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Editor's note

BAHRAIN MAY BE small – but it's big on ambition. The major discovery offshore in 2018 has the potential to significantly change the Kingdom's oil and gas fortunes, with preliminary results of test wells expected in the second quarter of this year. See our article on p12-14 for an update on progress on the Khalij Al Bahrain Basin discovery and other developments.

In this issue, we focus on the importance of training and skills development, where virtual reality training can play a valuable role in improving competence levels, increasing knowledge retention and boosting safety (p24), while on the technical front, we feature the latest compressor developments (p32) and innovations for pipeline integrity and corrosion protection (p42).

We also preview upcoming events, including GEO 2020, where the focus will be on the role Fourth Industrial Revolution technologies can play in geosciences (p6) and the expanded and rebranded Oman Petroleum & Energy Show (p18).

Contents

Front cover image courtesy of Tatweer Petroleum

➔Executives' Calendar 2020

FEBRUARY			
25-27	**IP WEEK**	LONDON	www.ipweek.co.uk
MARCH			
2-3	**Kuwait HSE Forum**	KUWAIT	www.hse-forum.com
2-4	**MERTC**	MANAMA	https://mertc.wraconferences.com
3-5	**Middle East Energy (MEE) 2020**	DUBAI	www.middleeast-energy.com
9-11	**Oman Petroleum & Energy Show**	MUSCAT	www.omanpetroleumandenergyshow.com
16-19	**GEO 2020**	MANAMA	www.geo-expo.com
24-26	**OpEx MENA 2020**	MANAMA	www.europetro.com
25	**Oil, Gas & Petrochems Finance & Investment Conference**	DUBAI	www.oilgasmiddleeast.com
30-31	**Middle East Petroleum & Gas Conference**	MANAMA	www.mpgc.com
APRIL			
13-16	**SOGAT**	ABU DHABI	www.sogat.org
MAY			
4-7	**OTC**	HOUSTON	www.2020.otcnet.org
JUNE			
15-16	**Bahrain HSE Forum**	MANAMA	www.hse-forum.com
18-18	**Lebanon Int'l Oil & Gas Summit**	BEIRUT	www.liog-summit.com

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Challenges and opportunities for oil & gas finance and investment

OIL REVIEW MIDDLE East readers can benefit from a 20 per cent discount at the Oil, Gas & Petrochems Finance & Investment Conference, the Middle East's first and only conference to discuss the opportunities and challenges facing investment and finance executives in the oil and gas sector.

The global oil and gas industry is undergoing a fundamental structural change. As of January 2020, energy companies account for just four per cent of the S&P500. Output is stable but valuations are depressed. Oil prices have endured five years of volatility, and oil and gas companies are increasingly transitioning into fully-integrated energy and renewables companies. Challenges lie ahead for the sector, and now is the time for industry leaders to present, discuss and debate how the oil, gas and petrochemical companies conduct business and make investments.

The Oil, Gas & Petrochems Finance & Investment Conference, to take place on 25 March at the InterContinental Festival City, Dubai, will bring together representatives from the governments, National Oil Companies (NOCs), International Oil Companies (IOCs), downstream and petrochem companies, suppliers to the O&G sector, traders, brokers, advisors, investors and financiers. The event is a unique opportunity for senior oil and gas executives to share ideas, network and build business relationships.

The event will focus on finance and investment in the oil and gas sector.

Image Credit : Adobe Stock

The conference will address the most pertinent issues in the market with an agenda full of senior executive speakers, including: Jason Schenker, Bloomberg News' number one globally ranked oil price forecaster; Dr. Mohammed Al-Sabban, former senior advisor to the Minister of Petroleum, Kingdom of Saudi Arabia; Mark Cutis, chief financial officer, ADNOC; Paul Horsnell, global head of commodities research, Standard Chartered Bank; Neeraj Agrawal, group chief financial officer, Crescent Petroleum; Dr. John Sfakianakis, chief economist & head of research, Gulf Research Center, and many more.

The Oil, Gas & Petrochems Finance & Investment conference is one of four events at The Finance & Investment Forum (FIF). FIF is a two-day event bringing together thousands of senior decision-makers from across the globe. By registering, your pass will allow you access to:

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Embracing the Fourth Industrial Revolution

Hisham Zubari, GEO 2020 chairman, shares what's in store at GEO 2020 and what lies ahead for the industry.

SINCE ITS INCEPTION in 1994, the GEO conference and exhibition has grown to become one of the major geosciences events in the region and beyond, providing a platform for knowledge sharing, exchange and dissemination as well as an opportunity to interact with major upstream companies, service providers and academia.

GEO 2020 will address a new theme – 'Geosciences in the Digital World: 2020 and Beyond'. The theme reflects the committees' strongest belief that the advancement in the new cloud technologies, analytics, the 'Internet of Things,' artificial intelligence, Big Data Analytics, automation, and machine learning will provide geoscientists with powerful tools and opportunities in dealing with complex data to come up with better decisions with respect to optimising production and maximising reserves.

The theme addresses the value-added role which the Fourth Industrial Revolution is going to play in the geosciences area. The upstream industry in general and geosciences, in particular, are yet to catch up with the rest of the world when it comes to integrating 4IR into the business. Research the web for the top successful and value-adding AI applications in the world and you will find healthcare, automobile, retail and agriculture and many others, but not geosciences.

However, AI in E&P will catch up big time because of the limitless potential ideas for applications. In the oil industry, we have already seen security drones patrolling oilfields, and will soon see sophisticated drones equipped with thermal sensors and methane detectors that can roam oilfields or even dive under the sea to detect oil and gas leaks and notify maintenance teams immediately, minimising losses and protecting humans and environment. Drones equipped with hyper-sensitive cameras will be able to identify changing vegetation and soil colour around pipelines in a time-lapse mode to signal immediate response.

Geosciences will take a bit longer to ride 4.0 due to the complexity of the business. Dealing with huge volumes of data collected through sensors such as micro-seismic, fibre-optics and logging will bring new challenges and unexpected opportunities.

A main challenge we see for the industry is to effectively ride the 4.0 train. AI has proven to increase efficiency and lower cost and provide better health, safety and environment in the upstream sector. GEO 2020 will help explore and identify opportunities it provides for geoscientists to contribute to that.

We believe that advancements in disruptive technologies in many sectors all over the world will have a positive impact on the field of geosciences. Cross-pollination of ideas between sectors will bring about fascinating solutions and concepts. GEO 2020 will showcase technical presentations as well as AI-focused plenary sessions and will host a good number of AI companies in the accompanying exhibition.

GEO 2020 will have a whole new look. In addition to the conventional themes, GEO 2020 will address the role of AI in geosciences, the role of geosciences in the field of mineralogy, hydrology and delivering sustainable energy to the world such as through geothermal energy. This year we have a dedicated session on geosciences applications in fields other than fossil fuels.

Image Credit: Informa Markets

Hisham Zubari, GEO 2020 chairman and senior advisor to H.E. the Bahrain Minister of Oil, Shaikh Mohamed bin Khalifa Al Khalifa.

In total, GEO 2020 will host more than 400 presentations in 48 sessions and posters in addition to six plenary and special sessions addressing important themes and topics.

GEO 2020 will host more than 100 specialised companies from 20 countries, from major NOCs and IOCs to manufacturers, technology providers, service companies and others. It will attract more than 5,000 visitors, providing great business opportunities.

Furthermore, GEO 2020 will for the first time, provide a 'business incubators' area for startup companies in the fields of geosciences. ■

GEO 2020 takes place from 16-19 March at the Bahrain International Exhibition & Convention Centre, Bahrain.
For further information visit the website at www.geo-expo.com.

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Neptune Energy and EGPC sign agreement for Gulf of Suez

NEPTUNE ENERGY HAS signed an operated exploration licence with the Egyptian General Petroleum Corporation (EGPC) for Egypt's North West El Amal offshore concession.

Neptune will acquire 100 sq km of 3D seismic data and drill one exploration well in the first phase, with two further wells planned in the phase two.

Image Credit: Aomarch/Adobe Stock

The Gulf of Suez provides many promising prospects.

The North West El Amal offshore concession covers 365 sq km and is located in the central part of the Gulf of Suez, approximately 42 km south of Ras Gharib and 105 km north of Hurghada.

The signing ceremony was held at the Egypt Petroleum Show (EGYPS) in the presence of Tarek El-Molla, Minister of Petroleum.

Gamal Kassem, Neptune Energy's Egypt managing director said, "The Gulf of Suez provides many promising prospects and we look forward to working closely with EGPC to grow Neptune's business in Egypt."

'OPEC cuts not enough to balance the market following coronavirus outbreak'

THE PRODUCTION CUTS of 600,000 bpd proposed by an OPEC+ committee are far from enough to balance the market following the coronavirus outbreak in China, according to a Rystad Energy analysis.

Image Credit: kittikorn14/Adobe Stock

The second quarter may see a sizeable surplus of 700,000 bpd.

The first and second quarters of 2020 will see global oil production surpluses, says Rystad. The first quarter will see producers left with a stock build of 700,000 bpd. According to the previous estimate, it was for a balanced first quarter with a 100,000 bpd surplus.

The second quarter threatens to build oil stocks by 1.3mn bpd unless production is reduced further. That means that even if the OPEC+ output cuts are implemented in the second quarter, there will still be a sizeable surplus of 700,000 bpd.

Bjørnar Tonhaugen, Rystad Energy's senior vice-president and head of oil markets, said, "The economic shut-down in China will cause the largest negative oil demand shock since 2008. Even though the chaos unfolding in Libya has wiped out most of its oil production, and even if OPEC's output cuts are fully applied, they will not be enough to fill the demand gap now exacerbated by the coronavirus."

Commercialising oil spill technology

AUSTRALIA'S FLINDERS UNIVERSITY and Singapore-based Clean Earth Technologies (CET) have collaborated to build and develop a manufacturing facility in South Australia that will produce commercial quantities of the absorbent polysulfide.

CET executives visited the South Australian capital Adelaide to formalise the agreement, which assigns a suite of patents to the Singapore-based company ahead of production for global markets.

The patents cover numerous areas, including a class of novel polymers used for environmental remediation, and mercury- and cyanide-free method of precious metal extraction and recovery.

The sponge-like polymer was developed by an international team headed by Flinders University associate professor Justin Chalker and can be made of waste cooking oil from fast food outlets and sulphur – a by-product of the petroleum industry.

The product is hydrophobic – meaning that it separates from water and binds well to oil. The polymer absorbs oil much like a sponge, forming a gel that can be scooped out of the water. The recovered oil can be squeezed from the polymer-like water from a sponge and the oil can also be reused.

When still in its early stage of development, associate professor Chalker described the product as a new class of oil sorbent that is low-cost, scalable and enables the efficient removal and recovery of oil from water.

The agreement includes a research collaboration that will provide ongoing funding for the Chalker Research Lab, including scholarships and salaries for researchers and royalties as they continue to find new ways to use the breakthrough product.

CET chairman and co-founder Paul Hanna said that the partnership was an important step forward in the company's search for an answer to some of the world's most pressing environmental waste problems.

"Technology like this, which uses waste to solve waste problems, has huge advantages for the industry at the big end of town. It can save the lives of thousands of small, artisanal miners around the world who use poisonous chemicals, like mercury, to survive and the communities around them," Hanna stressed.


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ADNOC awards contracts for Dalma Gas Development Project

ADNOC awards EPC contracts to Petrofac

THE ABU DHABI National Oil Company (ADNOC) has awarded two contracts for the construction of offshore facilities for the Dalma Gas Development Project located 190km northwest of Abu Dhabi.

The two EPC contracts, worth US$1.65bn (AED 6.06bn), were given to Petrofac Emirates LLC (Petrofac) and a joint venture between Petrofac and Sapura Energy Berhad.

Both contracts are expected to be completed in 2022 and will enable the Dalma Gas Development project to produce around 340 million standard cubic feet per day (mmscfd) of natural gas.

The Dalma project is a major part of the Ghasha ultra-sour gas concession, which is central to ADNOC's strategic objective of enabling gas self-sufficiency for the UAE.

Seventy per cent of the total award value will flow into the UAE's economy under ADNOC's In-Country Value (ICV) programme, reinforcing ADNOC's commitment to maximising value for the UAE as it delivers its 2030 strategy.

Egyptian Ministry of Petroleum and Schlumberger introduce the Egypt Upstream Gateway

THE EGYPTIAN MINISTRY of Petroleum and Schlumberger have introduced the Egypt Upstream Gateway, a unique and innovative national project for delivering a digital subsurface platform to ensure Egypt's subsurface data is kept evergreen. The Egypt Upstream Gateway will also be a platform to promote Egypt's exploration and production potential worldwide.

The Egypt Upstream Gateway will leverage the GAIA digital subsurface platform and provide additional value-added solutions – enabled by digital technology and domain expertise – using the DELFI E&P cognitive environment capabilities and technologies.

"Leveraging digitalisation to modernise the petroleum sector of Egypt has been a key focus of our modernisation programme of the oil and gas sector and a critical project for the country. The goal is to equally enhance the understanding of our subsurface offering, unlocking the full potential of our assets to meet our energy needs. In addition, the Egypt Upstream Gateway will provide a platform to attract new investments to Egypt from investors from all around the world through state-of-the-art bid round digital enablement. The Egypt Upstream Gateway reflects the progressive vision we have for Egypt's Ministry of Petroleum digitalisation and will be a key enabler positioning Egypt as a modern East Mediterranean Hub," said Tarek El-Molla, minister of petroleum and mineral resources, Egypt.

"Schlumberger combines deep domain expertise with transformative digital technologies using the GAIA platform, which will enable us to enrich Egypt's subsurface data and deliver the Egypt Upstream Gateway," said Maurice Nessim, president, WesternGeco, Schlumberger.

PDO provides boost to Omani Engineering with OMEPC contract

The signing of the new contract with OmEPC.

PETROLEUM DEVELOPMENT OMAN (PDO) provided a further boost to Omani engineering with the signing of a new contact with the Oman Engineering Procurement & Construction (OmEPC), a joint partnership between four Omani SMEs; Value Engineering Centre (VEC), Hamad Engineering Services (HES), Precision Engineering Consultancy (PEC) and Rock International.

