additive dosing unit, heating unit, online filters, piping, valves, instrumentation and filling station, which are connected and operated through a semiautomatic PLC system with HMI controls.

The end user has to simply connect the base oils from flexitanks to the feed manifold. Each package is provided with basic laboratory testing equipment, a set of spares, maintenance tool kit, a booklet for starting formulations and basic laboratory quality tests. A quick change-over flushing system is also provided for product turn arounds.

This plant is used for production of automotive, industrial, bio and marine lubricants.

Advantages include:

- Short delivery and installation time
- Quick and homogeneous blends
- Connects directly to flexitanks
- Low investment costs
- Reduced on-site erection and hook-up time
- Factory tested and manufactured
- Single source responsibility, ensuring fewer interfaces for our client to handle
- Self-contained operations
- Manufactured to CE specifications

Frigmaires also offers turnkey solutions for the production of lube oil blending and grease plants that cater to the requirements of small or large scale lubricant and grease manufacturers.

Constant innovation remains their top priority, ensuring delivery of high-quality solutions to customers in the industry.



Image credit: Frigmaires Engineers

Mobile Skid Mounted Lube Oil Blending Plant For Start-Ups & Small Scale Production Units
Capacity: 5,000-10,000 LTRS/Day

The plant can be used for the production of automotive, industrial, bio and marine lubricants.

ABB introduces ABB Ability Genix Asset Performance Management Suite

ABB HAS STRENGTHENED its existing digital offerings with the launch of ABB Ability Genix Asset Performance Management (APM) Suite for condition monitoring, predictive maintenance and 360-degree asset performance insights for the process, utility and transportation industries.

The Genix APM Suite makes it easy to add asset condition monitoring to existing operational technology (OT) landscapes, enables prioritisation of maintenance activities based on AI-informed predictions, and provides a comprehensive overview of asset performance.

Genix APM Suite also empowers significant improvements in operational sustainability. By assessing the remaining useful life of industrial assets, Genix APM generates a plan for preventive maintenance, which can extend equipment uptime by as much as 50 percent and increase asset life by up to 40%.

With reliable data insights, decision makers are provided with the information required in order to identify gaps and areas of improvement for energy efficiency and tighter control of operations, increasing asset availability and improving profit potential.



The Genix APM suite provides a comprehensive view of asset performance.

Image Credit : ABB

"Poor asset availability and reliability is a major problem that results in unplanned downtime and unexpected maintenance costs, and also impedes strategic planning and procurement," said Rajesh Ramachandran, chief digital officer at ABB Process Automation. "It's not that industrial customers lack data; it's that many lack

effective ways to use their data to improve operational and business performance."

Genix APM is built on the ABB Ability Genix Industrial Analytics and AI Suite, which integrates IT, OT and other enterprise data in a contextualised manner, applying advanced industrial AI capabilities that support new insights to optimise operations.



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Sercel launches Bluepulse acoustic marine source

SERCEL, MANUFACTURER OF high-tech solutions for subsurface exploration, has announced the launch of Bluepulse, an innovative marine acoustic source offering advanced frequency control technology. Bluepulse is a purpose-built acoustic source designed to help protect marine wildlife from high-frequency emissions, while maintaining highly accurate and reliable results for seismic acquisition.

Bluepulse is compatible with all existing peripherals making it an easy choice for surveys requiring limited high frequency source emissions. Through intelligent engineering and design, existing G-Source and G-Source II units can be easily upgraded with Bluepulse technology, saving customers up to 40% on the cost of fleet conversions.

The new units offer available range options in three different casings, twenty-two different volumes and with two frequency limits (100Hz and 200Hz) to comply with regulatory environmental standards and restrictions. The source array can thus be configured and customised to meet exacting survey requirements.

"Bluepulse is a perfect example of our continued commitment to providing high-quality data combined with the highest level

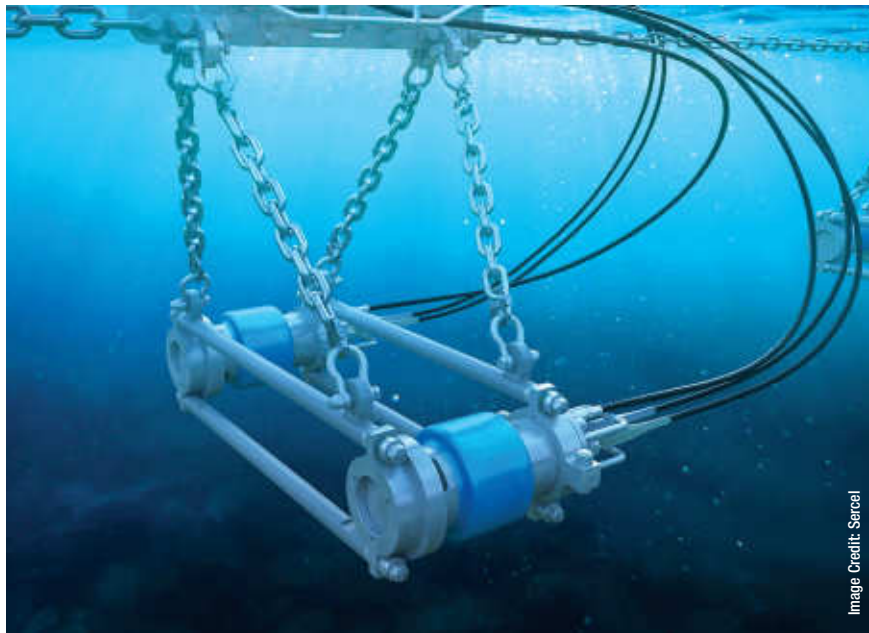


Image Credit: Sercel

Sercel's new marine acoustic source for seismic acquisition in sensitive areas.

of environmental responsibility. The ability to upgrade existing units and the wide variety of options also offers the highest flexibility for marine surveys all over the world," said

Emmanuelle Dubu, CEO, Sercel.

Sercel provides innovative solutions for structural monitoring, defense and underwater acoustics applications.

Honeywell launches new gas detection solutions offering advanced monitoring

HONEYWELL HAS RELEASED two new Bluetooth-connected gas detectors that can deliver continuous monitoring in severe weather conditions.

The new Honeywell Searchline Excel Plus and Searchline Excel Edge are the next generation of open path gas detectors that use advanced optics and high-powered infrared technology to stay online during challenging weather.

"Protecting worksites and workers is the number one priority for any business," said Jason Winburn, senior product manager, Honeywell Gas Analysis and Safety. "Honeywell's Searchline Excel Plus and Searchline Excel Edge can continuously monitor for leaks even in poor weather, giving plant operators peace of mind knowing that their gas detection system can withstand various outdoor conditions."

Many traditional open path, fixed gas detectors and monitors can be vulnerable to weather conditions such as fog, rain, snow and mist which can block open path detector signals. This can, in turn, bring devices offline and render them unable to monitor for harmful flammable hydrocarbon gases.

Honeywell's Searchline devices, featuring advanced optics and near Band Infrared absorption technology, have the ability to penetrate through thick fog with minimal visibility. Additionally, both the Searchline Excel Plus and



Image Credit: Honeywell

The new Honeywell Searchline Excel Plus and Searchline Excel Edge are the next generation of open path gas detectors.

