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Oil Review Middle East

Covering Oil, Gas and Hydrocarbon Processing

VOLUME 18 | ISSUE 3 2015

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- Managing the workforce for long-term growth
- PDO drives Oman's oil and gas production forward
- LNG market faces increasing volatility
- The benefits of sharing big data
- Improving performance in drilling operations
- Making fracturing safer and more efficient

Andy Gibbins, VP Middle East at EPC, discusses the impact of the low oil price on refining and petrochemicals

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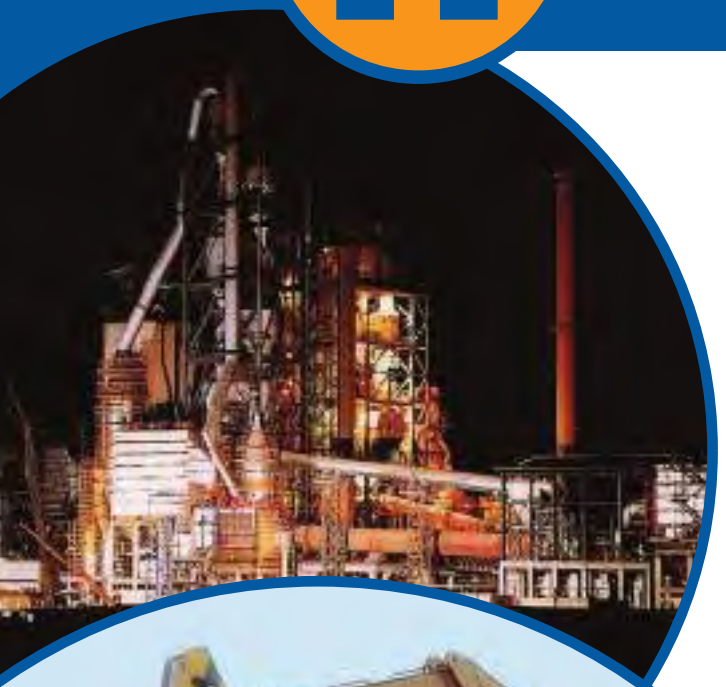

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➔ Editor's note

AT A TIME of low oil prices it is tempting to slash investment in technology and lay off staff. At MEOS in March, delegates were cautioned against overreacting. Amin H Nasser, Saudi Aramco's senior vice president of Upstream, speaking on the challenge of keeping up during a downturn, commented, "Retaining talent is crucial for the future of the industry...the reduced investment in technology and talent that characterised the 1980s and early 1990s should remind us that repercussions can be lasting."
Our feature on page 56 highlights the need for oil and gas firms to take a long-term view and adopt a strategic approach to recruitment to ensure they have the appropriate resources in place when oil prices recover. Seeking efficiencies rather than cutting the workforce is key. This and other issues will be debated at our 'Managing Talent in Oil and Gas' conference in Abu Dhabi in May. We hope to see you there.

➔ Contents

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➔ Executives' Calendar 2015

MAY 2015			
17-19	**Managing Talent in Oil & Gas**	ABU DHABI	www.managing-talent.net
19-21	**CCPS-MEPSC**	ABU DHABI	www.mepsc.org
19-21	**EPC Contracts in Oil & Gas**	DUBAI	www.cwcschool.com
24-26	**GCC Environment Forum**	RIYADH	www.gccenvironmentforum.com
26-27	**ISA Automation Conference & Exhibition**	ABU DHABI	www.isa-emea-expo.org
26-28	**WPC Leadership Conference**	TROMSØ	www.wpcleadership.com
JUNE 2015			
1-3	**IRPC**	ABU DHABI	www.cvent.com
1-5	**World Gas Conference**	PARIS	www.wgc2015.org
2-5	**Caspian Oil & Gas Exhibition**	BAKU	www.caspianoilgas.az
8-10	**Iraq Petroleum 2015**	LONDON	www.cwciraqpetroleum.com
23-24	**FLNG World Congress**	SINGAPORE	www.flngworldcongress.com
SEPTEMBER 2015			
8-11	**Offshore Europe**	ABERDEEN	www.offshore-europe.co.uk
15-17	**MEPEC**	MANAMA	www.mepec.org
OCTOBER 2015			
11-14	**KOGS**	KUWAIT	www.kogs2015.com
18-20	**Plastics & Petrochem Arabia**	DAMMAM	plaschem.4p-arabia.com
19-21	**Negotiation in Oil & Gas**	DOHA	www.cwcschool.com
27-30	**Gastech**	SINGAPORE	www.gastechsingapore.com

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

Local and global energy challenges to be tackled at 26th edition of World Gas Conference

THE WORLD GAS Conference (WGC), set to take place in Paris in June, will look to address gas industry challenges such as the sustainability of supply, the role of gas as a transition fuel, and the development and application of new technologies.

Jérôme Ferrier, president of the International Gas Union (IGU), has been visiting a number major gas producing and purchasing countries prior to the triennial event, including Indonesia, South Korea, Japan, Qatar and the UAE, in order to discuss the challenges facing the gas industry with politicians and industry leaders. Their insight and expertise will feed directly into discussions scheduled to take place during the conference.

The event has already confirmed participation from more than 100 countries and 600 organisations, with a range of delegates from technical, engineering, strategic and commercial backgrounds set to be in attendance.

More than 435 speakers have been confirmed, with speakers set to include Total SA CEO Patrick Pouyanné, GDF Suez chairman and CEO Gérard Mestrallet, and Sheikh Khalid Khalifa Al Thani, CEO of Qatargas. The number of abstracts received for the 26th edition of WGC has reached record numbers, more than doubling the number gathered for the 2012 edition.

Speaking about the upcoming conference, IGU national organising committee chairman Daniel Paccoud commented, "The dynamic and resilient city of Paris is a highly appropriate venue for discussions on the future of gas and of world energy. Our visitors from across the globe will see practical demonstrations of tomorrow's energy today, with showcase cutting-edge technological and commercial advances, a dedicated pavilion on Natural Gas for Transportation, and live product demonstrations and launches."

The event will take place at Paris Expo Porte de Versailles in the French capital from 1-5 June 2015.

WGC will see discussions and debates take place on the role of gas within the global energy mix (Photo: VladSV)

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Abu Dhabi set for automation trade show and conference

AUTOMATION PROFESSIONALS, EQUIPMENT manufacturers and service providers will be on hand in Abu Dhabi in May for the ISA Automation Conference and Exhibition Europe, Middle East and Africa.

Jointly organised by the International Society Of Automation (ISA) and DMS Global, the event will include a two-day technical conference and supporting exhibition, with a focus on the latest measurement and control technologies.

DMS Global president and CEO Mohammed Loch said, "There are many mega events in the energy sector that are too general. The events division of DMS Global aims to facilitate the gathering of industry leaders and experts for specific communities to give them more focus to achieve their objectives."

In attendance at the event, which will take place in Abu Dhabi on 26-27 May 2015, will be a mix of regional and international experts, who will share their experiences, visions and solutions to the challenges of measurement and control in complex industrial environments.

Timothy Feldman, director of global products and services at ISA, remarked, "This conference will be a unique opportunity for local professionals involved in the automation field to learn, exchange experiences and network with peers from all over the world."

The ISA Automation Conference and Exhibition Europe, Middle East and Africa will take place in Abu Dhabi in May 2015 (Photo: Ferveez Mohideen)

WPC leadership event wins CEOs' support

A NUMBER OF leading CEOs based in Norway have offered their support to the World Petroleum Council's (WPC) first sustainability-focussed event.

Set to take place in the Norwegian city of Tromsø on 26-28 May 2015, the WPC Leadership Conference on Responsibility, Cooperation and Sustainability has garnered the official support of Statoil acting president and CEO Eldar Sætre, DNV-GL group president and CEO Henrik O. Madsen, Norsk Industri CEO Stein Lier-Hansen and Norwegian Shipowners' Association CEO Sturla Henrikson.

In a letter of support signed by all four industry leaders, the CEOs said, "We are convinced of the necessity and value of hosting such an event. As an industry, it will help us to provide sustainable energy solutions for our future. That is why we have committed to sponsoring this event and have formalised this support to the WPC."

Approximately 1,000 participants from the oil and gas industry are expected to attend the event, which will focus on technologies and practices that can be utilised to minimise environmental impacts and risks.

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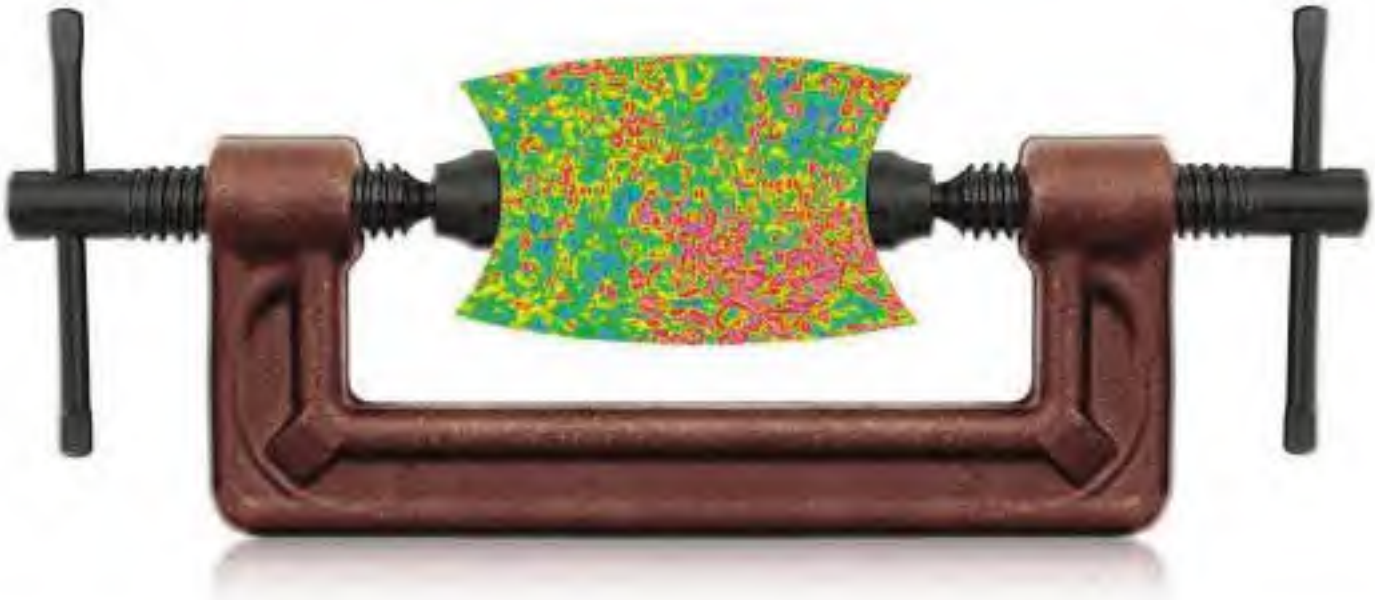

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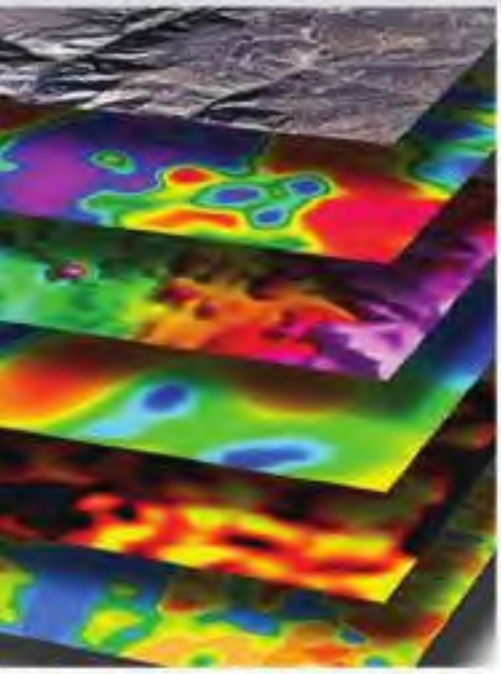

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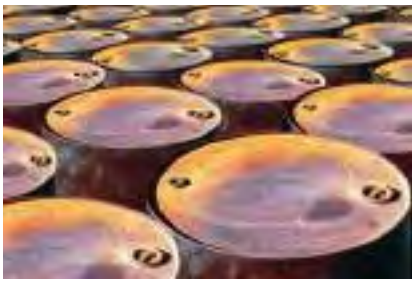
Gazprom Neft receives first batch of oil from Iraq's Badra oilfield

RUSSIAN OIL PRODUCER Gazprom Neft has received the first batch of oil from the Badra oilfield. The company, which operates Iraq's Badra oilfield, has confirmed that it received the f Kirkuk grade oil from the Iraqi government.