The contract, valued at around 10 million Omani Rials for the first phase, was signed on 13 February at PDO's Knowledge World centre in Muscat by managing director Raoul Restucci and OmEPC chairman Mohammed Al Said, representing the four-company partnership.

The phased contract is the latest development in the oil and gas industry's In-Country Value (ICV) Blueprint Strategy launched in December 2013 in which PDO is supporting efforts in job creation and training as well as providing commercial and investment opportunities for local businesses.

BP announces ambition to become a net zero emissions company

BP'S NEW GROUP chief executive, Bernard Looney, has announced the company's ambition to become a net zero emissions company by 2050 or sooner, and to help the world get to net zero.

He said the company aims to achieve net zero across BP's operations and on carbon in BP's oil and gas production by 2050 or sooner; a fifty per cent cut in the carbon intensity of products BP sells by that date or sooner; install methane measurement at all BP's major oil and gas processing sites by 2023 and reduce methane intensity of its operations by 50 per cent; and increase the proportion of investment into non-oil and gas businesses over time.

More broadly, the company aims to help the world get to net zero by measures such as advocating policies that support net zero including carbon pricing; launching a new team to help countries, cities and large companies decarbonise; and further incentivising its workforce to advocate for net zero.

To deliver all this, BP will fundamentally transform its whole organisation, to become a more focused, more integrated company, Looney said. Under the plans, BP's existing, largely autonomous business segments – upstream and downstream – will be dismantled and the group reorganised globally into a more focused and more integrated entity, comprising 11 teams.

The pledge to become a net zero emissions company is one of the most ambitious made by any international oil company, although the announcement was short on detail of how the company will achieve this.

Bernard Looney said,"The world's carbon budget is finite and running out fast; we need a rapid transition to net zero. We all want energy that is reliable and affordable, but that is no longer enough. It must also be cleaner. To deliver that, trillions of dollars will need to be invested in replumbing and rewiring the world's energy system. It will require nothing short of reimagining energy as we know it.

"This will certainly be a challenge, but also a tremendous opportunity. It is clear to me, and to our stakeholders, that for BP to play our part and serve our purpose, we have to change. And we want to change – this is the right thing for the world and for BP."

Looney said that BP will remain an oil and gas business for a very long time, while acknowledging that production will decline in the long term.

Luke Parker, vice president, corporate analysis at energy consultancy Wood Mackenzie commented, "BP joins Shell, Total, Equinor and Repsol in making a major commitment to reduce its net carbon footprint.

"This marks a major turnaround in BP's position. Just 12 months ago former CEO Bob Dudley said the company could not be held accountable for how people use its products. Looney is taking the company in a very different direction."

Parker added, "It's an ambition, rather than a target, but the commitment appears to be unconditional. In terms of scale of commitment, this puts BP towards the top of the pack, along with Repsol and Equinor.

"This will see BP's business completely transformed over the coming decades: renewables and carbon abatement will get very big, legacy oil and gas will eventually get smaller. But the transition to 2050 is a multi-decade transition – not something that will happen in the next year or so."

Image Credit: Tatweer Petroleum

Bahrain is maximising its oil and gas resources, both onshore and offshore.

Bahrain thinks big

With offshore exploration efforts underway, a new cross-border oil pipeline in place from Saudi Arabia, and an LNG terminal completed offshore, Bahrain's energy sector is experiencing a period of transition. Martin Clark reports.

BAHRAIN'S OIL AND GAS sector may be tiny compared to peer states, but there's no doubt the commitment to unlocking maximum value from any domestic resources available, although this has not always been a quick or simple process.

Good relations with hydrocarbon-rich Saudi Arabia, in particular, have lifted Bahrain's own energy prospects through the new cross-border oil pipeline inaugurated in November 2018. The 110-km pipeline connects Saudi oil processing facilities at Abqaiq with the Bapco refinery in Bahrain and has a capacity of up to 350,000 barrels of oil per day (bpd).

The project, a joint initiative of Saudi Aramco and Bahrain Petroleum Company, replaces an ageing pipeline between the two countries that dates back 75 years; it had been supplying Bapco with crude oil since 1945. The new AB-4 30-inch diameter pipeline is intended to help Bahrain meet rising energy demand, a common feature among the Gulf's resurgent economies.

While the country has long been an important refining hub for Saudi oil, it is also stepping up the search for more of its own resources. That includes new drilling efforts by Tatweer Petroleum, tasked with boosting the nation's offshore oil and gas deposits. This work has already yielded great success, but more is to come (see box).

Attracting investment

Significantly, Bahrain is also able to draw investment from some of the world's best-known international oil and gas players, attracted by the country's political and economic stability as well as access to the region's upstream potential.

Eni unveiled a new collaboration with Tatweer Petroleum in February to work together in areas including exploration, as well as renewable energy and liquefied natural gas (LNG) supply. It represents a further step for the Italian energy major, which began operating in Bahrain in 2019, with one offshore exploration license.

Eni's chief executive Claudio Descalzi said the memorandum of understanding with Tatweer Petroleum demonstrates a "commitment to expanding its presence in Bahrain". He also said it highlighted Eni's overall decarbonisation strategy, and forms part of the company's transition towards green energy.

> "Bahrain is able to draw investment from some of the world's best-known international players."

Like other Gulf states, Bahrain is prioritising renewables and other non fossil fuel energy alternatives, as it seeks to diversify from oil and gas and cut its carbon footprint.

Perhaps, more significantly, the arrival of Eni could hint at further advances in the LNG sector. Bahrain LNG announced in January that construction had been completed on its first import terminal, intended to bring in much-needed gas supplies from overseas.

The LNG consortium is jointly owned by Bahrain's Oil and Gas Holding Company and a consortium of international investors, Teekay LNG, Kuwait-based Gulf Investment Corporation and Samsung C&T Corporation.

The terminal comprises a floating storage unit (FSU), an offshore LNG receiving jetty and breakwater, an adjacent regasification platform, subsea gas pipelines from the platform to shore, an onshore gas receiving facility, and an onshore nitrogen production facility.

Bahrain's Oil Minister Shaikh Mohamed bin Khalifa Al-Khalifa said it marked a "critical milestone for this project which is of strategic importance to the energy sector of the Kingdom of Bahrain." What he did not say is when the country will start to benefit from the facility. It is possible that aligning with Total could accelerate the process, bringing in contract gas to deliver actual energy into Bahrain's energy system.

Energy demand is rising rapidly, driven by the power sector and a fast-growing population, as well as the needs of other large industrial users, such as the Aluminium Bahrain (Alba) smelter. Alba's Line 6 expansion project inaugurated last November made it the world's largest smelter outside of China, taking the site's total production capacity to 1.54 million metric tonnes per year.

There are plans to expand some of Bahrain's other industrial facilities too, which will again place strain on the energy sector.

Italian oilfield services group Saipem signed a deal in February to study various energy-related projects with the Gulf Petrochemical Industries Company (GPIC), the Bahrain-headquartered petrochemicals group.

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Maurizio Coratella, chief operating officer of the Saipem Onshore E&C Division, hailed it as a "significant new opportunity" for the company.

Key projects under the microscope include an increase of GPIC's daily plant production of ammonia, urea and methanol, and a separate pre-feasibility study to build a new mega ammonia and urea plant. A third project aims to determine the quality of gas feedstock in the fields discovered in 2018 off the west coast of the kingdom.

> "Energy demand is rising rapidly."

Meanwhile, the expansion and modernisation of Bapco's Sitra refinery, which is slated for completion in 2022, reached financial close in May 2019. When completed it will be one of the most advanced refineries in the region, with a capacity of 360,000 bpd. TechnipFMC with Samsung Engineering and Tecnicas Reunidas, was awarded a US$4.2bn EPCC contract in December 2017, with construction commencing in 2018. The work comprises a residue hydrocracking unit, hydrocracker unit, hydro desulfurisation unit, crude distillation unit, vacuum distillation unit, saturated gas plant, hydrogen production unit, hydrogen recovery unit, sulphur recovery unit, tail gas treatment unit, sour water stripper unit, amine recovery unit, bulk acid gas removal unit, sulphur solidification unit and sulphur handling facilities. Utilities and offsites are also part of the scope.

The signing of the MoU between Saipem and GPIC.

Image Credit : Saipem

While its indigenous reserves will no doubt play a vital role in meeting Bahrain's energy needs at some point, the need for imported oil and gas remains evident for now. ■

Tatweer Petroleum: engineering growth and prosperity in the Kingdom of Bahrain

TATWEER PETROLEUM IS the upstream oil operator of the Kingdom of Bahrain, whose goal is to increase the production of oil and the availability of gas to meet the future energy demands of the Kingdom. The preliminary results of the test wells at Khalij Al Bahrain Basin (KAB), where Bahrain discovered a large repository of tight oil in 2018, are expected in the second quarter of 2020. The resulting data will be used to update models in order to aid in planning the development further and attracting potential collaboration with investors and international oil companies (IOCs). The first appraisal wells of the KAB field have been drilled in 2019. The preliminary results of the KAB test wells are expected in the second quarter of 2020. The plan is to drill additional appraisal wells over the next few years. The number of future appraisal wells to be drilled will depend on the resulting data from studies conducted on the currently drilled wells.

Tatweer Petroleum is committed to the development of Bahraini nationals.

Image credit: Tatweer Petroleum

Satellite image of the Khalij Al Bahrain Basin (KAB.)

Image Credit: Tatweer Petroleum

In addition, the discovery of 10 to 20 trillion cubic feet of natural gas in the Pre-Unayzah reservoir is a welcome development which aims to meet the increasing gas demands of the Kingdom of Bahrain.

The drilling of the first two pre-Unayzah wells is underway. Drilling operations have been projected to be completed by mid-2020.

Tatweer Petroleum continues to maintain oil and gas production levels with remarkable achievements that include the commissioning of the Central Gas Dehydration Facility and drilling of additional oil and non-associated gas wells. The year 2019 also marked the start of a successful trial to drill unconventional crude production wells in cooperation with a renowned service company. The Gas Distribution Network Mapping Project is currently in the evaluation phase and once completed, a winning bidder will be selected to begin the execution of the project, which is scheduled to commence some time in the year 2020.

With regards to safety, Tatweer Petroleum staff achieved one year without lost time incidents in 2019, a significant safety milestone.

Tatweer Petroleum continues to work on various crude oil and gas production enhancement projects to maintain, if not increase, production, utilising the latest oil exploration, production, and recovery technologies whilst upholding its commitment to the highest standards of health, safety, and environmental protection, and the development of Bahraini nationals.

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Shaping growth through **sharing knowledge**

Victoria Kalina, Reflex Marine's global business development manager, discusses the company's plans and the factors that have contributed to its continued success.

Reflex Marine has grown substantially over the last few years. What would you say were the driving factors behind this development?

The company was established in 1992 with a clear mission: to improve the safety of offshore workers and to help ensure they always return home safely. This goal was a driving force behind the company's growth for years, and led to the development of the safest crew transfer devices available on the market today. Our products are an industry benchmark that has influenced worldwide change in the standard of offshore personnel transfers. Over the last 25 years, Reflex Marine significantly contributed to increasing the safety of this type of operations, but we haven't stopped there – we have a vision of improving safety in the offshore industries further.

Managing how businesses create, store and share their information is a key to their success. What would you say Reflex Marine do as part of their knowledge management activities?

As an innovative and ambitious company, we collaborate with a wide range companies in collecting data, actively analysing the needs of our customers and developing new products and solutions. We offer open-access to a lot of this data through our website. We also share our knowledge and experience through joint projects and at events. We firmly believe that knowledge transfer and engaging in open discussions are the main factors that lead to disruptive ideas, innovative developments and business growth. They certainly stimulated our growth over the last four years where we continue to nearly double our revenue year on year and expand our reach globally, opening new countries and new markets.

> "We continue to innovate and look for gaps in the market."

How does a small company ensure consistent standards across its offering while continuing to focus on growth?

We understood the challenges that are inherent to the fast-paced global expansion of our business. We knew that we needed to ensure that Reflex Marine kept offering the highest standard of services which go beyond just product delivery. After all, we provide 365 days a year support to all our customers as well as training, maintenance and servicing support anywhere in the world. We managed to maintain the highest level of this extensive range of support services thanks to our network of Approved Service Centres.

The well-established partner network is key to the effectiveness of our international expansion. We have agreements in place with global partners in related industries such as safety equipment or crane maintenance: Survitec Group, EnerMech and Viking Life-Saving Equipment. In some locations, we've identified a greater need for local expertise and we've also engaged with independent companies, e.g. in Brazil or Malaysia. We value both types of partnerships, as each offer different skillsets and abilities. Particularly in Asia, this business model has proven extremely effective, and our close collaboration with local partners has helped us improve our understanding of the needs of our customers in the region.

Victoria Kalina, global business development manager, Reflex Marine.

Image Credit: Reflex Marine

Are there any new projects in the pipeline for Reflex Marine?

Yes, we continue to innovate and look for gaps in the market which we can help fill. We've recently brought to market a new product: STORM-WORK, a unique work basket for suspended works at height. For Reflex Marine, this is an area of the industry previously unexplored yet very familiar. Similarly to the personnel transfer carriers, with our design we've raised the standards of safety of this type of operations. This has already been recognised by the market, as we've been nominated for the Lifting Equipment Engineers Association Award in the Safety Category. We are waiting for the results.

The STORM-WORK actually has an additional connection to Asia specifically. We've designed the work basket in collaboration with Seaway Heavy Lifting (a Subsea7 company). However, the development of the concept was also supported by ConocoPhillips. They have been our first client for the STORM-WORK, and we've designed a customised version of the work basket specifically for their projects in Australia. ■

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Catering to Oman's oil & gas needs

The rebranded Oman Petroleum & Energy Show (OPES) takes place from 9-11 March at the Oman Convention & Exhibition Centre, under the auspices of the Ministry of Oil and Gas.

OMANEXPO'S LONG-STANDING OIL and gas event, Oil and Gas West Asia (OGWA), will now be part of this broader event to better align its objectives with the continued growth and expansion of the oil and gas sector in the Sultanate of Oman.

This comes in light of the government's moves of late to integrate the power, oil and gas sectors under the domain of the Ministry of Oil and Gas, and on the back of renewed optimism resulting from mounting global requirements, more buoyant global oil prices, new reserve discoveries and concessions, intensified offshore oil and gas production and exploration activities, and increased local and foreign investment.