Edge feature Bluetooth connectivity so that they can be paired with the Honeywell Fixed Platform App to offer simplified maintenance and testing procedures, which in turn means more efficient and safer performance checks. For example, because workers can use their mobile devices from up to 20 metres away to conduct maintenance checks, they do not need to regularly climb on high ladders and risk falling to check devices located high off the ground.

Open path gas detectors play an important role in a facility's fixed gas detection system, creating an invisible line that senses gases passing between the device's transmitter and receiver. The Searchline Excel Plus monitors short and mid-range applications from 2 to 120 metres, allowing workers to monitor specific areas or equipment for continuous safety applications.

The Searchline Excel Edge provides long range perimeter or fence line monitoring from 60 to 330 metres. Employees can both monitor whether their facility could be emitting harmful gases into neighbouring areas or if neighbouring plants may have leaks of their own that are crossing onto the facility's property and need to be addressed. In both instances, monitoring for gas emissions shows environmental due diligence and can be a factor in avoiding or reducing costly fines and litigation.

ADC Energy identifies upgrade to reduce rig emissions

ADC ENERGY, A specialist provider of integrated rig inspections, has completed a project with a major rig owner which identified that an upgrade to a Dynamically Positioned (DP) rig's power systems can reduce carbon emissions by almost 5,000 tonnes per year.

Typical DP drilling units operate in HV split-bus, or open-bus, configuration with the power management switchboards operating in silos, using an independent island philosophy. However, this mode from a redundancy perspective requires more engines to be online than may be required for the total operational loads, creating a potentially greater emission output.

By upgrading existing rig power management systems to allow for closed-bus mode, which ties the switchboards together, this allows the power plant to run with fewer engines and optimal loads, therefore delivering a more efficient power source.

ADC's recent project highlighted that DP rigs operating in closed-bus configuration can successfully reduce annual CO₂ emissions by 4,800 tonnes per year – delivering a fuel saving of US\$620,000 per year – while reducing engine running hours by 20%.

With the number of engines required to be online at one time lowered, the enhancement also provides operators with greater maintenance schedule flexibility, which can create potential maintenance savings of up to US\$150,000 per annum.

Austin Hay, director at ADC Energy said, "There is significant pressure on the oil and gas industry to decarbonise current assets, and the findings of our recent project effectively highlight how upgrades to existing systems can actively reduce the carbon footprint of operations."



Image Credit : ADC

ADC supported a major DP rig owner to identify fuel savings.

"We recognise this enhancement requires considerable investment from rig owners and operators, but as the sector continues its efforts to deliver more sustainable operations, this capital is essential to support net zero goals. Existing rigs and vessels are critical components in the energy transition, and we are already working with a number of clients to advise them through this process to ensure that assets continue to operate safely and efficiently with minimal environmental impact."

Red Wing calls for improvement in women's offshore PPE

RED WING, A PPE solutions provider, is leading the call for offshore industry to come together to close the gender PPE gap and improve the safety of women's kit. The provider claimed that female workers were being put at risk by being given men's PPE, with many having to roll-up coverall legs and sleeves, as well as not having appropriately fitting footwear.

With potential hazards caused by ill-fitting PPE including sleeves getting snagged in machinery, long trouser legs resulting in slips, trips and falls, the need for change is about more than aesthetics. There is also a danger associated with flash fires if clothing does not fit properly.

The call comes after a survey by the AXIS Network, in partnership with Step Change in Safety, found that 62% of women said their coveralls did not fit effectively, while 51% said their outerwear / jacket wasn't suitably sized.

Dez Young, senior HR of Red Wing Shoes, commented, "Women not having the right PPE is something that has been accepted for too long, and the solution is out there. Over 70% of our customers feature women's-fit PPE in their safety programmes, which shows that

availability and price isn't the issue. However, the kit is still not reaching those who need it.

"We know from our research that women working offshore and the purchasing teams buying products on their behalf, don't fully understand why women's PPE is so important. They also aren't aware of the tools they need to find the right fitting coverall for them."

To drive compliance, the international organisation has produced a Right Fit Toolkit, complete with visual sizing guide and correct fit instructional video for offshore companies to ensure workers get the right kit.

Young said, "There is a need to educate procurement departments to enable them to offer the right kit to the right people. We want women to know the PPE they need is available, but they shouldn't have to wait to be offered it. That's why we have created the Right Fit Toolkit – to help make the process of getting the correct PPE easier."

The issue was highlighted at The Right Fit event, which was held in collaboration with Wood, the OGUK Diversity and Inclusion Taskforce, AXIS Network, Harbour Energy, Step Change in Safety, East of England Energy Group (EEEGR), and the Institution of Occupational Safety & Health (IOSH).

Red Wing has implemented a four-point supply matrix based on availability, quality, price and compliance. Red Wing hubs in Dubai, Stavanger and Houston, as well as Aberdeen, commit to hold ladies' workwear solutions ensuring the company provides quality kit across its global locations.

Onsite tailoring services also help the wearer get that extra comfort level, while driving customers towards standard garments helps remove the cost associated with minimum order quantities, which is often perceived as a barrier to purchase. In addition to on demand fit-tools, fit kits can also be provided to customers, giving them the option to try a range of sizes ahead of their trip.

Jon Bodicoat, Red Wing Europe managing director, added, "Companies, distributors and manufacturers have the responsibility to ensure every person has the correct clothing to keep them safe, while giving them the opportunity to succeed."



Image Credit : Red Wing

Red Wing has created the Right Fit Toolkit to ensure workers receive correctly fitting PPE.

Halliburton launches new cement system

HALLIBURTON COMPANY HAS introduced IsoBond, a cement system that reduces sustained casing pressure (SCP) at its source to deliver a barrier that minimises fluid loss, shortens transition time, and improves shear bonding.

The IsoBond cement system alleviates SCP on all fronts. With rapid gel strength development and short slurry transition time IsoBond lessens annular flow through cement and increases the anchoring force to the casing and formation by up to 40% when compared to traditional systems. This improved shear bonding results in a cement sheath that is more resistant to degradation from corrosive fluids. The IsoBond cement system's transition time to prevent gas migration is reduced, and the cement's permeability can be reduced up to 75% compared to other cement systems.

Halliburton has pumped more than 15,000 barrels of IsoBond across multiple wells in North America and Latin America. The IsoBond cement system will be available globally by the end of 2021.



Image credit: Adobe Stock

The cement system will be available globally by the end of 2021.

BASF introduces Enable FCC additive

BASF HAS ANNOUNCED the commercial launch of Enable, its next-generation Carbon Monoxide (CO) promoter additive. Enable enhances activity and delivers superior performance for refiners with more efficient use of precious metal. Enable optimises durability via support surface morphology modification, and the combination of differentiating design features offers customers significant performance improvement in controlling regenerator afterburn.

“Enable is the latest addition to BASF’s industry-leading, advanced refinery additives portfolio,” said Detlef Ruff, senior vice-president, Process Catalysts, BASF. “We are excited about how this new technology will support our customers by enabling environmental compliance with a cost-effective solution.”

“Building on BASF’s experience from automotive emissions compliance applications, we are proud to introduce this innovative Pt-based technology solution into our refining segment,” said Jim Chirumbole, vice-president, Refining Catalysts, BASF. “Refiners are under pressure to deliver more with fewer resources. Enable accomplishes just that, combining economic and environmental benefits with better CO conversion at lower addition rates and a more efficient use of precious metals.”

