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Oil Review Middle East

Oil · Gas · Petrochemicals

VOLUME 21 | ISSUE 2 2018

New frontiers in EOR

- Bahrain's energy investment drive
- Increasing recovery in heavy oil wells
- Compressor trends
- Addressing sour gas processing challenges
- Selecting the right pipeline coating
- Recruitment: attracting digital natives

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Editor's note

ENHANCED OIL RECOVERY (EOR) plays an increasingly important role in maximising recovery in the region's mature fields, and there is a strong focus on bringing on new EOR technologies that can help to unlock difficult oil resources. Petroleum Development Oman (PDO) is a pioneer in this field; find out more on p18. The Oil & Gas West Asia (OGWA) conference and exhibition to take place in Oman from 25-28 March, will provide a forum for the exploration of the latest EOR developments and techniques (see p20).
As Middle East countries struggle to produce enough gas to meet domestic requirements, sour gas fields have come to the fore as an important energy source. We address sour gas processing challenges on p32. We also look at Bahrain's flagship projects to lift production both upstream and downstream (p12), trends in the compressor industry (p26) and how to attract younger, digitally conversant talent into the industry (p15).

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➔Executives' Calendar 2018

MARCH			
11-13	**GPCA Research & Innovation Summit**	DUBAI	www.gpcaresearch.com
13-15	**Interspill**	LONDON	www.interspillevent.com
26-28	**Oman Oil & Gas Exhibition & Conference (OGWA)**	MUSCAT	www.ogwaexpo.com
26-27	**OpEx MENA 2018**	MANAMA	www.europetro.com
28-29	**Gulf Safety Forum**	MANAMA	www.europetro.com
APRIL			
17-18	**Kuwait Oil & Gas Summit**	KUWAIT	www.cwckuwait.com
17-19	**MOC 2018**	ALEXANDRIA	www.moc-egypt.com
29-3 May	**SOGAT 2018**	ABU DHABI	www.sogat.org
30-3 May	**OTC 2018**	HOUSTON	www.2018.otcnet.org
MAY			
7-8	**Homeland Security Middle East**	DUBAI	www.gulfhomelandsecurity.com
6-9 May	**Iran Int'l Oil, Gas, Refining & Petrochems Exhibition**	TEHRAN	www.iran-oilshow.ir/English
29-1 June	**Caspian Oil & Gas**	BAKU	www.caspianoilgas.az
OCTOBER			
23-25	**GDA Int'l Downstream Conference & Exhibition**	BAHRAIN	www.gdaconference.org
NOVEMBER			
12-15	**ADIPEC**	ABU DHABI	www.adipec.com

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

Striving for Operational Excellence in oil, gas and petrochemicals operations

IT IS NOW a given that striving towards Operational Excellence is critical for oil, gas and petrochemical operators as well as for the manufacturing and industrial sectors in general. Operators need to increase their margins and tightly control costs, whilst ensuring that safety and reliability are not compromised. Effective leadership is essential in managing the process of continuous improvement and ensuring that employees are empowered with data, information and procedures transparently in a role-based manner to assist in fast, accurate actions which lead to consistently good decisions.

At OPEX MENA 2018, which takes place from 26-27 March in Bahrain, the major operators in the region will share case studies that outline their challenges, successes and key learnings. Industry leaders, solutions providers and key consultants will discuss the latest trends, tools and techniques that will enable even greater levels of operational excellence improvements, allowing companies to innovate in the areas of 'people', 'process', 'assets' and 'technology'.

Topics include:

- Effective leadership and management systems for organisational excellence
- Operational Excellence through operational discipline
- Leveraging human factors for strategic change
- Portfolio performance optimisation – case study
- Digitalisation and the Fourth Industrial Revolution
- IIOT, leveraging the Cloud to monitor plant data
- Asset management, surveillance andreliability
- Operational readiness – dos and don'ts
- Energy management for increased efficiency and stability

For further information see the website at https://europetro.com/event/opex_mena2018/0.

The importance of Operational Excellence is increasingly acknowledged

Image Credit : the_lightwriter/fotolia

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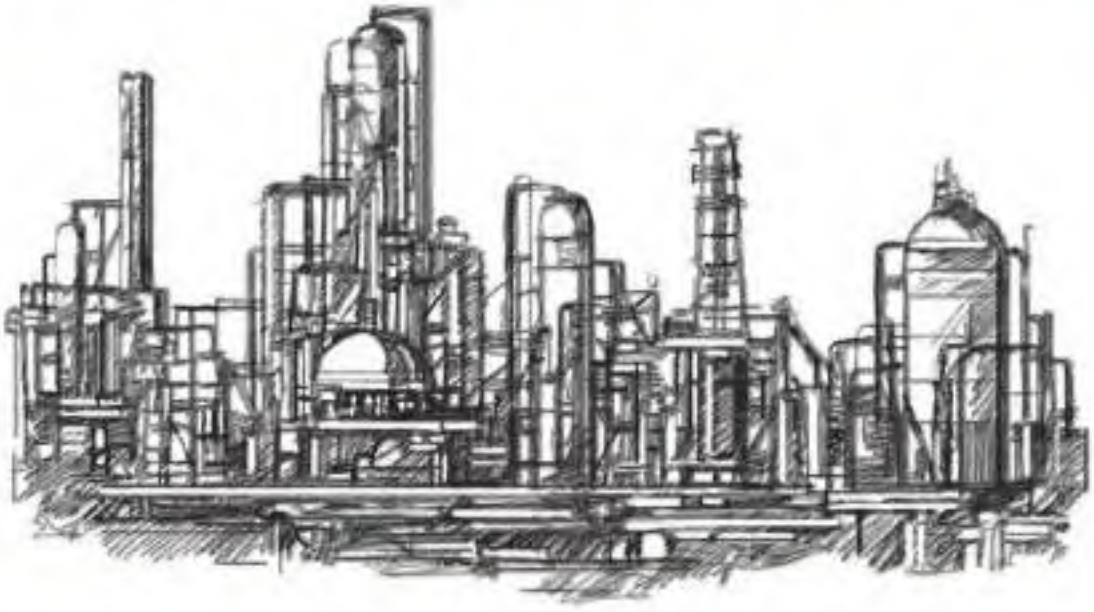

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SOGAT 2018 to explore latest developments in sour hydrocarbon management

SOUR OIL & Gas Advanced Technology 2018 (SOGAT 2018) will take place from 29 April to 3 May in Abu Dhabi, under the theme "Enhancing cost effective sour hydrocarbon treatment".

Comprising a conference, exhibition and practical workshops, the international event is supported by ADNOC and will provide a one-stop review of all the latest developments in sour hydrocarbon management.

The technologies involved in sour field development and production are continuously progressing, and the latest developments across the whole sour hydrocarbon management spectrum, including capturing CO_2 from sour gas processing facilities for use in EOR, will be included in the well respected SOGAT conference programme. This will focus on practical presentations demonstrating new developments and case study experiences.

In keeping with previous years, in-depth and practical workshops on topical issues that contribute to enhancing efficient operations will be presented in the first three days of SOGAT 2018, covering practical amine treating, sulphur recovery practice and design and the key aspects of sour oil and gas process optimisation, plus other technical issues of current concern.

For further information see the website at www.sogat.org.

The event will review the latest developments in sour hydrocarbon management

Image credit: Nikolai Zaburdaev/Shutterstock

Unlocking the Mediterranean's energy potential

THE MEDITERRANEAN BASIN has huge hydrocarbon potential. Egypt has more than 70 trillion cubic feet of proven gas reserves with Zohr, the largest gas discovery in the Mediterranean, accounting for 30 trillion cubic feet of natural gas alone. Combined with four billion barrels of proven oil reserves, this makes Egypt one of the largest oil and gas producers in Africa and in a strong position to become the regional oil and gas hub, as envisaged in Egypt's Vision 2030 programme.

The 9th Mediterranean Offshore Conference & Exhibition (MOC), to take place from 17-19 April 2018 in Alexandria, is Egypt's premier energy event focusing on offshore oil and gas. Organised by the Egyptian petroleum sector in partnership with the Offshore Mediterranean Conference (OMC) of Ravenna, Italy, the event will provide an excellent opportunity to network with national and international companies, innovators and decision makers, and get an in-depth understanding of where the opportunities are and how to get involved.

For further information see the website at www.moc-egypt.com

Kuwait Ministry of Oil and KPC to host 5th Kuwait Oil & Gas Summit

THE CWC 5TH Kuwait Oil & Gas Summit will take place from 16-17 April 2018 in Jumeirah Messilah Beach Hotel, Kuwait under the patronage of HE Bakheet Al-Rashidi, Kuwait's Minister of Oil, and is officially hosted by KPC and its subsidiaries. The summit will welcome regional government and leading industry players who will come together to announce new project opportunities and discuss innovative solutions.

Kuwait expects to spend more than US$500bn as it boosts its crude oil production capacity to 4.75mn bpd by 2040, with US$100bn due to be spent in the next five years, the CEO of Kuwait Petroleum Corporation has said, with the number of drilling rigs forecast to grow from 150 to 180 by the end of the year. Ambitious plans to boost refining capacity, both in Kuwait and abroad, are also underway, with more than US$50bn being spent over the past five years to build a new refinery and upgrade existing refineries. Now is the ideal time to explore business opportunities in Kuwait.

Jamal Abdulaziz Jaafar, CEO, KOC who will be speaking in Session 3 on Day 1, stated in a recent interview with CWC, "Global oil and gas consumption continues growing, representing 57 per cent of total primary energy consumption in the world, and both fuels will continue to be the main source of energy for several years to come. That represents a strong opportunity to expand our market share through OPEC. KOC continues to be recognised as one of the largest oil and gas companies in the world, and we have been, for several years, focused at implementing a growth strategy, given our large reserves base and our advantage of having the lowest costs in the world."

With the theme 'New Energy Era in the Region: Transformation, Diversification and Integration', the agenda of the conference will cover the future outlook for the energy industry; industrial partnerships; petrochemical innovation: new product development; energising the workforce and strategies for talent development; and investment and project finance.

Sponsors include: EQUATE, Schlumberger, Total, Shell, Weatherford, GOFSCO, Petrofac, FLUOR, Dow, ABB, Glasspoint, Hot Engineering & Construction Co. and Kuwait Airways.

The event will welcome leading regional government and industry players

Image credit: CWC

Distinguished speakers include H.E. Bakheet Al-Rashidi, Minister of Oil, Kuwait; Nizar Al-Adsani, deputy chairman and CEO, KPC; HE Dr. Mohammed bin Hamad Al Rumhi, Minister of Oil & Gas, Oman; Mohammed Qahtani, senior vice president of Upstream, Saudi Aramco; Khalid M. Abuleif, Sustainability advisor to the Minister and chief negotiator for Climate Change Agreements, Ministry of Energy, Industry and Mineral Resources, Saudi Arabia; Jamal Abdulaziz Jaafar, CEO, KOC; Sami Iskander, executive vice president, Upstream Joint Ventures, Shell; Maen Razouqi, president Northern Middle East, Schlumberger; Mohammad Husain, former president and CEO, EQUATE Petrochemical Company; and other senior business leaders.

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

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Honeywell and EQUATE in deal to enhance Kuwait's petrochemicals productivity

HONEYWELL AND EQUATE Petrochemical Company have signed a memorandum of understanding (MoU) to further the development of innovative technologies to support operations at EQUATE's industrial complexes in Kuwait.

EQUATE is currently the owner and single operator of several fully integrated world-class petrochemical complexes in Kuwait, North America and Europe. The company is Kuwait's first international petrochemical joint venture and the world's second-largest producer of ethylene glycol (EG).

As part of the MoU, EQUATE will test newly released Honeywell technologies, including the latest additions to the Honeywell Connected Plant portfolio, as well as assess EQUATE's requirements and new ideas at Honeywell facilities. The companies will join efforts to analyse EQUATE's needs and create added value through increased productivity and reduced downtime, setting a new standard for the petrochemical industry in the region.

Honeywell has had a presence in Kuwait for more than 53 years and is the leading automation provider in the country that has around nine per cent of the world's oil reserves. Honeywell has successfully delivered more than 2,000 projects in Kuwait and services 50 sites daily.

ADNOC awards Japan's INPEX 10 per cent stake in Lower Zakum offshore concession

THE ABU DHABI National Oil Company (ADNOC) has signed an agreement with Japan's INPEX awarding the latter a 10 per cent interest in Abu Dhabi's offshore Lower Zakum concession. A wholly-owned INPEX subsidiary, JODCO Lower Zakum Limited, will hold and manage the interest in the concession on behalf of INPEX. The agreement, which comes into effect on 9 March and has a term of 40 years, was signed by Sultan Ahmed Al Jaber, ADNOC Group CEO and member of Abu Dhabi's Supreme Petroleum Council, and Toshiaki Kitamura, president and CEO of INPEX. At the same time INPEX's stakes in Abu Dhabi's Satah and Umm Al Dalkh concession have been extended for 25 years. INPEX maintains its 40 per cent stake in Satah and increases its Umm Al Dalkh share from 12 per cent to 40 per cent.

INPEX paid a participation fee of US$600mn to enter the Lower Zakum concession, which will be managed by ADNOC Offshore, a subsidiary of ADNOC, on behalf of all concession partners. The Japanese firm has also paid US$250mn to extend its interests in the Satah and Umm Al Dalkh concession.

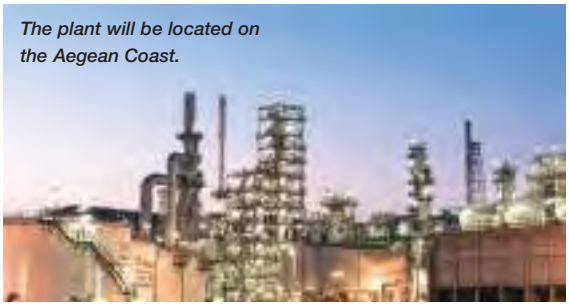
Lower Zakum is one of three new separate concession areas that make up the former ADMA offshore concession, which is being split into three separate concession areas to maximise commercial value, broaden the partner base, expand technical expertise, and enable greater market access.

Japan is heavily reliant on crude oil imports from the Middle East, with the UAE providing 25 per cent of the country's requirements. ADNOC is also finalising opportunities with potential partners for the remaining 20 per cent of the available 40 per cent stake in the Lower Zakum offshore concession, earmarked for foreign oil and gas companies.

SOCAR's oil refinery in Turkey to begin In Q3 2018

THE FIRST NEW oil refinery to be built in Turkey in 30 years will start production in the Q3 2018, the builder and operator Azeri state energy firm SOCAR said.

According to a Reuters report, the US$6bn Star refinery will supply feedstock to Turkish petrochemicals firm Petkim to help cut Turkey's dependence on imported refined oil products. It will boost Turkish refining capacity by 30 per cent.



The plant will be located on the Aegean Coast.

Image Credit : Sorapop/Adobe Stock

The plant on the Aegean Coast will have capacity to process around 10mn tonnes per year (200,000 bpd) of crude, SOCAR deputy V-P Vitaly Baylarbayov said.

The plant is expected to produce 1.6mn tonnes of naphtha and 420,000 tonnes of xylenes. It will also produce around 4.8mn tonnes of diesel, alongside jet fuel, petroleum coke, reformate, sulphur and liquefied petroleum gas (LPG).

Turkey produces a surplus of gasoline but relies on imports of diesel, with consumption of the fuel growing by around seven per cent a year and expected to reach 25mn tonnes in 2019.

Tupras, Turkey's only refining firm, has four plants across the country with combined processing capacity of 28mn tonnes (560,000 bpd).

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Total acquires Marathon Oil's stake in Libya field

TOTAL HAS ACQUIRED Marathon Oil Libya Limited, which holds a 16.33 per cent stake in the Waha Concessions in Libya. This acquisition will give Total access to reserves and resources in excess of 500mn bbl of oil equivalent, with immediate production of around 50,000 barrels of oil equivalent per day (boe/d) and a significant exploration potential across the area of 53,000 square kilometres covered by the concessions in the Sirte Basin. The consideration payment for the transaction is US$450mn.

"This acquisition is in line with Total's strategy to reinforce its portfolio with high quality and low-technical cost assets whilst bolstering our historic strength in the Middle East and North Africa region," said Patrick Pouyanné, chairman and CEO of Total. "It builds on the Group's long-term presence in Libya, a country with very large oil and gas resources, and demonstrates our commitment to continue supporting the recovering oil and gas industry of the country."

The Waha Concessions currently produce around 300,000 boe/d, which is expected to rise to more than 400.000 boe/d by the end of the decade, according to Total.

The Waha Concessions are jointly owned by the NOC (59.18 per cent), Total (16.33 per cent), ConocoPhillips (16.33 per cent) and Hess (8.16 per cent). The Waha Oil Company, a 100 per cent NOC-owned entity, operates the asset.

Total has been present in Libya since 1954. In 2017, the Group's production was 31,500 boe/d.