The new event, Oman Petroleum and Energy Show (OPES), integrates OGWA (now on its 12th edition), the SPE Conference at OPES, and the newly launched Gas & LNG Show, Offshore & Marine Show and Stainless Steel World Middle East.

Ashley Roberts, portfolio director, Omanexpo, says, "We are excited about the growth prospects in Oman's oil and gas sector. Seeing the government's long-term development strategy allows us as organisers to continue to play a crucial role in helping advance the industry, as events such as OPES play a pivotal role in supporting the development."

"We are equally grateful for the Ministry of Oil and Gas' support to our timely rebranding initiative and our decision to make OPES an annual show. This milestone enables us to evolve our product and service offerings and stay relevant to our customers and stakeholders," he adds.

OPES will be the largest B2B event in the Sultanate of Oman, with more than 500 exhibitors and country pavilions representing India, Iran, Italy, Korea, Qatar, Russia, China, Turkey and United Kingdom.

Top names from the industry who have already signed up for the exhibition and are part of the sponsor roster are Petroleum Development Oman (PDO), Schlumberger, BP, Oman LNG, Seven Seas Petroleum, ARA Petroleum and TMK, who will showcase the best of their products, services and technology to more than 12,000 trade visitors.

OPES is expected to attract more than 12,000 visitors.

Image Credit : Omanexpo

Adding sustained value to the event is the SPE EOR Conference, organised by the Society of Petroleum Engineers (SPE), which will highlight the advances in enhanced oil recovery (EOR), LNG and gas developments, and offshore and marine operations, technologies and activities.

"The 2020 conference will expand to include other focus areas in Oman and the region, such as IOR, gas and LNG as well as offshore and marine, thus providing ample opportunities to share experiences, explore new technologies, and test innovative methodologies," says Salman Mohammed Al-Shidi, conference chairperson and director general of Management of Petroleum Investments, Ministry of Oil and Gas, Sultanate of Oman.

> "OPES will be the largest B2B event in the Sultanate of Oman."

According to MEED, around US$51.1bn of oil and gas projects are in the pipeline and underway in Oman, of which contracts worth around US$20.8bn are scheduled to be awarded from now until 2021. Although hydrocarbon activity still attracts the lion's share of domestic and foreign investment, more efforts are being made to expand the downstream capacity, heightened use of enhanced oil recovery (EOR) techniques and venturing into natural gas. Despite the government's plans to diversify from oil, Oman remains bullish over the industry's continued growth. ■

For further information see the website at www.omanpetroleumandenergyshow.com.

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A longstanding partner in Oman's oil & gas industry

Halliburton has been at the forefront of Oman's oil and gas industry development for more than 55 years. In the run-up to the Oman Petroleum & Energy Show, Zeinoun Klink, the company's Vice President of Eastern Gulf Geomarket, speaks to *Oil Review Middle East* about the company's Oman operations.

DISCUSSING THE COMPANY'S longstanding involvement in Oman, Klink explains, "Halliburton has been heavily involved in the upstream business lifecycle for many of the operators in Oman, with services spanning drilling & evaluation, completion & production and Landmark software, as well as integrated project management."

Klink mentions that a key operator in Oman has recently introduced an integrated project management approach involving lump sum turnkey-type projects.

"We were awarded the full turnkey project for one of Oman's biggest oilfield developments, where Halliburton execute the entire scope for the well, from road construction, civil works, well construction and completion, all the way to the hook-up. It's a major project involving more than 300 wells, where Halliburton is the main integrator of its services as well as the subcontractors, a one stop shop approach. We see this type of project becoming more common in Oman, as operators are challenged to reduce costs and manage risk. Halliburton is well positioned to take advantage of this shift in project execution, with years of experience from other parts of the world.

"So we are on a continuous journey in Oman which is going to grow." The company will soon be starting a deep gas project on similar lines for one of the major IOCs, he adds.

Technical challenges

With its deep and tight gas as well as mature oilfields, Oman offers no shortage of technical challenges, but Halliburton's experience of more than 100 years and its leadership in unconventional plays in North America have stood it in good stead.

> "We are on a continuous journey in Oman which is going to grow."

"In Oman the gas play is very tight, so Halliburton has pioneered hydraulic fracturing, drawing on our experience in North America," says Klink. "We brought in the horsepower to hydraulically fracture these formations and allow the hydrocarbons or gas to flow to the surface. This is a huge area of investment; it's very expensive because the water and raw material resources are not readily available in country. In the USA, sand and water are now available in plenty, but in Oman fresh water for hydraulic fracturing is scarce, so a lot of resources are going into producing fresh water for hydraulic fracturing. Halliburton has been working very closely with our partners to develop technologies that use produced water instead, and we've successfully trialled a breakthrough technology. I am confident, partnering with our customers, we can take it to the next level and commercialise it, thereby freeing up millions of gallons of fresh water which can be used elsewhere for the benefit of the people of Oman."

The second factor affecting the economic viability of hydraulic fracturing is the availability of sand, he continues. "You'd think you'd find a lot of sand here in the desert, but it's the wrong type of sand! Currently we use manmade propant, from outside the country, and we are working with the government collaboratively to find locations where there are some outcrops of high strength silicate that can be used for hydraulic fracturing."

Turning to oil, Klink comments, "A lot of the assets produced today are mature assets, and are going through a lot of EOR-type production enhancement. Here, water production is an issue. Oman produces a high rate of fluids, probably a similar amount to Saudi Arabia in terms of bpd, but a significant amount of this is water. This is a huge liability, not only from a cost perspective but also from an environmental point of view. Operators are doing a good job in managing this water, but it comes at a cost. We are working on key technologies to control that water production and minimise it from coming to the surface. There is a lot of focus on this area, and that will continue into the near future.

"The second part of enhancing oil productivity is maximising contact with the prolific part of the reservoir, with thin targets," he continues. "I'm talking about drilling something like 1,000-1,500m horizontal wells in a reservoir say two feet thick. That requires innovative technologies and experience in terms of modelling and the ability to geosteer into the sweet spot. So a lot of collaborative effort is going into how and where you place your wellbore, maximising contact with the reservoir rocks to maximise productivity."

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WE KNOW WHAT'S AT STAKE.

Listen and respond

Much has been said about the importance of technology innovation in oil and gas. Klink is keen to stress that innovation for innovation's sake is not the Halliburton way.

"Our approach is very simple – it's called listen and respond. That means listening to the customer and their challenges, thinking it through collaboratively, coming up with a solution and introducing it to the customer. Our local technical teams collaborate with our customer, with our regional and global teams, to find a solution to the challenge. It is not necessarily about inventing something new, sometimes it might involve using something we already have in our toolbox in a different way. We might use something developed in, for example the Gulf of Mexico, or Alaska, or anywhere else in the world, and adapt it to the environment and the challenge to provide a unique solution.

"For example, a customer here who was using steam injection to heat up the oil in the reservoir, asked us to come up with a solution to control the steam propagation and improve the associated sweeping efficiency, thus reducing costs and making the operation more efficient. We are adopting existing chemicals in our tool box, modified for the environment, and a unique placement technique to ensure its success. More to come on this space as we trial in live well. Many times, new technology will have to be developed, going through the Technology Acquisition Process (TAP) to bring to market. Ultimately, we follow our value proposition, to collaborate and engineer solutions to lower the cost of production for our customers."

> "The future has to be in going offshore."

The growth of digital

Digitalisation is a hot topic and there are "big things going on" in this arena, where Halliburton's expertise is recognised by its clients, Klink says.

"We've done breakthrough trials with our customers on well construction, and on EOR. The well construction process, from identifying where and how to drill, to full field development, normally takes months, because of the complexity of the workflow. Halliburton introduced a well construction flow process through our Landmark software, where all disciplines can interconnect simultaneously live, updating the models through Halliburton's Well Construction 4.0 platform. That has taken the process of well construction planning from months down to two to three weeks, and it can be done in even less time as the information acquisition gets better and better. The operators have seen huge benefits, and we continue to expand in that arena.

"The second one is on machine learning," he continues. "To give an example from Oman, where a large number of ESP pumps are used, which collect massive amounts of data such as pressure, flow rate, current etc. The operator asked Halliburton, what can be done with all this data? Data management comes right into our backyard. Our Big Data group have conducted mathematical analysis, simulations and so on, and we found that these machines are actually talking to us, we just didn't understand their language! They're telling us when they start feeling sick, they're giving us symptoms of their sickness ahead of time, but we're not listening to them until they die! Which means downtime and loss of production to the operator.

"The pilot programme gave us a lot of indications that these pumps tell us when they're sick and give us plenty of notice, so effectively, we are able to proactively predict failures weeks before they happen, which allows the operator to schedule maintenance, and it becomes part of a maintenance programme rather than a shutdown programme.

"Following the pilot, we have been awarded the implementation phase, and more to come on this as we continuously learn with our customers. It's a fantastic project that's ongoing right now."

Focusing on In Country Value

Localisation is at the top of the agenda for Oman's oil and gas industry, through the In Country Value (ICV) pillars. Halliburton is proud of its record in achieving a high percentage Omanisation of its workforce. "Our journey starts with our summer internship programme, then recruiting upon graduation, taking our young engineers through rigorous training programmes," says Klink. "Some of them go on to work for the oil companies here. We do not mind losing people to the operators – we see it as part of the process of developing our Omani talent.

"We're very committed to engaging with universities," he continues. "As an example, we've granted Sultan Qaboos University access to the majority of our Landmark digital software used in the industry, from geoscience, to reservoir to petrophysical interpretation, with all the required support programme, where our technical team give real-life examples of how to use the software to the students. It's a win-win for both of us, as the students will graduate from university being familiar with the leading petrotechnical software, so more useful in the workforce, and promoting Halliburton at the same time.

"On the local manufacturing and procurement side, Halliburton has a strict policy to source in-country, and only if something is not available will we source it from outside. Vendor development is part of our strategy; we take local SME companies and incubate them to a point where they are able to stand on their own feet, whether as a supplier or subcontractor, under the Halliburton umbrella."


Image Credit: Halliburton

Zeinoun Klink.

Halliburton was the first company to introduce a repair centre for drill bits in Oman, he adds. "We saw that the market was ripe, and the logistics were favourable compared to other countries in the Middle East, so we established our repair centre for the entire Middle East here in Oman. Bits are sent here from countries including Iraq and UAE, as well as those used in Oman, instead of to the USA as in the past. Our key personnel are Omanis who have been trained in the USA for several months to adhere to our service and quality standards.

"Another initiative we are pushing ahead with is an Eastern hemisphere manufacturing base for ESP pumps here in Oman, a flagship manufacturing and training centre which will service the EH market growth."

Turning to the Oman Petroleum & Energy Show, of which Halliburton is a Platinum sponsor, Klink comments that digital will be a huge focus. "It's all about efficiency, automating/demanning operations in the field and doing more with less; digital to be adopted must reduce cost.

"The second focus will be offshore development, as Oman is now keenly looking to enter this market." Halliburton has a lot to offer given the lack of in-country expertise and the company's offshore experience, he says.

"We're looking for this market to grow; the onshore market is very mature and the future has to be in going offshore. We hope for discoveries offshore that will allow the expertise to come to Oman and develop the next frontier.

"ICV continues to be a big push for us here, and we will see more job creation and value creation in Oman for years to come," he concludes. ■

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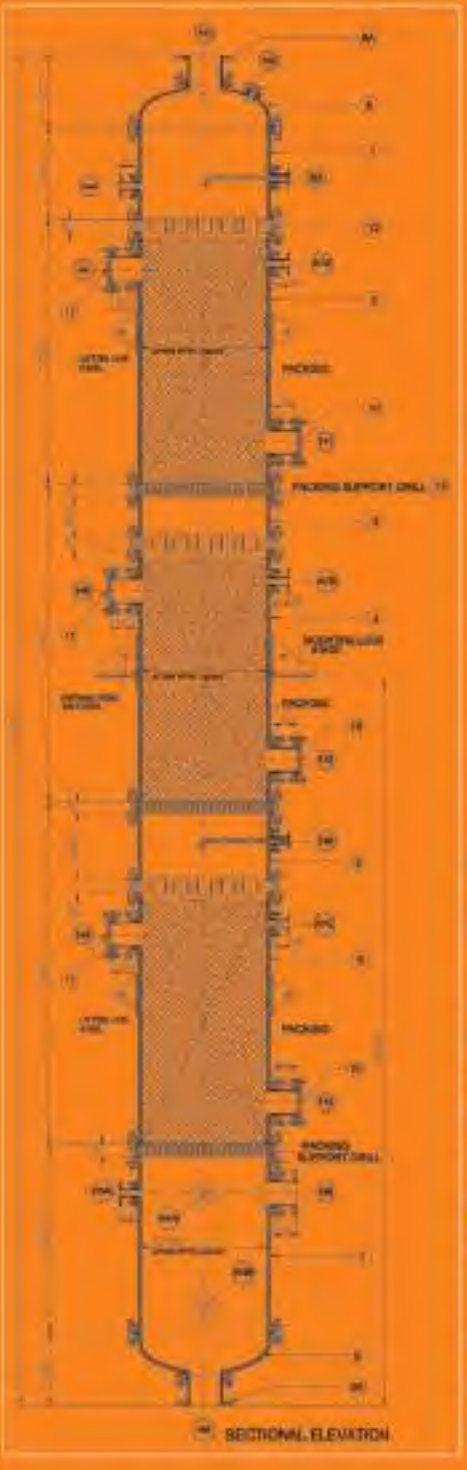

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Embracing virtual reality for operational excellence

An innovative virtual reality training programme is helping improve competence levels, increase knowledge retention and boost safety on Saudi Aramco Nabors Drilling's (SANAD) land rigs.

THE PROGRAMME WAS created by virtual reality specialists at 3T Energy Group to provide an engaging way to refresh skills and improve safety for SANAD personnel working on land rigs in Saudi Arabia. In an industry-first, the virtual reality programme automatically links with a custom-built competency management system to provide critical workforce intelligence, which enables SANAD to tailor future training.