Gazprom Neft's buyer is an Asian company and the crude oil is being delivered on FOB (Free On Board - delivery to the port and loading on the buyer's ship) terms. The crude oil has been given to the Russian company in compensation for its investment in the development of the Badra oilfield. About 70,000 tonnes of oil was delivered in the first batch from the Iraqi state corporation SOMO (State Oil Marketing Company) in the Turkish port of Ceyhan.



Gazprom Neft is one among five buyers of oil from the Badra oilfield

The Badra oilfield has been producing oil in a stable manner, which has enabled investors to receive compensation for costs incurred by obtaining oil produced on the field. A consortium comprising Gazprom Neft (the operator), Kogas (South Korea), Petronas (Malaysia) and TPAO (Turkey) will claim their respective shares of oil from the Badra oilfield.

Kuwait Energy and EGPC discover hydrocarbons onshore Egypt

KUWAIT ENERGY AND the Egyptian General Petroleum Corporation (EGPC) have announced that the exploration well ASH-1ST on the Abu Sennan concession, located in the Western Desert onshore Egypt, has discovered hydrocarbons in the Alam El Bueib (Early Cretaceous) Formation.

Tests of the Alam El Bueib formation achieved flow rates of 3,900 bbls per day of condensate with 46 API and 3.1 MMSCF/D of gas on choke 64/64. This is the first discovery from the deep horizons at the Abu Sennan area with a good flow rate.

Kuwait Energy holds a 50 per cent revenue interest and is the operator in the Abu Sennan development lease.

Kuwait Energy CEO Sara Akbar said, "I am delighted to announce this important discovery at the Abu Sennan block, which will add big value to the asset and even the neighbouring assets. This discovery adds a new producing horizon to the stream and opens a window for deeper exploration targets." The Abu Sennan concession has 12 producing wells, producing from different formations.

Dragon Oil sets up committee to oversee ENOC takeover bid

DRAGON OIL HAS set up a committee to oversee and assess the takeover bid made by Emirates National Oil Company (ENOC).

The committee will be chaired by Thor Haugnaess, Dragon Oil's senior independent non-executive director who will chair the commitee, and Ahmad Al Muhairbi, Saeed Al Mazrooei and Justin Crowley.

Earlier, Emirates National Oil Company (ENOC) had approached oil and gas explorer Dragon Oil for a takeover. ENOC owns 54 per cent of Dragon Oil and has made a bid to take over the latter for an undisclosed amount, stated Dragon Oil in a statement.

Headquartered in Dubai, Dragon Oil has exploration assets in MENA and Central Asia. ENOC, also based in Dubai, develops donwstream and upstream assets across the oil and gas industry.

Dragon Oil has exploration assets in MENA and Central Asia

This marks the second approach made by ENOC to take over Dragon Oil, after it failed with a previous takeover attempt in 2009. At the time, ENOC offered 65 cents-a-share, which valued Dragon at US$1.6bn, but failed to garner enough shareholder support. However, Goldman Sachs analyst Ruth Brooker has described Dragon Oil's Cheleken field as a strategic asset, which could garner interest.

Saudi Arabia achieves record-high oil production of 10.3mn bpd

SAUDI ARABIA'S OIL production hit a record high in March 2015 with a total of 10.3mn bpd, surpassing its former peak of 10.2mn bpd in August 2013.

The surge in production as well as a rise in USA's crude stockpiles led to a fall of six per cent in oil prices, said Reuters.

Saudi Arabia oil minister Ali al-Naimi said that the country will keep producing around 10mn bpd in near future. "The challenge is to restore the supply-demand balance and reach price stability. This requires the cooperation of non-OPEC major producers, just as it did in the 1998-1999 crisis."

Ali al-Naimi, minister of petroleum and mineral resources in Saudi Arabia

However, some non-OPEC major producing countries said that they were unable or unwilling to participate in production cuts. Hence, OPEC decided to maintain production levels and not to give up its market share in favour of others.

The Saudi production figure also reflects some additional domestic refinery demand. Yanbu Aramco Sinopec Refining, a joint venture between oil firm Saudi Aramco and China's Sinopec, has been steadily ramping up production this year and reached its full capacity in February 2015.

In addition, demand was increased partly by deep discounts on Saudi Arabian exports in March as the Kingdom offered Asian customers the deepest discounts on its flagship Arab Light crude in at least 12 years, according to Reuters. Saudi Aramco has raised its prices for the following two months, putting May at the highest level since last year. US imports of Saudi Arabian crude rose to more than 950,000 bpd over the four weeks to March 27 – the highest since last September.

According to Joint Oil Data Initiative database, Saudi Arabian refineries ran a record 2.2mn bpd of crude in December 2014, up from 1.5mn bpd in 2012.

Libyan state firm producing 317,000 barrels of oil a day

Libya is one of the major producers of oil among the MENA countries

LIBYAN STATE FIRM Arabian Gulf Oil Company (AGOCO) is producing 317,000 barrels per day (bpd) – the highest level in the last two years. Libya is currently producing around 600,000 barrels of crude per day, less than half the 1.6mn bpd it produced before the fall of Muammar Gaddafi in 2011. Despite several oil ports and major fields being closed, two of the biggest ports, Ras Lanuf and Es Sider, with a combined capacity of 600,000 bpd, may open soon, officials said. Libyan prime minister Abdullah al-Thinni said that the government would run its own oil sales and deposit revenues abroad in a bid to divert proceeds away from a rival self-declared administration in Tripoli. But the Tripoli-based National Oil Company (NOC) still handles all oil sales and revenues, and AGOCO – although located in eastern Libya – is an NOC subsidiary. NOC has tried to stay out of the conflict between the rival governments, said *Reuters*.

Oil and gas exploration costs to fall 33 per cent by 2016, says Wood Mackenzie

The deflation could allow companies that hold spending, to fund more exploration activities next year

OIL AND GAS drilling could return to 2014 levels by next year, according to energy research group Wood Mackenzie. In its report *Upstream cost deflation: how much could costs of exploration fall?*, Wood Mackenzie revealed that exploration deflation will average 33 per cent by 2016. Despite oil and gas companies slashing their exploration budgets by an average of 30 per cent to adjust to lower oil prices, efforts to address cost inflation will largely cushion the blow.

The deflation would be comprised of a 19 per cent fall in like-for-like costs, a five per cent saving from the simplification of activities, a further five per cent saving from efficiency improvements and a final four per cent from the strength of the US dollar.

Andrew Latham, vice-president for exploration research at Wood Mackenzie, said that the deflation could allow any companies that hold spending flat into 2016 to fund 50 per cent more exploration, versus 2014.

Global LNG - supply growth and **market diversification**

The LNG market will be marked by increasing volatility in 2015 as new 'waves' of supply start to add volume together with new markets opening up, according to BG Group's *Global LNG Market Outlook 2015*.

"AFTER FOUR YEARS of flat supply we are entering a period of supply growth," said Andrew Walker, BG Group vice president of Global LNG. "2014 marked the start-up of a new wave of supply from Australia, which will be joined by the first volumes from the US Gulf of Mexico around the end of 2015. This new supply will be absorbed by continued growth in Asian demand, together with the creation of up to six new markets[1] in 2015, further diversifying the LNG trade and opening up new sales opportunities.

"While we see good growth in LNG imports into Asia in 2015, key influences that will affect demand include the rate of return of Japanese nuclear power plants, economic growth rates for China and South Korea, as well as when the new markets begin importing. Over the longer term, BG Group continues to expect LNG trade worldwide to exceed 400mn tonnes (mt) per year by 2025, representing an annual growth rate of around 5 per cent – almost twice the rate of expected growth in global gas consumption."

Although the industry expects five new liquefaction trains and one floating LNG (FLNG) production facility to start up in 2015, Dr Walker noted that "these will be towards the end of the year limiting incremental supply in 2015 to around 7mt. How the market responds to the growing volumes in 2016 and 2017 will be a key factor to watch. We expect the LNG market to become more volatile over the next few years as it responds to 'lumpy' supply and market-side additions plus exogenous supply and demand factors."

> "How the market responds to the growing volumes in 2016 and 2017 will be a key factor to watch"

Dr Walker explained that "we see fewer final investment decisions being taken in 2015 than previously expected, which will mean less LNG is available to the market at the end of the decade. This uncertainty brings into sharper focus the attractiveness of flexible supply portfolios which can respond to changing market dynamics."

In the longer term, LNG trading is forecast to grow at a compound annual growth rate of 5 per cent to 2025, twice as fast as for gas overall. New supply currently under construction, predominantly in Australia and the USA, will raise LNG supply to 350mtpa (delivered) by 2020.

LNG trading is forecast to grow at a compound annual growth rate of around 5 per cent to 2025 (photo: Lens Envy)

Flat deliveries in 2014

LNG deliveries in 2014 were an estimated 243mt, effectively flat for the third year running. Despite new supply from Papua New Guinea and an improved performance from some existing plants, this was offset by reduced performance from some existing plants.

A first cargo was loaded from train one of the QCLNG project in Eastern Australia, the first large-scale coal-bed methane to LNG project. However, as start-up was just prior to year-end, the project did not have a significant impact on 2014 volumes. One expansion train at Arzew, Algeria started production.

Improved year-on-year performance was observed across a number of plants, but, in particular, from Nigeria and Algeria, which produced 2.6mt and 1.9mt more LNG than in 2013, respectively. In the case of Nigeria, 2013 production was interrupted by a marine access dispute, while Algeria increased production year on year in 2014 for the first time since 2007 based on its new train and a reduction in pipeline exports.

The increase in supply was balanced by a reduction in exports from a number of suppliers, in particular Egypt, where growing domestic demand continued to impact exports and Qatar, which likely undertook additional maintenance in 2014. Finally, Angola LNG was offline from April onwards to allow for major repairs.

Imports grew and diversified

Asia remained the dominant importing region, importing a record 182mt in 2014. Asian growth rates slowed compared to recent years, however, as there were pockets of demand weakness, in particular

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from South Korea and China, due to seasonal and 'structural' factors.

The market side of the industry continued to grow and diversify. Last year saw the start-up of six new import terminals representing a total 23mtpa of import capacity. Lithunia started importing LNG. Other new terminals were located in Asia; Japan (1), South Korea (1), Indonesia (1) and China (2). China now has 13 terminals in operation with a further three under construction.

With all nuclear capacity offline in 2014, Japan received record LNG imports at 89mt, a slight increase on 2013. However, as indicated last year, with LNG import capacity and gas-fired power capacity likely both close to seasonal limits, growth was expected to be limited in this market.

The second largest importer was South Korea at 38mt, followed by China and India, the third and fourth largest importers at 20mt and 15mt, respectively. In combination, the four markets represented just under 70 per cent of all imports. Asia represented 75 per cent of all imports.

> "The market side of the industry continued to grow and diversify"

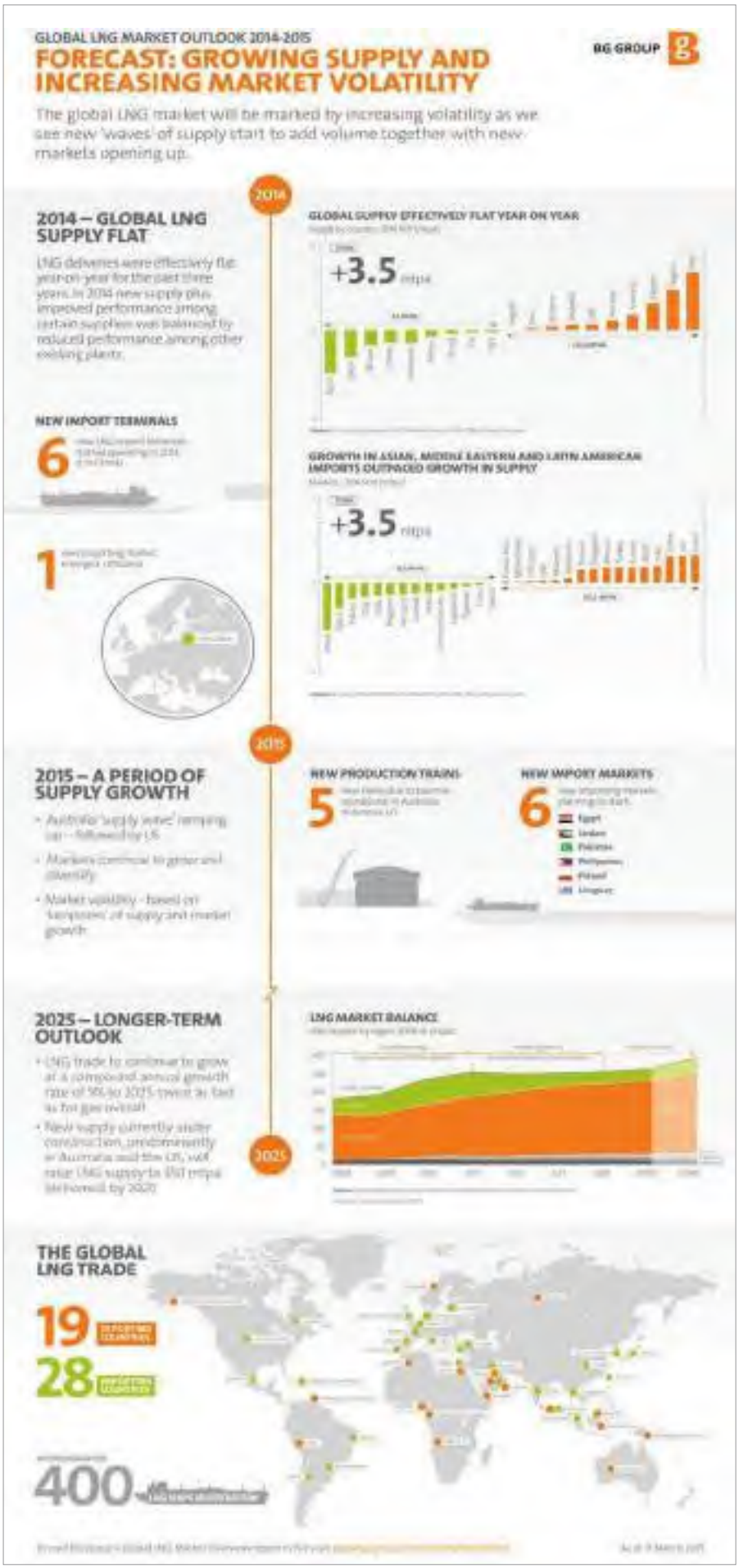
The ongoing drought in Brazil meant that it was the highest growing market in 2014, at 25 per cent year-on-year, followed by the UK, (which had a stronger summer, at 17 per cent year-on-year), just ahead of China and India.