Luke Parker, vice president, Corporate Analysis, at energy consultants Wood Mackenzie commented, "The Waha acquisition is an interesting one for Total. It comes at a time when Libya's production resurgence continues, with unofficial sources reporting exports of 1.1mn bpd for February, which would be the highest level since 2014.

Image Credit: Ben Grasser / Shutterstock

The area has significant exploration potential

"But there are risks to the growth story. In recent times production has been constrained for prolonged periods due to shut-ins at export terminals. Stability has improved, but the lack of central government means the risks of tribal disputes and labour strikes blockading critical infrastructure remain acute."

Bahrain presses on with energy investment drive

With multiple projects underway to diversify energy sources and elevate production, these are crucial times for Bahrain and its flagship energy companies, says Martin Clark.

BAHRAIN MAY BE one of the Gulf's smaller oil and gas producers but there's no denying its current level of ambition. Flagship projects include raising production at the local refinery, rolling out a new crude oil pipeline to Saudi Arabia and lifting natural gas production. It is an important time in the modernisation of the country's energy sector.

At the end of last year, the Oil and Gas Holding Company (nogaholding) – the government holding entity for most of the country's big energy companies – closed out a US$3bn fundraiser to help bankroll its current slate of projects. Signing off the financing, Oil Minister and nogaholding chairman Sheikh Mohamed bin Khalifa Al Khalifa, said the proceeds would allow Bahrain to pursue its intensive upstream and downstream agenda – and he didn't rule out further borrowing later on.

"The debt raised from this – and future issuances – will be an important tool in enabling nogaholding to deliver on its stated objectives of developing commercially attractive projects across the oil and gas value chain, to the benefit of the people of the kingdom of Bahrain."

nogaholding's portfolio includes the Bahrain Petroleum Company (Bapco), the Bahrain National Gas Company (Banagas), oil and gas producer Tatweer Petroleum, among numerous other upstream and downstream subsidiaries.

Al Khalifa said the Bapco refinery modernisation, the Banagas expansion project, as well as the new crude oil pipeline between Abqaiq and Bahrain (the so-called A-B pipeline), will generate substantial additional revenues from increased capacity and production. He also cited "the unbreakable ties" between Bahrain and Saudi Arabia, as well as the close commercial relationship between Bapco and Saudi Aramco, in putting this new energy blueprint together.

Diversification

The Bahrain energy facelift comes at a time when the region's oil and gas sector has been forced to come to terms with a sustained period of lower pricing.

Image Credit : BAPCO

Bahrain is looking to pursue an intensive upstream and downstream agenda

> "Bahrain's economy is still heavily reliant on the oil and gas sector"

Like other Gulf states, Bahrain has been taking active steps to diversify its economy away from hydrocarbons in recent decades, into finance, tourism and other services, in response to the energy market volatility.

Although it is a much smaller producer compared to Saudi Arabia and other peer states like Kuwait and Abu Dhabi, it has still faced many of the same challenges linked to oil and gas dependency.

Last year, the International Monetary Fund (IMF) put gross domestic product (GDP) growth at just 1.7 per cent, down from around three per cent in 2016, although it noted a significant uptick in the growth of the non-oil sector. Bahrain's small population of around 1.4mn also means it does not have to contend with the same scale of problems faced by larger economies such as Saudi Arabia.

Nonetheless, despite advances in financial services and other sectors, Bahrain's economy – and the public purse – is still heavily reliant on its oil and gas sector. This places Bapco and the other nogaholding operating companies in the front seat in piecing together the nation's economic future. Indeed, the establishment of Bahrain LNG –

another nogaholding company – to import gas into the kingdom underscores the country's, at times, challenging position. The floating liquefied natural gas (LNG) terminal is due for completion in early 2019 and will have a capacity of 800mn standard cubic feet per day. It is regarded as a key component of Bahrain's energy sector expansion and to supplement local gas production to meet peak seasonal demand and fuel long-term industrial growth.

The terminal is jointly owned by nogaholding and a consortium of Teekay LNG Partners, Gulf Investment Corporation (GIC) and Samsung.

Potentially, it will allow Bahrain to supply gas to other regional states – including Saudi Arabia – as well as satisfy its own domestic energy needs.

Production lift

While the LNG project will bring options and an added level of energy security to Bahrain, Bapco remains focused on elevating the country's own production.

Central to this is the Bapco Modernisation Programme (BMP) – the country's single most expensive energy project – involving the expansion of capacity at the existing Sitra oil refinery from 267,000 up to 360,000 bpd. Bapco awarded a US$4.2bn contract to TechnipFMC, Samsung Engineering and Tecnicas Reunidas for the project in December. The project, slated for completion in 2022, will enhance the refinery's product slate and improve environmental compliance. The refinery will produce fuels for the local, regional and international market.

> "The project will enhance the refinery's product slate and improve environmental compliance"

The expansion is closely linked to the construction of a new 350,000 bpd oil pipeline from Saudi Arabia, to replace an existing 230,000 bpd link from Abu Safa, an oilfield that is shared by both countries. The 115 km pipeline will run 42 km offshore and 73 km onshore, between Saudi Aramco's Abqaiq plant and the Sitra refinery on the coast of Bahrain. Work is now reportedly around half completed on the project. While the improved oil flow is intended to be used to feed Bapco's refinery expansion, Bahrain is also hoping that it can increase domestic gas production simultaneously.

Officials want to lift output from Bahrain's own oilfield – the Bahrain field – by tapping pre-khuff gas, which is gas located in deep deposits, although any development here could be linked to prevailing conditions in the energy markets. Al Khalifa has said Bahrain is looking for more partners to develop the field, following the departure of the UAE-based Mubadala and the USA's Occidental Petroleum back in 2016.

Banagas is leading another of the country's major energy projects to lift domestic gas processing capabilities with a series of new state-of-the-art facilities. Once completed, the combined capacity of Banagas and the Bahrain National Gas Expansion Company (BNGEC) is expected to increase to 653mn standard cubic feet per day. This too attracted financing worth more than US$500mn, from a variety of international sources, reflecting an ongoing positive sentiment towards Bahrain, even in the face of more challenging economic conditions. ■

Iraq eyes revival of northern oil infrastructure

After the tumult of recent years, Iraq is once again looking ahead to the development of its oil sector and the revival of its northern assets, says Martin Clark.

IT MAY STILL be a challenging market to operate in, but Iraq no doubt presents one of the greatest opportunities in today's oil industry.

After declaring victory over Islamic State (IS) in December, and taking back all territory captured by militants in 2014 and 2015, the country is once again looking forward. Even in previously troubled areas there is a sense that the industry is ready and keen to return to work.

That's certainly evident in the north, in the wake of years of chaos, fighting and factions. Baghdad has just invited bids for the construction of a new 100,000 bpd refinery near Mosul in the province of Nineveh, for instance. Mosul was the IS de facto capital in northern Iraq, until it was dislodged in 2017.

Iraq is also taking steps to secure a planned oil transit route through to Iran, clearing any lingering armed groups in remote mountainous border areas. The two sides have agreed to swap up to 60,000 bpd of crude produced from Kirkuk for Iranian oil to be delivered to southern Iraq.

Kirkuk crude sales have been halted since Iraqi forces took back control of the fields from the Kurds in October. Kurdish forces took control of Kirkuk in 2014, when the Iraqi army collapsed, overwhelmed by the IS capture of large parts of the country. The Kurdish move prevented militants from seizing the region's oilfields.

> "Baghdad has just invited bids for a new 100,000 bpd refinery near Mosul"

And up in the semi-autonomous northern Kurdistan region of Iraq (KRI), Chevron has once again resumed drilling work with the Sarta 3 well. The US oil giant temporarily suspended operations in October last year after a controversial independence referendum sparked fresh tensions between Baghdad and the area's regional government. A month before, it had drilled a well at the Sarta block after a two-year hiatus.

Image Credit : Pixabay

Things are looking up for Iraq's oil industry

While parts of the country remain volatile – IS groups continue to carry out attacks and bombings in Baghdad and other parts of Iraq – a new normality is returning. It sees the government in determined mood once more to increase oil export capacity both from the north and from the more stable south of the country.

Iraq's Oil Minister Jabar Al Luaibi said earlier this year that the nation's export capacity was now nearing five million bpd, the vast majority of it (4.6mn bpd) from the south. Despite constraints from OPEC quotas and other challenges, a key focus, Al Luaibi said, was to elevate northern production. Iraq hopes to more than double output from the Kirkuk oilfields, for example, after signing a memorandum of understanding with BP in January. The oil company had originally agreed in 2013 to help Baghdad halt a decline in output from the area. The new agreement sees BP boosting Kirkuk's output to 750,000 bpd, more than twice existing capacity.

The Oil Minister is also courting Turkey with the hope of resuming northern pipeline exports through the Turkish port of Ceyhan.

There are plans to build a new export pipeline out of Kirkuk, to replace an old and severely damaged section linking the oilfields to the Mediterranean. The new pipeline would extend to the Fish-Khabur border area with Turkey. Iraq and Iran are also discussing the possibility of building a new pipeline to carry oil from Kirkuk. The bulk of Iraq's oil is still exported via its southern terminals, however, and concentrated around the city of Basra.

While production levels are rising and set to grow further with the revival of the northern fields, they are still way off long-term growth targets – around 12mn bpd oil – a figure declared more than a decade ago.

No one doubts Iraq's resource potential – with estimated reserves of 112bn bbl – but harsh technical service contract terms and a myriad of technical, political and security factors have all conspired to subdue growth, say analysts.

Energy consultancy Wood Mackenzie says that while Iraq's technical service contracts promised investors quick cost recovery with a low per barrel fee there were a number of shortcomings. Indeed, following the oil price decline there were late payments to operators – the likes of BP, Shell and Exxon – that eroded project returns and disrupted schedules.

There remain many difficulties, but for now, the peace dividend is everything, enabling all sides to look forward again with a degree of greater confidence and to plan ahead. ■

The challenge of attracting digital natives

Jon France, regional director – EMEA, Petroplan, discusses what oil and gas companies need to do to attract and retain the next generation of engineering and leadership talent.

WITH THE EMERGENCE of digitisation and Big Data, artificial intelligence and the increased use of automation, the oil and gas industry is examining how these advanced, and sometimes disruptive, technologies will play a role in improving performance and securing a long-term future, albeit one that will eventually represent a very different industry from today. Even today, while hydrocarbons still represent a large proportion of the end product, increased digitisation is driving greater innovation and improving productivity and efficiency in the field.

In any industry, people are the most important commodity. When it comes to implementing the digital strategies that oil and gas companies are pursuing to improve operational efficiency and retain profitability, people are even more important.

> "The skills required for this new age of digital oil and gas differ immeasurably from what has long been the traditional skillset"

The concern for the oil and gas sector is that the skills required for this new age of digital oil and gas differ immeasurably from what has long been the traditional skillset, and largely reside with a younger generation. Failing to elevate the skills of a workforce is the most common pitfall in unsuccessful transformations. To advance the skills needed in the oil and gas sector will require a combination of recruiting fresh talent from outside the industry – including data scientists, software engineers and other digitally savvy professionals – as well as recent graduates, plus updating skills for operational staff already within the industry. Disciplines include digital risk security, cloud architecture and infrastructure, control networks (SCADA), robotics and Progressive Web applications, among others.

The requirement for younger, technologically savvy individuals is compounded by the natural but significant attrition from the industry of retirement-age oil and gas employees – or the "Great Crew Change" - with the potential loss, not of digital skills, but of the process know-how that technology will enable and advance.

With impending knowledge loss and digitisation gaining ground, now is the time to recruit new talent from the vast amount of highly capable people available, who may not have considered the oil and gas sector as a potential employer.

Petroplan, one of the world's leading oil, gas and energy recruitment companies, produced their second Talent Insight Index in 2017. A key finding was that digital natives may not be looking at the oil and gas sector as a career choice, verifying earlier indicators within the industry.

While attracting younger, digitally-conversant talent is undoubtedly a challenge facing a number of industry sectors, it is somewhat more of a concern for the oil and gas industry. In a now well referenced speech from 2016, Bob Dudley, chief executive of BP, forewarned that the oil and gas industry was in jeopardy of falling behind in the competition to attract talented younger employees. Citing a McKinsey research study[1] listing the industry sectors where digital natives (often synonymously referred to as "Generation Y" or "millennials" and born between 1982 and 2004) would least like to work, he announced that the dubious honour went to the oil and gas industry – with 14 per cent of respondents admitting they would not seek a career in the sector, due to its perceived negative image. This negative response was higher than for any other industry, including defence – and considerably higher than banking, which has received a particularly bad rap in recent years.

In a further study from EY[2] the news got worse with the generation after millennials, commonly referred to as 'Z', rejecting the idea of oil and gas careers.

Millennial attitudes

Millennials are now occupying junior to mid managerial roles and are beginning to ascend into executive ranks. According to McKinsey's report, millennials will constitute a majority of the US workforce by the early 2020s. They have already formed their own attitudes and viewpoints around a host of work related issues from sustainability, ethical work structures and accountability to diversity, equality and technology – and they are not only very different from those of the baby boomer generation, but will come to define corporate culture going forward.

Their negative perceptions of the oil and gas sector, held legitimately in many cases, include it being seen as a "dirty" hydrocarbon-based industry versus one which can help support a cleaner fuel future; having a reputation for "unfairness" and lobbying borne of self-interest; maintaining a rigid hierarchical management infrastructure where innovation and ideas are overlooked; a lack of employee diversity; slow to embrace newer ways of operating including remote working and flexibility towards time management; and an underappreciation of the potential of digital technologies and what they can deliver to the business.

Millennials dislike rigid corporate structures and want open collaboration rather than a siloed approached to working. They view the workplace as being built around tasks and projects, rather than top-down decision making, where teams may have no formal leader, instead leaving decision making to whoever has the relevant expertise.

Millennials have ambitious aspirations and want rapid career progression with a plan for continual learning and personal development and an expectation for immediate feedback – with a more crowdsourced approach than the traditional line manager assessment. In multiple surveys undertaken, this aspect of working was seen as more important than remuneration. Organisational agility and fluidity in team working and the ability to innovate in a rapid, iterative, "fail-fast", test-and-learn approach is seen as the way forward, rather than the old test-to-destruction method, with cascading layers of approvals.

They also expect a genuine work/life balance and have been described as "loyalty lite"[3], ready to change employers when their expectations are not met.

Digitally savvy millennials have grown up in an era of rapid technology evolution and expect access to it at work. For this younger generation – often referred to as "digital natives" – technology accessibility means immediate response times, group collaboration, enablement of remote working, even in some instances, location-agnostic employment.

Image Credit : .shock/Adobe Stock

The oil industry needs to work hard to attract digitally-savvy talent

The power of the employer brand can't be underestimated. In a study undertaken by Cone[4], a staggering 76 per cent of millennials surveyed were seeking employers with corporate social responsibility (CSR) values that matched their own, and most would consider leaving an employer whose values no longer matched their expectations. As Bob Dudley commented, "The millennial generation don't just want career growth, they also expect to make a positive contribution to society." It will be important for oil and gas companies to communicate to millennials how their transformational strategies will lead to a cleaner environment so potential hires don't feel like they are at a moral crossroads. Bob Dudley further emphasised that the industry must do a better job communicating its commitment to help the world shift towards cleaner forms of energy or risk losing the young people needed to lead the transition. "We need people who are curious, people who can challenge the status quo and come up with new solutions," he said.

> "Millennials dislike rigid corporate structures and want open collaboration"

Struggling to connect

When it comes to attracting digital natives into the oil and gas industry, we find many companies struggling literally – and metaphorically – to connect.

Organisations that have successfully attract talented millennials, such as Google, Ebay, Amazon, Microsoft and Apple, have since their inception been pioneering employers who have rarely been constrained by traditional notions of the workplace. Their flatter management structures, positive attitude to diversity, ground-breaking adoption of technology and overall corporate culture attract the brightest millennials, making them formidable competitors for the best talent.

For some smaller, more regionally focused oil and gas companies – who are able to benefit from greater agility and the ability to connect more directly with their local talent base – attracting millennials is proving less of an issue. Bold, publicly communicated initiatives around transformation away from hydrocarbon motor fuels and embracing changing consumer habits around mobility and retail services, have allowed organisations like the MOL Group in Hungary, for example, to successfully attract not only much needed digital natives but also the engineering talent to replace outgoing baby boomers. "The success of our transformation strategy depends on our people, so hiring a younger generation that fits a more customer service oriented – even start-up – mentality, must be supported by not only innovative recruitment initiatives, but the right mindset internally," commented Zdravka Bubalo, VP of Human Resources at MOL."MOL has grasped the fundamentals of what millennials and digital natives need in the workplace – from a focus on continual development and promotional advancement to gender parity and support for innovation."

The new MOL HQ, to be opened in 2021, will rival the best working environments in Silicon Valley in terms of sustainability, ergonomics and interconnectivity and will reflect MOL's vision and commitment to hiring the very best millennials.