Coy Wilcox, head of training at Saudi Aramco Nabors Drilling, explains: "SANAD is committed to workforce development and the use of technology enhanced learning platforms or TELP to train our personnel. TELP combines the power of e-learning, instructor-led learning and virtual reality and we were keen to show how using these tools could fundamentally change the way we tackle adult learning for both our own organisation and across the wider industry.

"We approached 3T Energy Group to design a range of immersive virtual reality solutions to train our workforce and test competence. Using real-life scenarios, we wanted to assess workforce safety compliance and push the boundaries of human performance.

"3T initially developed three different scenarios for our drillers, derrickhands and floorhands to cover a range of health and safety procedures from rig familiarisation to hazard awareness, working at height, PPE and shut-down.

"The personnel at 3T have a background in the gaming industry so are experienced in creating striking visuals and immersive experiences. They used this experience to create a truly immersive learning programme with ultra-realistic graphics. Along with a realistic backdrop, the programme uses realistic scenarios, which are designed to lead delegates down a path which could result in mistakes being made. When the correct procedures aren't followed, delegates experience tragic outcomes such as explosions, suffocations and critical accidents.

"By actively involving the user in making these mistakes, you ensure better memory retention. Essentially you learn more from your own mistakes. So a delegate seeing the consequences of their actions will remember the experience which prevents the mistake being made in real life.

"As well as better memory retention, the programmes help speed up competency rates. This in turn assures the highest levels of safety across our assets.

"Our virtual reality training programme links to a custom-made competency management system. This platform allows us to gather a wealth of information on individual performance which wouldn't be possible with any other training method. As well as allowing us to track the progress of our training, the system gives wider insight into how well procedures are being followed and understood and enables us to make fact-based decisions on future training.

"This is proving extremely effective, and we are now planning to extend our virtual reality training across other land rig roles and procedures. We believe our positive experience can benefit the wider oil and gas sector by highlighting new and innovative ways of addressing workforce development." ■

The VR system in use.

Image Credit : 3T Energy Group

> "The system gives wider insight into how well procedures are being followed and understood."

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Oil and gas professionals seek improved training and development

OIL AND GAS professionals are concerned at a perceived lack of investment in their training and development, according to the fourth annual Global Energy Talent Index (GETI), with training, learning and development opportunities cited as one of the most important factors affecting professional engagement.

The GETI 2020 report by Airswift, the global workforce solutions provider for the energy, process and infrastructure sectors, and Energy Jobline, the world's leading jobsite for the energy and engineering industries, encapsulates the views of 21,000 energy professionals, of 151 different nationalities and spread across 169 countries.

It reveals that nearly half (44 per cent) of sector professionals believe that their employer does not regularly invest in their training and development (although hiring managers are more positive), and 32 per cent claim not to have received any training in the past year.

Hannah Peet, managing director of Energy Jobline, commented, "This may not be as worrying as it first appears. First, many people don't view on-the-job shadowing and mentoring as training, so some training schemes often go unnoticed. Second, more hiring managers say there is training. Possibly this is a perception issue and companies could do better at communicating their training schemes internally."

Younger professionals are more likely to say they had received training – which fits with the fact that 68 per cent of those who do receive regular training say it is to improve their current job performance. Once professionals learn the ropes, training seems to decrease, which explains why fewer older professionals had received it, and why few training recipients say it was related to skills beyond their current job (18 per cent) or to further their career (14 per cent).

The story on training methods is generally positive. Those who received training had typically received instructor-led classroom training, self-paced online learning and leadership or development programmes. This corresponds with instructor-led training and leadership programmes being the methods respondents prefer to receive.

Image credit: Adobe Stock

Oil and gas professionals regard training and development opportunities as one of the most important factors affecting professional engagement.

However, women are less likely than men to be placed on leadership development programmes (17 per cent versus 22 per cent).

Janette Marx, CEO at Airswift commented, "Potential future leaders are rarely identified on the basis of performance alone. Relationships matter, and people relate more to those similar to themselves. With men dominating leadership positions at present, that puts women at a disadvantage. They need to invest more time in their relationships to overcome this, while companies should work to shift the focus to performance and address the imbalance."

The energy workforce is a highly engaged one, according to the survey, with 89 per cent of professionals reporting being engaged with their careers. Training, learning and development opportunities are cited as being one of the most important factors affecting professional engagement, with women citing it as the most important factor.

Marx said, "The oil and gas sector is blessed with a highly engaged workforce. The question is how to keep ambitious and motivated professionals engaged throughout their careers. Training and development opportunities are clearly a very important piece of the puzzle.

"However, I suspect that there is a perception issue at play in these results. Of course, there is room for improvement and companies should always look to improve the training on offer. But they should also work hard to communicate the opportunities that are already available to make sure employees are aware and able to make the most of them."

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Training - the driving force for the best HSE performance

Investing in staff training is mission-critical for workplace safety, says His Excellency Saif Humaid Al Falasi, Group CEO, ENOC.

AN IN-DEPTH STUDY on work-related incidents in the oil and gas sector, published in Energy and Environment Research, highlights that human factors had the most significant impact on workplace safety and that a hazardous working environment was the cause for more than half of the Occupational Work Related Incidents (OWRIs).

These findings present two important perspectives that are key to building an organisational Health, Safety & Environment (HSE) culture. The first is the need to continuously upskill the team to ensure that the impact of human factors on OWRIs can be minimised. The second is the strategic imperative of having an overarching Health and Safety policy that focuses on the safety and security of all personnel and premises.

Promoting health and well-being is not just a commitment for companies; in fact, the UN Sustainable Development Goal SDG-3 with the objective to 'Ensure healthy lives and promote wellbeing for all at all ages' and SDG-8 with the objective to 'Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all' underpin the need for all stakeholders – not just in the energy sector – to work towards ensuring the highest levels of safety and security at the workplace.

In driving a world-class HSE framework, the most crucial aspect is in addressing the challenges under 'human factors' – a term that describes the "interaction of individuals with each other, with facilities and equipment and with management systems." PwC's report on 'Leadership Commitment for Transforming HSE Culture,' states that HSE considerations must be looked as a "core value inherent in all operations" for incident-free operations as well as for maintaining environmental sustainability.

> "The most cruial aspect is in addressing the challenges under 'human factors'."

Over the years, the framework of HSE has also undergone significant change – and it is important for organisations to scale up their HSE policy to keep pace with the shifts. Organisations today follow an integrated approach to HSE management, taking into consideration several aspects such as organisational objectives and structure. The most important driver of such a professional HSE management system is the resolve of the leadership to set in place and ensure the implementation of policy and protocols.

It is crucial for companies and organisations to place considerable importance on ensuring that world-class HSE policies are underpinned by an efficient and robust compliance culture. Developing detailed guidelines can only enable an organisation to reach so far; the key is to ensure that the formulated policies and governance standards are adopted and practiced by all employees. This has been the focus of ENOC since our inception.

Image Credit: ENOC

HE Saif Humaid Al Falasi, Group CEO, ENOC.

In addition to setting in place a robust HSE policy, which is updated regularly in tune with the emerging safety related technologies, we have a rigorous follow-through process to monitor the implementation and adoption of HSE best practices.

Today, we pride ourselves in upholding stringent HSE standards and as a result, we achieved more than 40 million safe work hours without any fatality or serious injury last year. The overall Lost Time Injury Rate (LTIR) was reduced by 75 per cent compared to 2017, largely due to efforts geared towards increasing HSE training hours to 124,352 – twice our estimated target.

The driving force in achieving this outcome is continuous training of our staff. We invest considerable effort in upskilling our team on HSE best practices, which is underlined by a group of ten Emirati ENOC employees recently completing a four-week intensive training programme at the prestigious International Fire Training Centre in

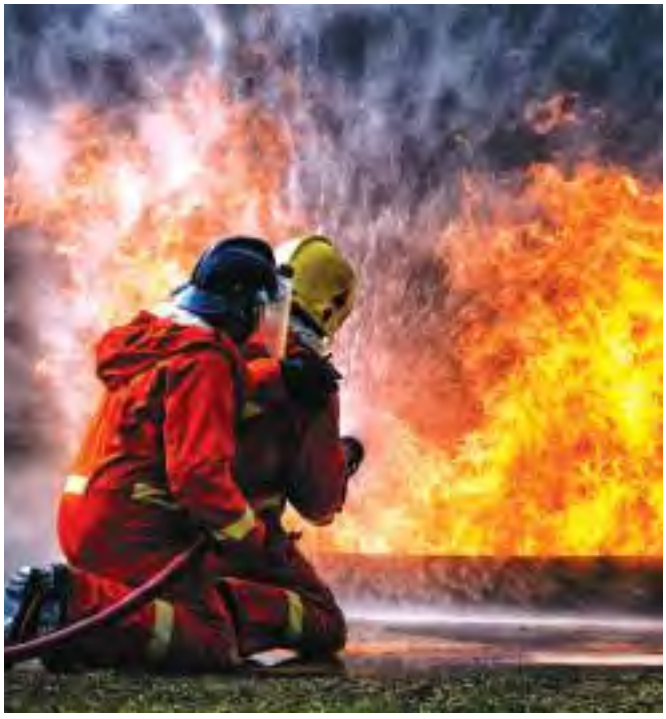

Image Credit: Adobe Stock

Continuous training is essential to achieve the highest standards of health and safety.

Darlington, UK. They participated in rigorous coaching on structural firefighting, oil & gas firefighting and hazardous material handling (HAZMAT). This prepared them to take up the role of firefighters at the ENOC Fire Emergency Response Centre in Jebel Ali. We are the first energy company in the UAE to offer our employees such an opportunity, a move that highlights our commitment towards raising industry standards.

> “We invest considerable effort in upskilling our team on HSE best practices.”

We have also further enhanced ‘wellbeing’ standards as our subsidiary Horizon Terminals Limited (HTL) partnered with DP World to provide accommodation at Jebel Ali Free Zone for our heavy-duty drivers to reduce stress and fatigue. We have more than 150 heavy duty tanker drivers making more than 250 trips per day to our different sites and operations and this move has already shown positive results in reducing fatigue and improving their general ‘wellbeing’.

HTL has also teamed up with IRCA to provide a flexible, user-friendly, engaging and interactive training and testing package that fit the schedules of all – from operators to the management team. Further, a Learning and Competency Management System is being implemented to serve as a one-stop-shop for all, which provides learners and their managers with the ability to know what learning is required, assign it, execute it and track progress.

ENOC cares for people and environment and the strategic vision of our HSE programme is ‘No Harm to people & Environment’. Our goal for 2025 is achieving operational excellence where we move from compliance to a generative culture that looks at environmental stewardship as a key pillar for a sustainable future. Everyone who works for ENOC, or is involved in our business activities, is a partner in this transformational journey and we all share a common goal, i.e. for each one of us go back home safely every day. ■

Ushering in a new energy era

The International Petroleum Technology Conference took place from January 13-15 in Dhahran, Saudi Arabia, under the patronage of HRH Prince Mohammed bin Salman bin Abdulaziz Al-Saud, Crown Prince, Deputy Prime Minister and Minister of Defense, Kingdom of Saudi Arabia, with Saudi Aramco serving as the Exclusive Host.

THIS WAS THE first international multi-disciplinary, inter-society oil and gas conference and exhibition to be held in Saudi Arabia, attracting more than 18,000 attendees from 1,080+ companies, and 75+ countries. The event was sponsored by the American Association of Petroleum Geologists (AAPG), the European Association of Geoscientists and Engineers (EAGE), the Society of Exploration Geophysicists (SEG) and the Society of Petroleum Engineers (SPE).

At the opening ceremony, Saudi Aramco president and CEO Amin H. Nasser congratulated Saudi government entities for their successful efforts in securing the prestigious industry conference to be held in Saudi Arabia, as the Kingdom prepares to host the G-20 summit this year. Nasser emphasised the need to transition to a lower carbon energy mix and highlighted the role the energy industry has played in creating the economic prosperity the world enjoys today.

"With IPTC 2020, we have the perfect platform to push forward in our efforts to demonstrate that our industry is an integral part of the long-term solution to global energy challenges. As part of the energy transition, I firmly believe, oil and gas will continue to play a significant role for a long time to come."

He added: "We have the capability to be leaders when it comes to addressing the need for more energy with less emissions, and I am confident that our industry has the talent and the innovative mindset, which is required to find the best and most pragmatic solutions."

> "We have the capability to be leaders when it comes to addressing the need for more energy with less emissions."

Image Credit : IPTC

Amin H. Nasser, president and CEO, Saudi Aramco, addressing the conference.

Saudi Arabia's Energy Minister HRH Prince Salman Al-Saud, highlighted the ambitious agenda and vision being pursued by the Kingdom in the energy sector as well as its global role in global energy and prosperity and in stablising the oil market.

"As for the Fourth Industrial Revolution, the Kingdom is setting the base for the energy transition and we hope the rest of the industry will follow our lead with the same vigour," he said.

"Our most pressing mission and challenge is to reduce the carbon footprint of energy projects. Science, technology and innovation will be gamechangers," he commented. He noted the Kingdom's progress in energy price reform, energy efficiency programmes and reducing emissions as well as its ambitious renewable energy targets. The Kingdom has joined the World Bank's Zero flaring by 2030 initiative. "We are confident we will achieve this target," he said.

HE Yasir O. Al-Rumayyan, chairman of Saudi Aramco, stressed the need for a "more pragmatic narrative" regarding the energy transition, saying that there will be multiple energy transitions in different parts of the world taking place at different speeds. "If we can offer real solutions to the real energy needs of the world, our industry's place at the heart of the global energy will be assured," he said.

Climate change concerns and the

industry's license to operate were further addressed at a CEO panel session when Baker Hughes president and CEO Lorenzo Simonelli commented, "We are an industry that is hated by many but essential to everyone."

Mahmoud M. Abdulbaqi, chairman of ARGAS said, "The issues facing us are getting more complex, requiring the most advanced technology and more integrated solutions. The IPTC provides a platform to discuss and exchange ideas on this."

It was noteworthy that the opening ceremony was addressed by two of Saudi Aramco's young female petroleum engineers, Sheika AlDossary and Rowa Taufiq.

Rowa Taufiq commented, "We are reimagining what is possible and looking to the future with excitement. As we work to meet the increasing energy demand, we need affordable, accessible energy solutions."