Once again growth in Asian, Middle Eastern and Latin American imports outpaced growth in supply, although the difference was more modest in comparison to recent years. Asian, Middle Eastern and Latin American imports grew by 6mt, while supply grew by 3.5mt. In particular, lower-than-expected growth was seen in China, while South Korean demand was 7 per cent lower year-on-year.

Although import volumes into Asia grew, the competition for spot cargoes likely decreased, leading to a reduction in spot prices over the summer. Falling oil prices at the end of the year further pressured spot prices downwards. Long-term contracts, which are generally indexed to oil in Asia, but are lagged against oil movements, will see more of an impact in 2015. ■

[1]*Egypt, Jordan, Pakistan, Philippines, Poland and Uruguay.*

See www.bg-group.com/LNGmarketoutlook



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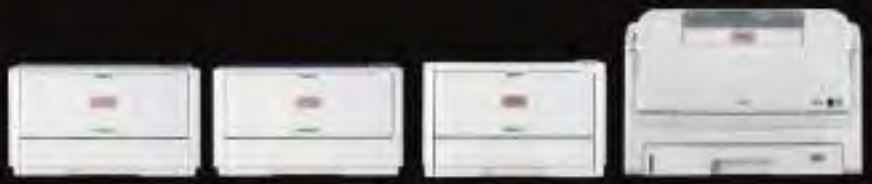

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BP predicts LNG growth spurt

PRODUCTION OF LNG will show dramatic growth over the rest of this decade, according to BP's *Energy Outlook 2035*, which gives an insight into the most likely shape of the future energy landscape over the next 20 years. By 2035 LNG will have overtaken pipelines as the dominant form of traded gas, predicts BP, with increasing trade across regions as demand for gas grows. This can be expected to lead to more connected and integrated gas markets and prices across the world, and is also likely to provide significantly greater diversity in gas supplies to consuming regions such as Europe and China.

Overall, LNG supply grows by 48 bcf/d by 2035 predicts BP, with Australia (16 bcf/d) and the USA (14 bcf/d) each contributing around a third of that increase. African LNG supply, led by East Africa, increases by 12 bcf/d. As a result, Qatar, which has the largest market share today, is overtaken by Australia (24 per cent share of the market by 2035), Africa (21 per cent), and the USA (18 per cent).

Asia is the largest destination for LNG, with its share in global LNG demand remaining above 70 per cent. By 2035, China becomes the second largest LNG importer (12 bcf/d), just behind Japan (13 bcf/d). Europe's share of global LNG imports rises from 16 to 19 per cent between 2013 and 2035, with an additional 10 bcf/d of LNG demand.

LNG will overtake pipelines as the dominant form of traded gas (photo: BP)

Egypt and Jordan to become LNG importers

EGYPT IS SET to commence LNG imports in April 2015, in the face of growing domestic demand and a decline in production, despite having the third largest gas reserves in Africa. The country currently has a gas supply deficit of 700 mmcfd, according to Egypt's Ministry of Petroleum, and has turned from a net gas exporter to gas importer. A tender has been awarded to four international companies for the supply of 75 shipments of LNG over two years, in addition to contracts with Russia's Gazprom for 35 LNG shipments over five years, and Algeria's Sonatrach for 6 cargoes this year. Further negotiations with international companies are reported to be underway. Egypt has signed a five year charter deal with Norway's Höegh for the FRSU Gallant (floating storage and regasification unit) to be located at Ain Sukhna port on the Red Sea.

Meanwhile, Shell is set to commence deliveries of 150 mmcfd of LNG to Jordan from July 2015, which will cover around 25 per cent of the country's power generation needs. The deliveries will be made to the LNG terminal currently under construction at the port of Aqaba, and will ensure security of supply following the sabotage of Jordan's main pipeline from Egypt which halted the country's imports of Egyptian gas. The LNG will provide a more cost effective and cleaner alternative to the diesel and heavy fuel oil which Jordan currently has to rely upon for power generation to meet the rapidly increasing demand for energy.

Egypt and Jordan will commence LNG imports in 2015 (photo: Shell)

Investment pledged for Egypt gas development

INTERNATIONAL INVESTORS PLEDGED billions of dollars of investment in Egypt's energy sector at the Economic and Development Conference held in Sharm El-Sheikh in March, with upstream gas development featuring strongly. This will help to address Egypt's energy crisis resulting from declining gas production and continued growth in energy demand.

BP signed a Memorandum of Commencement of BP New Projects in Egypt, with investments estimated to be up to US$12bn to include the execution of the West Nile Delta project, exploration and resource appraisal activities, East Nile Delta operations and Gulf of Suez operations.

The West Nile Delta (WND) Project is a particularly significant project. The multinational oil and gas giant has estimated there to be five tcf of gas and 55 mmbbls of condensates in the WND, which it expects to produce at a rate of up to 1.2 bcf/d. If the predicted figures are accurate, the project will equate to around 25 per cent of Egypt's current gas production. BP said they expect production to commence in 2017, and added that all gas produced by WND will be fed directly into Egypt's national grid, helping to meet the anticipated continued growth in energy demand.

Other commitments made at the conference included ENI's framework agreement worth around US$5bn, to develop 200mn barrels of oil and 1.3 tcf gas over the next four years, while BG committed US$4bn for the continuing development of the West Delta Deep Marine (WDDM) concession (to include drilling additional well workovers to improve recovery), as well as for the pursuit of further gas projects.

Egypt also signed a MOU with Cyprus to strengthen co-operation in oil and gas and to examine potential pipeline and onshore facilities options for transporting natural gas from Cyprus's Aphrodite field to Egypt.

Investors have been encouraged by Egypt's progress in reducing energy subsidies and repaying arrears to international energy companies.

BG is a major investor in Egypt's gas sector (photo: BG)

GE Oil & Gas signs deal with ADGAS

GE OIL & GAS has signed a long-term service agreement with ADGAS to further strengthen gas productivity and maximise the reliability and efficiency of its plant in Abu Dhabi.

ADGAS CEO Fahim Kazim said, "We are committed to further enhance our capabilities to achieve operational excellence and to increase our productivity goals."

GE Oil & Gas will support full maintenance, repair and services for GE Frame 5 2D gas turbines as well as associated centrifugal compressors.

GE Oil & Gas CEO for Middle East, North Africa and Turkey Rami Qasem added, "We thank our partner ADGAS for committing to this new long-term service agreement that further supports the seamless operations of the company's plant."

GE Oil & Gas will also provide training for a number of ADGAS engineers that will further build local capabilities, noted Qasem.

The signing ceremony

BP to continue with Khazzan project

ENERGY GIANT BP has announced that despite the cut in its capital expenditure this year, it will complete the exploration of 16 wells in Oman's Khazzan tight gas field and will have at least nine rigs operational by the end of 2015.

BP Oman chief operating officer Dave Campbell said that the reduction in global capital expenditure, in a bid to counter the impact of plunging oil prices and fall in profits, will not affect the ongoing Khazzan tight gas field project.

"The Khazzan project is on track, on budget and on schedule. The company is also ready to increase drilling activity in the technically challenging natural gas field. Five rigs are operational at the moment and several rigs will be added soon," he noted.

The Khazzan tight gas field project represents the first phase in the development of one of the Middle East region's largest unconventional tight gas accumulations, which has the potential to be a major new source of gas supply for Oman for many decades.

The project involves drilling of around 300 wells over the next 15 years and will achieve production of around 28.32mn cu/m of gas per day, equivalent to an increase of around one-third of Oman's total daily domestic gas supply.

photo: Ben Grasser

The project involves the drilling of around 300 wells over the next 15 years

Azerbaijan remains reliant on the mature ACG oilfield complex (photo: BP)

Developing a new **Roadmap**

Azerbaijan is reevaluating and readjusting its oil and gas development and marketing strategies, says Samuel Ciszuk.

CHANGE IS ALL around for oil exporters these days, with the reality of depressed oil prices throughout 2015 and perhaps most of 2016 starting to sink in. Global overproduction of crude stood between 1.5-1.75mn bpd in March according to the International Energy Agency (IEA), and inventories were starting to run out of storage space. Needless to say, the formidable mountain of global crude stocks which is forming will take considerable time to erode, and the point at which supply and demand balance remains elusive at the time of writing.

Azerbaijan, a country highly dependent on oil and gas exports, has not been spared the consequences of the recent declines in oil prices. Having struggled in vain to defend the US dollar peg of its currency, the manat, the Azeri central bank had to abandon it in February. Virtually all the currencies of its neighbouring trading partners had weakened during 2014, but unlike Turkey, Georgia and Russia, Azerbaijan's economy was long regarded to be on a sounder footing, notwithstanding its reliance on oil revenues. Yet, within the space of a few days in mid-February, the manat depreciated by around 35 per cent.

> "Decline management is now the name of the game for Azerbaijan's oil industry as a whole"

These more general woes, caused by the global oil glut, do serve to drive home a stark message in Azerbaijan. The last four years brought a wake up call for the country and its leadership regarding the maturity of its oil industry. Azerbaijan's oil wealth in the decades following the fall of the Soviet Union has to a very high degree been built around a handful of oilfields. In particular, the 1994 BP-led project for the development of the Azeri-Cirag-Guneshli (ACG) field complex set the scene for the Azeri oil boom. The offshore fields saw production rise gradually from between 1997 to 2006, with some additional later developments taking output to over 820,000 bpd in 2010, around 80 per cent of the country's total crude production that year. Since then production has fallen sharply, however. ACG production declined to 664,000 bpd in 2012 and dropped further to 655,000 bpd in 2013.

Last year operator BP had more success in arresting decline (BP holds a 35.83 per cent stake and is partnered by Azerbaijan's state-owned NOC SOCAR with 11.57 per cent, Chevron 11.3 per cent, Inpex 11 per cent, Statoil 8.6 per cent, ExxonMobil 8 per cent, TPAO 6.7 per cent, Itochu 4.3 per cent and ONGC Videsh 2.7 per cent). Nevertheless, output fell further in 2014, to about 638,000 bpd, even despite a new 90,000 bpd production stream from the West Chirag platform reaching plateau production.

Hence, the future story of ACG will be about managing mature decline, rather than growth. Given the country's reliance on ACG for its total oil production, decline management is now the name of the game for Azerbaijan's oil industry as a whole. Since its peak of around just one million bpd in 2010, Azeri total crude production has fallen to 865,000 bpd in 2013 and 841,000 bpd in 2014. Production is expected by SOCAR to come in at around 806,000 bpd this year.

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Azerbaijan has increased its Black Sea sales

Photo: BestPhotoPlus

Focussing on gas

As a consequence of the continued reliance on the mature ACG field complex and the general industry pessimism over the country's remaining oil exploration potential, Azerbaijan has for some years been focussing on its gas prospects. Large discoveries have been made, first and foremost the Shah Deniz gas field, but further exploration potential remains. Only recently, Total discovered the large Absheron gas field in the Caspian Sea, while BP has been working on ways to monetise the complex, high-pressure, high temperature, Shafag-Asiman gas and condensate structure.