However, these oil and gas companies are in the minority. The majority of organisations do not find themselves in this position and need to take urgent steps to foster the internal changes required in order to attract millennials. They also need to take a more proactive approach to specifically seeking out technologically advanced candidates from other sectors. As Jon France explained, "For decades they have been used to recruiting from within their own ranks but they now need to source that talent not only from other industries but from geographical locations often far removed from their home bases, such as high-tech hubs like San Francisco and Seattle. Oil companies see it as a gamble but if the selection and interview process is well considered, they should benefit from these potential hires' learning."

> "They need to take a more proactive approach to seeking out technologically advanced candidates"

Petroplan believes the industry also needs to take a fully engaged, hands-on approach to recruiting IT-based technology graduates, in addition to the latest engineering high flyers. It needs to direct its recruiters to do the same, reaching out to universities and colleges to communicate that the oil and gas industry is a vibrant, relevant and rewarding industry. Some academic institutions based in oil and gas hubs such as Houston are looking to expand their offerings around data science. RICE University, for example, has an initiative to significantly grow its faculty in this discipline with a view to supporting Houston's major industries.

It is clear that millennials will be a powerful generation of workers and that those with the right skills will be in high demand. As well as commanding strong remuneration packages, they will have influence over how and where they participate in the workplace.

However, in order to attract and retain the next generation of engineering and leadership talent, oil and gas companies need to work harder on understanding their motivations. They will also need to make deeper changes to their organisation and cultural constructs in order to meet the younger generation's needs for meaningful work and social responsibility – and they will need to actively seek candidates from beyond the usual energy-based hunting grounds.

There is a significant amount of transformation and innovation happening in the oil and gas sector which if harnessed and well communicated should engage millennials, but companies need a clear and attractive storyline. ■

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PDO - a global leader in EOR

Junaid Ghulam, field development manager, Petroleum Development Oman (PDO) and Rifaat Al Mjeni, EOR portfolio leader, PDO discuss the oil and gas company's enhanced oil recovery (EOR) activities and achievements in the run-up to Oil & Gas West Asia (OGWA).

What is the importance of EOR to Oman's oil and gas sector and its contribution to achieving production goals?

Despite the challenging economic environment, PDO is continuing its journey in growing the future EOR contribution to oil production with focus on cost. It is anticipated that by 2025 more than 23 per cent of PDO's production will come from EOR projects. PDO is currently operating a range of commercial-scale EOR projects including chemical EOR, miscible gas injection (MGI) and thermal applications. Concurrently, PDO is continuing to identify novel EOR technologies that have the potential to unlock difficult hydrocarbon resources. This is being done through a series of dedicated laboratory and field testing programmes.

Image Credit : PDO

Junaid Ghulam, field development manager, PDO (left) and Rifaat Al Mjeni, EOR portfolio leader, PDO

What do you think are PDO's most significant advances and achievements in EOR?

PDO is the leading company in the region, if not the world, in which four different EOR recovery processes are being implemented on a full field commercial scale. The projects include miscible gas injection, steam injection, steam-assisted gravity drainage, and polymer flooding. These projects are a testament to PDO's ability to successfully implement several complex recovery processes with various challenges in a short time span. The Amal West steam injection project warrants a special mention as it is the first in the world where a renewable energy source (solar energy) is harnessed to assist in steam generation for injection.

> "It is anticipated that by 2025 more than 23 per cent of PDO's production will come from EOR projects"

What have been some of the main challenges in implementing EOR projects, and how have you overcome them?

There are two main challenges encountered in EOR. The first is related to the scarcity of the specialised skill sets required for EOR throughout the EOR value stream. The second challenge relates to the commercial environment and ensuring that we persist with EOR during the downturn with a cost focus.

On the specialised skill set challenge, PDO created an EOR department and staffed it with Omani and international experts who together are working towards developing technologies that will unlock hydrocarbons in the future. In addition, PDO entered into a number of strategic alliances and joint industry projects with various institutes worldwide in which we are able to access the niche skills that we need to strengthen, and ensure that our staff are developed accordingly.

As for the commercial challenges, we have divided the heavy oil portfolio into three segments:

The first segment consists of fields which lend themselves to easy replication of some of the proven EOR recovery processes in full field implementation, such as steam floods, thermal-assisted Gas-oil Gravity Drainage (GOGD), and polymer floods. This allows Oman to progress with projects in a phased manner which minimises exposure, accelerates cash flow and increases production.

Segment two are the fields that seem to be a small step out of the proven EOR technologies, such as heavier oils for polymer floods or lower permeability reservoirs. These require a small pilot but are still within the assets under the EOR recovery process, and have standard surface facility systems which do not require major upgrade or enhancement of the surface injection/production system.

Segment three are reservoirs which do not have any proven EOR processes associated with them and still remain within the research

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domain. These fields can either be offered to companies where we could collaborate to unlock the reserves using novel recovery ideas and/or perform laboratory experiments in which various technologies are tested on a laboratory scale to define new recovery mechanisms where it is recognised that a long lead time is needed before the technology is matured.

What are PDO's future plans for EOR, and what techniques do you think are the most promising for future development?

PDO is investigating cost-effective EOR technologies, so that we can continue to implement EOR in a much more cost-efficient manner. This means expanding the types of chemicals that are being looked at beyond the conventional chemicals and focusing on maximising cashflow. We are investigating technologies to deliver chemical formulations to target areas through the use of diverting chemicals to improve contact of chemicals with reservoir fluids. We are also investigating the use of alternative polymer types which may be suited to high temperature and salinities as well as continued work on the use of solvents as a means to increase production. Many of these areas are at the forefront of innovation and hence still reside in the laboratory phase. However, much of the groundwork is being done so that we could implement the technology when the commercial environment becomes more favourable.

Due to the diversity of reservoirs within the PDO portfolio there is not going to be one single technique that can be relied on. I think that we will need to ensure we have a number of techniques that are commercially viable to ensure the maximisation of recovery from our difficult hydrocarbon portfolio. ■

The 11th OGWA-SPE Exhibition and Conference

THE OIL AND GAS sector in Oman has undergone transformative changes over the last few years. Technological advances are unlocking new oil and gas resources in the region.

Leveraging these developments, the 11th edition of Oil & Gas West Asia (OGWA) Exhibition and Conference will be held from 25-28 March under the auspices of the Ministry of Oil & Gas and supported by PDO and OPAL.

Since its launch in 1998, the OGWA-SPE Exhibition and Conference has grown to become one of the most important and recognised oil and gas events in the region. In Oman, it has become the landmark event for the sector, playing a major role in boosting government initiatives to open paths to viable alternatives to the current extraction and exploration techniques and technologies. It provides a ready platform to present major projects and potential business opportunities, as well as encouraging trade.

Image Credit : OmanExpo

OGWA has become the landmark event in Oman for the oil and gas sector

The SPE EOR Conference, held alongside the OGWA exhibition, has as its theme 'Staying the course and moving to new frontiers'. It will feature a keynote panel session and an executive plenary session where distinguished industry leaders and representatives from the Ministry of Oil and Gas, Oman, will share their views of the industry's successes and progress made in enhanced oil recovery, in addition to boosting the industry's contributions to socio-economic developments. Technical sessions will cover the latest advances in chemical EOR, thermal EOR, miscible gas injection EOR, low salinity water flooding and much more.

Over the years, this event has become a hub for professionals from around the globe to share their experiences and discuss new technologies and advances in EOR.

This year, the exhibition will be held for the first time at the new Oman Convention & Exhibition Centre and will showcase more than 300 companies representing 19 countries. Highlighting the exhibition are six country pavilions (China, Iran, Italy, India, Egypt and the SPE Technology Pavilion), and the ICV Riyada Pavilion, where with the support of Strategic Partner Business Gateways, it will present around 130 companies who will showcase their profiles at the Riyada JSRS e-marketplace and 10 stands at the exhibition.

His Excellency Mohammad bin Al Zubair, adviser to His Majesty for Economic Planning Affairs, will formally open the event.

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

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Helping to enhance production

Zeinoun Klink, Halliburton's vice president of the Eastern Gulf Region, shares his thoughts on EOR and how Halliburton is helping customers to maximise the value of their assets in Oman and the region.

How does Halliburton view business prospects in Oman and the region?
Halliburton is very optimistic about Oman and the Middle East. We foresee an increase in future activities and the need for services and technologies to effectively develop oil and gas assets. Geology complexity, various challenges and market conditions today demand efficient and engineered solutions. Halliburton has been heavily investing in technologies and solutions that help our customers increase production and lower costs. Halliburton has been also investing in Oman, building and upgrading facilities, workshops, and setting manufacturing capabilities. This is driven by our "In Country Value" initiative to invest in the local workforce, institutions and the development of local companies in Oman. The company's value proposition is to collaborate and engineer solutions to maximise asset value for our customers. We see many opportunities in various areas like hydraulic fracturing, water conformance, sand production, artificial lift and integration of services. Halliburton plays a major role in offering solutions to help operators successfully develop their assets.

Image Credit : Halliburton

Zeinoun Klink, Halliburton's vice president of the Eastern Gulf Region

What is the importance of EOR to the region's oil and gas sector?
Worldwide, the importance of EOR is increasing as the discovery of large fields with plentiful reserves becomes fewer and farther between. The majority of production in the Middle East and North Africa region is accounted for by mature fields. Enhanced oil recovery is recognised as an essential process to maximise the asset value of these ageing fields.

Oman is one of the leading areas in MENA, implementing EOR techniques to varied success and we can expect production contribution from EOR projects to grow continuously.

We have also observed successful implementation of thermal, chemical and miscible EOR technologies, and recently solar EOR in the Amal field. The future for EOR in Oman and other MENA countries is expected to remain bright despite the volatility in commodity prices.

How is Halliburton contributing to enhancing production in Oman?
Halliburton has been in Oman for more than 40 years and has deep knowledge and understanding of assets in the country and their challenges, which help us engineer solutions to maximise asset value for customers.

There are numerous projects in which Halliburton is contributing to enhancing production. One of them is fracturing tight gas wells where we are using state-of-the-art equipment and the latest technologies to enhance production. Halliburton is also soon to start a strategic large scale integrated drilling and completion project to help reduce the cost of drilling and minimise the development time to realise production.

There are many technologies being deployed in Oman that contribute to enhancing production such as:

- Water conformance through chemical RPM and sealant solutions
- Autonomous inflow control devices (AICDs) to reduce water cut and increase production
- Improving productivity through customised reservoir fluid systems like N-FLOW™ 325 in the Nimr area
- Providing lost circulation solutions to deliver productive wells on time ahead of plan
- Various latest technologies in cementing to ensure well integrity for the life of the wells
- Digitalisation and data management allowing customers to predict equipment failures, especially in ESP pumps, minimising downtime and maximising production.

What has been your experience of implementing EOR projects worldwide?
Through its Consulting group, Halliburton has designed and engineered almost 50 EOR projects over the last five years.

Halliburton has been instrumental in drilling and completing wells for large-scale thermal EOR projects in Canada and India and is currently implementing well construction for one of the largest full-field polymer injection deployments in the world.

In Canada's steam-assisted gravity drainage (SAGD) fields, the use of steam injection (thermal EOR) has revolutionised the recovery of a very large oil reserve in a challenging

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environment. The enhancements to this process and the technologies used in SAGD are constantly evolving to increase production and reduce environmental exposure.

What EOR techniques do you think are the most promising for future development in the region?

Alkali-surfactant-polymer (ASP) lab formulation techniques and smart completions to prevent breakthrough and manage unwanted fluids are two of the most promising techniques for future development.

A third frontier for us is the digitalisation of the oilfield to the extent that EOR project recoveries can be optimised using big data analytical techniques.

How does Halliburton hope to benefit from taking part in OGWA?

Visibility. OGWA is a prominent event for the industry which brings together personnel from operators, service companies, academia and government along with associated industries that benefit from the oil and gas industry. A presence allows us to interact with existing customers and attract new ones. It is also a great platform to showcase Halliburton technologies and the value they bring while listening to various challenges the industry is facing. Key highlights and focus areas are demonstrating Halliburton expertise in mature fields and EOR; listening to customers so we can respond and offer the right solutions and technologies; and sharing and exchanging information and enabling interaction with technical and operational experts.

Reliability. We want to showcase the benefits of how improved collaboration with our customers and delivery of engineered solutions makes us a reliable service partner for customers in Oman and the region.

By being a gold sponsor at OGWA we can showcase our commitment to this important event and demonstrate how we are a reliable partner for operators in Oman.

What technologies will Halliburton be showcasing?

Halliburton is showcasing the following technologies at the OGWA Exhibition:

- Artificial lift technology - Summit ESP Series
- Autonomous ICD – EquiFlow. EquiFlow AICDs enhance the production of valuable hydrocarbons versus the costly contaminants they share the reservoir with. By increasing the hydrocarbon production cut, this autonomous technology decreases cost per BOI.
- Frac sleeves – RapidSuite. RapidSuite frac sleeves are an ideal fit for Oman gas wells. They are reliable; they enhance completion efficiency, enhance completion options and reduce HSE exposure, risk and cost.
- Advanced drilling fluid solutions – DFG
- Advanced well construction platform – Well Construction 4.0
- Advanced fiber optic enabled coil technology – SPECTRUM
- Chemical conformance portfolio
- Integrated drilling and completion solutions for infill EOR drilling, especially for tight reservoirs. ■

Byrne Rental Equipment eyes Oman expansion

BYRNE EQUIPMENT RENTAL, one of the largest plant and equipment rental companies in the Middle East, have strategically positioned their operations across the region with fifteen operational bases, enabling them to deliver their product ranges and services to a wider geographical audience than ever before.

Within the oil and gas sector, Byrne have identified thirty new products lines which they are systematically rolling out across the Middle East. To support these new product lines, Byrne will be holding 'Product Launch Days' for clients and potential customers to receive demonstrations and discuss potential rental solutions.

"On a regional view the markets are at various stages of demand and scale," said Steve Caygill, regional general manager, UAE, Qatar and Oman.

"New markets for Byrne are providing great uplift and penetration for the business, as our core and more established markets are at varying phases of requirement in relation to shutdown/ turnaround needs. Demand for accommodation camps for both onshore and offshore has seen a surge in recent months. Coupled with the new product ranges to be rolled out, this serves to re-enforce the belief that 2018 will be buoyant."

Oman is a promising market for the company, with the potential for strong growth and increasing demand. In consultation with the local market, Byrne identified a significant demand for rental products where supply is either underserved or non-existent. Byrne's response has been to invest in the aforementioned new product lines filling this gap, which will be rolled out in due course.

In 2017, Byrne opened a new facility in Duqm to support ongoing demand in the southern region of Oman, which allows their clients flexibility when operating in remote locations.

"We are constantly listening to what our clients require and support them with newly acquired plant and services," said Caygill. "We understand OPEX and CAPEX are two very different functions, and work closely with the client to identify the best solution in terms of operational and commercial outcome."

Byrne is exhibiting at the OGWA exhibition taking place in Muscat from 26-28 March, to capitalise on market opportunities.

"The OWGA exhibition is a fantastic platform for Byrne to engage directly with existing clients as well as to identify potential customers entering the market, and to showcase Byrne's industry-leading products and services," commented Caygill. "It also serves as an opportunity to further understand industry leaders' and governments' intentions over the coming 12-36 months to ensure we can tailor our products and services to align with industry demands. From a delegate's perspective there is an opportunity for continual professional development, and Byrne representatives are encouraged to attend the technical workshops to supplement their knowledge and implement it in their roles, to better serve clients' needs."

Unloading a Byrne container in Oman


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‘BAUER stands for quality, reliability and accountability’

Colin Fountain is the managing director of BAUER Kompressoren GCC FZE

Image Credit : BAUER Kompressoren

Oil Review Middle East catches up with Colin Fountain, managing director of BAUER Kompressoren GCC FZE, in his office in JAFZA, Dubai, to discuss and review developments and assess future opportunities in the compressors industry.

Can you take us through your journey in BAUER Kompressoren over the last six years?

When I joined the company it was managed at a distance from Germany, and the present office was under construction. My new role required me to work on physically setting up the company, which meant dealing with building contractors as well as the JAFZA permits. BAUER Kompressoren was also in the process of getting ISO certification. That was a very interesting time for me. So in my first six months, I was setting up a permanent office in Dubai as well as guiding it towards ISO certification. It was a good start.

After that, I concentrated on remodelling the distributorship strategy, with my experience in this area helping to bring more discipline to our distribution network. At the time, the distributor network was disorganised – service levels, training levels, pricing levels and discount levels, were all very ad hoc. What we did was to bring in a structured approach to distribution to clarify what distributors could expect from us and what we could expect from them. We also tried to refocus the business in favour of industrial ranges, as the company had been more focused on selling breathing apparatus.