The following Ministerial Dialogue touched on several important issues in the industry such as sustainability, oil price volatility and the future of the oil and gas industry. Prominent speakers who shared their views included the Minister of Energy; His Excellency Shaikh Mohammed Bin Khalifa Al Khalifa, Minister of Oil, Kingdom of Bahrain; Patrick Pouyanné, chairman and CEO, Total; and Darren Woods, chairman and CEO, Exxon Mobil Corporation.

The three-day conference agenda offered extensive opportunities for attendees to learn, contribute, debate, and discuss important topics that will lead to the enhancement and development of the energy industry, with digitalisation and sustainability being core themes. Panel sessions covered topics such as the role of IR 4.0 in revolutionising the oil and gas industry; emerging technologies and challenges; the future of gas; talent development and workforce diversity; and unconventionals development.

For the first time, the conference incorporated workshops examining the importance of diversity and inclusion in the sector, an area in which Saudi Aramco has significantly advanced in recent years.

> "The private sector is thirsty to invest."

Showcasing the latest technologies

More than 250 exhibitors showcased their latest products and technologies, enabling delegates and visitors to discuss potential partnerships and projects.

Agreements signed during the event included an alliance between TAQA and AlMansoori Petroleum Services to provide fracturing and stimulation services in Saudi Arabia, which will allow both companies access to the growing hydraulic fracturing market in the region; and a contract signed by Schlumberger with Saudi Petroleum Services Polytechnic to train 200 additional young Saudis as part of their Saudization plan.

Exhibitors commented on the "good vibes" at the event as well as the huge opportunities in the Saudi market, where the drilling industry is "booming", according to one exhibitor.

Particularly interesting were the new technologies being brought to the market, often under the banner of the big trading companies, many of which were undergoing or awaiting trials with Saudi Aramco. ED-Projects showcased its next generation stabilisers and reamers. Its hybrid reamer, approved by Aramco, has had successful runs in Khurais and other fields. While Innovate Drilling Systems showcased its new sub for hole-cleaning (see p43).

Local manufacture is growing, boosted by Saudi Aramco's localisation requirements. The company's In-Kingdom Total Value Add Program (iktva) aims to increase the amount of goods and services procured in the Kingdom to 70 per cent by 2021.

"The private sector is thirsty to invest," commented one exhibitor.

A good example is Automech, which has one of the largest machine shops and fabrication facilities in the region in the UAE, providing precision engineering and manufacture of components. The company has started a manufacturing facility in Saudi Arabia, and is looking to become a manufacturing vendor to Saudi Aramco. ■

The International Petroleum Technology Conference will return to Saudi Arabia in 2022.

A panel session at the conference.

Image Credit : IPTC

CompAir launches premium 90 to 132kW screw compressor models

GARDNER DENVER HAS launched a new, premium range of oil-lubricated screw compressors as part of the CompAir L-Series, which offer best-in-class efficiency.

The premium range, available in 90 kW, 110kW and 132kW models, combines a fixed speed compressor with IE4 motors. This creates a system that delivers energy efficiency improvements of 2.3 per cent when compared with standard models.

With businesses around the world striving to implement increasingly sustainable strategies and equipment in order to reduce the environmental impact of their operations, the new premium range can help offer businesses a long-lasting and energy-efficient investment, says the company.

The new models feature a newly patented oil regulation valve, which automatically regulates oil injections and discharge temperature according to environmental conditions. This reduces power consumption as well as eliminating the risk of condensate and corrosion in the system. It also helps maintain the oil's high quality throughout the compressor's lifetime, reducing the unit's total cost of ownership.

The premium models include an improved airend, designed and manufactured at Gardner Denver's Centre of Excellence in Simmern, Germany. It is supported by the CompAir Assure warranty, which covers the airend for up to 10 years or 44,000 hours. The airend is the heart of the compressor, and the improved technology from Gardner Denver features a larger-sized inlet and outlet to help improve air flow and reduce pressure drop.

As Industry 4.0 drives the need for users to share an analyse asset data, businesses are demanding more intelligent insights from compressed air performance to remove risks, improve productivity and reduce energy consumption. The premium range supports iConn, Gardher Denver's digital analytics platform for helping manage and optimise compressed air usage, as well as a user-friedly touch-screen control system that provides a range of insightful monitoring capabilities.

Image Credit : Gardner Denver

The new screw compressors deliver greater energy efficiency.

Dora Artemiadi, product manager for Industrial Compressors EMEA at Gardner Denver, said, "As a leader in the compressed air industry, we are committed to bringing the latest compressor innovations to the market, which deliver reliable and consistent compressed air that operators can depend on. Our new screw compressors are just the latest example, helping to improve energy efficiency and reduce a system's whole life costs."

She added that compared with competitor models, one of the premium units delivered five per cent greater energy effciency and up to 12 per cent higher flow rate, providing energy savings of Euro 3,700.

"Capable of delivering pressure ranges from 7.5 to 10 bar and volume flow between 15.5 to 24.8 m3/minute, our new models have been designed so that servicing is a simple and straightforward process too. Easy access to parts that need replacing, such as filters and separators, helps ensure maintenance is a hassle-free process.

"The premium models also feature many high-quality details that help set it apart from others models available on the market, including Victaulic couplings and an automatic lubrication system for the motor's bearings, which prevents drive failure due to improper or poor lubication."

For further information please visit www.gardnerdenver.com/industrials.

Reciprocating compressor valve failure: diagnose, repair, prevent

RECIPROCATING COMPRESSOR VALVE failure can cause system lags and affect the seamless operation of processes.

Compressor valve parts manufacturer KB Delta offers advice on diagnosing, repairing and preventing compressor valve failure in a blog on its website.

The main causes of reciprocating compressor valve failure are environment and mechanical factors, it says. Environmental factors can include improper lubrication, corrosive contaminants and foreign material. Reciprocating compressors need to be operated in a conducive environment where the machine is not exposed to dirt and air-bound oil and mist.

As for mechanical factors, system overload or overheating can cause high levels of stress on the valve, and incorrect use of the compressor may also lead to a breakdown of the valve. Mechanical causes of compressor valve failure include spring failure, high-cycle fatigue and off-design operation.

Common signs of reciprocating valve failure include overly high suction pressures, low discharge pressure, overly high discharge temperature, and working more quietly than usual.

Troubleshooting will enable you to repair reciprocating compressure valve failure. The blog provides advice on how to do this.

To prevent valve failure in the future, you should examine line temperatures; check for low compressor amp draw, which will indicate there may be performance issues with your valve; check the compressor shell for overheating; and examine the valve bypass when the compressor is off.

"Reciprocating compressor valve failure is easy to diagose, repair and prevent if you're informed on how best to go about each of these," says KB Delta. "Once your valves are in order, their long life span will be assured, instead of being tampered with by environmental and mechanical factors. The best part is, you can prevent these problems from occurring in the future, and therefore, reduce the frequency of maintenance on your reciprocating compressor."

https://kbdelta.com/blog/reciprocating-compressor-valve-failure-diagnose-repair.html

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TMC Compressors of the Seas (TMC) launches marine compressors range

TMC COMPRESSORS OF the Seas (TMC) is launching a range of marine compressors for use in combination with air lubrication systems (ALS) to help ships further reduce fuel consumption and emissions to air.

Air lubrication system is a method used to reduce the resistance between the ship's hull and seawater by using air bubbles. The air bubble distribution across the hull surface reduces the resistance working on the ship's hull, creating energy-saving effects.

TMC's marine compressed air systems for air lubrication systems can be utilised to generate the required stream of air bubbles that passes continuously beneath the ship's surface, thereby reducing frictional resistance between the hull and the seawater.

"We have a duty to both our customers and the globe to continuously make our products even more energy efficient and less harmful to the environment. This responsibility extends to identifying new usage areas for our marine compressed air technology, such as in combination with air lubrication systems," said Hans Petter Tanum, TMC's director of sales and business development.

TMC will offer a wide range of large compressors for air lubrication system applications, ranging from 50 kW to 400 kW capacity. TMC has also developed an associated electronic ALS control system that is integrated in a specially designed control room cabinet.

"With the right ship hull design, the air lubrication system can generate substantial reductions of both fuel and CO2 emissions, with an associated decrease of the vessel's operating costs. We are proud to offer a compressed air product that can help ALS become more mainstream in the shipping and offshore industries," added Tanum.

TMC is a leading supplier of compressed air systems for marine and offshore use. The company is headquartered in Oslo, Norway.

Burckhardt Compression introduces range of capex-optimised compressors

SWITZERLAND-BASED BURCKHARDT COMPRESSION has introduced a capex-optimised line of compressor systems that meets the API Standard 618. Its modular compressor design takes advantage of global processes and cost-efficient engineering and supply chain.

Hyundai Engineering Company has ordered the first two compressors from this new product line for a petrochemical plant in Poland, where they will be used for propane dehydrogenation in the production of propylene. The two compressors will be driven by 5 MW electric motors.

"Burckhardt Compression has leveraged its global setup with locations around the world to offer this new, capex-optimised line of compressors. It allows us to target and win over new groups of customers for our products," said Marcel Pawlicek, CEO of Burckhardt Compression.

EOR and fluid end assembly: a global perspective

A report released by Transparency Market Research analyses the state of the global enhanced oil recovery (EOR) sector and the projects around the world that will drive further growth and investment in the fluid end assembly market.

Image Credit: Adobe Stock

Drilling with fluid end assembly enhances EOR and provides opportunities.

THE GLOBAL FLUID end assembly market was valued at around US$9.8bn in 2018 and is anticipated to expand at a CAGR of around four per cent during the forecast period. Based on type, the triplex fluid end segment held a dominant share of the fluid end assembly market in 2018, primarily due to its high quality and low price. In terms of material, the stainless steel segment accounted for a major share of the fluid end assembly market in 2018. Demand for stainless steel fluid end assembly is high due to its excellent quality and long life. Based on application, the onshore segment constituted a significant share of the fluid end assembly market in 2018, owing to the presence of a large number of wells and lower cost of investment compared to offshore wells. The fluid end assembly market in North America is likely to expand at a substantial pace during the forecast period, owing to significant investments in exploration and production activities in the oil and gas industry in the region.

Of late, several oil and gas discoveries have been made across the globe. Furthermore, shale discoveries are rising at a promising rate. For instance, Russia discovered nearly 1.5 billion barrels of oil equivalent (Bboe), with new discoveries on the peninsula shelf in the Kara Sea. In Guyana, ExxonMobil made 14 discoveries during the first quarter of 2019, while Tullow Oil PLC also announced two new discoveries. These discoveries of new oil and gas reserves provide lucrative opportunities to oil and gas service companies, which use fluid end assembly for drilling. In November 2019, Tullow Oil PLC and its licensed partner Orinduick announced that they had started assessing commercial viability of two offshore Guyana discoveries after lab results indicated that the oil recovered was heavy crude oil with high sulfur content. Thus, discovery of new oil and gas reserves across the world is fuelling the expansion of the fluid end assembly market.

> “New oil and gas discoveries are providing lucrative opportunities to service companies which use fluid end assembly for drilling.”

In August 2019, Halliburton Company bagged nine conditional contracts for drilling and completion services for Sangomar field development in Senegal from Woodside Energy (Senegal). Moreover, in July 2019, Halliburton and Kuwait Oil Company (KOC) announced that they had signed an Integrated Offshore Drilling Services contract for six high-pressure high-temperature (HPHT) exploration wells in the Arabian Gulf. The fluid end assembly market is led by multinational players operating across the globe. Prominent players in the fluid end assembly market are Halliburton, The Weir Group, Forum Energy Technologies, Gardner Denver, EnTrans International and Alco Group. ■

A simple solution to mitigate fire risk

Tim Martin, sales director, MIDEL EMEA discusses how the use of ester transformer fluid can enhance fire safety.

AS WITH ANY industrial operation, a reliable source of electricity is critical to the competitiveness of oil and gas operations, and unscheduled downtime from asset failure can easily cost operators millions of dollars in lost opportunity.

Transformer failure, as a case in point, poses a very real risk to oil and gas safety and uptime. Last year's Transformer Risk Report found that 61 per cent of survey respondents had experienced some kind of failure in the past five years. It was little surprise that 50 per cent of respondents were very concerned about the impact of transformer failure on their operations. Even more of a concern was the length of time a failure might take to repair, with less than a third of asset owners expecting that power would be reinstated immediately, and a handful expecting to wait as long as six months.

Concerns over transformer failure are often exacerbated in the Middle East by harsh operating conditions. Last summer saw heatwave temperatures reportedly exceeding 60°C, coupled with dusty, humid or coastal conditions. What's more, plants are not always in the most accessible of locations, meaning any electrical equipment needs to be doubly reliable.

While newer transformer designs have been more closely tailored to cope in these conditions, the age and maintenance condition of electrical infrastructure across the Middle East's oil and gas sector is mixed. Further, while refineries are experts at managing the processing of hydrocarbons, managing transformer fire risk may not come so naturally. And, as ExxonMobil's Beaumont refinery found out, it only takes one small fire in a transformer to cause a sitewide outage that has an impact that lasts for days.

Taking proactive measures is a key line of defense, both for new and existing infrastructure. Opting for an ester transformer fluid can make all the difference in providing a reliable, safe power supply.

Fire is a risk in refineries.

Image Credit : Philipus/Fotolia

Proactive measures: transformer fluid

Most transformers are filled with mineral oil; a good insulator, albeit demonstrably flammable. Clearly, an oil and gas operation is about the last place you'd want a fire, whether caused by mechanical breakdown, or as a result of terrorism.

In the 1970s, MIDEL ester transformer fluids were developed as an alternative insulating fluid by UK-based manufacturer M&I Materials. MIDEL's readily biodegradable transformer fluid not only significantly reduces fire risk, it can also substantially extend the transformer's useful life.

Ester fluids are highly moisture tolerant, unlike mineral oil, protecting the transformer's paper insulation and thereby extending its life. The fluids are also easy to use as a retrofilling option, meaning that operators across the Middle East can enhance fire safety and uptime, while preventing deterioration without replacing transformers.

The Duqm Refinery in Oman is a good example of how the right ester fluid can deliver world-class risk mitigation. The refinery is part of a US$15bn investment earmarked to create Oman's next industrial centre – the Duqm Special Economic Zone. The zone's proximity to international shipping lanes in the Arabian Sea and Indian Ocean expedites the process of transporting goods in and out of the region and as such gives the refinery strategic advantage.