Gas from the Shah Deniz second phase development project had largely been contracted to buyers by mid-2014, something which today looks particularly fortuitous. Azerbaijan's promising gas future does today run a very high risk of being delayed, or in some cases even derailed, by falling prices. Projects are relatively expensive and require large investments in transport infrastructure, to reach markets far removed from the Caspian region. This brings the issue of pipeline geopolitics, never far removed from the Azeri oil and gas story, back to the fore. With Shah Deniz phase II gas contracts being secured, a deal was also struck to build new pipeline capacity through Turkey to Europe. Russia's reversal of its plans to construct the South Stream gas pipeline under the Black Sea to Bulgaria late last year and instead look to develop more pipeline capacity to Turkey and onwards to Europe, has suddenly created a competing alternative for many of the Turkish and Balkan gas markets. A situation where key clients along the trans-Anatolian pipeline route start to reconsider their options can not be ruled out, given that both projects remain in their early days.

A balanced approach

Taken together with the increased Russian geopolitical assertiveness against FSU states in the past year, as well as Azerbaijan's location close to Russia's unruly southern Caucasian territories, it is clear that the Azeri market strategy has to be carefully weighed against its full strategic position.

> "There could be several positive effects on Azerbaijan from diminishing Iranian isolation"

Azerbaijan has previously excelled at balancing its oil and gas marketing, as well as its political considerations. It is interesting to note that in early 2014, the country reversed previously stated policies of backing out of crude sales through Russia's Novorossiysk port on the Black Sea. Instead SOCAR increased Black Sea sales by a further 30 per cent this year, targeting sales of around 34,000 bpd of crude through that route. It is a minuscule volume compared to Azerbaijan's total exports, nevertheless it sends a signal internationally that the country wants to maintain diversified routes. The message is particularly strong vis-a-vis its Caspian Sea neighbours, suggesting Azerbaijan is not entirely stepping away from being a competitor over the allocation of Russian company Transneft's pipeline capacity. It also sends a strong signal to the Baku-Tbilisi-Ceyhan pipeline consortium, that Azerbaijan maintains other channels despite the 1.2mn bpd crude pipeline being deeply underutilised.

The Iran factor

Carving out its own oil and gas export channels to Europe has been a carefully fought battle for the comparatively small Caucasian nation and one which, given its gas-focussed future, will continue to evolve. Maintaining positive commercial and political relations with Russia could be as important as ever these days, while the need for guarding its marketing and transport sovereignty also seems to be peaking. Change is however not only coming from renewed Russian assertiveness these days, but perhaps in the longer run also from its southern neighbour. In the aftermath of the outline agreement reached between the P5+1 coalition of Western states and Iran over the latter's nuclear programme in Lausanne in early April, there is now more cause for optimism for a thorough accord being struck by mid-year. A fundamental change in Iran's relations with the West, as well as with Azerbaijan, can now be hoped for, even if it is very early days.

While it will take time before sanctions are lifted and Iran can potentially start drawing upstream investment back into its hydrocarbon industry, there could be several positive effects on Azerbaijan from diminishing Iranian isolation.

Iranian interest in developing its deepwater section of the Caspian, could foster political understanding about maritime border delineation between the countries. That would unlock both countries' border area for exploration. Today this area of Azeri waters is lagging in terms of collected seismic data and drilled wells. Over the considerably longer term, there could be synergies to explore between the countries regarding gas export routes to Europe, or even to Iranian liquefaction projects on the Gulf. Given Azerbaijan's oil maturity, new export links to the Gulf are unlikely to figure on the map in the distant future, however a quicker short-term solution could well be dusting off old plans for crude swaps. The lion's share of Iran's oil and product demand is in its populous north, comparatively close to Azerbaijan's oil production, while Iran's own production is located almost entirely in its southwest.

This is an optimistic scenario which would require significant changes in the relationship between Iran and the West in the coming years; however it would allow Azerbaijan to strengthen its bargaining position considerably regarding pipeline links.

In the meantime, Azerbaijan will have to weather low prices and do what it can to make sure gas investment and complex EOR work on its oilfields do not begin to lag. ■

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Streamlining the value chain

Companies that can find ways to work smarter and more cost-efficiently will be the survivors in the current low oil price scenario, says Ian Fleming, managing director, IFS Middle East, Africa and South Asia.

DESPITE DRAMATIC FALLS in the oil price, Saudi Arabia and the Gulf countries continue to invest in the oil and gas sector to maintain production, taking a long-term view.

The fall in the oil price, however, does put the industry under enormous pressure to control costs. Organisations in this region that have grown up in an environment of rising energy prices must now operate on lower margins. That means re-examining their business assumptions and investing for long-term sustainability. The bad news is that changes that are long overdue will undoubtedly face some cultural resistance.

For a start, there is significant room for efficiency improvements in ongoing projects, with better information systems and coordination of activities. Companies could also improve efficiencies in asset maintenance and rein in their compliance costs. Such measures have not necessarily been a huge priority for the energy industry – at least not until recently.

Companies that are prepared to invest in the value chain – finding ways to work smarter and more cost-efficiently – will be able to improve margins. Others, many of them service companies that subcontract to the major producers, may not survive to see energy prices bounce back, however long that may turn out to be.

Information technology systems that provide real-time visibility into projects, maintenance and compliance are key to streamlining operations across the value chain. In this respect, however, the industry is coming off a very low base with (in some cases) minimal investments in technology.

> “There is significant room for efficiency improvements in ongoing projects”

Information technology systems are key to streamlining operations (Photo: Shell)

Part of the issue is structural – the industry typically operates in a ‘siloed’ fashion with different business units and contracting firms operating independently.

Another issue is cultural. As a supplier that specialises in providing visibility and control over finance and operations for the oil and gas industry globally, one of IFS’s key value additions is integrating information across all aspects of the business.

Technology is key

Those changes start with technology improvements to break down information silos that make it difficult to operate efficiently, such as:

- Real-time visibility – You cannot improve what you cannot measure. Capturing and consolidating financial and operational information into a single system in real time has to be the first priority. Once the numbers are in front of you, it is not hard to identify how processes could be made more efficient. Of course, if the information is not real-time, then what you are looking at has already happened, so it may be too late to do anything about it. That is why capturing information at the source and communicating it as things happen is so important.
- Instant communications – Stories about workers hanging around doing nothing while they wait for landholders to turn up are common in the oil and gas industry. While hard to imagine in a world of instant communications, data networks in remote locations may not be available or as reliable as they are in urban areas. Some investments may be needed to ensure that workers remain in constant communication. It is not difficult to tap into a back-up satellite link, for example, and distribute it to mobile devices.
- Supplier portals – Just because different companies do the work does not mean they cannot share information and co-operate. Oil and gas producers can implement supplier portals so that

services companies can see all the information they need to do the job efficiently and co-ordinate with other suppliers. Suppliers can also do job reporting on-the-spot via mobile apps so that the producer has real-time visibility of activities.

- Mobile apps – While many workers in the industry do not have computer experience, this does not mean they cannot benefit from information technology. With modern enterprise software, it is now a simple matter to access information and report back through mobile apps running on a phone, tablet or phablet. Getting people to use them may be more of a challenge. Companies may need to engage closely with their workforces to make apps consistent and easy to use – giving them the right information for each job, for example – to make sure that new systems are successfully adopted.
- Executive dashboards – While producers and service suppliers are aware of inefficiencies in their operations, many would currently struggle to quantify them or pinpoint exactly when they are happening. Establishing simple metrics and alerts around performance, cost and compliance, and monitoring them in real-time via graphical dashboards that responsible managers can see is a great way to get started.
- Monitor compliance – This is a key area where information systems can contribute to the long-term sustainability of the oil and gas industry. Creating a free flow of information between concerned parties like landholders and government is a valuable tool for establishing and maintaining trust. That in turn lessens the likelihood that more restrictive or onerous compliance requirements will be imposed. Enterprise information systems can also automate the reporting process and manage communications with different groups to reduce compliance costs.

Ian Fleming, managing director, IFS Middle East, Africa and South Asia

> "While many workers do not have computer experience, this does not mean they cannot benefit from information technology"

Despite the industry's strong momentum, 2015 may still be a very challenging year - but also a great opportunity for companies that are willing to invest in their own and the industry's future. ■

Oman has been investing in enhanced oil recovery (EOR) techniques (Photo: Shell)

In the driving seat

PDO is still driving Oman's oil and gas production forwards despite current challenges facing the industry, says Martin Clark.

OMAN MAY NOT have the largest oil and gas fields in the Middle East - its 5.5 billion barrels of crude oil reserves are fairly paltry compared to Saudi Arabia or Abu Dhabi - but it is certainly making the most of what it does have.

Much of that is down to the know-how and sheer grit of Petroleum Development Oman (PDO), the government's upstream joint venture with Shell, and two other minority investors, Total of France and Portugal's Partex.

By far Oman's largest producer of oil and gas, PDO is the name behind many of the country's biggest and better-known energy projects.

It accounts for about two thirds of the country's overall oil production and nearly all of its natural gas supply, and is an important exporter, especially to the Asian markets. China alone took almost 60 per cent of Oman's liquids exports in 2013, according to figures from the US Energy Information Administration.

Collectively, the Sultanate's national oil company produces over 1 million barrels of oil equivalent per day (boepd), oil and gas combined, every single year.

And it has made a name for itself in other ways too, by investing in new technology and bringing in additional skills for understanding more complex reservoir systems that are not uncommon in this corner of the Gulf.

In this way, it has been able to unlock additional value from mature or declining fields, a niche in which it has led the pack in and around the Gulf region.

Enhanced oil recovery

In fact, PDO's heavy spending on enhanced oil recovery (EOR) has made up for any dwindling oil production of the past, effectively reversing the sustained decline of Oman's energy industry of yesteryear.

There are major EOR initiatives underway at Marmul, Qarn Alam and

> "PDO produces over 1 million barrels of oil equivalent per day, oil and gas combined"

Harweel, plus other pilot schemes at Fahud, Lekhwair, Nimr, al-Noor, Amin and Ghubar.

Recent work at the established Nimr-C field, in the south of Oman, is a case in point.

This field, which first came on stream back in 1987, has achieved a six-fold oil production increase in just four years, after suffering a drop because of falling reservoir pressure.

PDO's pioneering water flood project boosted oil output from 2,800 barrels per day (bpd) in 2010 to 17,600 bpd in 2014. It means 43 million barrels of incremental oil reserves could be produced over the life of the field, significant by any standards.

> "Oman has been able to grow its overall oil and gas production despite the limited reserves"

The turnaround was achieved by injecting large volumes of water through the field to recover the highly viscous oil - a common method for PDO, However, Oman has also pioneered other EOR techniques including solar, thermal, miscible gas and chemical recovery techniques.

"In just under three years of implementing this project, we had surpassed the 22-year-old peak in oil production of 13,800 bpd and are now producing six times as much oil as we did in 2010," said Nimr cluster leader Junaid Mohiddin al-Ghulam.

The US$600mn initiative has also enabled 15 other fields around Nimr to re-open wells as the re-use of produced water has relieved pressure on the main production station.

And it has opened new opportunities for potential development too with the identification of up to 8 million barrels of incremental reserves during the drilling of wells and other updates on the field structure.

EOR has created new opportunities for potential development (Photo: Michele Solmi/Flickr)

Production on the rise

The net result is that Oman has been able to grow its overall oil and gas production in recent years despite the limited reserves and any challenges posed by mature or more technically demanding fields.

Oman's Oil Minister Mohammad bin Hamad al-Rumhy said in January that the country's overall liquids production - combining PDO output and that of other smaller producers - is expected to rise by about 20,000 bpd in 2015.

Total production hit 942,000 bpd in 2013, according to BP's Statistic Review of World Energy 2014, a figure that includes crude oil and other liquids, including natural gas liquids (NGLs).

The government has yet to release official figures for last year, but Oman's crude oil and condensates exports combined in 2013 reached an estimated 833,400 bpd, and PDO is certainly contributing its fair share of that volume.

In the first two months of this year, it lifted its crude output above the planned annual average for 2015, its managing director, Raoul Restucci, announced recently. The planned average is 570,000 bpd, he said, although he declined at the time to give actual current production numbers.

It's a similar tale in the gas sector as well, where reserves, at around 0.9 trillion cubic metres (33.5 trillion cubic feet), are also limited compared to some other Gulf states.

Likewise, this has not stopped Oman making great progress in extraction, with projects such as the flagship liquefied natural gas (LNG) export plant.

In 2013, Oman's total gas production tallied 30.9 billion cubic metres (bcm), according to BP's review, double that of a decade earlier, and, for the most part, a steady rise year-on-year.

Cost cutting

It's not all one way traffic though. Despite success in the field, PDO is, like other industry players, now adjusting to a new, lower oil price environment, which means a renewed focus on pruning costs.

With no intention of scaling back its aggressive upstream plans, or halting its costly EOR business, the company must seek other ways to balance the books.