We enjoyed good growth in business with revenue more than doubling from 2012 to 2014. Then came the massive crash in the oil price. Approximately 60 per cent of BAUER Kompressoren business is led by the oil and gas sector, so it resulted in two very difficult years for us. We had to refocus internally once again to try to diversify our business. In 2015, our profits dropped by 35 per cent, and a further 10 per cent in 2016 when we cut staff, which was not an easy decision.

2017 saw an improvement. The first half of last year saw the stabilisation of oil prices that resulted in a stronger flow of inquiries, and the second half was even better. I am quite optimistic about 2018; we are on a slight upward gradient and while it will take some time to reach the dizzy heights of 2014, it is moving in the right direction. To sum it up, we have good products and great staff, and have had a couple of bad years.

What major achievements has BAUER Kompressoren witnessed during your time in the company?

The biggest change has not been in the product offering, but in the way the customers use our products. We have introduced a number of things that make our products more efficient, easier and, in line with 21st century developments, more digital. In many of our machines, we have removed analogue displays and manual controls and replaced them with touchscreen digital displays and automatic controls for operators. There is also a lot of technology in terms of connectivity and user interface that we have introduced. Our machines have changed significantly over the years.

We produce compressors primarily for breathing air, and these need to meet the

highest standards. BAUER Kompressoren is accountable for every breath our users take in. Contaminants in the air can cause damage to the lungs of users. So there are stringent controls requiring a manual test of air quality every three months. We have introduced a technology whereby you can constantly monitor the quality of air without having to stop the machine. We can send that sample to the third party lab and they can provide certification of the quality of our products.

How is business in the Middle East?

We are experiencing two-pronged growth – by product mix and by geography. As I mentioned earlier, when I joined BAUER Kompressoren, more than 90 per cent of our sales were breathing air-related and the industrial range accounted for a very small proportion of the business. We are putting a lot of effort in to grow our industrial ranges now, and are doing much more industrial range business in the Middle East. We are already No.1 in the world for breathing air apparatus, and hold 65 per cent of the market globally. In the industrial sector, we have a much lower market share. Going forward, I see more opportunities to grow this side of the business.

> “Our strongest market, totally entwined in the history of BAUER Kompressoren, is air compressors for diving – commercial and scuba.”

In terms of geography, the biggest market for us is Saudi Arabia, and I still see a lot of growth in that market with regards to industrial and breathing apparatus.

I believe Iran has a lot of pent up demand and there is strong demand to increase oil output. Iran is a very diverse market compared with the GCC, and I see it as offering very good potential. We opened a branch in Iran last year, which is fully operational with three employees, but we have not seen much growth there yet. We are still laying the groundwork to establish relations with customers and contractors. Oman and Qatar are also good markets for us.

What are BAUER Kompressoren’s best selling industrial ranges?

The segregation is based on the actual use of air rather than customer specification. The breathing air applications mainly go into the oil and gas sector.

Another area where we have experienced growth is in emergency responders for firefighters, police, coast guards, etc.

But our strongest market, which is not very strong in Dubai but is really totally entwined in the history of BAUER Kompressoren, is air compressors for diving – commercial and scuba. Innovative high-pressure system technology by BAUER Kompressoren helps the recovery and decanting of noble gases and gas mixtures. The compressors are intelligently controlled based on the final pressure of the storage system, the level of the gas balloon or the intake pressure.

We also have products for alternative fuels handled by our European market – compressed nitro gas (CNG). In the UAE, vehicles are being converted to run on CNG, and BAUER Kompressoren won a contract with ADNOC in 2009-10 to supply all the CNG compressors for vehicles in the capital

city. So far, there are 34 CNG stations around Abu Dhabi and Sharjah and the northern emirates.

What trends and technologies are affecting the compressors market?

There is a rise in the trend of 'invisibility'; people do not want to see the gas, just feel it – like electricity. You know it's there but not how it's produced. Compressed air is considered the 'fourth utility' and needs to be remotely operated.

IoT is a big trend. Another is achieving energy efficiency. One of the biggest costs to compressor users is the operating cost rather than the initial purchase price. Many customers make their buying decision on the purchase price. But the biggest cost to a user is the operating cost over a period of, say, 10 years. Operating costs come down to two things – energy consumption and service and maintenance cost. So I think there will be continuous efforts to increase efficiency of compressors.

With regards to service and maintenance costs, currently this is conducted periodically, like servicing a car, on a preventive analysis basis. The trend will slowly shift towards predictive maintenance in the future, and this is where our air monitoring technology comes in. We monitor the health of the compressor and make interventions. With the degree of use in harsh environmental conditions, it will now force manufacturers to extend warranties and expand service intervals.

Another trend is the move towards oil-free compressors. As clients are becoming more environmentally aware, there is a push to remove oil from compressors, as it is a contaminant. With an oil-lubricated compressor, oil must be monitored and changed according to schedule. As oil-free air compressing systems utilise a teflon sleeve or coating in the compression chamber, they do not require any lubrication. They are maintenance free as far as lubrication is concerned. However, one will still need to service the air filter on a regular basis. And oil-free compressors do not provide zero risk of contamination (atmospheric dirt, microorganisms, etc). At BAUER Kompressoren we provide oil compressors with filtration, building our own purification systems. We are the specialists of contaminants removal. We have the technology portfolio to achieve oil-free air, even if it is not an oil-free compressor. We are not yet looking at making oil-free compressors, because the less oil in a machine, the more heat it generates, and the more heat the machine generates, the more times the machine has to be stopped. Productivity is lost in the process.

What are BAUER Kompressoren's best solutions in the market currently?

We produce a range of products for the offshore oil and gas sector, which are our best-selling products right now in the region. The solutions mainly include breathing air compressors for H2S protection, for commercial divers offshore; nitrogen generators for blow out preventers (BOP); air compressors for rig tensioning and motion compensation. They are used in offshore rigs for which you require two compressors – electric and diesel. We also have a medium sized compressor range in the fire and marine industry. We call it the Premium Line and they are our fast moving compressors. They are used on ships and for diving activities. Standalone compressors are used in small fire stations. But our star is the Unicus 4i range. It is the state-of-the-art control system with a 12-inch HMI touch-screen interface, which allows the operator to manage the entire system from the single-point touch screen. It unifies breathing air parts in one package and everything is available on one interface. This is the product we see growing in the future.

The latest version launched two years ago with the focus moving towards the firefighting industry.

What is your advice to someone looking at the compressors industry as a career option?

I would say that this is a very mature business. This industry has been around for 70 years. The technology is dependable and forward moving. But what I find interesting about this industry is that we have such a wide range of customers. We are selling to individuals, companies like Saudi Aramco and ADNOC, and now to Dubai Civil Defence and Abu Dhabi Civil Defence. It is very exciting in terms of day-to-day involvement with customers.

What makes BAUER Kompressoren the best?

Our logo states 'Quality. Our DNA'. If you ask me to come up with one word to define what makes BAUER different, it is quality. We manufacture practically all the components of our compressors. And the main reason for that is to maintain quality. The typical life of compressors is 25 years, and it is not unusual for our compressors to run up to 35-40 years. That really, in my opinion, sets us apart. We pay strong attention to detail on quality. With that comes a responsibility. I refer to BAUER Kompressoren as the 'Rolls Royce of Compressors'. We are never the cheapest, but we offer the best value to customers. It's very unlikely that our customers have ever been dissatisfied. Quality, durability and reliability are what BAUER stands for. ■

Image Credit : BAUER Kompressoren

Colin Fountain with the BAUER Kompressoren team in JAFZA, Dubai

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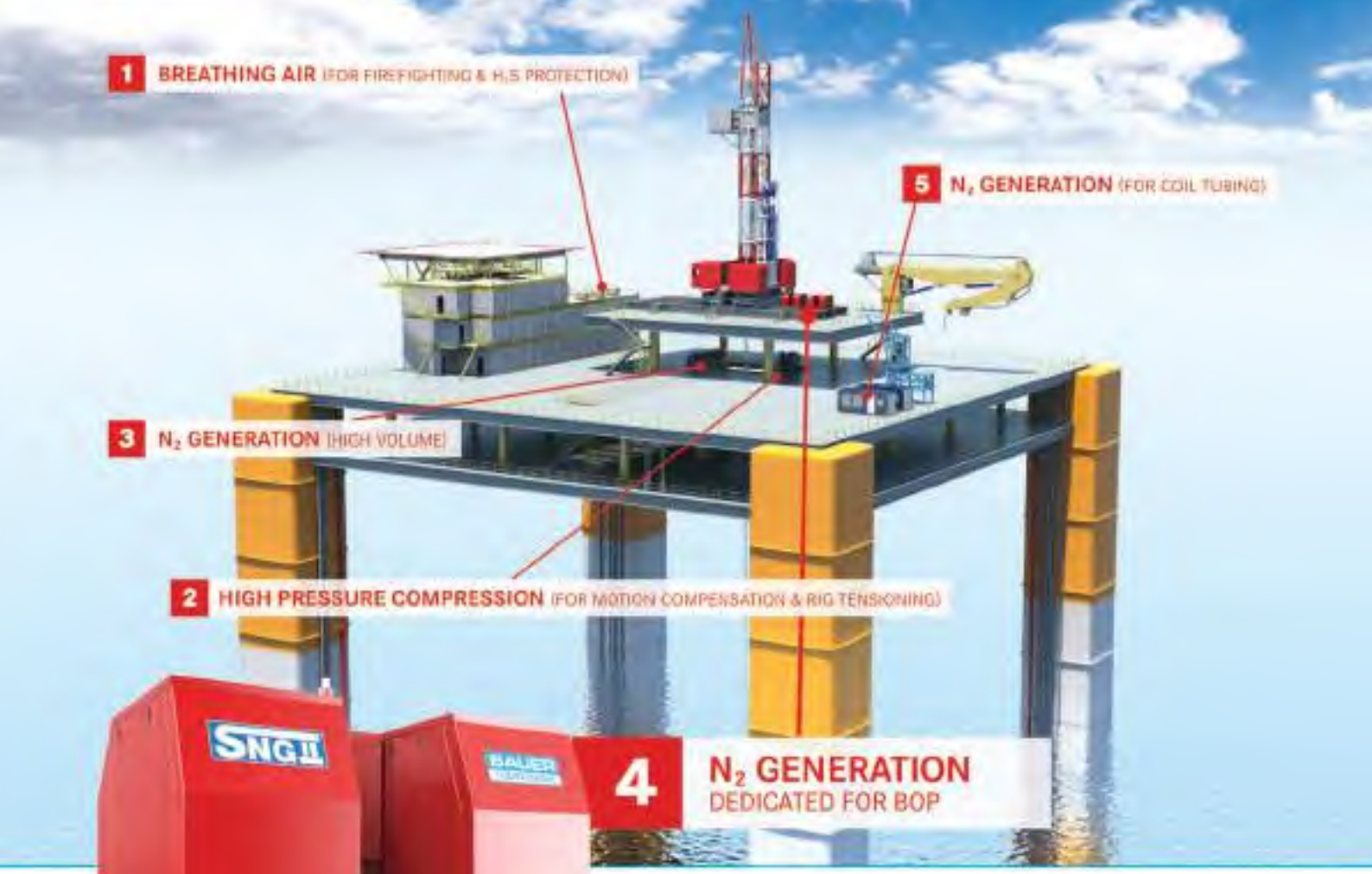

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Enhancing Oman's gas production

WEG's variable speed drive systems are helping to boost extraction from PDO's Saih Rawl Field in Oman.

With their high performance drive and motor architecture, WEG products are suitable for the most arduous industrial applications

Image Credit : WEG

ACHIEVING MAXIMUM PRODUCTIVITY from oil and gas fields is the prime goal for the petrochemical industry, but the extraction process becomes more difficult as fields become depleted. With this in mind, leading global manufacturer of motor and drive technology, WEG, has developed bespoke variable speed drive systems to help with extraction from some of Oman's older oil fields where the natural pressure is beginning to fade.

Boosting extraction from depleting reserves is part of a US$33bn project which aims to enhance Oman's hydrocarbon production capabilities and help the country broaden its economic base. It is expected that Oman will unlock around one trillion cubic metres of natural gas over the next 25 years, representing a long term sustainable competitive feedstock for its petrochemical industry. Plans are also afoot to develop downstream industries such as the production of ethylene dichloride (EDC), caustic soda and other chemicals.

As part of this major effort, the PDO Saih Rawl Field Depletion Project, Phase 2, will see US$550mn invested on developing a daily gas production capacity of 30mn cubic metres, which will be fed to the existing Saih Rawl central processing facility. Extra compressors will be installed to increase the pressure so that gas continues to flow, enabling the field to feed the LNG industry while offering a back-up when other plants are shut down for maintenance.

Electric motors will play a key role in ensuring that such compressors run efficiently, smoothly and reliably, as they will be responsible for driving their suction and discharge cooler fans. Bearing in mind that electric motor-driven systems (EMDS) are the largest individual source of energy use, accounting for 45 per cent of the world's electricity consumption, and more than half of this energy demand originates from motors used in fans and compressors[1], Indian company Larsen & Toubro decided to partner with WEG to equip the main gas compressor with an efficient drive system, which could endure the most demanding applications.

> "Electric motors will play a key role in ensuring that such compressors run efficiently"

To meet such needs, WEG has developed a bespoke solution comprising 48 30kW variable speed drives and motors and 32 15kW drives and motors, which will be supplied as systems and mounted in control cabinets, and also include a high capacity circuit breaker for emergency cut outs and a by-pass system for DOL (direct on line) starting. Additionally, WEG has fitted its equipment with a passive input harmonic filter to reduce problems relating to mains borne corruption of the power supply, while an output filter will be used to protect the drive.

WEG's variable speed drive systems have been tested at its manufacturing facility in Brazil in the presence of inspectors from PDO and Larsen & Toubro to simulate the harsh environmental and operating conditions that may occur in the field. WEG is also conducting performance tests of the motors at the fan manufacturer's plant in Korea, and has organised training sessions for PDO staff in the Brazilian factory.

Thanks to its vertical manufacturing process, WEG has also been able to supply Larsen & Toubro with all of the overloads, switchgear, relays and pushbuttons used within the drive cabinets, thus ensuring component compatibility and trouble free system building and commissioning, as well as efficient ordering and delivery. Other elements in the cabinet include a control power transformer and auxiliary contactors and circuit breakers. Additionally, a door-mounted control panel incorporates a backlit LCD keypad, while a redundant serial link (two channels Modbus-RTU over RS485) provides communication to the wider control system. Finally, the control cabinets include space heaters, which are essential to withstand the extreme temperature differentials between day and night in the Oman desert, which can cause potentially damaging condensation. ■

For more information on WEG visit www.weg.net/ae.

[1]http://www.iea.org/publications/freepublications/publication/ee_for_electricsystems.pdf

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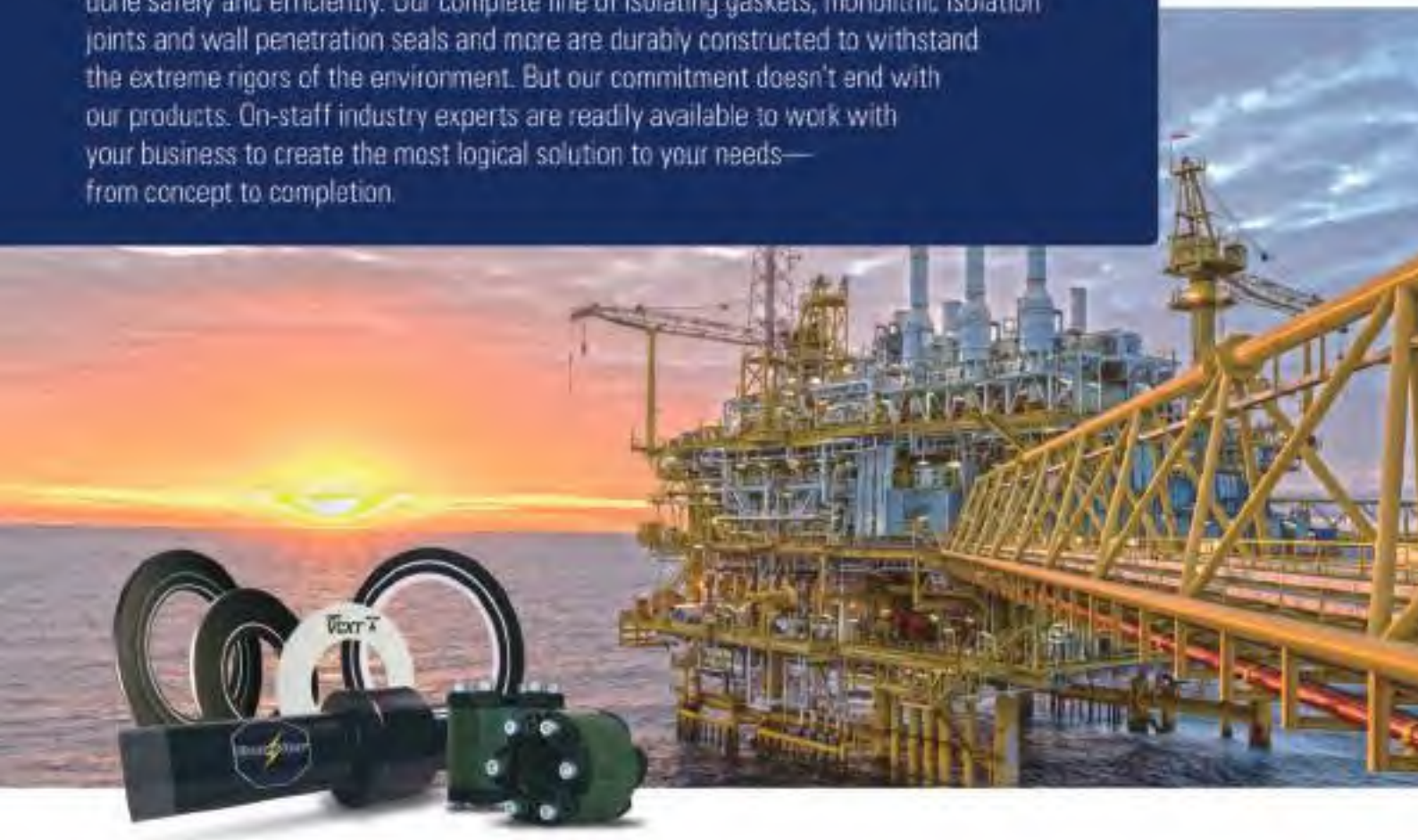

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Addressing sour gas processing challenges

Up to a third of the world's natural gas reserves contain high concentrations of sour gas, with the Middle East a region where such fields are prevalent. John Young, CEO, Twister BV, discusses a new technology that can help to make the development of sour gas fields safe and commercially viable.