> "It only takes one small fire in a transformer to cause a sitewide outage."

The site's vision is to "create a facility that will benefit many generations to come….to be sustainable far into the future" and with a refining capacity of around 230,000 barrels of crude oil per day, fire safety is also an operational imperative.

Adhering to the strictest of international standards, the engineering team at Duqm commissioned new transformer units, filling the transformers with MIDEL fluid. The Duqm engineering team benefited from:

- Enhanced transformer risk mitigation (K class fluids have fire points >300°C)
- Improved environmental protection (MIDEL's esters fluids are readily biodegradable)
- Reduced total cost of ownership (less maintenance and civils costs.)

With its enhanced fire safety profile, ester fluid filled transformers require substantially less bunding and fire suppression systems – a cost saving that typically runs into the millions of dollars on complex industrial sites.

MIDEL is used by leading names across the Middle East including JEPCO (Jordan), MEW (Kuwait), ADMA OPCO (Abu Dhabi), ZADCO (Abu Dhabi) and Qatar Petroleum (Qatar). ■

Kongsberg develops state-of-the-art firefighting simulator

KONGSBERG DIGITAL (KDI) has developed the K-Sim Safety Advanced Fire Fighting Simulator (AFFS), a new simulator solution designed in accordance with the objectives and stipulations of STCW Advanced Firefighting courses. Specifically, it addresses regulations covering methods of organising and training fire teams, inspecting and servicing fire detection and extinguishing systems and equipment, and controlling onboard firefighting operations.

As a realistic representation of the layout on a real crude oil carrier, the simulator's interactive 3D 'WalkThrough' software engine combines precise object and equipment models with immersive visuals, exposing trainees to all conceivable scenarios and situations related to preventing and dealing with onboard fires.

The full mission K-Sim Safety AFFS accommodates an instructor station, a debrief area, a bridge/safety command centre, two fire team muster stations and two smoke diver areas. Up to three separate teams – usually, a management team and two firefighting teams – can be trained at the same time. In exercises designed to replicate onboard emergencies,

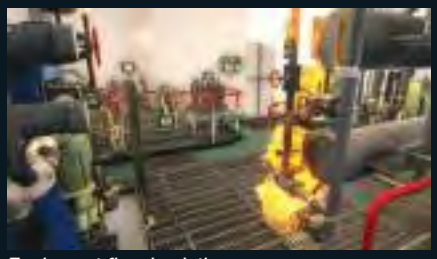

Image Credit : Kongsberg

Equipment fire simulation.

the management team will assemble at the bridge/safety command centre, from where thry will manage firefighting operations.

The management team can oversee how the fire teams are handling the emergency situation as the bridge/safety command centre is equipped with an Integrated Automation System (IAS) and safety panels, while recording, replaying and detailed debriefing tools will allow teams to evaluate how effective their decision-making and consequent plan of action has been in each exercise.

Kongsberg has been awarded its first K-Sim Safety Simulator contract with the Norwegian Sea Rescue Society (NSRS) for installation in its Horten-based training centre in Norway.

"We're very proud of the fact that our K-Sim Safety AFFS is the first in the world to attain a DNV-GL certification," said Tone-Merete Hansen, senior vice president, Kongsberg Digital. "Being commissioned to deliver this solution to the NSRS is another resounding vote of confidence, but more importantly, the AFFS' contribution to the prevention and containment of shipboard fires in the future will be invaluable."

"Where hands-on, onboard fire control and safety training would up to present have been costly, time-consuming and potentially hazardous, KONGSBERG's K-Sim Safety simulators have ushered in a new era whereby trainee officers can attain mandatory advanced firefighting competence and confidence in conditions of total safety," added Martin Fuhr Bolstad, managing director at the NSRS training centre.

The company hopes it will gain orders worldwide now that the simulator can be demonstrated in use. Given it is designed to meet stringent global standards, it can be easily ported to meet different national needs.

Aiming for the highest standards of health and safety

Events researched and developed by Health, Safety & Security Review Middle East will highlight best practices, technology advancements and innovative applications to enhance occupational health and safety performance while promoting wellbeing at work.

THE RECENT TRAGIC fatalities on a construction site in Kuwait have underscored the need for constant vigilance to maintain the highest health and safety standards. The construction sector in the Middle East, with its high levels of activity, has historically accounted for a relatively high proportion of workplace accidents.

Improving competency and safety in high-rise construction sites will be just one of the critical issues on the agenda at the **Kuwait Health, Safety & Environment Forum**, to take place from 2-3 March at the Jumeirah Messilah Beach Hotel & Spa, Kuwait City.

Inspiring visionaries who are making an impact on the future of occupational health and safety in the Middle East will share their insights and expertise at the Forum, which takes place at the under the patronage of the Ministry of Health, Kuwait, and in association with the Kuwait National Guard and Kuwait Fire Services.

> “The construction sector has historically accounted for a high proportion of workplace accidents.”

They include Dr. Duaa Alkhaledi, director - Occupational Health, Ministry of Health – Kuwait; Mohmed Khalil Saeed, director – Safety, Aluminium Bahrain; Nawaf Al Subaie, consultant – Medical Group, Kuwait Oil Company; Brigadier Muhammad Alshatti, director of Fire Department, Kuwait Fire Services Directorate; Qusai Al Shatti, former director general, Central Agency of Information Technology, (CAIT) Kuwait; Prof. Sungsoo Chun, policy adviser in Health, UNDP Kuwait; Alex George, director – corporate HSE, CSCEC Middle East, and many more.

Other topics under the spotlight include the Kuwait Health Development Plan; occupational safety challenges in Kuwait; fire safety; sustainable healthcare as a way forward to achieve the unified Gulf Health Strategy; protecting workers with 3D modelling; leadership and safety culture; mitigating risks in hostile environments; IoT for monitoring potential workplace hazards; the effects of greenhouse gases on health and environment; and preventing environmental contamination by hydrocarbons.

Last year’s Bahrain HSE Forum saw Bapco’s emergency rescue team effect a rescue from height.

Image Credit: Alain Chalres Publishing

The Bahrain Health, Safety & Environment Forum, to take place from 15-16 June at the Wyndham Grand Manama Bahrain, builds on the phenomenally successful inaugural event held in June 2018, which saw Bahrain Civil Defence and Bapco collaborate in a first of its kind mock fire drill.

This year’s event will focus on the Bahrain Economic Vision 2030, which highlights the necessity of a safe and secure environment and envisions the adoption of the latest technologies in critical areas including healthcare and environment. This includes a focus on the modernisation of police services and a special emphasis on road safety.

Topics will include towards zero accidents; detecting cognitive fatigue with smart technologies; smart Personal Protective Equipment; detecting gas leaks and hazardous substances using smart cameras; and using Artificial Intelligence to monitor potential hazards within the working environment.

The event is expected to attract participation from government departments and leading industrial companies including Bahrain Health Ministry, BAPCO, JGC Gulf International, Gulf Petrochemical Industries Co, Bahrain Airport Company, BMMI Group Bahrain, Ministry of Labour & Social Development, Ministry of Works, Aluminum Bahrain (ALBA), Tatweer, National Oil & Gas Authority and many more. ■

For further information and to register, see the website at www.hse-forum.com.

Protecting FPSOs from corrosion

The solution being deployed.

A PIONEERING SYSTEM of protecting floating offshore installations from corrosion without using divers has been successfully deployed for the first time in the UK North Sea.

EM&I collaborated with Forth Engineering to design the solution, which was used on a flating production storage and offloading (FPSO) vessel 75 miles offshore.

Designed for lifetime protection of the underwater hull from corrosion below the water line, HullGuard is an EM&I innovation that involves locating a tubular anode with an integral dielectric shield, through an ODIN-type port fitted to the ship's hull. Once the anode is installed, the launch tube is removed, leaving only the completion plug in place, with the electrical supply cable ready for connection to a standard transformer rectifier.

Danny Constantinis, EM&I's executive chairman, said, "EM&I has proven that many of the integrity-related functions that used to be carried out by divers can be carried out more safety and at lower cost by robotic systems such as HullGuard. I am confident that this solution will be welcomed in a market which seeks safer, lower cost and lower carbon footprint solutions. "

Tenaris introduces insulating coating solution

TENARIS HAS INTRODUCED a new insulating coating solutoin, TenCoat Marine Deep, a high-performance polypropylene blend engineered for flow assurance in deepwater environments.

"The oil and gas industry has moved towards solutions with short return on investments. The development models have changed to tieback solutions versus large SURF developments," said Gregoire Flipo, Tenaris VP of offshore line pipe services. "In order to support our customers in this new scenarios, we are introducing the TenCoat Marine Deep, a cost-effective solution with unmatched thermal performance for HP/HT, deep and ultra-deep water environments."

TenCoat Marine Deep is a system comprised of single-component layers, leading to a reliable and repeatable application process with excellent control consistency and quality, the company says.

Coelmo gensets installed in Abu Dhabi project

ITALY'S COELMO, WHICH specialises in gensets for hazardous environments, has supplied two gensets rated 2,800 kVA each at site condition, 3.3 kV three phase and 50 Hz frequency, and two gensets rated 500 kVA for emergency backup in oil processing plants in Abu Dhabi, UAE.

Each genset is equipped with engines of 2,590 kWm and 576 kWm with oil prelubrification pump; alternator IP55 CACA cooling IC6A1A1 (Ref. IEC 60034-6), oil lubricated, double support with sliding bearings, OLCMS monitoring system, dual NiCd batteries with ATS and earthing resistor.

The gensets are installed in IP56 with a C5-M marine paint cycle suitable for particularly aggressive environments. Inside the containers is installed a fire detection and fire-fighting system with inter-gas clean agent extinguishing system (IG-541) in compliance with NFPA standards.

The two gensets can run unattended – as they have the requisite alarms and safety cut outs. They can start (from cold state) and supply power to the main grid in the event of external power supply failure, a remote START signal or supply failure from the two mains. The two generators work in parallel with each other as well as the two mains. In case of power resumption, they can automatically de-synchronise and shut down.

The two 2,800 kVA gensets.

Image Credit: Coelmo

With 70 years of experience and several projects successfully completed, Coelmo is able to design and manufacture generating sets for use in hazardous areas, where dangerous vapours can cause an explosive atmosphere (ATEX Classified Area Zone 2 Temperature class T3 or Class II division 2), either in enhanced safety and weatherproof enclosures (according to EN 50019), or in pressurised enclosures (according to EN 50016).

Enhanced swellable sealing solution launched

TENDEKA HAS CREATED and qualified a new version of its swellable sealing solution, SwellStack, in collaboration with Wellvene. It provides a cost-effective sealing solution that is compatible with all Wellvene and original equipment manufacturer (OEM) insert safety valves.

Image credit: Tendeka

Wellvene's Bronson Larkins with Gillian King of Tendeka.

The use of the patented technology ensures production can be reinstated to wells that are closed in due to the failed sealing of an insert safety valve, thereby eliminating any requirement to consider higher cost and long lead straddles or potential workovers.

Originally launched by Tendeka in 2013, the SwellStack has been utilised in more than 180 installations globally prior to the release of the next generation design. Comprising of swellable O-ring technology and a bespoke chevron seal design, the swellable O-ring expansion within the damaged bore activates the chevron seals to both effectively and reliably provide integrity for up to 10,000psi in liquid and gas.

Gillian King, Tendeka's VP for Europe, Russia, CIS & Africa said, "Our partnership with Wellvene to develop this new, improved SwellStack brings a superior design to our clients for their mature fields. We have a proven track record using our SwellStack solution to bring shut-in wells back on-line, adding significant value to global operators whilst maximising economic recovery."

SwellStack incorporates the knowledge gained from standard Tendeka swellable compounds which have been used in more than 65,000 successful installations worldwide. Tendeka's Swellable O-rings have been used since 2011, with more than 11,200 O-rings supplied globally to date. All O-rings are manufactured from an oil or water swellable compound, designed to swell when in contact with control line fluid or produced well fluids.

Halliburton introduces streaming unconventional well test data retriever

HALLIBURTON HAS UNVEILED its SPIDRlive self-powered intelligent data retriever, an unconventional well testing and fracture interaction monitoring technology that acquires real-time well data without the need for intervention, reducing costs and improving fracture understanding for greater recovery

The retriever captures high-resolution, high-accuracy and high-frequency data from wellhead without downhole equipment.

The SPIDRlive retriever combines quartz-based hardware and proprietary modelling software to capture high-resolution, high-accuracy and high-frequency data from the wellhead without running downhole equipment.

In unconventional wells, operators can acquire data to optimise fracture design or perform an engineered flow-back to improve well performance. In multiple wells, operators can utilise the streaming capability for remote monitoring of fracture interactions in offset wells.

Daniel Casale, vice-president of Testing and Subsea, said, "We designed this technology to deliver critical well data to the surface with an emphasis on simplicity and accuracy to improve performance.

"The retriever is a versatile tool with applications throughout the well lifecycle to enhance reservoir understanding while reducing costs."

In West Texas, an operator recently deployed SPIDRlive on multiple offset wells to monitor for fracture interactions. During the fracture treatment, SPIDRlive transmitted data via a wireless signal to a field edge device and then streamed into a secure cloud application for the client to visualise. The streaming data indicated an interaction on a neighbouring well pad, alerting the operator of potential consequences during their production optimisation campaign.

Digital integrity service for pipeline operators launched

THEIA provides a complete picture of pipeline assets under a wide range of different scenarios.

Image credit: Adobe Stock

PENSPEN, IN PARTNERSHIP with QiO Technologies, has developed THEIA as an environment for pipeline operators across the world to access Penspen's leading expertise in defect assessment and asset integrity management. The project is part of the company's ongoing commitment to the digital transformation of its services.

Penspen's CEO Peter O'Sullivan explained, "There is no secret about the challenges we face in the energy industry. Ageing pipeline assets mean greater risks that are in turn set against a background of industry-wide cost reductions and increased regulatory demands.

"Furthermore, loss of skills and a dearth of new talent mean personnel resources for the time-consuming analysis of inspection data are limited. THEIA responds to all these constraints by empowering operators to make critical and timely decisions for the optimum management of their pipelines."