It recently urged its major contractors to identify areas to save money to tackle the steep fall in oil prices.

> "Oman is emerging as something of a global centre of excellence in this kind of innovation"

The goal, according to Restucci, is not to beat suppliers down on price, but to work together to identify greater synergies and partnerships for better project economics.

PDO's total capital and operational spend last year came to around US$6bn, but included high cost areas such as tight gas in Khulud and even a fracking programme, as well as a shift towards greener technologies.

And investment continues in new state-of-the-art facilities to understand and manage the country's hydrocarbon wealth even further.

PDO recently inaugurated a 'New Wells' resource centre at its Mina al-Fahal headquarters with the aim of sustaining production and further improving drilling efficiency.

While lower prices obviously means lower revenues, PDO officials insist that the group's projects, even the more technically demanding ones, remain both economic and on track.

There are certainly no plans to put the brakes on this year, according to Restucci. Speaking at an industry event late last year, he said all PDO projects were tested against robust 'price collapse' scenarios of a far more serious magnitude.

"There isn't an oil price we couldn't envisage in the normal world that would affect our programme," he was quoted as saying by the Oman Daily Observer.

Longer term challenges

And yet PDO's oil and gas production grows ever more complex and demanding.

Its various thermal, miscible gas and chemical EOR projects are expected to account for a third of the group's production by 2023 as conventional techniques become less effective.

But with these same challenges facing other countries and producers too, Oman is emerging as something of a global centre of excellence in this kind of innovation, such as in the area of solar-based EOR, for instance.

This green and ground breaking technique for boosting oil production carries obvious advantages, not only by deploying green solar power, but also in freeing up natural gas or other resources for use elsewhere such as power generation, industrial use or water desalination.

PDO boss Restucci has said that EOR is a 'must do' given the group's portfolio of mature assets and the Sultanate's complex oil and gas reservoirs.

Last year, the company awarded the next phase of expansion targeting another 250 million barrels of oil at Harweel, its first full-scale miscible gas injection project.

With oil and gas export revenues accounting for roughly two thirds of the government's budget, PDO's central position in Oman's economy is plain to see.

The company estimates that for every dollar it spends, it generates around six dollars in value for the economy as a whole. It is already one of the country's leading job providers and has taken its 'Omanisation' responsibilities very seriously.

Government officials have even tasked the company to raise crude production to 600,000 bpd in the coming years in a bid to further boost the nation's finances.

For the well-being of the country's finances, it is vital that this oil joint venture continues to succeed.

Right now, in the face of all the technical challenges thrown at it, and the deteriorating economic outlook for the industry, that's precisely what it is doing. ■

PDO recently opened a resource centre to improve drilling efficiency (Photo: Nestor Galina/Flickr)

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Big data: adding value through **sharing data**

A growing number of firms are gathering valuable business intelligence from mining the vast volumes of data generated by their operational processes and systems. If such data were shared securely industry-wide, the benefits could be much greater, says Wood Group Intetech's Dr Liane Smith.

MCKINSEY & CO (2011) defines big data as "datasets whose size is beyond the ability of typical database software tools to capture, store, manage and analyse." It is often associated with other terms such as 'industrial internet' or 'internet of things', which describe the convergence of advanced computing, analytics, low-cost digital sensing and new levels of connectivity. This convergence promises greater levels of speed and efficiency for almost every type of business and in every industry sector.

There would be great benefit to the transport industry as a whole, for example, if the different 'data stacks' across rail, aviation and roads were pulled together and opened up to the industry to create a shared view. In the UK, Transport for London (TfL) has committed to syndicating open data to third parties and to engaging developers to deliver and innovate using its open data. More than 200 travel apps covering all modes of transport are now available.

Meanwhile, the Airport Collaborative Decision Making (A-CDM) initiative developed by Eurocontrol, a European-wide organisation concerned with air traffic management, enables airlines, ground handlers, air traffic control and airport staff to share the latest and most accurate information about the status of inbound and outbound flights for better-informed and more consistent decision-making.

Changing 'hearts and minds'

TfL's open data and A-CDM are just two examples of the types of initiatives discussed recently at the first in a series of 'Connected Data' workshops being held by the UK's Royal Academy of Engineering. Security and anonymity of data, together with analytics and connectivity were the three common requirements to emerge from the workshop, which was focused on transportation.

Further workshops are to be held during 2015 focussing on other sectors such as manufacturing, healthcare and energy, as part of the Royal Academy of Engineering's 'Connecting Data Study'. Although data models and whole data systems could be identified as assets and managed and maintained like any other type of asset, the Royal Academy of Engineering believes that a change in 'hearts and minds' is necessary to capitalise on the opportunities that better data and improved connectivity provides.

One of the barriers to realising the shared benefits of opening up data is that individual organisations perceive value and thus competitive advantage in the proprietary data they hold. Moreover, any firm that has invested time and money in recording a large dataset is unlikely to make it available if they perceive security to be an issue. Anonymity of data is a further concern, as firms do not necessarily want proprietary data to be made public, particularly if this includes negative information.

Nevertheless, connecting data to make it more relevant and valuable presents a significant opportunity. Cisco Consulting Services values this opportunity, what it calls the 'Internet of Everything' (IoE), at US$19 trillion globally over the next decade. This is

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based on two studies conducted by the company during 2013-14 that identified US$4.6 trillion in potential bottom-line value (higher revenues and lower costs) for the public sector, and US$14.4 trillion for the private sector. In the latter, Cisco cites the five main drivers of IoE as being:

- Asset utilisation (US$2.5 trillion)
- Employee productivity (US$2.5 trillion)
- Supply chain and logistics (US$2.7 trillion)
- Customer experience (US$3.7 trillion)
- Innovation, including reducing time to market (US$3.0 trillion)

Building the business case

The high-tech, telecom, and financial services industries ranked highest in potential IoE value in Cisco's private sector study, while the retail, energy, and manufacturing sectors ranked lowest, but were found to have the highest potential upside for growth.

Certainly, firms must be prepared to re-evaluate their systems to find smarter ways of managing and extracting value from the data they collect. The sheer volume of data, and the speed at which it is collected, makes it difficult and costly to store, while a query can take hours if not days to run unless the right technology is in place. It is also difficult to review and compare global trends if the required information is scattered across multiple assets, operations and back-office functions, especially where firms have inflexible legacy systems and lack enterprise-wide analytic tools.

In the oil and gas sector, the need for near real-time data is driving huge investment by operators to better connect their business units and support operations intelligence initiatives. Some large operators are investing in central systems that are focused on optimising day-to-day activities, and support a diverse range of applications – from monitoring well testing and reservoir analysis, to predicting and preventing failures in components.

> "Making the correct evaluation with high quality data delivers huge benefits for operators"

Dr Liane Smith FREng, founder and director, Wood Group Intetech

Comparing the relative performance of components with identical functions is a critical exercise given that each may have different mechanisms and root causes of failure. Making the correct evaluation with high quality data delivers huge benefits for operators in driving up the reliability of their equipment over time, and realising substantial reductions in total cost of ownership. Ultimately, broadening the statistical basis of decision-making delivers significant rewards.

Component reliability data applications

Operators capture vast volumes of operating well data on a daily basis in order to monitor the integrity of well barrier components – or 'safety critical elements' (SCE). With scaling, corrosion and failed well barrier equipment all common issues calling for great vigilance to minimise risk of leakage, information on the status of safety-critical well barrier components must be completely dependable.

The performance of installed well components must also be predictable. Should a problem arise at any given point in time, operators must be confident that they understand how critical well barrier components will respond on demand. For example, if a subsurface safety valve (SSSV) needs to be closed, then it should be known with some measure of certainty that it is going to close and contain the well fluids in the specified time.

Getting accurate reliability figures for well barrier components requires access to a statistically significant database. Although most operators collate component reliability information from their own assets, having access to industry-wide data would mean they could identify the best-performing well components, and benchmark the performance of components within their own organisation against industry averages. They could also extract reliability and availability numbers to support a range of cost-saving decisions based on facts.

While the industry recognises this need, a key challenge has been the reticence of operators to make data such as component reliability and failure rates available externally. In addition to concerns over data confidentiality, any efforts to build such a database have tended to be limited to single regions such as the North Sea, or have primarily focussed on specific components such as the SSSV. Previous databases have not been ideally structured for purpose. Others have suffered from poor quality of data, or issues with usability and access.

Realising industry value

In response to industry demand, Wood Group Intetech has launched a global database of well component performance data. This online experience database utilises a reliability analysis tool, iQRA, and is

providing operators with access to global well and oilfield component performance information. Subscribers can substantially reduce operational expenditure (OPEX) by adopting risk-based inspection frequencies and performance-led maintenance schedules instead of corrective remedial work.

Risk-based analysis allows operators to determine where testing can be safely performed less frequently. This should extend the lifetime of equipment, given that each cycle causes some amount of wear and fatigue – especially an active component that is opened and closed. Potential issues on other wells can also be pre-empted by taking the opportunity to replace a piece of equipment if another well intervention is taking place. Performance data analysis therefore allows the effective management of well integrity problems that were dominating and interfering with production.

> "Connecting data requires firms to work more collaboratively, not just internally but also externally between third parties"

Wood Group Intetech's iQRA application gives operators access to global well and oilfield component performance data

In addition, the insight of equipment performance gained from an understanding of historical information results in a more reliable equipment selection. Vendors too, could improve component performance by highlighting areas for existing product modification, or by paving the way for the development of new ones.

As demonstrated by the success of iQRA thus far, connecting data requires firms to work more collaboratively not just internally between business functions such as operations and corporate IT, but also externally between third parties. Wood Group Intetech has enabled this through iQRA by ensuring that data sources are kept strictly confidential. Sensitive data is anonymised and access to system functions is protected, using password strength gates and a robust set of user roles and privileges.

Data upload from spreadsheets or direct from third-party systems is supported to make life easier for subscribers with large legacy test failure databases. Meanwhile, data integrity is assured because all data submitted to the system is automatically passed through a quality assurance workflow incorporating multiple validation steps as well as manual checks by engineers.

Importantly, the benefits of a global database of component reliability extend far beyond well integrity and the oil and gas sector – they apply equally to any process-intensive industry sector reliant upon many instruments and control systems, and where cost pressures and increasing regulatory requirements demand informed decision-making based upon a risk evaluation approach. ■

Refining and petrochemicals face mixed outlook

Andy Gibbins assesses the impact of oil price changes on the GCC refining and petrochemicals industries.

THE LAST FEW months have seen significant falls in the crude oil price. We have seen many theories for why this has been happening, ranging from slowing global economic growth, OPEC being unwilling (or unable) to reduce production, hedge fund managers dumping crude on the market to liquidate their positions, increased output from non-OPEC players and many others.

Whilst recent weeks have seen some rebounds, it is thought that these are mostly investor driven, with managers taking short positions in anticipation of a rebound in prices. The fact remains, however, that there is a global oversupply of some two million barrels per day, which will always have an impact, no matter what the sentiment of the markets.

Undoubtedly, a sustained oil price fall will have a major impact on refining and petrochemicals. Globally, refiners are undoubtedly seeing a benefit, ExxonMobil, for example, reported a significant increase in profit during the third quarter of 2014, with a significant increase over the same period of 2013. Clearly this is derived from significantly reduced crude prices, while prices at the pump remained relatively high. Of course a different scenario exists for integrated state-owned companies, where overall business economics are much more relevant.

For petrochemicals producers, the picture is somewhat more complex. The long-suffering companies with naphtha crackers are certainly feeling some respite and the cost curve is flattening, eroding the competitive advantage of ethane over liquid feed. Profitability will certainly improve for those cracking liquids but for those with fixed price gas supply, margins will be eroded due to lower end product prices.

Andy Gibbins, vice president Middle East, Euro Petroleum Consultants (EPC)

There will undoubtedly be pressure on some of the ethane cracking projects announced in the USA. We may see some projects shelved, or at least postponed. This, in the longer term, will benefit the Middle East, helping to balance the supply/demand equation.

The short term issue, however, is inventory. Absolutely nobody wants to maintain stock in such a volatile and falling price environment. We will see inventories dragged down to absolute minimums; this will, in turn, put significant pressure on supply chains, which will have to be very lean to cope with the fluctuations in demand.

Companies are now seeing the absolute necessity of operational excellence (OE). There is recognition that assets must achieve the very highest standards of performance, and this OE approach is doubly magnified in the current environment. Those companies that have built in flexibility to their businesses will be able to adapt well, increasing and decreasing production as required, closely managing stock levels and carefully managing costs. They will have highly agile supply chains, which will be able to cope with the demand fluctuations which will certainly occur.

> “For petrochemicals producers, the picture is somewhat more complex”

These companies will, in particular, recognise the importance of training and skills in such a situation and will not make drastic cuts in these areas, recognising that this takes away the very capability and flexibility that is required to survive such a challenging time.