AS OIL AND gas reserves worldwide continue to dwindle and many Middle East countries struggle to produce enough natural gas to meet domestic requirements, sour gas fields that were previously left under-developed due to high costs and technical and safety challenges, have come to the fore as an important energy source.

Examples include the Shah gas field in the UAE, the world's largest sour gas project, as well as the Bab gas field – also in the UAE; Kuwait, where operators are looking into the challenges of developing HP/HT Jurassic sour gas fields; and Qatar, where the North Field has up to seven per cent CO_2 and six per cent H_2S by volume.

However, sour gas and its extraction and processing come with significant challenges.

H_2S in the gas stream is highly toxic and flammable with significant HSE implications, the dangers of toxic gas releases or leaks; and threats to both production and transportation infrastructure, with H_2S's highly corrosive nature requiring special handling.

There is also a need to remove CO_2 from the gas stream due to the fact that its presence represents a non-value added gas transport cost. CO_2 can also cause problems for the transportation of LNG.

Furthermore, the need to remove water to allow cost-effective gas transportation also adds complexity, cost and safety implications to gas separation projects.

Traditional technology limitations

The corrosive nature of sour gas fields and processing and separation challenges have subsequently led to pressures on existing technologies and infrastructures.

For example, fully manned glycol-based or amine gas treating production platforms come with the dangers of the potential venting of toxic H_2S, contamination of the glycol regenerator with H_2S, high H_2S gas inventories, intensive personnel and maintenance requirements, and logistical and safety challenges in operating from remote offshore locations. There are accompanying technology challenges as well.

Twister's most recent installation of its supersonic separators

Image Credit : Twister BV

Turbo expanders are often used to dew point natural gas to meet export specifications and recover condensate. In a sour gas environment, however, there are significant pressures on the gas seals of turbo expanders, sometimes leading to availability of only 50 per cent.

Other technologies used to pre-empt corrosion in sour gas fields include Kinetic Hydrate Inhibitors (KHI) that are very popular in Saudi Arabia and are used to mitigate hydrate formation through injection into the natural gas pipelines system.

However, concerns over the performance of KHIs, and in many cases their significant costs, are obstacles to their more widespread usage. In a paper at the 9th North American Conference on Multiphase Technology in 2015, Saudi Aramco discussed the challenges of qualifying a compatible KHI in the Karan sour gas field.

It is against this context of both safety and the need to make sour gas fields commercially viable that operators are looking to alternative gas separation and processing technologies. One such alternative comes from Twister.

Safe, sustainable and profitable gas processing and separation

Based in the Netherlands, Twister BV delivers reliable, high-yield and robust solutions in natural gas processing and separation to the upstream and midstream oil and gas sectors. The Twister technologies are particularly suited to sour gas fields through the Twister Supersonic Separator, a robust, compact gas conditioning solution characterised by condensation and separation taking place at supersonic velocity; and the Twister Hydrate Separator that isolates hydrates and liquids from natural gas without using chemicals through heating coil and cyclonic separation melting hydrates.

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The combination of the two technologies results in low maintenance, a low sour hydrocarbon inventory and reduced equipment count. There is also no chemical degradation due to H_2S, no emissions and very limited operator intervention – always a significant benefit in sour gas fields.

Furthermore, the fact that Twister's supersonic gas solution dehydrates gas on the basis of expansion cooling instead of glycol absorption, as well as being a closed system, means that it is the safest means of dehydrating sour gas on the market today.

The reduced weight and plot space on offshore platforms of the Twister Supersonic Separator and Twister Hydrate Separator can also result in cost savings. There are also significant cost savings compared to Kinetic Hydrate Inhibitors, due to the removal of the need for a corrosion resistant alloy pipeline and the ongoing cost of KHI replacement.

A sour gas application, offshore Malaysia

The Twister technologies have also been put to the test in challenging sour gas environments, one such example being the Shell operated B11 600mn standard cubic feet per day (MMSCFD) production platform in Malaysia with higher than normal sour gas contaminant levels of up to 20 per cent CO_2 and 3500 ppm H_2S.

Here, the Twister technologies were a key element of the overall sour gas management risk mitigation strategy and – as a closed system – provided an inherently safer system over traditional dehydration solutions.

Other benefits included no shutdowns and >99 per cent availability; weight savings of 25 per cent compared to alternative platforms and estimated CAPEX savings of 23 per cent; the ability to handle varying feed gas compositions and multiple wells: no pipeline integrity issues; and safe operations.

A new approach to CO_2

As mentioned, another challenge faced in gas separation today in the Middle East is the removal of carbon dioxide (CO_2).

CO_2 is commonly found in natural gas streams and must be removed in order to meet specifications before the gas can be delivered to the pipeline. In combination with water, it can also be highly corrosive.

Traditionally, polymer membranes – semipermeable barriers – were used for the separation of CO_2 (they are less effective with H_2S) but come with significant size, weight and costs on offshore structures and are also often responsible for large methane losses.

With this in mind, Twister is focusing on not only improving the processing but also the profitability of acid gas fields containing large amounts of CO_2 through a cryogenic approach.

The main feature of the cryogenic approach is the production of liquid CO_2 for ease of reinjection. Using an adaptation of Twister's Hydrate Separator called the Crystallizer – designed to operate in low temperature cryogenic environments – the solid CO_2 is melted in order to enable reinjection of CO_2 into the reservoir through pumps, which is much more cost effective than compression.

In advancing this technology, Twister has entered into a joint development programme with Malaysian operator Petronas that will see the fabrication, testing and qualification of a skid-mounted Crystallizer Vessel. The qualification test is scheduled for Q2 2018 in PETRONAS' UTP facilities in Malaysia and is a key component of the joint technology programme. ■

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Increasing oil recovery in brownfield heavy oil wells

Dr Ismarullizam Mohd Ismail, subsurface engineering manager at Tendeka, describes how the use of autonomous inflow control devices (AICDs) can reduce water cut and improve oil recovery in heavy oil fields.

AS OIL RESERVOIRS age, the optimisation of oil recovery becomes essential if oil production targets are to be met, not least in heavy oil fields where the challenge is greater due to the lower reservoir energy and requirement for high reservoir contact.

For many years, inflow control devices (ICDs) have been used to mitigate early breakthrough of unwanted water or gas in oil wells. ICDs are, however, passive in nature and once water or gas breaks through, the choking effect cannot be adjusted without intervention. Furthermore, the viscosity difference between heavy oil and water creates an unfavourable mobility ratio, which allows water to flow much faster through the reservoir and into the wellbore, so that water breakthrough happens faster, displacing oil production from producing zones.

Autonomous inflow control devices (AICD) are designed to automatically react to the properties of the fluid flowing through them. An AICD restricts the flow of less viscous fluids, such as water and gas, while allowing more viscous fluids, such as heavy oil, to pass through with minimum pressure drop. When used in horizontal wells that have been compartmentalised using swell packers, AICDs restrict the flow of water in high water cut zones while allowing greater drawdown of the reservoir in high oil saturation zones, reducing water cut and improving oil recovery for the overall well.

Like ICDs, an AICD can be used in new wells to create a more balanced inflow profile along a horizontal section prior to water breakthrough. Once water breaks through in one or more zones, the AICDs restrict production from these compartments and favour production from low water cut zones. AICDs can also be used in existing wells where water breakthrough has already occurred through deployment as a retrofit string, reducing water cut to extend economic well life and improving sweep efficiency.

Applications

In sandstone reservoirs, the AICD is typically assembled as part of the sand screen joint in the lower completion. For carbonate reservoirs, the AICD can be deployed as a standalone sub, with a debris filter assembled before the inlet of the valve. Reservoir fluids enter the completion through the sand screen filter and flow along the annulus between the filter and base pipe into the inflow control housing where the AICD is mounted. The fluids then flow through the AICD and into the production conduit, moving to the surface together with the production from the rest of the well (Figure 1).

Flow loop experiments were carried out

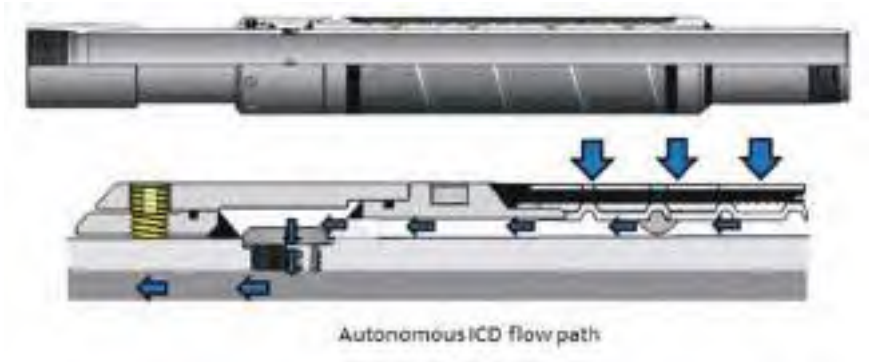

Image Credit : Tendeka

Figure 1

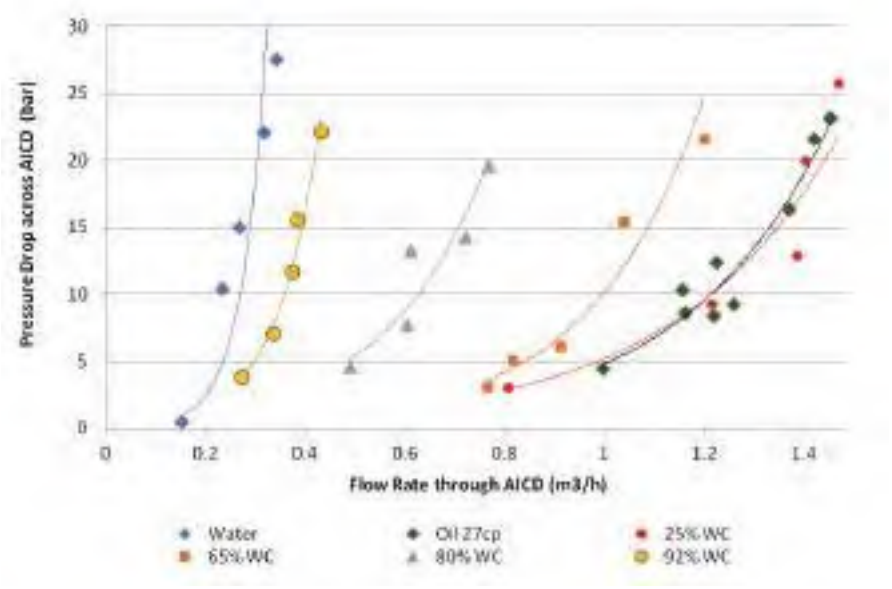

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Figure 2: Multiphase production test results with AICD as a function of volume flow rate and pressure drop

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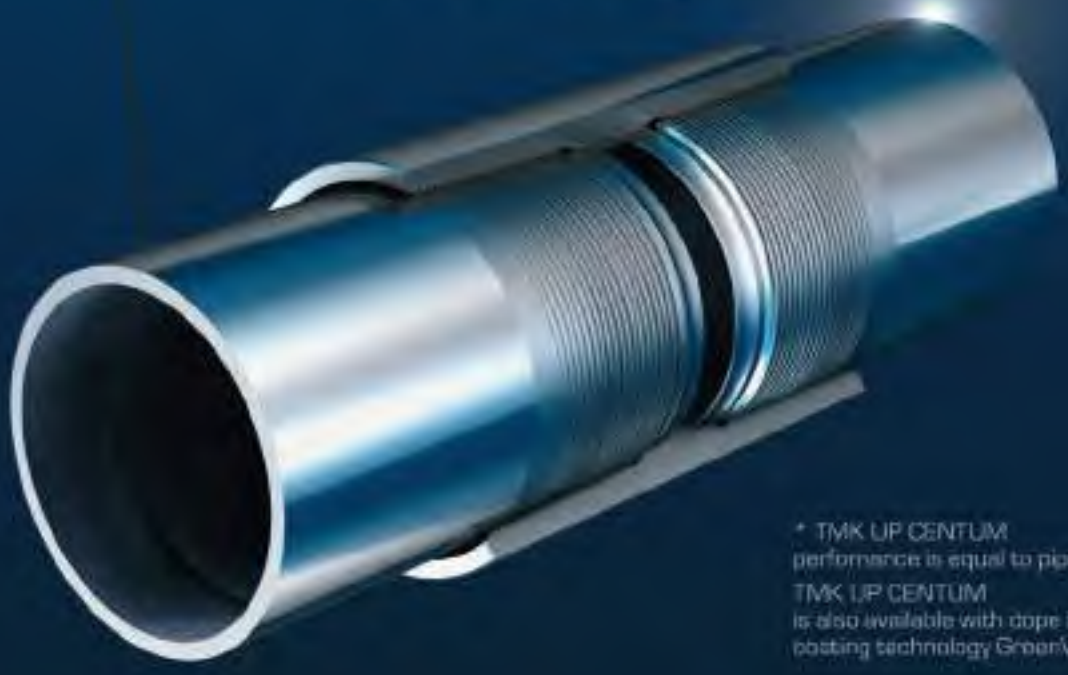

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with a 27cp crude oil and water to define AICD performance in heavy oil operations with varying water cuts conditions. Figure 2 shows two-phase oil/water tests performed with water cut at 25, 65, 80 and 92 per cent.The pressure drop as a function of total volume flow rate is plotted together with the single-phase oil and water curves for reference. With this degree of viscosity contrast, water will travel faster at a similar pressure gradient compared to oil. The AICD imposes a much higher pressure drop on water and leads to a reduction in water flow. The mixture of oil and water generates a mixture viscosity depending on the fraction of each fluid. The same trends were observed with increasing water cut. As the water cut increases, the mixture viscosity will be reduced and increase the velocity of the mixed fluid flow through the valve, resulting in an increase in the pressure drop. The AICD mathematical function of the mixture viscosity can be simplified to be expressed by the function μ_{mix} based on the fraction (α) of each fluid: $\mu_{mix} = \alpha_{oil}\,\mu_{oil} + \alpha_{gas}\,\mu_{gas} + \alpha_{water}\,\mu_{water}$.

As the water cut percentage increases, this will result in reduction in viscosity and higher pressure drop. A viscosity contrast of 3cp minimum is essential for the AICD to differentiate between water and oil.

Using AICDs requires a good understanding of the technology, well performance and reservoir properties. A segmented dynamic reservoir model is often employed to simulate representative reservoir performance and allow evaluation of the well with and without the AICD completion. For example, in wells without inflow control, the water may be drawn into the wellbore from the down-dip oil-water contact through high-permeability channels, reducing effective drainage of the oil up-dip. The AICD will improve the water sweep by balancing the inflow from high and low-permeability sections and creating additional pressure drop at high water cut zones. Furthermore, the AICD will allow a low mobility, viscous oil to be produced and recover the oil up-dip.