THEIA provides a complete picture of pipeline assets under a wide range of different environmental and operating scenarios. Penspen believes harnessing predictive data analytics in this way will enable its clients to gain future insights into how best to manage pipeline integrity alongside whole life-cycle technical assurance.

"The more operators use THEIA in tandem with our expertise at Penspen, it's more likely that defects will be quickly identified and prevented from causing failure," O'Sullivan said.

The ability to run complex assessments securely, providing predictive or real-time information and analysis, forms the backbone of the current THEIA offering. Further ahead, QiO's specialist skills in machine learning and AI will contribute to the further development of THEIA's capabilities and Industry 4.0 standard, as part of the growing trend for automation away from manual processes, and the unlocking of trapped business value through the use of the most advanced analytical techniques.

THEIA is a cloud-based, subscription service designed to allow clients a high degree of flexibility in accessing their pipeline information and the level of analysis required, while at the same time ensuring maximum security for all their critical data. Over the next 12 months, Penspen aims to make instant first level checking of defects available to every pipeline operator worldwide.

New corrosion assessment solution launched

CANADA'S EDDYFI TECHNOLOGIES has launched an improved Magnetic Flux Leakage (MFL) inspection system that allows rapid screening of corrosion in ferrous pipes and surfaces.

The new Pipescan HD solution is designed to offer the greatest resolution, combined with encoded scanning and intuitive C-Scan imaging for optimal speed, reliability, and confidence. The rugged, digital solution offers full data recording and reporting capabilities.

Image credit: Shutterstock

The system allows rapid screening of corrosion.

The Pipescan HD is available in three different adjustable configurations to cover diameters ranging from 48 mm (1.9 in) to flat surfaces. Each configuration has been optimised, but not limited, for the detection of small, isolated pitting and general corrosion in coated and uncoated carbon steel pipework. The encoded data allows for rapid mapping of the surfaces and easy identification of areas of interest. Pipescan HD users benefit from control buttons built in the scanning tool, as well as the ability to easily generate stitched data sets. The Pipescan HD can scan through non-conductive coating up to 6 mm (0.24 in) thick.

ROSEN Group breakthrough for MFL technology

AT THIS YEAR'S Pipeline Pigging & Integrity Management Conference in Houston, Texas, the ROSEN Group will introduce a new technology which provides laser-like 3D metal loss profiles derived from MFL (magnetic flux leakage) data, giving visualisation of the true metal loss shape, robust information for maintenance optimisation, and integrity confirmation.

This new technology, called Deep Field Analyze, enhances the level of information that is implicitly available in high-resolution MFL data and collected during ILI (in-line inspection) runs. High-quality data from axial and circumferential MFL inspections is used and processed to provide laser-like 3D profiles of a metal loss feature, thus visualising the true shape of any corrosion or gouging, even before a dig up. This technology and evaluation method delivers:

- True metal loss shape: highest confidence in data interpretation
- Maintenance optimisation: dig up prioritisation and faster decision-making for future activities
- Integrity confirmation: less conservative calculation of safe burst pressure.

This technology will be incorporated into a new service offering, called Virtual–Dig Up.

New pipeline technology being developed in the UK

A WORLD-FIRST PIPELINE technology is attracting interest from around the globe after being showcased in Aberdeen in November.

The development of the first ever FSWBot, Friction Stir Welding Robotic Crawler for internal repair and refurbishment of pipelines, is designed to transform the way industries deal with pipeline issues.

Led by Forth Engineering in Cumbria, and sponsored by Innovate UK, the FSWBot project seeks to integrate several state-of-the-art technologies including friction stir welding, milling, patch deployment and ultrasonic NDT, onto a robotic system which can be deployed to conduct repairs on pipelines without the need for the pipeline to be closed down for the duration of the repair.

If successful, it is envisaged that the system could be further developed to carry out a range of repair and fabrication tasks.

The FSWBot is envisaged to be a five-segment or six-segment PIG-type vehicle which will be inserted at the production end of the pipeline and will travel with the oil flow to a pre-designated spot to perform a repair.

The consortium wants to hear from companies which might have an interest in such a system, while the technology is being developed.

Mark Telford, managing director of Forth, said, "As a company, we have developed a worldwide reputation for developing a range of robotic solutions for use in harsh environments.

"There's a fantastic opportunity for other businesses and organisations in the UK and across the world, whether that's other nuclear operations, or oil and gas, renewables, and perhaps areas we haven't even thought of, to make use of that technology, and to share their challenges so we can develop the FSWBot in ways to help them." The development of the FSWBot is ongoing with the project due to be completed by end of January, 2021.

For further information contact: info@forth.uk.com or visit www.fswbot.co.uk

Scanning technique inspired by bats

BY MIMICKING HOW bats use differing wavelengths of ultrasound to detect objects, hunt, and avoid predators, engineers have developed a new scanning technique that combines two separate types of radiation to detect corrosion in oil and gas pipelines.

The new system, developed by engineers from the UK's Lancaster University, the National Physical Laboratory, and technology company, Hybrid Instruments, exploits the reflected signals, known as 'backscatter', of a combination of isolated fast-neutron and gamma radiation.

Image credit: Adobe Stock

The new technique is inspired by bats.

The two radiation types produce a different electronic signal. Data on both types of radiation can be retained simultaneously using a novel detecting device. The system produces a pencil-like beam of probing radiation, of neutrons and gamma, which is directed at the steel section being inspected.

The two imaging techniques were tested in real time in a laboratory on samples of carbon-steel of different thicknesses, where researchers were able to see differences in steel thickness. The sensors also worked when an insulating layer was replicated, with concrete or plastic, indicating the likelihood that defects in steels, as well as corrosion and rust, would produce variations in the backscatter. These results indicate that if used on real pipelines then potential issues could be more easily detected and resolved before oil and gas is able to escape.

"Isolating neutrons and gamma rays backscattered from a steel surface in real time, in a way analogous to the way bats' brains isolate backscatter ultrasound and thus avoid confusion with their own chirps, could help us isolate flaws in pipe walls more quickly and effectively," said Professor Malcolm Joyce of Lancaster University and Hybrid Instruments.

Baker Hughes launches AI application

BODYOIL SERVICES COMPANY Baker Hughes and enterprise AI software provider C3.ai have launched BHC3 Production Optimization.

BHC3 Production Optimization is an AI-based application that allows well operators to view real-time production data, better project future production, and help optimise operations for improved oil and gas production rates. The application uses machine learning algorithms to quickly aggregate historical and real-time data across production operations and creates a comprehensive view of the production from individual and multiple wells to the pipeline, distribution, and point-of-sale. It then applies machine learning to the data for anomaly detection, production forecasting, and prescriptive actions that improve production performance.

Derek Mathieson, chief marketing and technology officer, Baker Hughes, said, "BHC3 Production Optimization delivers the data visibility and optimisation capabilities that are critical for upstream businesses to meet production targets during a time of growing energy demand.

"Releasing this application is part of a continued commitment from Baker Hughes and C3.ai to help the energy industry improve productivity and efficiency with enterprise-scale AI applications." The application enables more precise and timely decision-making to optimise the right level of production to meet business goals and energy demand. Advanced machine learning models create a continuous, near real-time and accurate virtual representation of production operations by generating flow rate, pressure and temperature predictions of hydrocarbon production and flow across wells, pipelines, and network assets.

Additionally, the application uses a hybrid approach that draws on physics-based and data-driven AI models to generate predictions and prescribed actions that are accurate and easier to interpret. For example, engineers can now pinpoint exactly which injection wells to tune for higher production output.

Launched at the Baker Hughes Annual Meeting 2020, the application is now generally available to oil and gas customers globally.

New hole-cleaning tool

INNOVATIVE DRILLING SYSTEMS showcased its new sub for hole-cleaning at the International Petroleum Technology Conference in Saudi Arabia, featuring efficient dynamics and hydraulics.

THE REMOVER is a true axial pump for cuttings removal – charged and enhanced by hydrodynamics. It provides both hydromechanical and hydrodynamic cuttings cleaning for the first time in the industry. Cuttings are removed using a high energy-efficiency hydromechanical device, combining rotational and hydraulic energy for thorough cuttings bed decay. Complete hole-cleaning is achieved by recirculating cuttings to the high side of the hole, where mud flow annular velocity is greatest. This combination of hydraulic and dynamic mechanical hole-cleaning will decay cuttings bed equilibrium and remove all cuttings beds, even the smallest or residual ones.

This hole cleaning action is not constrained by hydraulic power and can maximise hole-cleaning efficiency at lower flow rates.

Belzona introduces anti-corrosion thermal insulation barrier

The application of Belzona 5871.

Image credit: Belzona Polymerics

BELZONA POLYMERICS HAS developed an innovative and multifunctional two-component, polymeric, solvent-free system – Belzona 5871.

This system provides a thermal insulation barrier with corrosion protection and "cool-to-touch" properties. Designed to be applied on to metal pipework, ducting, tank/vessel externals, and other industrial equipment, Belzona 5871 also provides protection against contact-burn injuries, corrosion under insulation, condensation, and icing. This all results in improved safety, durability and efficiency.

It can be applied by brush, cartridge, or heated airless plural spray, which is ideal for small, complex geometries or rapid application over large areas, offering a fast return to service and high film build with potentially just one layer of product.

Upon application, the product forms a lightweight, high-build closed-cell foam thanks to its epoxy technology, and expands up to three times its applied thickness.

Project Databank

Compiled by Data Media Systems

Project Focus

Compiled by Data Media Systems

Project Summary

Project name	Tatweer - NAG Long Term Field Development (LTFD) - Phase 2
Name of Client	Tatweer Petroleum
Estimated Budget (US$)	200,000,000
Facility Type	Gas Processing
Status	EPC ITB
Location	Awali, Bahrain
Project Start	Q2-2018
End Date	Q4-2021

Background

The non-associated gas (NAG) Long-Term Field Development (LTFD) project is a continuation of Tatweer's commitment to secure the delivery of natural gas needed to meet the growing demand power demands of the Kingdom of Bahrain. Phase 2 of the project will build two new gas processing trains as well as additional wells and infrastructure to deliver the gas to the processing facilities.

Project Status

Date	Status
Jan 2020	The lowest bids submitted by the companies for the EPC contract are: - TDE Overseas: US$34.8mn - Exterran Bahrain: US$35.4mn - Enerflex Middle East: US$37.7mn - Woodlands Energy Services: US$39.2mn - Enerserv: US$93.1mn
Nov 2019	The output capacity will reach 2.7bn cubic feet per day (bcf/d) by the end of 2019.Tatweer has stated that they expect to sign the EPC contract to connect 24 Pre-Unayzah gas well hookups, associated pipelines, and tie-ins at the GDUs, with Petrofac in Q4 2019 or Q1 2020.
Nov 2019	Tatweer has received bids for the EPC contract to connect 24 Pre-Unayzah gas well hookups, associated pipelines, and tie-ins at the GDUs. The bids were: Petrofac International: US$49 million Worley: US$76 million TDE Overseas: US$99 million
Dec 2018	The bids submitted for the EPC contract are as follows: PEG Engineering & Contracting (DMCC)- US$185mn Petrofac International SPC- US$195mn JGC Gulf International- US$294mn CB&I- US$295mn TDE Overseas- US$232mn (this bid has been suspended)
Oct 2018	Tatweer has set 14 November 2018 as the deadline for companies to submit bids for the EPC contract for the two 500 MMSCFD Gas Dehydration Unit (GDU) trains.
Aug 2018	After the completion of the centralized gas dehydration project for Tatweer, Petrofac is awarded a contract to build additional gas wells and pipelines which will be used to connect the new wells to the current and future processing facilities.

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Project Databank

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Project Focus

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Project Scope

The project scope includes:

The central scope of the project is building two 500 Million Standard Cubic Feet/Day (MMSCFD) gas dehydration unit (GDU) trains (Train 2 & 3) with associated gas dehydration facilities and non-associated gas compression facilities (NCF) at the Central Gas Dehydration Facilities plot. Other parts of the scope will include:

- Gas Wells
- Pipelines and gas well hookups
- Associated infrastructure.

Project Finance

Tatweer Petroleum is the client.

Stakeholders in Tatweer:

- Mubadala Petroleum, a subsidiary of Abu Dhabi investment vehicle Mubadala Development Company, has a 25 per cent stake.
- US-based Occidental Petroleum has a 25 per cent stake.
- Nogaholding - owning the remaining 50 per cent.