Complete fluid containment for hydrofluoric acid process units

HMD KONTRÖ HAS introduced a new pump specifically designed for use in hydrofluoric acid alkylation, a process which presents a particular challenge for manufacturers, due to the highly corrosive nature of the fluid. Developed in collaboration with HF Unit Operators and working closely with UOP (Honeywell), the sealless pump features a casing manufactured from C22/C276.

Hydrofluoric acid (HF) alkylation combines olefins with isobutene in the presence of a hydrofluoric acid catalyst to produce alkylate, a high-octane additive, responsible for the anti-knocking property of unleaded petrol/gasoline. Placing an HF alkylation unit downstream of the FCC (fluid catalytic cracking) process allows a refinery to maintain petrol/gasoline value and quality while satisfying fuel emissions requirements. HF acid seeks out and attacks imperfections in cast components that will ultimately lead to reduced life and product leakage.

Failure-prone mechanical seals can leak harmful process fluids. The new HMD Kontrö application-specific sealless pump ensures conformity with all environmental health and safety standards, protecting people, plant and the environment through complete fluid containment.

HMD Kontrö magnetic drive sealless pump technology also offers lower end-user installation costs and simplifies maintenance requirements.



Image credit: HMD Kontrö

Pump casing in alloy C22/C276.

Mokveld introduces zero emission valve

MOKVELD VALVES BV has introduced a unique zero emission innovation – a valve without dynamic seals to the atmosphere.

Mokveld has incorporated an electric actuator inside its new valve, eliminating the stem seal to atmosphere entirely. Common valve designs rely on stem seals to prevent process fluid leakage to the environment. Such dynamic stem seals are prone to wear and tear and degradation, over time showing increased emissions.

By eliminating the stem seal altogether, the new valve prevents any leakage to atmosphere throughout the valve’s entire life cycle. This technology brings achieving Scope 1 GHG goals one step closer – zero fugitive emissions.



Image credit: Mokveld

The zero emission control valve.

The zero emission valve consumes very little power and requires a low actuation force. Power consumption over the valve’s lifetime is reduced even further by cutting power to its drive under steady-state conditions, using a self-braking drive nut. This contributes towards achieving Scope 2 GHG goals – reduced indirect emissions.

The low actuation forces in combination with state-of-the-art servo control provides for unmatched control accuracy. The overall valve control performance is improved, with virtually zero dead time and zero overshoot.

More than 18 months of field trials have fully confirmed the design’s benefits, resulting in its TRL7 status.

Mokveld’s tried-and-tested one-piece axial flow designs with its optimised flow path and full range of control trims served as the basis for developing this new valve. The valve’s compact, lightweight design contributes towards achieving Scope 3 GHG goals – reduced value chain emissions.

Interventek unveils landing string

ABERDEEN- BASED SUBSEA well intervention technology specialist, Interventek, has announced the commercial launch of a new API 17G qualified, in-riser subsea landing string system.

The 'Revolution-7' landing string is an advanced, 7-inch nominal, 10,000psi rated system incorporating Interventek's unique Revolution safety valve, which is proven to provide superior shear-and-seal performance. The system also includes Interventek's PowerPlus technology, which is a unique arrangement of a locally integrated, gas-accumulated power source, providing the fastest, failsafe valve actuation in less than a second.

The landing string incorporates lower and upper subsea test tree valves, a latch, a retainer valve and lubricator valve. A slick joint, shear sub and project specific adaptors enable space out in the BOP and interface with the tubing hanger running tool and landing string tubulars. The system components are integrated via pre-loaded connections which provide high operational performance and fatigue resistance.

Interventek's new Revolution-7 landing string is market-ready and the first systems were dispatched to a customer in October. The technology has been designed, engineered and fully qualified by Interventek, with rigorous testing to meet the latest API 17G 3rd edition industry specifications.

The company believes the system is a stand-out solution, offering industry qualification to the highest standard, combined with advanced shear-seal valve technology, rapid failsafe gas-accumulated actuation, plus a range of technical, functional and cost benefits. The valve performs both cutting and sealing functions, using separate internal components, in a single rotation, reducing the need for the usual secondary valve to provide a post-cut seal.

For subsea well completion, intervention, workover or decommissioning operations, a landing string is deployed from a floating vessel, via a marine riser, to enable safe and environmentally secure operations. The landing



Image Credit: Interventek

Interventek's new API 17G qualified subsea landing string, pictured with some of the team involved in its commercialisation.

string system includes a subsea test tree which provides the capability to close in the well, cut any medium in the bore and disconnect in the event of an emergency.

The shear-and-seal Revolution valve technology used in the in-riser system is also compatible with open water, tree-on-tree abandonment and surface applications. Interventek is also working towards the provision of a subsea control system to complement their advanced landing string package.

Gavin Cowie, managing director at Interventek, said, "Our technology is modular and universal, allowing it to be scaled up or down in its configuration and capability, and integrated with other third-party equipment.

"We can offer simplified landing string systems, spanner joint systems, ultra-deep water systems and high-pressure, high-temperature systems, depending on the field application."

Cubility's MudCube delivers reduced waste treatment drilling emissions

CUBILITY'S MUDCUBE SOLID control solution reduces waste treatment emissions associated with drilling by 43% onshore and 42% offshore compared to traditional shale shakers, according to a report commissioned by Cubility and carried out by UK-based consultancy Carbon-Zero.

Based on this report, Cubility estimates that its customers saw CO₂ emission reductions of 21,221 metric tonnes (mT) and 13,037 mT in waste reductions during 2020 with the MudCube as compared to traditional shale shakers.

The report also calculated that the reduction in waste treatment emissions through the MudCube when landfilled would be 75% onshore and 76% offshore compared to other shale shakers, and that there was a 35% reduction in actual waste.

Intertek awarded quality assurance contract by Tatweer Petroleum

INTERTEK, A LEADING total quality assurance provider to industries worldwide, has been awarded a contract by Tatweer Petroleum for the provision of quality assurance solutions in Bahrain.

Intertek's global team of highly skilled engineers and inspection experts will provide a 'factory-to-field' inspection and quality assurance programme assisting Tatweer Petroleum in validating the specifications, value, and safety of raw materials, products and assets. It will also verify the quality and compliance of products and procedures throughout the supply chain and secure on-time delivery of products and services.

Catalin Tomescu, general manager of Intertek Industry Services Saudi Arabia and Bahrain, said, "We are thrilled to engage with Tatweer Petroleum and offer Intertek's innovative expertise and global reach. Intertek's Total Quality Assurance solutions have been utilised successfully by Tatweer Petroleum for over a decade, and we are truly honoured to be entrusted with this additional work scope. Intertek's in-depth experience in the oil and gas sector globally, in the region and our world-class quality assurance services provide our clients with the peace of mind they need to focus on their core business and competencies."

DuPont launches Kalrez OG193 perfluoroelastomer

DUPONT IS LAUNCHING THE Kalrez OG193 perfluoroelastomer, a 95 durometer, FFKM compound that exhibits an excellent balance of properties for oil and gas applications.

Kalrez OG193 combines best-in-class Rapid Gas Decompression (RGD) performance and chemical resistance with good low temperature and thermal stability. It passes the acceptance criteria for multiphase sour ageing according to ISO23936-2, and scores the highest rating at the Rapid Gas decomposition test. It is an ideal fit for various applications in both upstream and downstream, such as oilfield production/completion equipment, wireline and drilling tools, pumps, mechanical seals, valves, compressors and more.