The drop in the oil price is hurting companies now, and discretionary spending is being squeezed. In the longer term, it may be seen as a blessing in disguise, as it will force companies to become more competitive and agile, take an holistic approach and be less functionally driven. It is those companies that do this smartly that will be the real winners in the longer term. ■

Andy Gibbins is vice president, Middle East with Euro Petroleum Consultants [EPC] and based in Dubai. EPC is a technical oil and gas consultancy with offices in London, Dubai, Moscow, Sofia and Kuala Lumpur. They are also the organisers of leading oil and gas conferences and seminars including OpEx MENA 2015 – Operational Excellence in Oil, Gas & Petrochemicals, which takes place in Abu Dhabi from 6-8 December 2015. Please visit www.opex.biz for further details.

GCC petrochemicals production rose by 4.5 per cent in 2014, says GPCA

PETROCHEMICALS PRODUCTION IN the GCC rose by 4.5 per cent in 2014, making it the second highest growth region in the world, according to the Gulf Petrochemicals and Chemicals Association's (GPCA) Annual Report 2014.

Regional growth in chemicals production is largely attributed to a surge in plastic production, which grew by 6 per cent in 2014, nearly twice the worldwide average. Meanwhile, global production of chemicals rose by 2.8 per cent last year, a similar figure to 2013.

"This development is testament to the fact that the ambitious growth plans of the Gulf's chemicals industry are based on solid fundamentals," said Dr. Abdulwahab Al-Sadoun, secretary general, GPCA. "The region has grown nearly 60 per cent over the global average, an achievement that is made all the more significant when you consider that this progress was made despite continuing economic uncertainty in Europe and the recent slowdown in China."

Saudi Arabia continues to be the GCC's most dynamic petrochemicals market, with new fertilizer and plastic projects coming on-stream, as well as state-of-the-art research centres being launched by companies like Sabic, PetroRabigh, Sadara, Sipchem and Tasnee.

"While production growth is certainly a positive development, GCC chemicals producers must not rest on their laurels. The petrochemicals sector is tied into global economic trends and demographic demand, meaning that we in the Gulf could be affected by developments from around the world," advised Dr. Al-Sadoun. "However, what we are seeing in the GCC is that local producers are not only expanding capacities but also capturing value added opportunities — Safco's new fertilizer plant, for example, is capable of capturing 850,000 million tons of carbon dioxide per year enabling this Sabic affiliate to be the operator of one of the largest carbon capture and utilization facilities in the world.

"Moving forward, the picture looks positive," continued Dr. Al- Sadoun. "As Sadara formally comes on-stream this year, 14 of the 26 units operated by the company will manufacture products that have never before been produced in the Arabian Gulf, signalling that an era of diversification is imminent."

For more information on the GPCA Annual Report, please visit http://www.gpca.org.ae.

GCC petrochemicals production continued to rise in 2014

Qatari investment in Chinese petrochemicals firm

QATAR'S QATRA FOR Investment & Development (QID Group) and Hamad Bin Suhaim Enterprises have signed a deal worth US$5bn to acquire 49 per cent of China's Shandong Dongming Petrochemical Group.

Shandong Dongming Petrochemical Group CEO Ibrahim El-Tinay said that the deal is expected to be finalised by Q4 of 2015 with the cash used to finance a number of projects that the Chinese firm is currently working on.

"These projects will include building 1,000 petrol stations across six provinces in China and a LNG terminal with three million tonnes per annum capacity in Qinzhou city in China," he added.

The LNG terminal will be built in Qinzhou (photo: Andrew Tseng)

Once the acquisition deal is finalised then completion dates for these projects will be set, El-Tinay noted.

According to a joint statement from the three parties, the petrol stations will be built within a 300 km radius of Shandong Dongming Petrochemical Group's Heze refinery in eastern China, which will provide the petrol stations with a third of its output .

The LNG terminal will include the construction of a terminal, jetty, regasification and storage facilities.

John Crane secures KNPC clean fuels deal

JOHN CRANE HAS secured a deal to modernise and upgrade two Kuwaiti refineries by the Kuwait National Petroleum Company (KNPC) for its Clean Fuels Project.

The USA engineering firm revealed that the deal covers the full share of the mechanical seals and systems used for more than 530 critical pumps at the Mina Al-Ahmadi Refinery, as well as engineering services, commissioning support and technical training.

Dave Hill, John Crane's vice president of first fit sales and projects, said, "We are proud to be entrusted with this large project and support strengthening Kuwait's refining sector."

The deal was signed with a joint venture between JGC Corporation, SK Engineering & Construction and GS Engineering & Construction, which is managing a US$4.8bn portion of the Clean Fuels Project.

"As a leader in energy services, we believe it is part of our responsibility to provide the advanced technology needed by our customers to improve reliability in their operations, while meeting the highest standards of commitment to the environment," Hill added.

The KNPC Clean Fuels Project aims to increase the combined daily production capacity of the Mina Al-Ahmadi and Mina Abdulla refineries from the existing 736,000 bpd to 800,000 bpd while also improving their energy efficiency, reducing CO2 emissions and improving the quality of hydrocarbon production to meet international standards.

UK firm wins Oman contract

UK-BASED AMEC FOSTER Wheeler has been awarded a technical services agreement contract by Oman Oil Refineries and Petroleum Industries Company (Orpic) for Mina Al Fahal Refinery, Sohar Refinery, Aromatics Plant and Polypropylene Plant.

According to the three-year contract, the project management company will provide specialist process and technology engineering support, process safety improvement and maintenance programme support for the refineries and chemical plants. It includes an expert helpdesk service to troubleshoot plant processes, optimise production, reduce energy and utilities costs and improve plant reliability, safety and environmental performance.

The contract will support Orpic's refineries and chemical plants (photo: Orpic)

Roberto Penno, president for Asia, Middle East, Africa and southern Europe market at Amec Foster Wheeler, said, "This contract opens up exciting opportunities for us in the region. The agreement covers a wide range of our capabilities including increasing optimisation and we look forward to being able to demonstrate and deliver our capabilities for Orpic."

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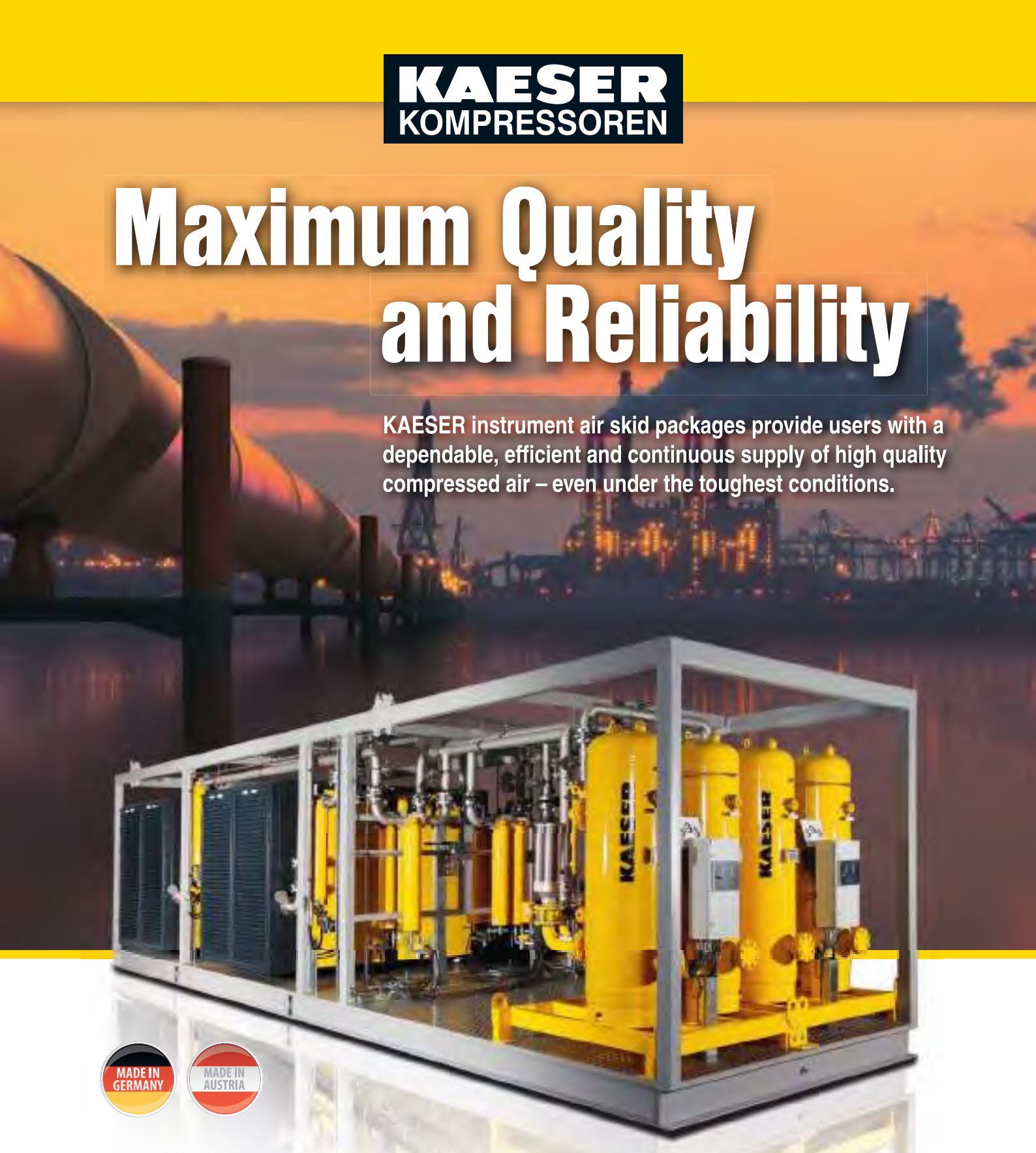

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Using solar energy in the oil and gas sector

KOC has developed a pioneering solar project designed to reduce greenhouse gas emissions in the oil and gas industry.

KUWAIT OIL COMPANY (KOC) is deploying the largest solar power plant in Kuwait to be commissioned in 2015. The project has been developed in response to the directives from KOC's parent company, Kuwait Petroleum Corporation (KPC), to utilize solar energy in the oil sector and reach the goal set by HH the Emir of Kuwait of producing 15 per cent of energy from renewable resources by 2030. The project vision is to reduce greenhouse gas (GHG) emissions resulting from oil and gas industry operations.

The solar plant uses photovoltaic (PV) panels, which convert light directly into electricity. The plant has a peak capacity of 10 MW, and is designed to provide a minimum of 5 MW during peak hours of summer months under typical weather conditions at the site in Umm-Gudair, West Kuwait. The plant is connected to an 11 kV distribution substation that receives electricity from the national grid to power 29 electric submersible pumps (ESPs).

"This is the first project of its type in the world, where solar energy feeds ESPs in the oilfield," says Saeed Al-Shaheen, Manager of Well Surveillance Group (WSG), which is responsible for well operation and oil production. WSG championed the development of the project from its early concept, and is supervising the project execution.

> "This is the first project of its type in the world, where solar energy feeds ESPs in the oilfield"

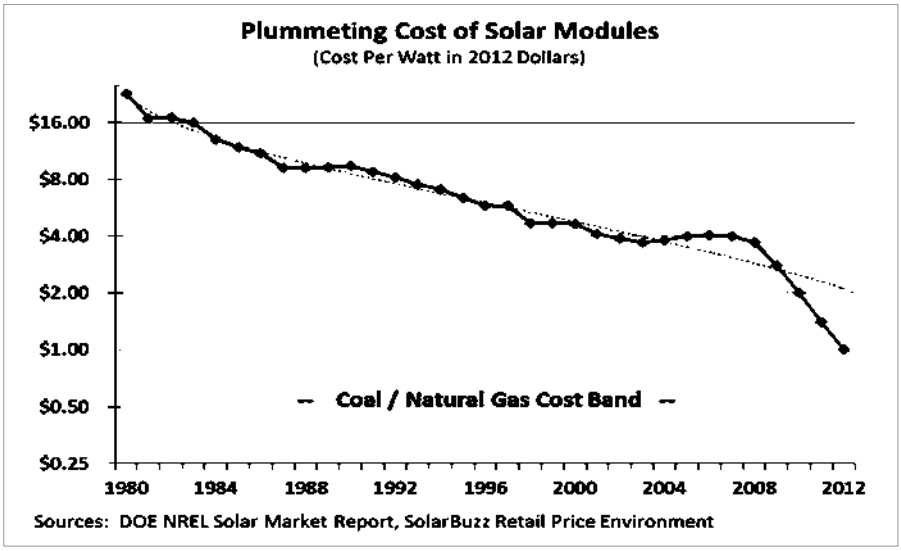
The project was awarded through a competitive tendering process to Gestamp Solar, a Spanish company that specialises in providing optimal solutions for PV plants. "This is a turnkey project with five years of operation and maintenance based on a lease model," says Al-Shaheen. The PV plant is situated on a 600 sq m plot in Umm Gudair, West Kuwait, and is connected by underground cables to the nearest distribution substation located 5 km away from the plant. Construction has started on the PV plant, and is targeted to be completed in six months.