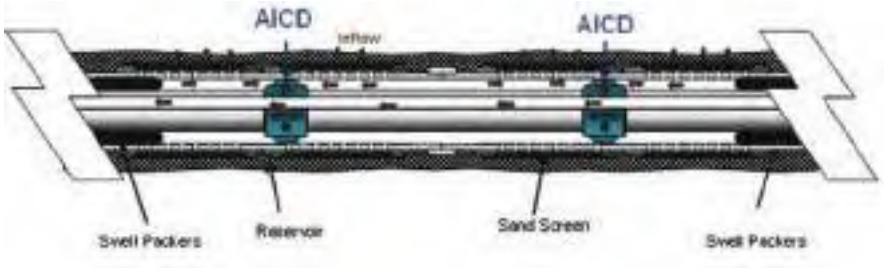

Image Credit : Tendeka

Figure 3: Retrofit AICD completion in existing standalone screen with the production flow paths

Completion design

Annular isolation is critical in AICD completions to compartmentalise the reservoir, which allows for the segregation of flow from sections of the well with different fluid saturations. The AICDs impose a greater flow restriction on compartments with high (mobility) water saturation and allow more production from low mobility, high oil saturation compartments. Generally, swell packer placement is dependent on the permeability contrast and fluid saturation contrast between intervals in the wells. Limitations on the number of compartments may be imposed by well construction and completion factors, such as zone length, open hole drag, dogleg severity and previous operational experience. Sensitivity analysis to optimise the quantity and location of zonal isolation devices is essential for this technology. The retrofit application consists of installing AICD subs within existing stand-alone screens along with packers for zonal isolation, as shown in Figure 3. The retrofit AICD application is also applicable with existing gravel pack well.

The overall flow rate, formation productivity and the well length will determine the flux rate through a single AICD valve. The initial and maximum oil and liquid production targets are used, along with the produced fluid properties and reservoir data, to determine the quantity and size of AICDs required to ensure the maximum well deliverability is achieved.

The evolution of water cut over time is a critical factor for AICD completion design to maximise oil production. During early production, prior to water breakthrough, AICDs should be used to optimise drainage and reduce the likelihood of water coning by ensuring that inflow between the zones is balanced. This provides a window to accelerate early oil production, and then maintain oil production from high oil saturation zones when water begins to break through other zones, until the water saturation increases uniformly along the entire wellbore.

The AICD acts as a check valve, preventing flow from the production conduit to the formation (injection direction). Where chemical treatments are prescribed to treat scale, paraffin, or asphaltene problems, requiring injection into the wellbore annulus and/or the formation, a bypass valve can be installed adjacent to the AICD to permit injection. The bypass valve can be installed as part of screen assembly (with the AICD) in the lower completion or run as a separate sub.

Case study

AICDs have been used in brownfield wells across the Middle East, China, and North America as a retrofit solution after water cut increases, most commonly when water cut has reached up to 96 per cent.

In one of the first AICD retrofit installations in a heavy oil environment, offshore China, designed to control water cut, it also showed a significant increase in oil production, as shown in Figure 4. The length of the well is 600m horizontal and completed initially with 5.5” screen with gravel pack in 8.5” open hole. Retrofit AICDs have been installed on 4” pipe joints and deployed inside the existing 5.5” screen. The well was previously shut in due to the water cut exceeding 96 per cent. Following installation of the AICD completion, a reduction in water cut to 93.6 per cent was observed. The water cut reduction enabled a resultant increase in oil production of 28 per cent. Based on the positive results of the initial well, there have been many more wells within the field completed with AICDs as a retrofit solution or primary completion for new wells.

Using AICDs in heavy oil fields to control water can help reduce water cut. The viscosity difference between heavy oil and water provides a favourable mobility ratio well suited to this technology, and has been shown to increase oil production. As the water is restricted upon breakthrough, the overall recovery of the well is improved when compared to operations using conventional methods and passive ICDs. ■

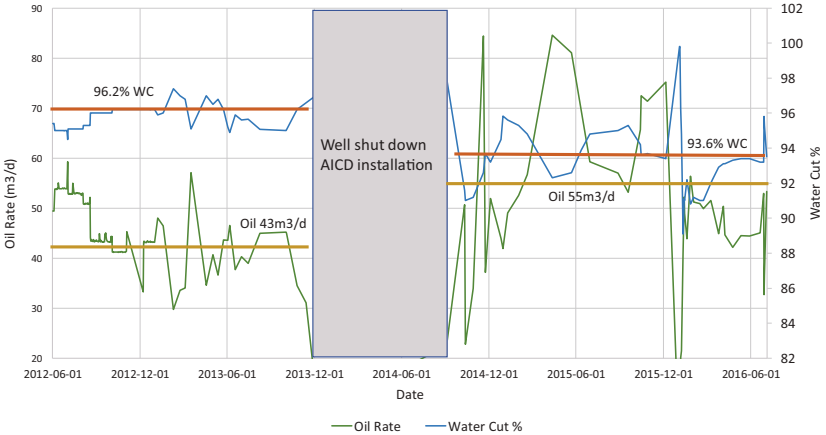

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Figure 4: AICD oil rate and water cut performance in an existing / retrofit well

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Selecting the right pipeline coating is critical for pipeline integrity

Image Credit : Darren J. Bradley/Shutterstock

Selecting the right coating for onshore pipelines

Operators need to look beyond the technical information and marketing claims to be sure of selecting the best coating for their specific requirements, says Dr Christopher O'Connor, principal consultant - pipelines technical advisory, UK and West Africa, DNV GL - Oil & Gas.

SELECTING AN ANTI-CORROSION coating system for an onshore pipeline is a complex challenge. The financial and reputational cost of failure can be high, a fact reflected in the global market value for on- and offshore pipeline coatings across all industries, which Research and Markets has recently estimated to be worth nearly US$12 bn by 2020.

The positive benefits of using the best corrosion protection coating for the job are potentially lower pipeline inspection, repair and maintenance costs; improved safety and environmental sustainability; and pipeline lifetime optimisation.

Onshore pipeline coatings have evolved substantially, in response to demand from pipeline operators transporting oil and gas from and across more challenging and remoter environments and terrains. The widening of coatings options introduced since the mid-1980s have removed or reduced problems such as microbially-influenced corrosion (MIC), stress corrosion cracking (SCC) and thermo-mechanical coating degradation, as well as creating the ability to fully integrate the pipeline coating system.

"The new coatings systems involve novel application techniques to extend the design lives and performance of components they are intended to protect," observed Dr O'Connor.

"Operators are now confronted by a wider range of choices. They need to look carefully beyond developers' and manufacturers' technical information and marketing claims to be sure of selecting the best coating for their specific requirements."

Key criteria for selection include adhesion of the system to the pipe; applicability; chemical and thermal stability; mechanical properties; and economics.

"Despite advances, there is no such thing as an ideal coating for all purposes," Dr O'Connor added. "A wide variety of materials is used for coating and wrapping pipework and fittings. All have different functionality, although the key function is to prevent corrosion."

New generations of coatings are generally better than older ones. However reported issues include:

- Increased susceptibility to alternating current (AC) and direct current (DC) corrosion in areas influenced by induced AC and stray DC interference
- The latest three-layer polyethylene (PE) field joint coatings being developed tend to be labour- and time-intensive, making them expensive to apply for onshore applications
- Using first-generation coatings – tapes and HSSs – on field joints protected with second- and third-generation mainline coatings can cause susceptibility to MIC, SCC, and thermo-mechanical degradation at the joints.

Fusion bonded epoxy (FBE) and polyolefin-based coatings – which include three-layer polypropylene and single-, two-, and three-layer PE – together account for 80 per cent of the global pipeline coating market, according to developers and manufacturers Bredero Shaw.

FBE is a popular choice in North America and for onshore gas transmission pipelines in the UK, where they appear to have worked without problems. Three-layer systems, which are used pretty much everywhere else, have proved themselves, though there is room for improvement in the adhesion of some three-layer systems to pipelines. "Clearly, standards in the sector need to be of the highest quality to ensure high-quality products that are fit-for-purpose," remarked Dr O'Connor.

International and national standards exist for the two critical steps in coating a pipeline effectively: technical qualification of the coating, and preparation of the pipe or field joint to ensure the coating will adhere. In addition, DNV GL's new 'Recommended Practice DNVGL-RP-F106 Factory applied external pipeline coatings for corrosion control' provides a guideline to the specification and execution of coating application work.

Standards evolve alongside the development of coatings and experience in the field, but they can only go so far, Dr O'Connor commented. "Going the extra distance means developing and using defined tests that ensure that a coating will both meet international standards and also do the job expected of it in specific environmental conditions. As for preparing pipes, it is probably the weak link in the coatings application process. Significant development is underway, which is exciting for the market. Qualification of the new products is just as important."

"It is good practice to undertake a vigorous, comprehensive review of design criteria including the application, where the system will be used, and the operating environment, such as external and internal pressures, and temperatures," concluded Dr O'Connor. "Some operators have internal experts on coatings, but consulting independent third-party experts can help to reach the right decision objectively."

DNV GL, for example, provides qualification, certification and verification for manufacturers in accordance with accepted procedures. It advises operators on materials selection for coatings; independently reviews and audits coating systems so operators can check fitness-for-purpose; and inspects pipelines during construction. ■

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Trans Asia Pipeline Services has displayed its extensive engineering solutions, efficiencies and innovative edge across Asia over the past 15 years from its UAE base, and now has its eyes set on further growth across new geographies and verticals.

TRANS ASIA PIPELINE Services' global ambitions are edging closer to fruition as commitment to its "Experience Excellence" philosophy, balanced with a proactive approach to continuous improvements, are attracting new opportunities across the world.

Headquartered in Abu Dhabi, UAE, with its equipment manufacturing and engineering base in Sharjah, the leading provider of pipeline and process services to the oil and gas, petrochemical and power industries comprises more than 400 employees and has presence in 14 countries across the world, meeting needs of clients in pre-commissioning, commissioning and process services in a volatile market.

The ability to offset inevitable industry challenges has been pivotal since the company's inception in 2001, growing from humble beginnings and focusing on onshore pipelines, before applying its evolving experience and track record over the years to an increasing array of services.

Innovative ideas

The privately-owned company operates primarily across Asia from its UAE hub, with physical branches in most of the GCC countries, India and Singapore. In each region of operation, the same quality standards are delivered across all services.

Receiving repeat clients on a regular basis, its longstanding positive relationships are testament to Trans Asia's success. The company's ability to provide innovative engineered solutions and ensure that project schedules are met in a safe and environment-friendly manner has helped it to be viewed as a dependable company by EPC contractors and oil and gas companies.

Trans Asia has recently acquired equipment and technology for plant shutdown and turnaround, providing services such as hydromilling, catalyst loading, change of services, etc. The company has won a significant job from a well known plant operator in the UAE and is currently executing the project as per schedule.

Company infrastructure

Responding to the demands created by rapid growth, Trans Asia opened a new office building in 2017 with the capacity for 100 employees, which will house the company's global engineering and design centre.

> "The ability to offset inevitable industry challenges has been pivotal since the company's inception in 2011"

D Surendranath, managing director, Trans Asia Pipeline Services

The company has also upgraded its workshop and yard facilities and secured an additional lease at Hamriya Free Zone. It now has more than 12,000 sq m of equipment yard and maintenance bays, and 4,000 sq m of workshop and manufacturing facilities at Hamriya.

The ability to drive forward and vastly improve internal infrastructures is refreshing in an industry which is currently under pressure, and is once again testament to the diversity that Trans Asia has within the business to offset certain sector shortfalls.

Complementing these structural capabilities is the equally significant devotion to personnel development, ensuring that the experience and excellence ethos is adhered to throughout the company, and instilled within each individual.

As a knowledge-based service company, Trans Asia operates in an industry where experience, knowledge, work safety and quality are critical, and it has always remained challenging to enhance employees' knowledge base and skills levels, and empower them. With a global workforce of more than 400 employees of diverse nationalities, Trans Asia has managed to overcome these challenges and has constantly invested in training and upskilling programmes.

Global and diversified

An additional advantage implemented into Trans Asia's personnel strategy derives from its international presence, along with the ability to instill a local feel into each branch's operations. As a consequence, the company has a truly diversified and global workforce.

Timely completion of its many projects underlines the success of Trans Asia's workforce, as well as highlighting its ability to overcome technical and local barriers. ■

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Image Credit : Eilbeck

The company's primary focus in the region is on hazardous area cranes and hoists for onshore and offshore applications

Cranes and hoists for hazardous areas

Australia's Eilbeck Cranes, a leader in the manufacture and service of overhead cranes, shares its outlook for business in the Middle East.

How do you view prospects for your business in the Middle East, and how are you looking to develop your business further in the region?

The recent announcement by ADNOC for the investment of Dh400bn in the next five years, KNPC projects, Qatar Petroleum project, Mozambique LNG, as well as the modernisation and upgrading of existing projects and the fact that most of the EPCM companies work here, all indicate good oil and gas business prospects for the region.

Our primary focus in this market is on hazardous area cranes and hoists for the onshore and offshore arena. We have been present in this region with our local partners and have worked with many renowned engineering and EPC companies such as Technip, Fluor, Saipem, Bechtel, JGC, Chiyoda, KBR, Samsung Heavy Industries and DSME.

Eilbeck will be exhibiting at the upcoming Iran Oil Show 2018 to capitalise on the opportunities in this market.

What are your most popular products in the region?

Cranes and hoists designed and certified to operate in hazardous areas such as gas plants; overhead electric travelling cranes and hoists for onshore and offshore; and LNG tank pump handling hoists and cranes. Eilbeck has been manufacturing and supplying such equipment for 20 years, for projects including Woodside KGP, Nigeria NLNG, Algeria Skikda LNG, GLNG, Yamal Ichthys FPSO/LNG, PNG LNG, Gorgon (Chevron) LNG, Wheatstone (Chevron) LNG and Iran LNG projects.

One of our strong points is in the experience gained over the years as a supplier and commissioner of electrical, hydraulic, pneumatic and mechanical LNG tank hoists and cranes. For example, our modularly designed ES Series hoists enable specific material selection for onshore, offshore, hazardous and corrosive environment requirements and allow quick, project-specific adjustments for up to 160t lifting applications. We are also supplying our Ex-hoists to other crane manufacturers.

As the leading crane manufacturer in Australia, our interests are also found in the mining and construction sectors where we have established our position as the preferred supplier of cranes and winches to world leaders such as BHP, Rio Tinto, Newmont, Heinrichson, Goldfield etc. and are supplying cranes of up to 500t capacity.

To what extent are your products suitable for hazardous or challenging environments?

Our Hazardous Area hoists and cranes are IEC Ex and ATEX certified. Most of the oil and gas companies have their own regulations and project specifications and they prefer to meet the same for standardisation reasons. Eilbeck Cranes is very flexible in incorporating project-based specifications in our product. We also give a recommendation for the selection of materials and alternative possible solutions (if applicable) based on the application.

Are there any current projects you would like to highlight?

Currently, we are manufacturing eight LNG tank pump handling cranes for Iran's South Pars Field. We have recently finished onshore projects with approximately 40 cranes for JKC (JGC, Chiyoda, and KBR) for INPEX off shore and onshore. We have supplied offshore cranes for other projects and clients, including Chevron Nigeria. Various projects are at present in discussion with Technip and other clients.

To what extent do you offer products incorporating the latest technological advances?

We are a 110-year-old company and have always been abreast with the latest technologies, incorporating changes to make our products advanced and optimised for purpose. We have been developing and expanding our manufacturing facilities to use the best production tools available, for example, in recent years we've set up a factory specifically for the production of hoists and winches that is fully equipped with the latest CNC machine tools. We are able to offer our modular ES series hoists incorporating the latest technologies. We believe adaptability and technological advancement are the key components required for survival in the current market. ■

Piezoresistive OEM pressure transmitters with I2C interface for areas at risk of explosion

KELLER HAS INTRODUCED the new intrinsically safe D Ei series pressure transmitters, a new addition to its D-line range which boasts a unique combination of highly robust industrial pressure transducers and the popular I2C interface. The new D Ei series is approved for gas group II applications and can be used to measure absolute and relative pressures in zone 0.

With its modular structure, the series permits numerous combinations, making it the ideal component for customisations using an I2C interface:

- OEM pressure transmitters for fitting directly into a system's existing drilled holes: 4 LD Ei...9 LD Ei
- OEM pressure transmitters with ultra-flexible pressure connection for screwing into existing pressure systems: 20 D Ei
- Pressure transmitters with a pressure connection and cable gland: 21 D Ei, 23 D Ei
- Level sensor for measuring the contents of a tank up to a maximum fill level of three metres: 26 D Ei.

The OEM pressure transmitters are available in various sizes and form the basis for the other models with ultra-flexible pressure connections or level sensors for measuring the contents of a tank up to three metres.

The 21 D Ei and 23 D Ei models are pressure transmitters with metal casings and cable outlets. Each offers a different level of accuracy, dimensions, potential applications and numbers of variants. For example, the slightly cheaper 21 D Ei model has a simple cable gland to relieve strain and is suited to use in dry environments, while the 23 D Ei has a premium-quality cable gland boasting protection level IP 68, allowing it to be used underwater and making it ideally suited to use in flooded areas.