Image Credit: Adobe Stock

With oil production being pushed into more extreme conditions and harsher environments, there is a limited margin for error.

Project Databank

Compiled by Data Media Systems

OIL, GAS AND PETROCHEMICAL PROJECTS, UAE

Project Name	City	Facility	Budget (US\$mn)	Status
ACT - Khalifa Port Liquid Storage Facility - Phase 1 - Storage Tanks	Khalifa Port	Storage Tanks	200,000	Construction
ADNOC - Abu Dhabi Construction of VLCC Carriers	Abu Dhabi	Very Large Crude Carriers (VLCCs)	300,000	Engineering & Procurement
ADNOC - Al Dhafra Petroleum - Haliba Oil Field - Phase 2 - Trains & Flowlines	Haliba	Oil Field Development	800,000	FEED
ADNOC - Al Dhafra Petroleum - Haliba Tie-in Wells	Haliba	Oil Field Development	130,000	Engineering & Procurement
ADNOC - Borealis - Borouge 4 Complex - Central Petrochemical Process Package	Ruwais	Ethane Cracker	2,000,000	EPC ITB
ADNOC - Borealis - Borouge 4 Complex - Polyethylene Package (XLPE 2)	Ruwais	Low Density Polyethylene (LDPE)	150,000	EPC ITB
ADNOC - Borealis - Borouge 4 Complex - Polymers Production Package	Ruwais	Polypropylene	1,100,000	EPC ITB
ADNOC - Borealis - Borouge 4 Complex - Utilities & Offsites Package	Ruwais	Offsites & Utilities	1,200,000	EPC ITB
ADNOC - Borealis - Polypropylene (PP) Plant	Ruwais	Polypropylene	550,000	Construction
ADNOC - Dalma Field Development - Offshore Package - Wellhead Platforms	Dalma	Gas Field Development	750,000	EPC ITB
ADNOC - Dalma Field Development - Onshore Package - Gas Dehydration Facilities	Dalma	Gas Field Development	1,100,000	EPC ITB
ADNOC - Dusup - Jebel Ali Gas Discovery	Jebel Ali	Gas Field Development	500,000	Construction
ADNOC - Fujairah Mandous Field	Mandous	Storage Tanks	2,200,000	Construction
ADNOC - Hail and Ghasha Megaproject - Compression Facilities	Hail	Gas Field Development	3,000,000	FEED ITB
ADNOC - Hail and Ghasha Megaproject - Offshore Gas Processing Plant	Ghasha	Gas Field Development	2,000,000	FEED ITB
ADNOC - Hail and Ghasha Megaproject - Manayif Utilities & Tie-ins	Ghasha	Gas Field Development	2,000,000	FEED ITB
ADNOC - Hail and Ghasha Megaproject - Manayif Gas Processing Plant	Ghasha	Gas Field Development	6,000,000	FEED ITB
ADNOC - Umm Shaif Long Term Development - Phase 1 - Wellhead Towers & Subsea Pipelines	Umm Shaif	Oil Field Development	400,000	EPC ITB
ADNOC Gas Processing - Asab 1 & 2 Capacity Enhancement	Asab	Gas Processing	1,500,000	FEED ITB
ADNOC Gas Processing - Bu Hasa Debottlenecking & Associated Pipeline	Bu Hasa	Gas Production	55,000	Construction
ADNOC Gas Processing - Habshan 4 CO2 Recovery & Injection	Habshan	Carbon Dioxide	80,000	EPC ITB
ADNOC Gas Processing - Habshan 5 Debottlenecking for Associated Gas	Habshan	Gas Production	250,000	Construction
ADNOC Gas Processing - Habshan Acid Flare Line and Flare Tips Upgrade	Habshan	Acid Gas	50,000	Construction
ADNOC Gas Processing - Ruwais Capacity Enhancement - NGL Trains 1,2,3 & 4	Ruwais	Natural Gas Liquefaction (NGL)	300,000	EPC ITB
ADNOC LNG - Integrated Gas Development Expansion - Compression & Dehydration Trains	Das Island	Gas Field Development	870,000	Construction
ADNOC Offshore - Das Island Crude Oil Tank Farm	Das Island	Storage Tanks	1,000,000	FEED
ADNOC Offshore - Lower Zakum Main Gas Pipeline	Lower Zakum	Oil Field Development	400,000	FEED
ADNOC Offshore - Satah Al Razboot (SARB) Deep Gas Development	Satah Field	Offshore Platform	600,000	FEED ITB
ADNOC Offshore - Umm Shaif Gas Cap Condensate Development	Umm Shaif	Gas Processing	1,500,000	EPC ITB
ADNOC Offshore - Upper Zakum Facilities Expansion - Subsea Pipeline Package	Upper Zakum	Oil Field Development	500,000	PMC
ADNOC Offshore - Upper Zakum Facilities Expansion - Surface Facilities Package	Upper Zakum	Oil Field Development	7,000,000	PMC
ADNOC Offshore - Zirku Facilities Capacity Enhancement	Zirku	Oil Field Development	410,000	Construction
ADNOC Offshore - Zirku Island Facility Integrity Execution Project (FIEP)	Zirku	Maintenance	150,000	EPC ITB
ADNOC Onshore - Bab Artificial Lift Wells	Bab	Artificial Lift	100,000	EPC ITB
ADNOC Onshore - Asab Full Field Development II - Compression Train & Flowlines	Asab	Oil Field Development	175,000	EPC ITB