Contractors

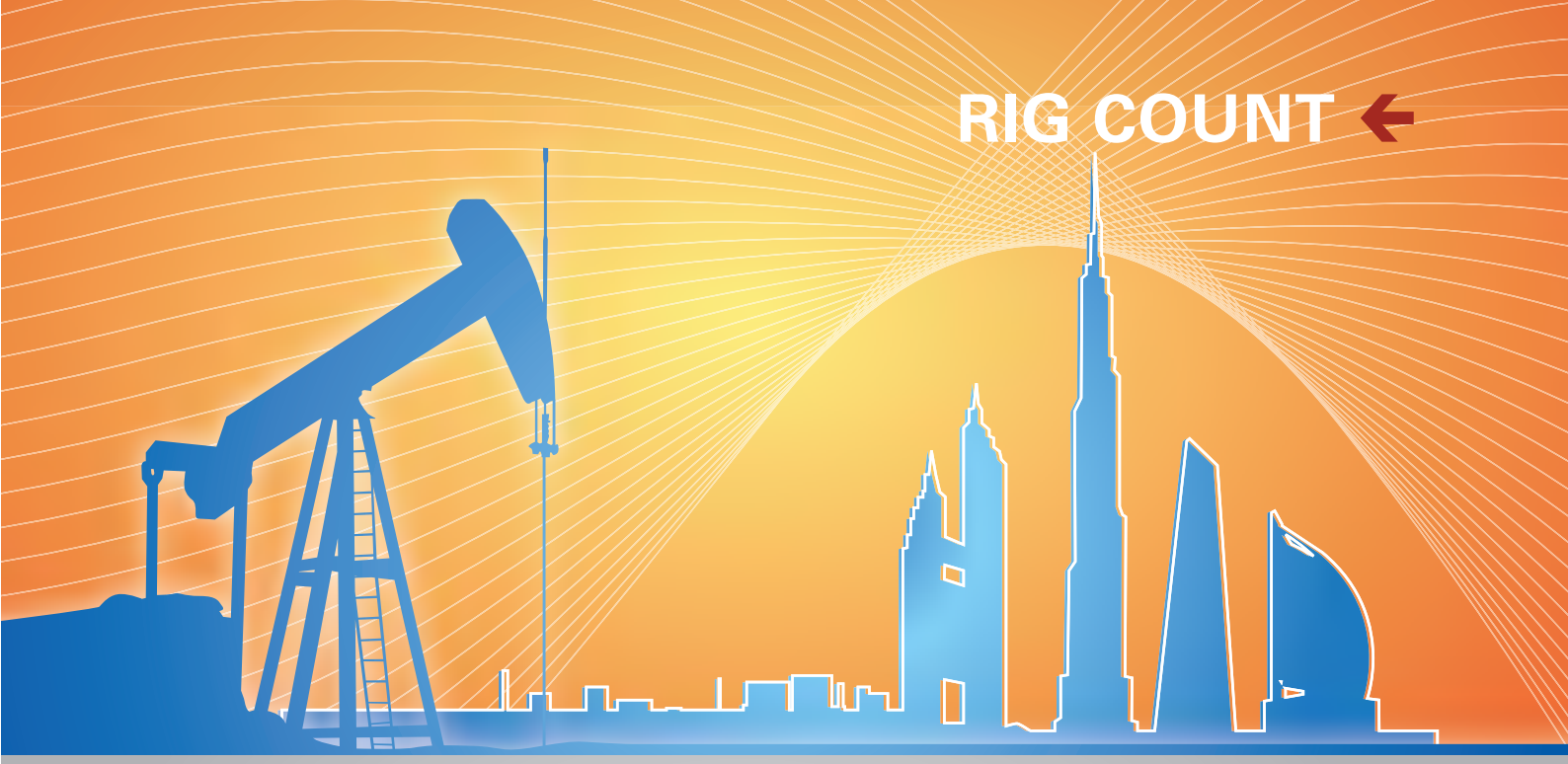
Contract Type	Pre-Qualified	Bidders	Awarded
EPC	• Petrofac • PEG Engineering & Contracting DMCC • JGC Gulf International Company • CB&I - Chicago Bridge & Iron Company • TDE • Worley • Enerflex • Enerserv • Exterran Holdings Inc	• Petrofac • TDE • Worley • Enerflex • Enerserv • Exterran Holdings Inc	
Sub-Contractors			• Petrofac

Project Schedules

Project Announced	2Q-2018
EPC ITB	3Q-2018
Engineering & Procurement	1Q-2020
Completed	4Q-2021

OIL, GAS AND PETROCHEMICAL PROJECTS, BAHRAIN

Project	City	Facility	Budget (US$)	Status
Bapco - Bapco Modernization Program (BMP) - Overview	Sitra	Petroleum Oil Refinery	6,000,000,000	Construction
Bapco - Bapco Modernization Program (BMP) - Residue Conversion Unit	Sitra	Petroleum Oil Refinery	800,000,000	Construction
Bapco - Offshore Blocks Exploration Production	Various	Offshore Oil & Gas Field	80,000,000	Engineering & and Procurement
NOGA - Aromatics Complex	Manama	Aromatics	1,000,000,000	FEED
Tatweer - NAG Long Term Field Development (LTFD) - Overview	Awali	Gas Field Development	150,000,000	Construction
Tatweer - NAG Long Term Field Development (LTFD) - Phase 2	Awali	Gas Processing	200,000,000	EPC ITB



Middle East & North Africa

The Baker Hughes Rig Count tracks industry-wide rigs engaged in drilling and related operations, which include drilling, logging, cementing, coring, well testing, waiting on weather, running casing and blowout preventer (BOP) testing.

	THIS MONTH			VARIANCE	LAST MONTH		
Country	Land	OffShore	Total	From Last Month	Land	OffShore	Total
Middle East							
ABU DHABI	42	22	64	0	42	22	64
DUBAI	0	2	2	0	0	2	2
IRAQ	77	0	77	0	77	0	77
JORDAN	0	0	0	0	0	0	0
KUWAIT	53	0	53	3	50	0	50
OMAN	53	0	53	0	53	0	53
PAKISTAN	17	0	17	2	15	0	15
QATAR	4	10	14	0	4	10	14
SAUDI ARABIA	94	17	111	-4	98	17	115
SUDAN	6	0	6	0	6	0	6
SYRIA	0	0	0	0	0	0	0
YEMEN	1	0	1	0	1	0	1
TOTAL	347	51	398	1	346	51	397
North Africa							
ALGERIA	41	0	41	-1	42	0	42
EGYPT	24	7	31	0	23	8	31
LIBYA	14	2	16	0	14	2	16
TUNISIA	2	0	2	0	2	0	2
TOTAL	81	9	90	-1	81	10	91

Source: Baker Hughes

مع وجود احتمالية لوجود عمليات تصدير أخرى، وذلك عبر خط الغاز العربي الذي يمتد إلى الأردن وسوريا ولبنان. على الرغم من أن مصر لا تصدر الغاز حاليا من خلاله سوى إلى الأردن، إلا أن خط الأنابيب كان أيضا بمثابة قناة لمبيعات التصدير إلى إسرائيل. وعلى صعيد آخر، تسعى القاهرة لجعل مصر محوراً رئيسياً للطاقة بين إفريقيا وأوروبا والشرق الأوسط. وهي استراتيجية مدعومة بالإنتاج المحلي القوي والمتنامي. ووفقا للشركة المصرية القابضة للغاز الطبيعي (EGAS) أنتجت الدولة 2.52 تريليون قدم مكعب من الغاز في الفترة من 2018 إلى 2019. وتتمثل النسبة المستخرجة من البحر الأبيض المتوسط في 58 في المائة و20 في المائة من الصحراء الغربية ودلتا النيل، والنسبة المتبقية مستخرجة من خليج السويس وشبه جزيرة سيناء.

الدافع الرئيسي

والدافع الرئيسي لمخططي الطاقة في مصر هو أنه يتم تحديد موارد جديدة طوال الوقت بما في ذلك النفط. كما كشفت شركة «برايم موفر» إيني عن اكتشافها الأخير للنفط في نهاية العام الماضي، في أعقاب اكتشاف بئر استكشافية اكتشفت في وقت سابق من اكتشاف جنوب سيدري، والذي تم الإعلان عنه في يوليو/تموز الماضي. وتشير التقديرات إلى أن جنوب سيدري يحتوي على حوالي 200 مليون برميل من النفط في مكان واحد، على الرغم من إعادة التقييم في ضوء عمليات الحفر الجديدة. ولوجد الاكتشافات الجديدة في توقيع عقد التنمية في أبو رديس سيدري، في خليج السويس، مع إعلان الشركة الإيطالية الكبرى أنها ستقدم الدعم المطلوب لتحقيق التطوير السريع.

ويبلغ إنتاج الأسهم الحالي لشركة «إيني» الآن حوالي 350 ألف برميل من المكافئ النفطي يوميا، على الرغم من أنها تتوقع أنها أكبر خلال العام الحالي، بفضل حقل غاز ظهر وحقل بلطيم. وفي شهر أغسطس/آب الماضي، أعلنت شركة إيني أن إنتاج غاز ظهر قد وصل إلى 2.7 مليار قدم مكعب في اليوم، ولكن من المتوقع أن يرتفع إلى مستوى مرتفع قدره 3.2 مليار قدم مكعب في اليوم.

الاستثمارات الأخرى

أدى نجاح شركة إيني وحقل ظهر المذهل أيضا إلى طفرة في الاستثمارات الجديدة لدى شركات النفط والغاز الكبرى، بالإضافة إلى الشركات الصغرى. وقد نتج عن هذا زيادة في الاكتشافات الجديدة والاحتياطيات المتضخمة. ووفقا لشركة جلوبال داتا للبيانات والتحليل، برزت الهيئة المصرية العامة للبترول، على مستوى العالم، بين الشركات في الربع الثالث من عام 2019 حيث حصلت على أكبر عدد من اكتشافات النفط والغاز - أربع اكتشافات في المجمل.ولأن التغيير يسير في عجلة دائمة، وكذلك الأمر بالنسبة لبعض الشركات الجديدة التي حلت محل شركات قديمة. قامت - في العام الماضي - شركة دراجون أويل، الكائنة في دبي والتابعة لشركة بترول الإمارات الوطنية (إينوك)، بإتمام عملية شراء جميع امتيازات شركة بي بي البريطانية في خليج السويس كاملاً، مع وجود خطط لاستثمار نحو مليار دولار أمريكي على مدى خمس سنوات لتعزيز الإنتاج وتوزيعه. وتهدف شراكة شركة دراجون أويل مع شركة بترول الإمارات الوطنية - في شركة جابكو - إلى زيادة إنتاجها المجمّع بقيمة 75 ألف برميل في اليوم الواحد بحلول عام 2021 من 60 ألف برميل في وقتنا الحالي.

الترخيص الجديد

يتضمن جزءٌ من استراتيجية القاهرة أيضا فتح مجالات جديدة للتنقيب والتطوير المحتمل. ففي ديسمبر/كانون الأول 2019، منحت مصر امتيازات التنقيب في البحر الأحمر لشركة شيفرون الأمريكية (القطاع الأول) ومجموعة شل الإنجليزية (القطاع الثاني) وشركة مبادلة الإماراتية (القطاع الثالث) بعد مناقصة دولية أولى.

وذكرت وزارة البترول المصرية - في بيان لها - أن القطاعات الثلاثة تغطي مساحة تنقيب إجمالية تبلغ حوالي 10 آلاف كيلومتر مربع، ويبلغ الإنفاق على الاستثمار 326 مليون دولار أمريكي كحد أدنى. وقد عرضت مصر 10 قطاعات في الجولة الواحدة عبر منطقة الجرف البحري وحدودها مع السعودية.

وهناك مبادرات أخرى لإطلاق العنان للإمكانات في جميع الأماكن الأخرى، وتشير أحدث التقنيات لتحديد الاحتياطيات وجذب المزيد من الاستثمارات. ويشمل ذلك خططاً للحصول على أعلى دقة لصور الجاذبية في العالم. eFTG (مقياس الجاذبية الكاملة لقياس التنسور)، داخل مصر، عن طريق خبراء الزلازل والبيانات في شركة تي جي إس، مع آستي بريدج بورت. وسوف يتم - في المرحلة الأولى - مسح منطقة صعيد مصر، ولكن سيتم توسيعها لتشمل المناطق البحرية أيضا.

وقال كريستيان يوهانسن، الرئيس التنفيذي لشركة تي جي إس : «ستعمل مجموعة البيانات عالية الدقة هذه على تحسين الفهم الجيولوجي لأنواع التنافس المختلفة في هذه المنطقة الحدودية الواعدة للغاية، وتزويد الصناعة ببيانات سطحية أساسية قبل جولات ترخيص 2020 المرتقبة».

مفكرة الفعاليات 2020

فبراير/شباط

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مارس/آذار

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9 - 11 ـــ معرض عُمان للبترول والطاقة www.omanpetroleumenergyshow.com ـــ مسقط

16 - 19 ـــ مؤتمر الشرق الأوسط لعلوم الأرض www.gse-expo.com ـــ الشارقة

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آثار اكتشاف إيني لحقل ظهر البحري موجة من التنقيب والاكتشافات في المنطقة

مصـــر: المحور الرئيسي لغاز البحر المتوسط

تسير مصر الآن على خطى الطريق الشويم لتصبح مركزاً قوياً للغاز في منطقة البحر المتوسط، وذلك بالتزامن مع ارتفاع الإنتاج المحلي وتدفق الواردات الأولى من إسرائيل. كما تسعى مصر لوضع نفسها كمحور رئيسي للغاز في البحر المتوسط وذلك بخطى ثابتة وسريعة. وبجانب وجود ارتفاع ملحوظ في الاحتياطيات المحلية والإنتاج المحلي، وبشكل رئيسي من المنطقة البحرية الغنية، فإن الدولة بدأت في استيراد الغاز من إسرائيل والذي يمكن بيعه فيما بعد لأوروبا والأسواق الأخرى في غضون الأشهر القادمة.

حولت مصر نفسها في نهاية 2018، إلى مُصدّر للغاز بعد معاناة من العجز دام لعدة عقود. وقد بدأت نقطة التحول هذه بعد الاكتشاف الذي حدث في 2015، إذ اكتشفت شركة إيني الإيطالية حقل غاز ظهر العملاق في منطقة الشروق وهو أكبر حقل غاز تم اكتشافه في مصر وفي البحر الأبيض المتوسط. ويقدر أن يحتوي هذا الحقل وحده على 30 تريليون قدم مكعب من الغاز الطبيعي. كما أثار هذا الحقل موجة من التنقيب والاكتشافات اللاحقة. وتحظى شركة إيني بحصة مقدارها 50 في المائة في الامتياز، كما تحظى شركة روسنفت بنسبة 30 في المائة، وشركة بي بي بنسبة 10 في المائة وشركة مبادلة للبترول بنسبة 10 في المائة أيضا.

محاور التصدير

هذا يعني أنه يمكن استخدام منشآتي الغاز الطبيعي المسال (LNG) الراسختين في الدولة، والتي تم تعطيلهما أو تشغيلهما بطاقة أقل في السنوات الأخيرة وذلك بهدف زيادة الصادرات. فقد كان مجمع الغاز المسال، الكائن في دمياط، في حالة خمود منذ عام 2013.

وتوفر إسرائيل لمصر منذ يناير/كانون الثاني 2020 ـ وحتى الآن ـ حوالي 85 مليار متر مكعب من الغاز من حقولها البحرية في ليفياثان وتمار، وعلى مدار فترة تقدر بحوالي 15 عاما. وقد تمت معالجة صفقة الاستيراد من قبل شركة خاصة في مصر تدعى شركة دولفينوس القابضة للطاقة بقيمة 19,5 مليار دولار أمريكي. ولاقت هذه الصفقة ترحيبا واسعا باعتبارها واحدة من أهم الصفقات التي تم توقيعها من قبل الدولتين المجاورتين منذ توقيع معاهدة السلام منذ أربعة عقود، حيث وصفها وزير الطاقة الإسرائيلي يوفال شتاينتز بأنها «مجرد البداية» للتعاون.

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