Pressure transmitters with an I2C interface are normally only available in plastic or ceramic "consumer" housings, with only the compensatory parameters being stored in a memory. The intrinsically safe OEM transmitters from KELLER, however, have their own built-in DSP (digital signal processing) core, which balances and standardises the output values. The I2C (inter-integrated circuit) interface is designed to connect elements directly on a circuit board. The I2C is a bus system in that it connects multiple transmitters (slaves) to the same communication line. For instance, the intrinsically safe D-line combines a pressure interface for industrial use in tougher environments with an electrical interface for OEM applications.

The new series is suitable for use in hazardous areas

Image Credit : KELLER

The D Ei series consumes very little energy and is optimised for battery-powered applications. The total error band is just ± 0.7 per cent FS over a temperature range of -10…80°C. The hermetically sealed sensor electronics and the compact stainless steel housing (optional Hastelloy C-276) are extremely resistant to environmental factors. With pressure ranges of one to 1,000 bar and an internal two-chip solution that keeps the pressure sensor separate from the signal processing, the D Ei series is extremely flexible.

Hempel launches new coating for offshore industry

WORLD-LEADING COATING MANUFACTURER Hempel has launched its high performance, chemical resistant, two component epoxy coating – Hempadur 15600 – to the offshore industry.

Designed specifically for Floating Production Storage and Offloading (FPSO) cargo tank protection, Hempadur 15600 is International Maritime Organization (IMO) Performance Standard for Protective Coatings (PSPC) cargo oil tank compliant. It provides excellent resistance to continuous immersion in hydrocarbons, including crude oil up to 90˚C/194˚F.

Maurice Steijger, group offshore manager, Hempel A/S said, "Hempadur 15600 offers the application benefits of a pure epoxy coating with the corrosion protection and temperature resistance of an epoxy phenolic coating. It is particularly suitable for FPSO contractors and owners specifying coatings for their cargo and slop tanks.

"Hempadur 15600 is mechanically robust and can be applied in just two coats to comfortably achieve the required dry film thickness (DFT) for most cargo oil tank specifications. This enhanced performance is due to Hempel's high cross-link density technology which gives added chemical and corrosion resistance and a hard, glossy surface for easy cleaning. Application costs and risks are reduced, and the coating offers resistance to hydrocarbons at temperatures up to 90˚C/194˚F." This ensures excellent performance at temperatures where conventional epoxy universal primers can display limited resistance.

American University of Sharjah invents leak detection robot

THE ENGINEERING COLLEGE at the American University of Sharjah (AUS) has invented an 'In-Pipe Detection Robot,' to automatically check oil and gas pipes for holes and leaks.

According to Dr Mamoun Abdel-Hafez, professor and head of the Mechanical Engineering Department at AUS, the device is self-propelled and uses an internal gas or oil powered engine inside the pipe to detect leakage. It employs GPS maps and other self-measuring systems to send signals on the precise location of the hole or leak. He further added that the importance of the device lies in the fact that very long pipelines commonly cover different topographical areas including deserts, underground and oceans.

The robot has a navigation system specifically developed for this purpose. After a hole is detected, the robot uses an innovative algorithm to pinpoint the exact location. The algorithm processes multiple data to locate the hole.

The robot also has a communication system that allows the operator to send instructions to the robot wirelessly and follow the robot's operation while testing short pipelines.

The innovation was presented at the Innovation and Entrepreneurship Exhibition held as part of UAE Innovation Month.

The outcome of the project has the potential to positively impact the UAE's economy through helping to ensure speedy, efficient and reliable pipelines, comments the University.

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Technology advance in safety and reliability for small bore tubing systems

HOKE®, A CIRCOR product brand, has launched the new GYROLOK® XP product family, advanced technology that significantly improves the installation assembly process and ensures safer, more reliable tube-fitting connections.

GYROLOK® XP is the only tube fitting specifically designed and extensively tested to overcome the challenges of assembling fittings onto a complete range of corrosion resistant, heavy wall tubes. The GYROLOK® XP fitting is designed to grip heavier wall tubes, which increases working pressures by up to 80 per cent over conventional tube fittings.

"The GYROLOK® XP underscores our mission-critical severe service strategy," said Erik Wiik, group president, CIRCOR Energy. "The new product allows our XP fittings to be used on tubing with higher pressure ranges, including exotic alloy tubing used in severe service applications. This increased capability replaces the more expensive options, such as welded tube fittings or the cone and thread approach. The unique GYROLOK® XP design simplifies the installation and ensures that fittings cannot be overtightened, the most common installation error leading to leaks."

The new tube fitting ensures safer, more reliable tube fitting connections

Image Credit : HOKE

Sabin Metal Corporation launches information-rich website

SABIN METAL CORPORATION, the largest privately-owned precious metals refining organisation in North America, has revamped its website at http://www.sabinmetal.com. The redesigned site presents a comprehensive view of the company's services, offers precious metals industry news, and describes Sabin's innovative approach to precious metals refining. The website also serves as a communications platform between Sabin, its customers and other visitors through the "Events" and "Free Plant Evaluation" pages.

Brad Cook, VP of Sales and Marketing, explains, "Sabin focuses on the company's vision: to be the world leader in responsible and innovative precious metals refining. This is accomplished through excellence in customer service, the ongoing development of our people, and a dedication to the highest ethical and environmental standards. We're excited about this website launch and the information it provides our clients, partners and the media."

The Sabin Metal website will be updated on a regular basis with news and events, and there are plans for additional features.

Sabin Metal Corporation recovers and refines precious metals from the hydrocarbon, petrochemical, chemical, mining and other industries

Image credit:Sabin Metal Corporation

Project Databank

Compiled by Data Media Systems

OIL, GAS AND PETROCHEMICAL PROJECTS - BAHRAIN

Project	City	Facility	Budget ($ US)	Status
BAC - NOGA - Bahrain International Airport Modernization Hydrant Program - New Aviation Fuel Farm & Fuel	Muharraq	Airport	200,000,000	Engineering & Procurement
Bahrain LNG - Liquefied Natural Gas Receiving and Regasification Terminal	Hidd	Liquefied Natural Gas (LNG)	660,000,000	Construction
Banagas - Central Gas Plant Expansion	Sitra	Gas treatment plant	600,000,000	Construction
Bapco - Bapco Modernization Program (BMP) Procurement	Sitra	Petroleum oil refinery	6,000,000,000	Engineering &
Bapco - Bapco Modernization Program (BMP) - Residue Conversion Unit	Sitra	Petroleum oil refinery	800,000,000	Engineering & Procurement
Bapco - Offshore Blocks	Various	Oil and gas exploration	80,000,000	Feasibility Study
Bapco - Saudi Aramco - AB Pipeline	Abqaiq - Sitra	Oil pipeline	350,000,000	Construction
BNGEC - Fuel Pipelines And Storage Facilities Expansion	Sitra	Gas storage tanks	80,000,000	Construction
PIC - NOGA - Aromatics Complex	Manama	Aromatics	1,000,000,000	FEED
Tatweer Petroleum - Central Gas Dehydration Facilities	Awali	Gas processing	150,000,000	Construction

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Project Databank

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Project Focus

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Project Summary

Project Name	Bahrain LNG - LNG Receiving and Regasification Terminal, Hidd
Name of Client	Bahrain LNG
Estimated Budget ($US)	660,000,000
Revised Budget ($US)	741,000,000
Status	Construction
Project Start	Q1-2008
End Date	Q4-2018
Main Contractor	Teekay LNG Partners, GS Engineering & Construction
Contract Value ($US)	645,000,000

Background

Bahrain National Oil and Gas Authority (NOGA) is planning to build a Liquefied Natural Gas Receiving and Regasification Terminal which will be located in Hidd Industrial area. The terminal will have an initial capacity of 400mn standard cubic feet per day (mmscfd) which is expandable to 800 mmscfd. The project will be developed on a BOOT (Build-Own-Operate-Transfer) basis under a twenty-year agreement commencing on 15 July 2018. The terminal will help Bahrain meet the increasing demand for gas.

Project Status

Date	Status
Jan 2018	GS Engineering has commenced pipelaying works to install the terminal's subsea pipeline. Dredging activities (which include trenching, backfilling and pipelaying) are scheduled to conclude by August 2018.
Dec 2017	Teekay LNG has secured US$327mn long-term financing for the project after being advised by International law firm Watson Farley & Williams (WFW).
Oct 2017	Saudi Aramco has commenced talks with Bahrain about importing LNG from Bahrain using the LNG terminal. When the plans proceed the terminal will be expanded to allow for larger LNG imports.
Jan 2017	Construction works are underway with the project expected to be commissioned in Q4 2018.

Project Scope

The project scheme includes:

- Floating storage unit (FSU)
- Offshore LNG receiving jetty
- Breakwater
- Regasification platform
- Subsea gas pipelines from the platform to shore
- Onshore gas receiving facility
- Onshore nitrogen production facility

Project Finance

The LNG terminal will be owned and operated by Bahrain LNG WLL, a new joint venture owned by:

- Noga – 30 per cent
- Consortium of Teekay LNG, Samsung and the GIC – 70 per cent: Teekay LNG (30 per cent), Samsung (20 per cent) and GIC (20 per cent)

A syndicate of nine international and regional banks is participating in the US$741mn 20-year loan for the first such project to be developed on a PPP basis in the Middle East.

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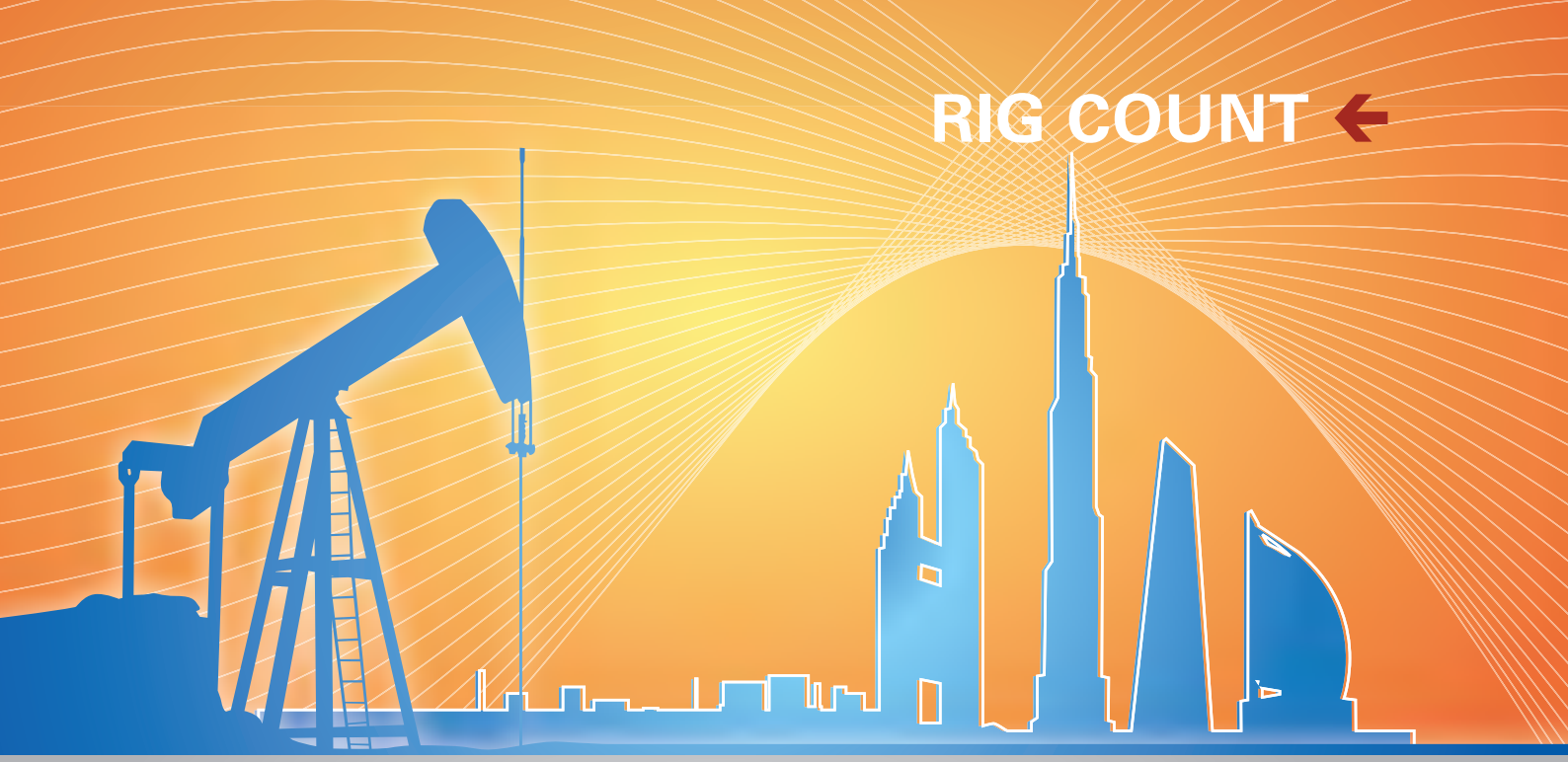

Middle East & North Africa

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			LAST YEAR		
Country	Land	OffShore	Total	From Last Month	Land	OffShore	Total	Land	OffShore	Total
Middle East										
ABU DHABI	38	14	52	1	39	12	51	33	15	48
DUBAI	0	2	2	0	0	2	2	0	2	2
IRAQ	56	0	56	2	54	0	54	41	0	41
JORDAN	0	0	0	0	0	0	0	0	0	0
KUWAIT	53	0	53	0	53	0	53	52	0	52
OMAN	54	0	54	-1	55	0	55	57	0	57
PAKISTAN	24	0	24	4	20	0	20	21	0	21
QATAR	3	3	6	0	3	3	6	5	5	10
SAUDI ARABIA	94	18	112	1	92	19	111	105	19	124
SUDAN	0	0	0	0	0	0	0	0	0	0
SYRIA	0	0	0	0	0	0	0	0	0	0
YEMEN	0	0	0	0	0	0	0	0	0	0
TOTAL	322	37	359	7	316	36	352	314	41	355
North Africa										
ALGERIA	50	0	50	0	50	0	50	51	0	51
EGYPT	18	2	20	-2	17	5	22	19	6	25
LIBYA	0	1	1	0	0	1	1	0	1	1
TUNISIA	0	0	0	0	0	0	0	1	1	2
TOTAL	68	3	71	-2	67	6	73	71	8	79

Source: Baker Hughes

والنمو. والدروس المستفادة، خلال فترات تراجع الأسعار، غالبا ما تصبح طي النسيان بمجرد تحقيق النمو. ويتعين على الشركات، الأكثر وعيا بالتكاليف، ضبط تكاليف التشغيل، إذ أن هذا هو الفارق بين الازدهار والفشل. وخلال فترة التعافي هذه، ستعود هذه الدروس المستفادة على الشركات بالربح الوفير.

لنعد بالذاكرة إلى العامين الماضيين اللذين شهدا أسوأ فترات التراجع. فعندما كان الإنفاق الرأسمالي معرضا لضغوط هائلة، كان الاستثمار في الحوسبة عالية الأداء يمضي بوتيرة ثابتة. هنا يحق لك تماما أن تتساءل عن السبب وراء ذلك. العديد من واضعي الاستراتيجيات الاقتصادية يشجع الاستثمار في الأسواق الراكدة. وبالنسبة لسوق النفط، ابدأ في سبر أغوار هذه الحقائق وستتجلى لك العديد من الأسباب التي تدفع للاستثمار في الحوسبة عالية الأداء في سوق مالية مُقيدة.

ففي الفترة التي شهدت انخفاضاً حاداً في أسعار النفط، أخبرنا كبيرو مسؤولي التكنولوجيا والمعلومات أنه قد طُلب من مديري مراكز البيانات تحقيق نتائج أفضل بنفقات أقل، وعدم التضحية بالمرونة التنظيمية. وبالنسبة لي، أعتقد أن هناك عاملاً واحداً على الأقل له أكبر تأثير على الاستكشاف المربح للنفط وتقليل مخاطره، وهو كفاءة تفسير البيانات الزلزالية.

أما بالنسبة لشركات النفط، فيؤدي الفهم الجيد للتكوينات الموجودة في باطن الأرض مباشرة، إلى تقليل مخاطر وتكاليف الاستكشاف. وكلما كانت رؤية الشركة للمنطقة الجيولوجية أكثر دقة، فإنها تحظى بفرص نجاح أفضل عند إجراء أعمال الحفر.

وللحصول على أفضل رؤية لباطن الأرض، تعتمد شركات النفط على عمليات المحاكاة وبناء النماذج عالية الوضوح. وبخلاف استخدام الصور عالية الوضوح، فإن العوامل الملموسة الوحيدة التي تسهم في سرعة الاستكشاف هي الحسابات الرياضية التي تُطبق على البيانات، وكم البيانات التي يتم بناء نماذج لها، فضلا عن سرعة بناء هذه النماذج.