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Project Databank

Compiled by Data Media Systems

OIL, GAS AND PETROCHEMICAL PROJECTS, UAE

Project Name	City	Facility	Budget (US\$m)	Status
ADNOC Onshore - Asab SIWAP EOR Pilot Project	Asab	Enhanced Oil Recovery (EOR)	35,000	EPC ITB
ADNOC Onshore - Bab 485 MBD Sustainable Facilities	Bab	Artificial Lift	500,000	Construction
ADNOC Onshore - Bab Facility Upgrade	Bab	Enhanced Oil Recovery (EOR)	220,000	EPC ITB
ADNOC Onshore - Bu Hasa Integrated Field Development (BUIFD)	Bu Hasa	Welded, Oil Production	1,645,800	Construction
ADNOC Onshore - Bu Hasa Smart Wells - Overview	Bu Hasa	Oil Field Development	400,000	Engineering & Procurement
ADNOC Onshore - Bu Hasa SWAG EOR Pilot	Bu Hasa	Enhanced Oil Recovery (EOR)	60,000	EPC ITB
ADNOC Onshore - Bu Hasa Tie-in Wells - Package 1 - Smart Wells	Bu Hasa	Oil Field Development	200,000	Engineering & Procurement
ADNOC Onshore - Bu Hasa Tie-in Wells - Package 2 - Smart Wells	Bu Hasa	Oil Field Development	200,000	Engineering & Procurement
ADNOC Onshore - Bu Hasa Wellhead Remote Monitoring	Bu Hasa	Oil Field Development	100,000	Construction
ADNOC Onshore - Flowlines and Wellhead Tie-in - Asab & Sahil Fields	Various	Oil Field Development	75,000	Engineering & Procurement
ADNOC Onshore - Flowlines and Wellhead Tie-in - Bab Field	Bab	Oil Field Development, Seamless	175,000	Construction
ADNOC Onshore - Fujairah MOT Produced Water Tie-in	Fujairah	Water Treatment	50,000	EPC ITB
ADNOC Onshore - Jebel Dhanna Crude Receiving Facility Upgrade	Jebel Dhanna	Oil Storage Terminal, Welded	120,000	Engineering & Procurement
ADNOC Onshore - Jebel Dhanna Replacement of Main Oil Lines	Jebel Dhanna	Welded, Oil	225,000	Engineering & Procurement
ADNOC Onshore - North East Bab (NEB) Phase 2 - Field Development	North East Bab (NEB)	Oil Field Development	250,000	PMC
ADNOC Onshore - Qusahwira Field Development - Gas Injection Compressors	Qusahwira	Oil Field Development	600,000	Construction
ADNOC Refining - Crude Flexibility Project (CFP)	Ruwais	Atmospheric Residue Desulphurisation (ARDS)	3,500,000	Construction
ADNOC Refining - Ruwais Refinery East - SRU Replacement	Ruwais	Sulphur Recovery	100,000	Construction
ADNOC Refining - Ruwais Refinery East - Upgrade & Debottlenecking of Condensate Refining Trains	Ruwais	Oil Field Development		FEED ITB
ADNOC Refining - Ruwais Waste Heat Recovery	Ruwais	Offsites & Utilities	600,000	Construction
ADNOC Sour Gas - Optimum Shah Gas Expansion	Shah Field	Gas Field Development	550,000	Engineering & Procurement
ADOC - Hail Oil Field Water Injection System	Hail	Water Injection	120,000	EPC ITB
Al Yasat Petroleum - Belbazem Oil Field Development	Belbazem	Oil Field Development	1,000,000	Engineering & Procurement
Borouge - Ruwais Polypropylene Plant 5 (BPP5)	Ruwais	Polypropylene	750,000	Commissioning
BPGIC - Fujairah Oil Refinery Project	Fujairah	Refinery	200,000	Feasibility Study
BPGIC - Fujairah Oil Terminal - Refinery & Storage Expansion	Fujairah	Oil Storage Terminal	100,000	FEED
Fujairah Oil Terminal (FOT) - Fujairah Oil Terminal Modifications	Fujairah	Very Large Crude Carriers (VLCCs)	200,000	Engineering & Procurement
Shaheen Chem Investments - Ethylene Dichloride & Caustic Soda Plant	Khalifa Industrial Zone of Abu Dhabi (KIZAD)	Caustic Soda	1,000,000	FEED ITB
SNOG - ENI - Onshore Acreage Exploration	Sharjah	Exploration	1,000,000	Construction
Ta'ziz - Ruwais Derivatives Park	Ruwais	Petrochemical Plant	5,000,000	FEED
Ta'ziz - Ruwais Derivatives Park - Chemicals Handling Terminal	Ruwais	Dredging/ Reclamation	600,000	FEED ITB
Total - Diyab Gas Export Pilot Project (Unconventional Gas)	Ruwais	Gas Exploration	70,000	Commissioning

TECHNICAL REVIEW

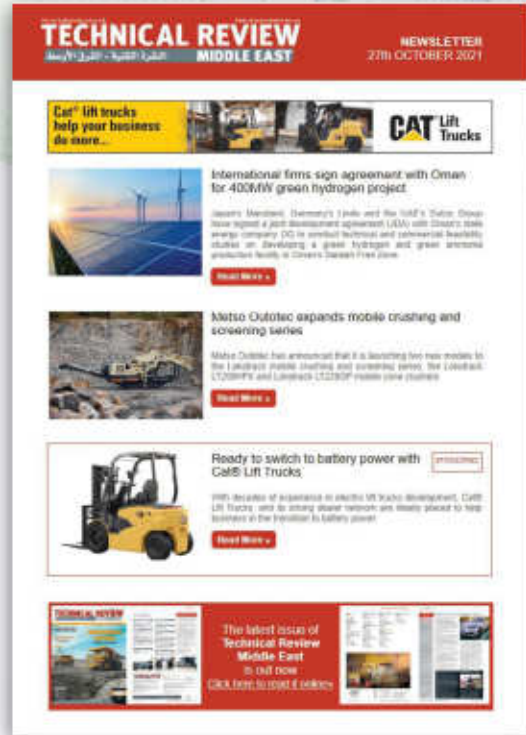
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Project Databank

Compiled by Data Media Systems

Project Focus

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ADNOC Offshore - Upper Zakum Facilities Expansion (UZ1000) - Phase 1 - Surface Facilities Package

Name of Client	ADNOC Offshore
Estimated Budget (US\$)	7,000,000,000
Award Date	2022-Q3
Facility Type	Oil Field Development
Status	PMC
Contractors	Wood (PMC); Tecnicas Reunidas (FEED)
Location	Upper Zakum, UAE
Project Start	2018-Q1
End Date	2025-Q4

Background

Abu Dhabi National Oil Company (ADNOC) plans to expand the Upper Zakum offshore oilfield located 84 km offshore Abu Dhabi. The project aims to develop the surface facilities as a part of the first phase of the UZ-1000 project.

Project Status

Date	Status
Oct 2021	The project is facing further delays as the EPC tender is yet to be issued.
Jul 2020	The FEED studies by Tecnicas Reunidas have been already completed while the EPC ITB is likely to be delayed.
Jun 2020	Wood Group is awarded the PMC contract for the project whereas the EPC ITB is yet to be issued.

Project Scope

The project scope includes the development of surface facilities:

- Expansion of the Upper Zakum field to produce 1mn bpd
- Multiple production, water injection, and water disposal wells
- Construction of gas handling facilities
- Construction of gas lift facilities
- Construction of water injection facilities
- Laying of power cables and pipelines from Umm Al Anbar to Zirku Island
- Construction of associated facilities

Project Finance

Abu Dhabi National Oil Company (ADNOC) Offshore is the client and the operator of the project. The stakeholders of the field are:

- ADNOC (operator) - 60%
- ExxonMobil - 28%
- Japan Oil Development Company (Jodco), a wholly-owned subsidiary of INPEX - 12%



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الحالية. ثانيا، هناك حاجة لتحصيل البيانات من الأصول المتباينة وجمع المعلومات معا باعتبارها رؤى موثوقة وذات مغزى. فعلى سبيل المثال، يقدم «سنسيا»، وهو مشروعنا المشترك مع شركة شلمبرجير، هذا النوع من الرؤى المتكاملة من خلال منصة إنترنت الأشياء من كونيكند برودكشن. ثالثا، يمكن تطبيق قدرات وخوارزميات علوم البيانات على البيانات من أجل التنبؤ بالمكان الذي قد يكون فيه فرص لزيادة الكفاءة في المستقبل. هذه التقنيات والأساليب يمكن أن تساهم في تحسين الحسابات وأطر صنع القرار حول استهلاك الطاقة، ليس فقط في استخدام الطاقة اليوم، بل أيضا للتطلع إلى ما ستكون عليه احتياجاتهم من الطاقة على مدار الأيام والأسابيع والشهور.