The solar plant has 32,500 panels that are mounted on single-axis trackers to increase energy production. During the five year operation and maintenance period when the plant is managed by the contractor, a minimum level of energy production is guaranteed. "The energy production is measured against actual weather conditions on site, which includes solar irradiation and ambient temperature to adjust the guaranteed generation, and is compared with actual electricity delivered to the substation," says Dr. Raed Sherif, a solar energy veteran working with WSG on the project.

Approximately 17,000 MWh are to be produced on average every year from the solar plant, which over the course of 25 years reduces CO^2 emissions by a collective amount of 250,000 tons. The project was successfully registered with the United Nations Clean Development Mechanism (CDM) to receive Certified Emission Reduction (CER) certificates."This is the first project in KOC to be successfully registered with the UN to receive carbon credits," says Sr. Eng. Laila Al-Bairami in the Well Surveillance Support and Engineering Team, who headed the registration process with the UN CDM. "Future solar projects in KOC will follow the same procedures defined in this project for registration with the UN," she adds.

The successful deployment of this PV project in KOC is likely to spur the development of other projects utilizing solar energy in the oil sector.

"There are many opportunities to supplement electricity from the grid with grid-connected PV plants, and where there are no grid connections, the environmental savings are even greater when PV is used with diesel generators," says Al-Shaheen. ■



Declining prices of solar PV panels make the project commercially feasible in addition to the environmental benefits

SledgeHammer set for expansion

IN THE SPACE of three decades SledgeHammer has grown from a small centralizer manufacturer to one of the world's leading cementing products companies and the largest producer of cementing and float equipment in Asia. Specialising in cementing centralizers for oil wells, SledgeHammer currently supplies more than 62 countries & more than 100 customers worldwide.

SledgeHammer has garnered the distinction of having API 10D, 5CT & ISO 9001:2008, 14001:2004 and 18001:2007 certifications under its belt. The company manufactures a wide range of equipment confirming to API 10D, 5CT, 10F, TR5 specifications under license from the American Petroleum Institute.

The company provides a complete range of cementing products and accessories for both offshore and onshore needs, as well as a complete line of welded and non-welded bow spring centralizers, turbolizers, solid centralizers, rubber cementing plugs, stop collars, stage cementing tools, DV tools, float equipment, cement retainers, bridge plugs, packers and other accessories for the oil and gas drilling industry.

An example of SledgeHammer products

Headquartered in India, SledgeHammer says it is the only company in Asia that has the capability of manufacturing the complete product line under one roof. All products are designed, assembled, tested and inspected at its own facility, resulting in superior quality, cost-effectiveness and impressive delivery timelines. The hub is equipped with modern machines such as robotics welding, robotics paint shop, flow loop testing cell, CNC, VMC,VTL, HMC, fully automated heat treatment plant for bow spring manufacturing, state-of-the-art press shop, complete machine shop and paint shop as well as testing machines.

The company prides itself on its commitment to innovation, excellence and customer satisfaction, and continuously strives to improve its products, which are subjected to rigorous on-site testing.

SledgeHammer has experienced significant international expansion in recent years, having set up joint manufacturing facilities in Malaysia and the Kingdom of Saudi Arabia, along with sales offices in the UAE and Thailand. The company looks forward to a bright future and further international expansion, with plans to set up an office in the USA.

Making fracturing safer and more efficient

The use of energised solutions can help to increase productivity and reduce the environmental impact of hydraulic fracturing, says Linde Gas.

CARBON DIOXIDE (CO2) hydraulic fracturing is coming to the fore as one of the most effective and cleanest approaches available today to increase oil and gas production, even from unconventional sources such as shale, tight sands formations and coalbed methane, while nitrogen (N2) is proving an effective alternative to CO2 in many situations, especially for fracturing shallower wells. In fact, it is estimated that up to a third of hydraulic fracturing operations are currently being energised, frequently with nitrogen.

When injected into gas and oil wells these so-called "energised solutions" are able to enhance hydrocarbon production rates and yields. Fracturing treatments energised with CO_2 or N_2 are increasingly being recognised for maximising long term well productivity, minimising environmental damage and reducing the overall costs of resources such as water. When properly designed, energised solutions can in fact be more economical than water.

Sometimes when CO_2 is more expensive than water, the overall economics of energised solutions are significantly improved through a faster payback and reduced well maintenance cost. CO_2 can be less costly than water when the operator takes into account total life cycle costs of their hydraulic fracture fluid choice.

Hydraulic fracturing and horizontal drilling are changing the natural gas industry by enabling the exploitation of reserves that were previously inaccessible. The most common form of this process uses a water-based formulation to achieve sufficient viscosity to suspend and capture the required particles. Creating the required extraction fluid formulation involves significant chemistry and is associated with the use of massive amounts of water.

Typically, low permeability source rock becomes an economically productive well by propagating fractures in a rock layer using the fluid in a highly pressurised state, in combination with a proppant (typically sand) to hold the formation open for the release of petroleum, natural gas (including shale gas, tight gas, and coalseam gas) or other substances for extraction. Some fractures form naturally — certain veins or dikes are examples of this — and can create conduits along which gas and petroleum from source rocks may migrate to reservoir rocks.

The US government's EIA estimates that by 2035, 46 per cent of the USA's natural gas supply will come from shale gas (Photo: Tom Murphy)

Shale gas, found trapped within shale formations, has become an increasingly important source of natural gas in the USA since the start of the 21st century, and interest has spread to potential gas shales in the rest of the world. In 2000 shale gas provided only 1 per cent of US natural gas production, but by 2010 it was over 20 per cent and the US government's Energy Information Administration (EIA) predicts that by 2035, 46 per cent of the USA's natural gas supply will come from shale gas. Some analysts expect that shale gas will also greatly expand world energy supply.

As a fine-grained, sedimentary rock, shale is heterogeneous — no two are alike and they vary aerially, vertically and along the wellbore, with in-situ stresses and geological variances. Shale is easily breakable into parallel layers. With permeability in the nanodarcy range, it is soft yet does not disintegrate when wet. Instead it becomes fine grain silt and mud. To extract embedded oil and gas, shale must be fractured.

The development of hydraulic fracturing has therefore made it possible to tap into this gas, leading to a shale gas revolution that is seeing wells thousands of metres in length being created. A vertical well is excavated to hundreds, and even thousands, of metres below the surface and then advanced horizontally, following the

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configuration of the rock formation. Although these fractures are enormously long, they are only millimetres in width, which is sufficient to open up the rock and extract the gas.

The extraction fluid is then pumped down the well and the pressure this creates causes the surrounding rock to crack, or fracture. The fluid flows into the cracks and when the pumping pressure is relieved, the water disperses and leaves a thin layer of proppant, a sand or ceramic material used to keep the fractures "propped" open. This layer acts as a conduit to allow the natural gas to escape from the shale formations and flow to the well for recovery.

Other unconventional reservoirs include tight sands and coalbed methane. Tight sands are hard rock, limestone, sand, or sandstone formations with low vertical permeability, in the microdarcy range. They are laminated structures and there can be no significant gas flow without fractures – whether naturally occurring or induced. Coalbed methane is found within coal deposits located in or around coal seams, often near earth's surface. Natural fractures are often filled with water and absorbed gas, making water removal a key extraction challenge.

First use

The first use of hydraulic fracturing goes back to the late 1940s, but it was only in 1998 that modern hydraulic fracturing technology, referred to as "horizontal slickwater fracturing", made the extraction of shale gas economically viable. This pioneering technology was first used in the Barnett Shale geological formation in Texas. The energy from the injection of a highly pressurised hydraulic fracturing fluid creates new channels in the rock, which can increase the extraction rates and ultimate recovery of hydrocarbons.

Linde Gas, a division of The Linde Group, a global leader in the international industrial gases market, was the first company to supply CO_2 and N_2 to the energy sector. It has decades of experience with the successful application of energised solutions in the production of hydrocarbons from unconventional sources such as shale. These solutions are helping producers increase their productivity and decrease the environmental impact of hydraulic fracturing.

Liquid nitrogen is used for 'dry fracking' – a fracturing process that has eliminated many of the problems associated with hydrofracturing

> "The more common fracturing fluids used today are gelled or water-based"

The more common fracturing fluids used today are gelled or water-based, and CO_2 and N_2 have built a reputation as being fluids that can reliably be harnessed for the successful hydraulic fracturing and stimulation of wells. Recent studies indicate that, from an economic perspective, hydraulic fracturing with solutions energised by CO_2 or N_2 can achieve significantly more hydrocarbon recovery than non-energised approaches. One such study found that use of energised fluids improved well performance by up to 2.1 times, compared with non-energised solutions.

The ultimate goal of well stimulation is to achieve maximum productivity at the lowest unit cost, but achieving economically desirable fracture penetration and conductivity can be particularly challenging in

unconventional reservoirs. Fracturing with fluids that are not energised can leave liquids trapped in low-permeability, tight, depleted or water-sensitive formations. This fluid remaining in the formation lowers the fracture conductivity, reducing or impeding the flow of oil and gas. Very often in water-based hydraulic fracturing fluids, the majority of the water is never recovered from unconventional reservoirs and the water that is recovered is contaminated.

Proppant can be improperly deposited, resulting in blocking or impeding flow and here foamed energised fracturing fluids are providing superior proppant transport properties. Gelled fracturing fluids must be flushed from the formation to clean out as much residue as possible from the proppant pack.

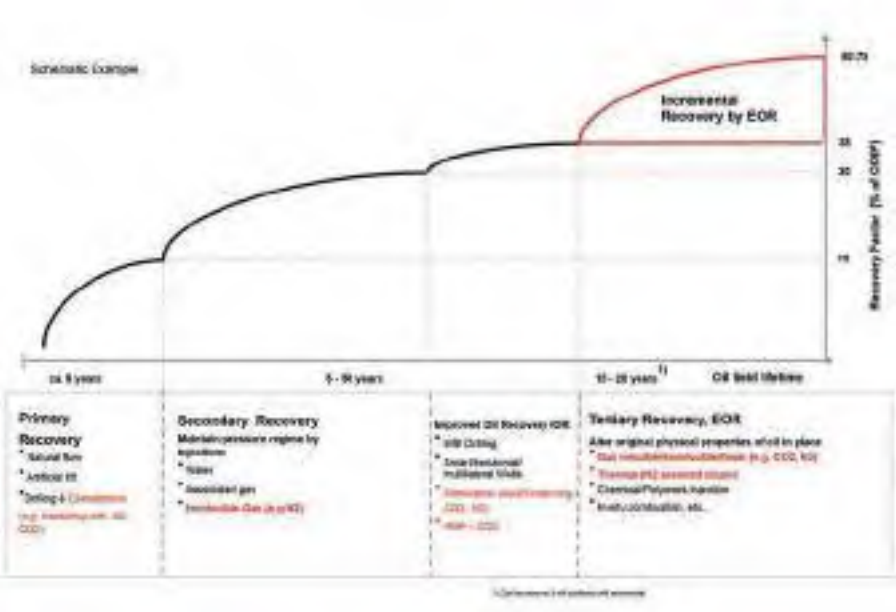
Energising the fracturing fluid with CO_2 or N_2 also improves the total flowback volume and rate, minimises fluid retention and reduces the required water volume, which has significant economic implications. CO_2 actually vaporises at reservoir conditions, leaving a liquid-free proppant pack. Avoiding damage, defined as "any induced reservoir change that inhibits or restricts hydrocarbon flow during well stimulation", is critical. There is evidence that the use of these industrial gases also reduces the damage caused by proppant, factures that are too far apart and residue from polymers and gels. The flexibility of energised solutions allows for the hydraulic fracturing fluid to be mixed according to the technological needs of unconventional reservoirs. They provide more rapid and complete treatment fluid recovery, help to clean without the need for swabbing and reduce formation damage by minimising the amount of aqueous fluids introduced to the formation.

Energised solutions also offer the ability to have superior proppant-transport properties and, in the case of under pressured or depleted zones, provide enhanced energy for hydrocarbon recovery.

Flexibility in solution viscosity allows for a more uniform deposition of proppants, improving conductivity of the propped area to enhance the flow of hydrocarbons. In unconventional reservoirs, energised solutions provide the necessary lift to move hydrocarbons in low pressure zones or areas with strong capillary forces. The solubility and miscibility properties of CO_2 provide greater opportunity to energize the flow of more viscous hydrocarbons.