وحتى تكتسب شركات النفط المزيد من المزايا التنافسية، يجب أن يتوفر لديها واحدٌ من خيارين: إما تحسين الحسابات الرياضية، وهو ما يستغرق وقتاً طويلاً، أو توسعة وتحسين بنيتها الأساسية من أجل تحسين أحجام وسرعات معالجة البيانات. وهذا الأخير يمكن تحقيقه فقط في غضون بضعة أشهر أو ربما أسابيع. ويمكن تطبيق تقنيات التخزين الناشئة، مثل ذاكرة الوصول العشوائي غير المتطايرة، بشكل استراتيجي لتحسين أداء التطبيق على نحو مباشر.

أما أسرع الطرق لكسب ميزة تنافسية بخصوص الاستكشاف، فتتمثل مباشرةً في التحسينات التي يتعين إجراؤها على البنية الأساسية للحوسبة عالية الأداء، ولا سيما كم البيانات التي يمكن تحليلها وإعادة تحليلها في أقل فترة زمنية ممكنة. فالعديد من المصادر الخارجية والإصدارات الصناعية ـ بشكل أساسي ـ يركز على زيادة القدرة الحاسوبية، ولكنك إذا أمعنتَ النظر في بيئات الحوسبة عالية الأداء ستجد نموذجاً صاعداً جديراً بالاهتمام.

وحواسب «بيتاسكيل» تتبنى الحلول المتكاملة ـ بشكل محكم ـ لتخزين البيانات على نحو متخصص وعالي الأداء. وغالبا ما تستعين شركات تكنولوجيا المعلومات هذه بالأجهزة القائمة على السلع الأساسية ومكونات التخزين المتخصصة معا لإحراز أفضل المكاسب. والشركات المعنية تسعى ـ بهذا النطاق ـ إلى التفوق على منافساتها من الشركات الأخرى، ومضاعفة عوائدها وزيادة أنشطتها المتعلقة باستكشاف النفط. فهي تهدف لرفع مستوى أدائها وتعزيز قدرتها على تخزين البيانات بنسبة سنوية تبلغ نحو ١٢٠ إلى ٥٠٠ في المائة.

ويُستخدم بالفعل عدد من أنظمة «بيتافلوب» في شركات صناعة النفط والغاز، وتقدم شركة «دي دي إن» ما يربو على ٥٠ في المائة منها. وتوفر شركة حلول التخزين لها إمكانية التعامل مع عشرات الآلاف من المعالجات بمعدل أداء مرتفع للغاية. والمقياس الأساسي في هذا الصدد هو الكفاءة، أي إلى أي مدى تتماشى البنية الأساسية للتخزين مع مستوى الأداء الذي تتطلبه التطبيقات.

وليس لزاما على شركة النفط أن تكون شركة عملاقة تستخدم نظام الحوسبة «بيتافلوب+» حتى تتمكن من كسب ميزة تنافسية قائمة على البنية الأساسية للحوسبة عالية الأداء. فهناك الشركات المنتجة والمستقلة متوسطة الحجم التي تتخذ توجهات مماثلة وتشهد تحسنا في التخزين عالي الأداء، ولا تستلزم ـ بالضرورة ـ وجود بيئة تخزين ضخمة، أو ضخ استثمارات هائلة. إذ يمكن تحسين التخزين لتحقيق التوازن بين أداء التطبيقات المطلوب والإمكانات المطلوبة. ومع وصول سعر النفط التنافسي الجديد إلى نصف السعر المعياري السابق، يجب على القائمين على هذه الصناعة البحث عن آليات، يمكن من خلالها، رفع الكفاءة التشغيلية ونجاح عمليات استكشاف النفط. إن درجة كفاءة تفسير البيانات الزلزالية تعتبر أكبر سمة مميزة في منشأتك، فلا عجب أن يتواصل ضخ الاستثمارات في الحوسبة عالية الأداء بوتيرة سريعة، بما في ذلك إدارة الشبكات والبيانات والتخزين عالي الأداء.

تحسين البنية التحتية للحوسبة عالية الأداء يمكن أن يلعب دورا رئيسيا في الإنتاجية والعمليات

الابتكار والبيانات الضخمة يدعوان إلى التفاؤل في مجال النفط

في هذا المقال، يناقش كورت كوكين، مدير التسويق بشركة «دي دي إن» لحلول التخزين، إمكانات التفسير الفعال للبيانات الزلزالية لتحقيق الكفاءة والربح في مجال استكشاف النفط. وهو يقول إنه بالنسبة لشركات النفط، يؤدي الفهم الجيد للتكوينات الموجودة في باطن الأرض مباشرة، إلى تقليل مخاطر وتكاليف الاستكشاف. وكلما كانت رؤية الشركة للمنطقة الجيولوجية أكثر دقة، فإنها تحظى بفرص نجاح أفضل عند إجراء أعمال الحفر.

هناك العديد من الأسباب التي تدفع القائمين على صناعة النفط إلى التفاؤل. فبينما لاتزال السوق تشهد انخفاضا في أسعار النفط الخام، فإن احتدام المنافسة الناجم عن مشاركة موارد النفط الصخري الأمريكي ومصادر الطاقة المتجددة إلى الساحة، وزيادة نشاط الاندماج والاستحواذ وإعادة النظر في المشاريع التي تأجلت من جراء تراجع الأسعار منذ بضعة أعوام ماضية، تعد جميعا علامات مؤكدة على التعافي

أرامكو السعودية تنجز أعمال الفحص والمعاينة في مصفاة رأس تنورة

أنهت أرامكو السعودية أعمال الفحص والمعاينة الكبرى لمصفاة رأس تنورة الواقعة بالقرب من منطقة الجبيل الصناعية في المملكة العربية السعودية.

وقد استكملت عملية الفحص والمعاينة لوحدة التجزئة خلال ٢٧ يوما مقارنة بـ ٣٨ يوما للوحدات العالمية، بينما أنجزت عملية التجديد والمعاينة لوحدة المهذب البلاتيني في ٣٢ يوًا مقارنة بـ٣٥ يوما للوحدات العالمية.

وقد تم إغلاق وحدة تجزئة مكثفات الغاز في مصفاة رأس تنورة، ووحدة المهذب البلاتيني/ المعالجة الهيدروجينية للنفثا، وذلك لإجراء التفتيش والصيانة للمعدات حسب جدول معاينة المعدات، وكذلك لإجراء أعمال صيانة ومشاريع أخرى تتطلب توقف المصفاة عن العمل، علما بأن المعامل تخضع لدورة فحص ومعاينة كل خمس سنوات.

وذكرت شركة النفط والغاز الخاضعة لإدارة المملكة أنه «في ظل القيود المفروضة على التكاليف، توخى فريق العمل ومجلس إدارة مصفاة رأس تنورة بالغ الحرص لاتخاذ قرارات من شأنها تحسين استغلال الموارد. وقد أنجزت أعمال الفحص والمعاينة بأقل من التكاليف المدرجة في موازنة خطة العمل، وبتكلفة أقل كثيرا من تلك التي تكبدتها الشركة لإجراء تلك الأعمال منذ خمس سنوات مضت».

ومن بين المشاريع التي تم إنجازها، استكمال وصلات الوقود النظيف، وتمكين مصفاة رأس تنورة من دعم مستقبل مستدام.

وسوف ينجح مشروع التخلص من الزئبق، ومشروع المسار الجانبي لمفاعل الإصلاح التحفيزي المنفذة خلال أعمال الفحص والمعاينة عند فترات تشغيل المنشآت، ومن ثم المساعدة في استقرار إنتاج الصناعات التحويلية. وقد تم تنفيذ تعديلات كبرى، منها تجهيز ٩٦ أسطوانة للمفاعل الداخلي، والمساعدة في تحسين أداء المفاعل، ومنع حدوث الأعطال المستقبلية.

تمت أعمال المعاينة والفحص بأقل التكاليف

دراسة تلقي الضوء على أهميـة الأتمتـة والتحويـل الرقمـي

صدر تقرير مؤشر المواهب العالمية في مجال الطاقة Global Energy Talent Index (جيتي) السنوي الثاني، الذي يعد أكبر تقرير عالمي يرصد توجهات العمل والتوظيف، وقد أوضح أنه يتعين على شركات النفط والغاز بدء اعتماد الأتمتة والتحويل الرقمي لإعادة تشكيل وتجديد قوى العمل لديها.

وكان التقرير الذي أعدته كلٌ من شركة إيرسويفت لتوفير حلول التوظيف العالمية لقطاعات الطاقة والمعالجة والبنية التحتية، Energy Jobline، موقع التوظيف العالمي الرائد لصناعات الطاقة والصناعات الهندسية، قد أشار إلى أن أغلب العاملين في هذا المجال (٧٧ في المائة) يعتقدون أن الأتمتة والتحويل الرقمي تطورات إيجابية بالنسبة لهذا القطاع، وقد تجاوزوا آية شواغل لدى المستجيبين بشأن أمنهم الوظيفي.

ولا يقتصر التفاؤل على المزايا المادية والتشغيلية للتقنيات المستخدمة، بل ويشمل أيضا المزايا الأكثر مرونة، والتي قد تكون في غاية الأهمية لجذب المواهب والاحتفاظ بها في مجال الطاقة الذي يشهد منافسة قوية. وعلى وجه الخصوص، أبدى أربعة من كل عشرة أفراد بآرائهم، سعادتهم خلال السنوات الثلاث الأخيرة بتحسن أوضاعهم بفضل مواكبتهم لتوجهات مكان العمل العصري المزود بأحدث التقنيات الرقمية، مثل نظام العمل المرن.

العاملون في قطاع النفط يعتقدون أن الأتمتة والتحول الرقمي تطورات إيجابية

من جانبها، قالت جانيت ماركس، الرئيس التنفيذي للعمليات في شركة «إيرسويفت»: «إنها أخبار جيدة للشركات النفط والغاز.

كانت السنوات الماضية قاسية على المهنيين العاملين في هذا المجال، ولذا فربما يتفاجأ المديرون القائمون على التوظيف بتفاؤل العمال حيال دور التحول الرقمي في مستقبل القطاع. والهدف الرئيسي هنا هو الاستفادة من هذا التفاؤل وتوفير الفرص للموجهة نحو التحول الرقمي للمهنيين لتحقيق المزيد من السلامة والمرونة والكفاءة في العمل».

وقد استطلعت شركة إيرسويفت Energy Jobline آراء أكثر من ٢٠ ألف مهني ومدير توظيف في مجال الطاقة في ١٦٣ دولة عبر خمس قطاعات فرعية في هذه الصناعة، وهي النفط والغاز، والطاقة المتجددة، والكهرباء، والطاقة النووية والصناعات البتروكيماوية.

التقرير متاح على الموقع
http://www.getireport.com/download-report.

الإمارات تسعى لعقد تحالف بين أوبك والدول المنتجة للنفط غير الأعضاء فيها

سهيل المزروعي يتحدث إلى المؤتمر

أعلن معالي المهنـدس/ سهيل محمد فرج المزروعي، وزير الطاقة الإماراتي ورئيس مؤتمر أوبك ٢٠١٨، أنه يسعى لإضفاء طابع رسمي على التعاون بين منظمة أوبك وحلفائها من غير الأعضاء فيها. وفي كلمته التي ألقاها في مؤتمر لندن في ٢٠ فبراير/شباط، قال المزروعي إنه يطمح، هو والأمين العام لمنظمة أوبك، إلى صياغة إطار عمل للتعاون بين الدول الأربع والعشرين الأعضاء في منظمة أوبك والدول الأخرى غير الأعضاء بها، والتي أسهمت في أن تستعيد السوق توازنها.

وقال المزروعي: «أعرب المشاركون في «إعلان التعاون» من الدول الأعضاء وغير الأعضاء في منظمة أوبك عن دعمهم للبحث عن آليات ووسائل لترسيخ هذا التعاون وإضفاء الطابع المؤسسي عليه. هذا الأمر بالتحديد سينال جل تركيزي في ٢٠١٨. إن أوبك قد بدأت في التواصل مع دول أخرى بخصوص إمكانية مشاركتها، ونأمل في مناقشة اتفاقية هذا العام مع الوزراء، فهذا كفيل بدعم المجموعة».

وقد ألقى الضوء على دور أوبك في إحداث التوازن بالسوق وتعزيز نمو الاقتصاد العالمي، وعلّق بالقول إن توقعات ٢٠١٨ تبشر بالأمل. وأضاف: «نتوقع هذا العام أن يتحقق التوازن بين العرض والطلب، وأن نشهد استثمارات كبيرة في هذا القطاع. ولاشك أن ضخ استثمارات تزيد على ١٠ تريليونات دولارأمريكي قد يكون مطلوبا حتى عام ٢٠٤٠ لاستبدال الحقول التي انخفضت قدرتها الإنتاجية وضمان إمداد الكميات الملائمة». وأضاف المزروعي: «كيف يتسنى لنا ذلك إن لم نبدأ العمل اليوم؟ مع وجوب الأخذ في الاعتبار فترة الخمس سنوات الفاصلة بين الموافقة على إنجاز المشروع وبدء الإنتاج».

واستطرد بقوله: «نحن، بوصفنا الدول الأعضاء في منظمة أوبك، حريصون على العمل مع كل شركة، سواء كانت إحدى شركات النفط العالمية أو المنتجة للنفط الصخري، أو أي كيان آخر، لضمان توفير الإمدادات الملائمة ودعم نمو الاقتصاد العالمي كما كان الحال فيما مضى».

استخدام تقنية «البلوك تشين» لجمع بيانات المخزونات النفطية في الفجيرة

أعلنت أمس مؤسسة إس آند بي جلوبال بلاتس، المزود العالمي الرائد والمستقل لبيانات المؤشرات السعرية لأسواق الطاقة والمواد الأولية، عن تدشين شبكة» بلوك تشين» التي توفر أسبوعيا للمشتركين وسيلة آمنة وسهلة من أجل تقديم بيانات المخزونات النفطية لمنطقة الفجيرة للصناعة البترولية (فوز) ولجنة بيانات الطاقة المعروفة اختصارا باسم «فيدكوم». وتعد «فوز» أكبر تجمع في منطقة الشرق الأوسط للمخزونات التجارية من المنتجات النفطية.

وقد نجحت إس آند بي جلوبال بلاتس، من خلال التعاون مع كل من منطقة الفجيرة للصناعة البترولية «فوز» ولجنة الفجيرة لبيانات الطاقة «فيدكوم» وكذلك مع الجهات الإحدى عشرة التي تتولى التخزين والتشغيل في المنطقة، في نشر تقنية تسجيل البيانات «بلوك تشين» على نطاق واسع تجاريا. وهذه التقنية تتيح لكل من «فوز» وأصحاب المصالح المشتركة، ومن ضمنها ميناء الفجيرة والجهات العاملة فيه، وسيلة آمنة وسهلة من أجل تتبع وتجميع البيانات الأسبوعية عن المنتجات النفطية للمخزونات.

وتعمل هذه التقنية الجديدة على تطوير الطريقة اليدوية وغير المنظمة التي تتواصل بها حاليا الجهات العاملة في مناطق التخزين لتقديم بيانات المخزونات الأسبوعية إلى فيدكوم، وبالتالي فإن التقنية الجديدة تخفف على فيدكوم أعباء التدقيق والتحقق والتجميع اليدوي للبيانات الواردة من كلٍ من جهات التخزين، وبهذا تقل احتمالات حدوث الخطأ البشري في العملية.

من جهته، أوضح جيمس رايلت، مدير الإبداع والاستراتيجيات الرقمية في إس آند بي جلوبال بلاتس بقوله: «نعتقد أن مشروعنا هذا، بالتعاون مع شركائنا في الفجيرة، يعتبر أول تطبيق لتقنية «بلوك تشين» في أسواق النفط، ويوفر للمشاركين في هذه الأسواق البيانات ذات الأهمية الحيوية للمتعاملين، سواء من داخل المنطقة أو على صعيد أسواق النفط العالمية. وتأتي هذه الخطوة في سياق التزامنا المتواصل والمستمر نحو التحولات الرقمية في قطاع الطاقة


مراسم توقيع عقد شبكة «بلوك تشين»

ومن أجل تقديم حلول إبداعية لتطويره. ونحن سعداء بهذه الفرصة للتواصل المباشر مع المشاركين، ولمناقشة سبل التطبيق الأنسب لهذه التقنية على نطاق واسع، بما يحقق تحسين الكفاءة وإدارة المخاطر ضمن بيئة عمل آمنة». وعلى جانب آخر، قال السيد سهيل إقبال، عضو لجنة التطوير في «فوز» والكابتن سالم الحمودي عضو فيدكوم: «إن هذا الابتكار يمثل الخطوة التالية ضمن طموحات الفجيرة لتصبح مركزا عالميا في تجارة المواد الأولية. وهو سوف يتيح لمشغلي ميناء الفجيرة أن يكونوا في طليعة التطور التكنولوجي، ويتمتعون ـ في الوقت نفسه ـ بأعلى درجات الأمان في هذا المجال».

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