3. البناء نحو نموذج أعمال صافي صفر: في حين يوفر «الأداء الأفضل» مع الأصول الحالية بوضوح فرصة لتحسين الأداء الأخضر، يجب أن يقترن بظموح لإعادة اختراع العمليات من أجل إطلاق نموذج أعمال مستقبلي أكثر استدامة وأقل كثافة للكربون. هذا الانتقال ذو شقين. فهو - من ناحية - ينطوي على تسريع التحرك نحو مصادر طاقة أكثر تنوعا. ومن ناحية أخرى، يتطلب الاستثمار في الابتكار للتحويل نحو نماذج تشغيل أنظف. ومكونات هذه النماذج واسعة النطاق، حيث تشمل استخدام البنى التحتية الفعالة والدائرية، والحلول المبتكرة للانبعاثات الهاربة ومنتجات الكربون التي لا يمكن تجنبها، وعمليات توريد تسلسلية أقل حجما، ومنهجيات ذات موارد أكثر لاستخدام الأصول وملكيته. ونظرا لأن الشركات قد تنفقر إلى الخبرة في جميع هذه الجوانب المتنوعة، فإن دور الشركات في هذه الحالة يكتسب أهمية حيوية.

لماذا الشراكة هي العنصر الرئيسي

لتحقيق القيمة الكاملة للأدوات الرقمية، يجب أن تكون هناك بيئة تتسم بالابتكار والتعاون. ولا يكفي أن تنفق الشركات المزيد على التكنولوجيا فحسب، بل يجب عليها - بدلا من ذلك - إيجاد حالات عمل حقيقية يمكن من خلالها تقليل انبعاثات الكربون، وهكذا تصبح الشراكات ذات قيمة.

لطالما كان هدفنا في شركة روكويل اوتوميشن، طوال خبرتنا الطويلة في صناعة النفط والغاز، هو دعم المنتجين في كل خطوة من سلسلة القيمة. مع وجود مجموعة متنوعة من المعارف والقدرات المطلوبة للمساعدة الشاملة، وتحديد الحالات التي يمكن أن تدعم فيها الاستدامة نتائج الأعمال. وقد جعلنا من أولوياتنا الاستراتيجية العمل مع شريك واسع النطاق، واستخدام نظام إيكولوجي للحلول لعملاء النفط والغاز لدينا للاستفادة منه. حيث يمكن للمنتجين، من خلال السيطرة على بيئتهم، انتهاز الفرص للتوفيق بين كفاءة العملية والممارسات الأكثر استدامة اليوم، والاستعداد للمنافسة في سوق الغد.

كما تعتبر التقنيات الرقمية أساسية لهذا التحول. فقد اعترف أكثر من ثلثي كبار موظفي المعلومات (77,3 في المائة) بالتحول الرقمي كأولوية أولى في الميزانية للمضي قدما. ووفقا لاستطلاع مجلة «سي أي أو أولتوك» (CIO Outlook) لعام 2021، أشار 72,7 في المائة إلى الأتمتة باعتبارها المجال الذي يتوقعون فيه تحقيق أكبر العوائد. وتدرك صناعة النفط والغاز هذا وتتقدم نحو النضج الرقمي. حيث تتطلع الشركات الآن، مدعومة بالتقنيات الرقمية، إلى بناء استراتيجيات لنماذج أعمال أكثر كفاءة من أجل الاستفادة بشكل أفضل من مواردها الحالية، وإزالة الكربون من إنتاجها المستقبلي.

تنفيذ النماذج المستدامة

هناك ثلاث ركائز أساسية يمكن لقادة النفط والغاز الاستفادة منها من أجل رفع دور الاستدامة، سواء في عملياتهم الحالية أو في تشكيل نماذج الأعمال المستقبلية.

1. الاستثمار في الكفاءة: تظل الكفاءة هدفا رئيسيا للقطاع. إذ يعني المزيد من الكفاءة إهدارا أقل وتكاليف طاقة أقل. إنه مكسب تجاري بالإضافة إلى أنه مكسب بيئي. ووفقا للمركز العالمي للتكيف، يمكن أن ينتج عن كل دولار يُستثمر في بناء القدرة على التكيف مع تغير المناخ صافي فوائد اقتصادية تتراوح بين 2 و10 دولارات أمريكية. لذلك فإن الاستثمار في الأدوات الرقمية لدعم العمليات الأقل إهدارا أو الأقل استهلاكاً للطاقة هو خيار حكيم.
- تعني العلاقة ذات المنفعة المتبادلة بين الكفاءة والاستدامة، أنه يتم تحفيز قادة النفط والغاز للنظر عبر أعمالهم وعملياتهم الحالية للعثور على مجالات وحالات استخدام محددة، حيث يمكن تقديم كفاءات جديدة.
2. تحسين القياس: تحسين الكفاءة يستلزم وجود رؤية أكبر للعمليات. ويعد الحصول على رؤى في الوقت الفعلي حول الجوانب الدقيقة للعمليات في كل مرحلة من مراحل عملية الإنتاج أمرا بالغ الأهمية لاتخاذ أفضل القرارات وتعظيم القيمة بشكل سريع. تحتاج شركات النفط والغاز، في سبيل تحقيق ذلك، إلى تحليل بياناتها بسهولة أكبر. وقد تكون عملية الحصول على رؤى شاملة أكثر صعوبة في مجال النفط والغاز مقارنة بالصناعات الأخرى، وذلك بسبب الصعوبات المرتبطة بوضع أجهزة الاستشعار في مواقع بعيدة أو وعرة. ومع ذلك، فمن هذه المصادر يمكن العثور على بعض أفضل الفرص لإجراء التحسين. وهناك العديد من العناصر التي يمكن أن تساعد في تحسين رؤية العمليات وقابليتها للقياس. أولا، هناك حاجة إلى التوحيد القياسي في طرق القياس. فمن خلال تعيين قيمة الكربون لكل منتج طاقة منفرد، يمكن للمشغلين إجراء مقارنات نسبية وتاريخية لتحديد فرص تقليل النفايات في العمليات

← مفكرة الفعاليات 2021 - 2022

نوفمبر/تشرين الثاني

www.africa-oilweek.com	دي	أسبوع نفط أفريقيا	11 - 9
www.adipec.com	أبوظبي	معرض أدبيك 2021	18 - 15

يناير/كانون الثاني 2022

www.intersec.ae	دي	معرض إنترسك	18 - 16
www.worldfutureenergyssummit.com	أبوظبي	القمة الدولية لطاقة المستقبل	19 - 17



استخدام التحول الرقمي لدعم جهود الاستدامة في مجال النفط والغاز

نماذج الأعمال المستدامة للنفط والغاز

في هذا المقال، يستكشف سيباستيان جراو، نائب الرئيس الإقليمي لمنطقة الشرق الأوسط وتركيا وإفريقيا لشركة روكويل اوتوميشن، كيف يمكن للقادة في مجال النفط والغاز استخدام التحول الرقمي لدعم جهود الاستدامة الخاصة بهم، وإعداد أنفسهم ليكونوا قادة في سوق الغد. وهو يقول إنه لا بد، لتحقيق القيمة الكاملة للأدوات الرقمية، أن تكون هناك بيئة تتسم بالابتكار والتعاون. ولا يكفي أن تنفق الشركات المزيد على التكنولوجيا فحسب، بل يجب عليها - بدلا من ذلك - إيجاد حالات عمل حقيقية يمكن من خلالها تقليل انبعاثات الكربون.

- على هذا النحو - قادة النفط والغاز إلى موازنة التبعيات قصيرة المدى مع تطلعاتهم طويلة المدى.

فعلى المدى القصير، هم مضطرون إلى تلبية طلب السوق المتقلب على منتجات النفط والغاز، خاصة مع الارتفاع المحتمل بعد الإغلاق.

وإلى جانب هذه الأولويات العاجلة، هناك مطلب متزايد للنظر في الشكل الذي سيبدو عليه العالم في عام 2030 ومواءمة الاستراتيجيات والاستثمارات المستقبلية في هذا الاتجاه.

وتأتي ضغوط التغيير من مصادر مختلفة. إذ لا توجد ضغوط تنظيمية لتقليل انبعاثات الكربون فحسب، بل هناك - أيضا - توقعات متغيرة من أصحاب المصلحة الداخليين والمستهلكين لممارسات أكثر استدامة. ويتطلب تلبية هذه المطالب تغييرا في نموذج الأعمال، وتحديث التقنيات المستخدمة لدعم عملية التحول.

بالنظر إلى أحداث العام الماضي، نحن في نقطة محورية في تحديد دور صناعة النفط والغاز في اقتصاد اليوم والغد. ونتوقع، في ظل التحديات الحالية، أن يظل الطلب على منتجات النفط والغاز قويا. ومع ذلك، لن تكون هناك عودة إلى «العمل كالمعتاد». حتى أكبر الشركات في القطاع تدرك الحاجة الملحة لإعادة ابتكار العمليات، والاستثمار في نماذج أعمال أكثر استدامة، والتركيز على مصادر الطاقة المتجددة. فمع اقتراب المواعيد النهائية لاتفاقية باريس، وإضفاء قيمة أكبر على الوعي البيئي على مستوى العملاء، أصبح من الضروري أن ترى شركات النفط والغاز الاستدامة بوصفها استثمارا في نجاحها المستقبلي.

موازنة الأولويات

وكما هو الحال مع كل شيء في الأعمال التجارية، هناك تنازلات متضمنة. ويحتاج



أحمد بكر، مسؤول الأمن السيبراني في سيمنز (يسار) مع أحمد خليفة، مدير المبيعات

إذ أن المعرفة تضع الأساس لعمليات آمنة وإدارة وصول ناجحة، كما أنها ترفع وعي جميع الموظفين. فقد توصلت دراسة في عام 2020، أجراها جيف هانوكوك الأستاذ بجامعة ستانفورد وشركة الأمن تيسيان، إلى أن 88 في المائة من خروقات البيانات ناتجة عن خطأ الموظف. وهذا يعني أنه يمكن منع أحد أكبر المخاطر التي يتعرض لها الأمن السيبراني - الخطأ البشري - من خلال التدريب.

هل تقدم الرقمنة فوائد أكثر من المخاطر؟

أحد الأشياء التي أكدها الخبراء السيبرانيون هو أن النمو الذي لا يمكن إيقافه للرقمنة يمكن أن يزيد من بعض المخاطر السيبرانية، إلا أن هذه المخاطر تفوقها الفوائد التي تعود على الصناعة.

يشير خليفة إلى أن «الرقمنة، وهي أداة عملية بشكل خاص لصناعة النفط والغاز، لا تعني - تلقائياً - التشغيل في السحابة. فهذا، بالنسبة للبنية التحتية الحيوية، مثل النفط والغاز، يعني في المقام الأول استخدام التطبيقات الرقمية لمراقبة الأصول المادية مثل ضواغط الغاز ومعدات الحفر البحرية، بهدف جعل العملية أكثر كفاءة وأكثر فعالية من حيث التكلفة. ونحن قادرون على حماية هذه الوظائف من التهديدات السيبرانية بشكل فعال للغاية». سواء كان ذلك من المراقبة عن بُعد أو الصيانة التنبؤية، أو انخفاض انبعاثات الكربون أو استهلاك الوقود الأمثل، يتم نقل البيانات المفيدة فقط في اتجاه واحد، بفضل بوابة أحادية الاتجاه من برنامج أئمة محطات الطاقة التابع لشركة سيمنز التي تحول الطرق السريعة للبيانات إلى مسارات ذات اتجاه واحد. لذا من المستحيل - مطلقاً - نقل البيانات في الاتجاه المعاكس - في اتجاه المحطة. والفوائد التي تعود على العملاء هي نظرة عامة شاملة على الحالة الصحية لأنظمتهم وإخطارهم تلقائياً في حالة حدوث أي أعطال.

الذكاء الاصطناعي يحمي من الجرائم السيبرانية

الرقمنة نفسها هي واحدة من أكثر الأسلحة فعالية ضد التهديدات السيبرانية، وكذلك الذكاء الاصطناعي. فالذكاء الاصطناعي هو أساس برنامج مراقبة أمن المحطة المتكبر من شركة سيمنز للطاقة، حيث تريد الشركة استخدام الذكاء الاصطناعي في المقام الأول لمساعدة شركات النفط والغاز الصغيرة والمتوسطة الحجم على حماية محطاتها من الهجمات السيبرانية. وكما يوضح خليفة، «تدرس خوارزميات مراقبة أمن المحطة وتتعلم السلوك «الطبيعي» للمحطة. وبعد ذلك، في حالة حدوث أي انحرافات، يسجل النظام السلوك غير الطبيعي ويصدر إنذاراً. وهذه هي الطريقة التي نستخدم بها - بشكل فعال - كل جانب من جوانب قوة الرقمنة، بما في ذلك - وعلى وجه الخصوص - مكافحة مجرمي وإرهابيي الإنترنت».

فالبعض يريد - ببساطة - تدمير الأنظمة وإيذاء الناس. لذا فإن الأمر يتعلق أيضاً بحماية تكنولوجيا التشغيل المادية».

لبعض الوقت، كان الأفراد في هذه الصناعة يتحدثون عن أحد أخطر الهجمات على منشآت النفط والغاز الصناعية حتى الآن. ووفقاً لتحليل أجرته شركة «فاير آي» للأمن السيبراني، لم يتم التخطيط لإحدى هذه الهجمات لتعطيل العمليات فحسب، ولكن أيضاً لإحداث أضرار مادية تهدد أرواح البشر. لكن ما هو واضح، وفقاً لما ذكره أحمد بكر، هو أن الأمن السيبراني الناجح يحتاج إلى أن يقوم على ما يسمى بنهج الدفاع متعدد الطبقات لمنع الأسوأ وإنقاذ الأرواح. حيث يعد الدفاع متعدد الطبقات، والذي يُطلق عليه أيضاً «الدفاع في العمق»، مفهوماً مثبتاً يعتمد على أنواع مختلفة من ضوابط الأمن السيبراني المتداخلة. وتكمن الفكرة في أنه إذا فشل أحد عناصر التحكم أو تجاوزه المهاجم، فستوفر طبقة أخرى الحماية اللازمة.

معايير داخلية وخارجية صارمة

تتيح شركة سيمنز للطاقة، بصفتها هيئة ذات خبرة في الصناعة، خبرتها الشاملة في صناعة النفط والغاز للمساعدة في مكافحتها للهجمات السيبرانية. وتتراوح عروض الشركة من منتجات الأمن السيبراني وتنفيذها إلى خدمات الاستشارات والتدريب، هذا بالإضافة إلى حلول الأمن السيبراني الشاملة. ويعد أن أنشأت شركة سيمنز للطاقة مؤسستها الداخلية القوية لمكافحة الجريمة السيبرانية منذ سنوات، أصبح لديها الآن أكثر من 100 خبير في الأمن السيبراني متمركزين في جميع أنحاء العالم، ويتم دعمهم بشكل مباشر من قبل زملائهم في مجالات الأعمال المختلفة المعروفين باسم مسؤولي أمن المنتجات والحلول. إذ يتحمل مسؤولو أمن المنتجات والحلول مسؤولية ضمان امتثال المنتجات والحلول لمعايير الصناعة العالمية؛ مثل معيار اللجنة الكهروتقنية الدولية رقم 62443. وهذا يعني أنه يتم باستمرار تعزيز الامتثال لمعايير الأمن السيبراني العالية للغاية؛ بدءاً من التطوير وطوال سلسلة القيمة بأكملها، وصولاً إلى تقوية المنتج وتنفيذ المشروع بشكل آمن سيبرانياً. كما يخضع الموردون وشبكة شركاء الشركة - أيضاً - لمطالبات صارمة. أحد هذه المتطلبات هو المنتجات الآمنة من الناحية السيبرانية. ونجمة متطلب آخر وهو الاستخدام الآمن لهذه المنتجات، على سبيل المثال، في شركات النفط والغاز. ويتفق الخبراء على أن شركات التكنولوجيا يجب أن تتحمل مزيداً من المسؤولية، وأن تصبح أكثر انخراطاً في نشر الحلول في بيئة العميل. ويقول أحمد بكر أيضاً: «نحن نستخدم مجموعة متنوعة من المنهجيات لدعم عمليات عملائنا الآمنة سيبرانياً. على سبيل المثال، حصل قسم التطبيقات الصناعية لدينا على شهادة اللجنة الكهروتقنية الدولية رقم 62443-2-4 في عدة مواقع لعمليات تنفيذ المشروع لتوفير حلول آمنة». ورغم هذا، فإن بعض الشركات ليس لديها أي عمليات أمن سيبراني داخلية، ناهيك عن منظمة مخصصة، أو ليس لديها موظفون مؤهلون. لكن في هذه الحالات، يمكنهم شراء المعرفة والخبرة، بما في ذلك - بالطبع - من شركة سيمنز للطاقة، التي تهدف إلى أن تصبح شركة تكنولوجيا الطاقة الأكثر قيمة في العالم. ويمكن تزويد العملاء - عند الطلب - بكل ما يحتاجونه لهياكل الأمن السيبراني، وتحليل الثغرات أو مواطن الضعف، بما في ذلك التدابير وتنفيذها. وهذا ما يسمى «الأمن السيبراني كخدمة».

الاستشارات والتحليل

عادة ما تكون الخطوة الأولى عبارة عن استشارة حول أحدث التهديدات السيبرانية والبوابات والتدابير التي يحتمل أن تكون فعالة. مدير المبيعات الفني للأمن السيبراني في الشركة هو أحمد خليفة. وهو وزملاؤه موجودون في دبي في الإمارات العربية المتحدة، يقول خليفة: «العديد من الإجراءات الأولية سهلة التنفيذ وليست مكلفة للغاية. على سبيل المثال، المعرفة هي مفتاح مهم للدفاع الفعال».



الأمن السيبراني الفعال يضمن بقاء الأنظمة والبيانات بعيدة عن الهجمات السيبرانية

نحن جميعاً أهدافاً سيبرانية محتملة

في هذا المقال تشير نينا تيرب، المؤلفة المتخصصة/ الكاتبة المستقلة في مجال الطاقة قائلة: «تحتاج صناعة النفط والغاز إلى زيادة المقاومة السيبرانية لأنظمتها الآن». وقد نُشر إلى العامة، في مايو/أيار من عام 2021، احتمال وقوع هجوم سيبراني على صناعة النفط والغاز، وذلك عندما تعرّض مشغل خط الأنابيب الأمريكي كولونيال بايبلاين (Colonial Pipeline) لهجوم برمجيات الفدية. ويوضح هذا المثال الأخير أن الهجمات السيبرانية أصبحت شائعة أكثر، وبل وأكثر تعقيداً.

واحد. إذ اضطرت الشركة إلى التوقف عن تشغيل الأنظمة التي تشغل خط الأنابيب البالغ طوله 5500 ميل. وكان الضرر الاقتصادي هائلاً. والهجوم الإلكتروني التالي في طريقه للحدوث. ويوضح بكر أن السؤال الوحيد هو متى وكيف سيحدث، ويضيف قائلاً: «صناعة النفط والغاز يجب أن تستعد الآن». ففي وقت مبكر من عام 2017، تم تكليف معهد الأبحاث الأمريكي بونيمون من قبل شركة سيمنز لإجراء دراسة استقصائية تتعلق بصناعة النفط والغاز. ووفقاً للنتائج التي توصل إليها الباحثون، ذكر 68 في المائة من مديري الأمن السيبراني في مجال النفط والغاز في الولايات المتحدة، أن مؤسستهم تعرضت لفقد واحد - على الأقل - من المعلومات السرية أو تعطلت العمليات في بيئة التكنولوجيا التشغيلية على مدار الـ 12 شهراً الماضية. في الوقت نفسه، أكدت الدراسة أن العديد من المنظمات تفتقر إلى الوعي بالمخاطر السيبرانية للتكنولوجيا التشغيلية.

يمكن للأمن السيبراني أن ينقذ الأرواح

ويضيف بكر قائلاً: «على الرغم من أن الدافع الأكثر شيوعاً لمجرمي الإنترنت هو جني الأموال، فإن المهاجمين لم يعودوا يقصرون أنفسهم على زرع البرامج الضارة.

لم يبدأ التهديد مع إنشاء التطبيقات الرقمية في هذا القطاع فقط، لكن أيضاً أنظمة المعلومات، وخصوصاً التكنولوجيا التشغيلية، معرضة للخطر. وتضمن حمايتها سلامة الأشخاص والأنظمة والبيانات. وتقتنع شركة سيمنز للطاقة بأن السبيل الوحيد للبقاء متقدمين بخطوة حاسمة، هو اتخاذ إجراءات فورية.

أحمد بكر هو أحد كبار مسؤولي الأمن السيبراني ومقره في مدينة جدة السعودية، يدعم هو وزملاؤه مختلف وحدات أعمال سيمنز للطاقة وعملاءها في كل جانب من جوانب الأمن السيبراني. وتشمل الخدمات تحديد الأصول الهامة وإدارة نقاط الضعف والثغرات الأمنية لتطبيقات تكنولوجيا المعلومات، ودعم المسؤولين عن الأمن السيبراني الصناعي لمحافظة سيمنز للطاقة. والتي تغطي أيضاً مجال أعمال النفط والغاز. ووفقاً لما يقوله بكر، «تمثل شركات النفط والغاز أهدافاً لمجرمي الإنترنت. فنحن جميعاً أهداف لهم. حيث تهدف هجماتهم إلى استهداف أنظمة الشركة، وإحراق الضرر بها، من خلال تعريض توفر البيانات وسلامتها وسريتها للخطر، على سبيل المثال. وعلى الرغم من تنامي الوعي، فإن الدفاع ضد الهجمات السيبرانية يجب أن يُؤخذ بجديّة أكبر في المستقبل». فعالة خط أنابيب كولونيال في الولايات المتحدة تبين ما يمكن أن يفعله هجوم

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