Extraction and processing

Nitrogen (N_2) and carbon dioxide (CO_2) as bulk gases are used in huge quantities for the extraction and exploration of natural gas with induced hydraulic fracturing. The traditional process for propagating hydrocarbons trapped in underground fractures had required high volumes of water, mixed with foaming agents and friction reducers and injected at high pressure into the fractures, cracking open the shale and creating fissures allowing gas or oil contained within them to flow freely.



The phases from primary to tertiary oil recovery include various methods of stimulation and re-stimulation from individual wells to a field-wide perspective. Highlighted are the areas where N_2 and CO_2 are utilised across the spectrum

Alternative techniques which can help mitigate water-related issues in fracturing include employing CO_2 mixed with alcohol or liquid nitrogen (LIN) in a process known as "dry fracturing". The CO_2/alcohol mix is also injected at high pressure underground to open up fractures, with the CO_2 expanding as it vapourises, allowing natural gas to flow out through the cracks to be collected and processed.

Liquid nitrogen is used for "dry fracking" – a fracturing process that has eliminated many of the problems associated with hydrofracturing and could prove to be more acceptable to people concerned about the environment. It uses very few, or no chemicals and after fracturing the nitrogen is released into the atmosphere, which already comprises 78 per cent nitrogen. Nitrogen has been shown to yield higher economic value in comparison to conventional chemical fracturing, it is being used extensively for natural gas extraction in areas of high environmental sensitivity.

> "Energising the fracturing fluid with CO_2 or N_2 also improves the total flowback volume and rate"

Uniquely positioned

As the industry continues to focus on reducing the amount of water required for hydraulic fracturing and developing completion designs to sustain well production, greater emphasis is being placed on the use of cryogenic gases and associated field support services to achieve these goals. Linde is uniquely positioned to work on a nationwide scale with oil and gas producers and oilfield service companies for fracturing and enhanced oil recovery. Services include a complete fleet of CO_2 transports, even to remote locations, and a strong N2 supply network.

Linde Gas produces N_2 and CO_2 in liquid form at facilities close to hydraulic fracturing sites and delivers these gases onto site in road tankers.

Last year Linde North America introduced Nitrogen Portable Storage Vessels (NPSVs) that enable hydraulic fracturing operators and service companies to expand their nitrogen storage capabilities on location. Providing 16,700 gallons of storage capacity, NPSVs are transportable cryogenic vessels that allow Linde to deliver high volume liquid nitrogen directly to production locations. Linde further simplifies the use of NPSVs by proactively managing nitrogen inventory for its customers for just-in-time availability. It provides high-quality nitrogen from its 70 US plants and depots to 11,000 local customer installations, with 40,000 deliveries per month. ■

Improving performance in **drilling operations**

Even Gjesdal, Cubility AS, outlines the benefits of a new filtration system that removes solids from the drilling fluid.

DESPITE THE CURRENT low oil prices, drilling and the drilling fluids market remain on the rise in the Middle East. According to the monthly Baker Hughes rig count for February 2015, the number of drilling rigs in the Middle East actually jumped by 19 units to 155 units in February 2015, in stark contrast to situation in the USA.

The outlook for drilling fluids also remains positive. Such fluids (also known as muds), that play a crucial role in cooling and lubricating drill bits, carrying drill cuttings to the surface, controlling pressure and retaining formations, form part of a US$560.97mn market in the Middle East, according to industry analysts MicroMarket Monitor.

MicroMarket Monitor predict that annual growth in the Middle East - both onshore and offshore - will be over 5.5 per cent between now and 2018, driven by significant drilling activity in Oman and Saudi Arabia. The report concludes by saying that "the Middle East is one of the stable markets for drilling and completion fluids and is expected to remain so in the coming years."

Given the importance of muds and drilling fluids to the Middle East, it is therefore vital that such fluids are used to their optimal potential.

> "The traditional technology for maintaining drilling fluids and separating rock particles has been around since the 1930s"

Drilling and the drilling fluids market are on the rise in the Middle East (photo: Daniel Fogg)

Key to this is the efficient separation of the drilled rock particles from the fluids to optimise drilling fluid and drilling performance, maintain drilling fluid parameters, reduce the volume of mud lost, and minimise the total tonnage of drilling waste generated.

Traditional solids control technologies

In an industry that has seen considerable innovations over the past few years, it is perhaps surprising that the traditional technology for maintaining drilling fluids and separating rock particles on both onshore and offshore rigs has been around since the 1930s.

Shale shakers - the primary method of solids control today - consist of vibrating screens where the "returns" from the well - drilling fluids and drilled solids - flow on to these screens.

The vibrating screens generate high G-forces, which are used to separate the mud and solids. In offshore operations, these solids are either discharged overboard or transported to shore for treatment and disposal. In onshore drilling, the solids are either discharged into lined pits or trucked to suitably equipped treatment facilities. The cleaned mud is then incorporated back into the active fluid system for further use.

Yet, despite their longevity and at a time of increased focus on drilling efficiencies, the bottom line and HSE, shale shakers are showing their age with inadequate solids removal efficiency, high volumes of mud lost, large tonnages of waste generated and a poor working environment provided for rig personnel.

For example, with the high G-forces used there is an increased risk that drilled solids will be broken down into finer and finer particles, reducing the amount of solids that are removed and increasing solids content in the drilling fluid – particularly the case with those detrimental low gravity solids. This leads to reduced drilling efficiencies, has a negative impact on penetration rates, and results in increased wear and tear on both surface and downhole equipment.

In addition, the use of vibrating type shale shakers will often lead to high volumes of mud being lost, with an increase in drilling waste and implications from both a cost and environmental standpoint.

Finally, shale shakers often expose personnel to high noise levels and vibrations as well as the emission of oil and other vapours. With many countries in the Middle East putting in place stricter HSE requirements related to employee conditions, this is another significant limitation with these traditional types of solids control systems.

A new approach

It is against this backdrop that Norwegian company Cubility is providing an alternative to shale shakers - the MudCube.

The MudCube is a field proven, vacuum-based filtration system that removes solids from the drilling fluid. Dispensing with the need for high G forces to separate mud and the drilled solids, drilling fluids are vacuumed through a rotating filter belt using high airflow to separate the cuttings from the fluid. The rotating filter belt carries drilling fluid and drilled solids forward while air - at 20,000 litres per minute - is pulled through the filter belt, taking with it the drilling fluid.

In this way, the cleaned drilling fluids are returned to the active mud system, and the drilled solids - carried forward on the filter belt - are discharged to a cuttings handling system. The solids removal efficiency of the new system often exceeds 90 per cent.

The benefits of the MudCube

There are a number of immediate benefits to drilling operations from this new solution that has the ability to significantly alter the solids control, fluids and drilling operations environment in the Middle East.

Firstly, the new system improves drilling efficiencies through better quality mud. The more stable mud properties and higher quality drilling fluids result in low Equivalent Circulating Density (ECD) - the density exerted by the circulating fluid against the formation - and pre-empt the dangers from high ECD, such as induced fractures, lost circulation and fluid losses. Effective solids control also results in higher rates of penetration (ROP), reduced risk of stuck pipe, and improved wellbore stability.

Cleaner muds and fluids also play a key role in reducing Non Productive Time (NPT), thereby enabling Middle Eastern operators to maximise the value of their drilling assets and ensure the best possible returns.

As well as drilling efficiencies, there are also significant cost savings arising from improved solids separation and better quality mud. For example, more mud is recycled back into the mud tanks to be reused for drilling, and fewer chemicals are required to maintain the mud's properties.

> "The solids removal efficiency of the new system often exceeds 90 per cent"

One operator and drilling fluids company recently reported the reduced use of premix chemicals as bringing savings of up to US$270,000 when using the MudCube, as compared to similar operations with standard shale shakers. Other cost savings include lower maintenance requirements for rig circulating equipment and less money spent for installation on onshore and offshore rigs.

Much of the operation of the MudCube can take place remotely with the real-time monitoring of mud volume, mud density, temperature and cutting shape recognition, resulting in improved efficiencies and cost savings.

There are strong environmental benefits as well. Due to less drilling fluid being lost and improved separation capabilities, the new solution also generates substantially drier cuttings with mud on cuttings being reduced to less than 30 per cent of drilled solids and oil on cuttings as low as 5wt per cent. This leads to reduced waste volumes and costs associated with handling, transporting and treating drilling waste.

The MudCube has the potential to significantly alter the solids control, fluids and drilling operations environment in the Middle East

With some areas of the Middle East operating on a zero oil discharge basis for oil based mud drill cuttings, reducing the volume of mud lost is a critically important component in meeting ever stricter environmental regulations while reducing the costs of disposal and treatment.

Finally, the new solution's use of vacuum and air flow rather than the high G- forces of shale shakers, leads to a much-improved working environment for rig personnel, with noise levels reduced to 74 dBA (decibels) and no vibrations or emissions of fumes and gases to the shaker room. In this way, the highest HSE standards required across the Middle East can more easily be met.

Applications

Since its 2012 introduction to market, the MudCube has been adopted on a number of offshore and onshore rigs. This has included the North Sea, Far East and North and South America as well as the Middle East, where an onshore trial with a major operator was successfully completed in 2014.

The primary objectives for this onshore trial were to improve the working environment for rig personnel, minimise the consumption of consumables (filter belts) and reduce mud losses and the corresponding volume of drilling waste.

On completion of the trial, the results were assessed and compared to the KPIs (Knowledge Performance Indicators) set. Noise levels were reduced, filter belt consumption was less than the targets set, and mud on cuttings concentrations were reduced to less than 30 per cent by volume of the rock drilled. Solids removal efficiency was above 90 per cent. It was therefore concluded that the trial was a success.

Conclusions

With the intensity of drilling operations, the need to monitor the bottom line and stringent environmental controls, solids control and waste management technologies are a critical element of successful drilling operations in the Middle East today.

This new technology offers Middle Eastern operators an alternative in improving drilling efficiencies and environmental performance in their exploration and development operations. ■

Caspian Oil & Gas 2015
Date: 2-5 June 2015
Venue: Baku Expo Center, Azerbaijan

Azerbaijan prepares to host 22nd Caspian Oil & Gas

With the distinction of being one of the oldest producers of oil in the world, the Caspian nation is all set to welcome oil and gas industry leaders to showcase the country's strength and significance in oil production and exports.

AZERBAIJAN HOLDS THE distinction of being one of the oldest oil producers in the world. Not only is oil and natural gas production key to the country's economic growth, but the nation is a major export route to the West.

Continuing to exert its influence on the global oil and gas industry is the Caspian Oil & Gas Exhibition, whose 22nd edition will be held from 2-5 June 2015 at the Baku Expo Centre in Azerbaijan.

More than 250 companies are expected to participate in the show, including AFZEN J.V., Azeri M-I Drilling, Baker Hughes, Bos Shelf MMC, BP, Caspian Drilling Company, Caspian Geophysical, Caspian Marine Services, Caspian Pipe Coatings, Chelpipe, Cross Caspian, Dentons, Global Energy, Inpex, RussNeft, TPAO, Tekfen Construction, Total and Schlumberger. The energy ministry of the country and the State Oil Company of Azerbaijan Republic (SOCAR) will also support the show, said organisers.

Spanning three pavilions of the venue, Caspian Oil & Gas 2015 will feature a host of new technologies and advancements in oil extraction, energy resource transportation, storage systems for oil and gas as well as focusing on some of the largest projects in the region.

According to the US EIA, Azerbaijan's SOCAR is involved in all segments of the oil sector. However, 80 per cent of its oil is produced by international oil firms, mainly from the ACG oilfields by the BP-operated Azerbaijan International Operating Company (AIOC), and the BP-operated Shah Deniz field, which produces oil condensate. AIOC is a 10-company consortium that has signed extraction contracts with Azerbaijan, led by BP and including Chevron, Inpex, Statoil, Turkiye Petrolleri, ExxonMobil, SOCAR, ITOCHU and Hess. BP is the largest foreign investor and has been involved in Azerbaijan since 1992, states the EIA.

The show is expected to showcase Azerbaijan's involvement in oil production and how it impacts the global supply of oil and condensate. Visitors to the show can expect to interact with industry experts in areas such as reservoir engineering, geology, geo-physics, oil well construction, design and manufacturing. Azerbaijan is also considered a favourable country for investment, with more than US$120bn being poured into the country between 1995 and 2013. There will be large trade missions from China, Finland, Turkey, France, Germany, Italy, Norway, the UK and the USA.

For the first time ever, Caspian Oil and Gas will also host an art exhibition titled *The Nobel Brothers and Baku Oil: The Prize*. The collection has been created on the initiative of the National Art Museum of Azerbaijan and the organisers of Caspian Oil and Gas, Iteca Caspian, to celebrate 135 years since the Nobel brothers' oil company was founded in Azerbaijan.

In addition, attendees can also participate in the International Caspian Oil and Gas Conference at the JW Marriott Absheron Baku hotel from 3-4 June 2015. More than 500 delegates from 30 countries will take part in the annual conference, with around 50 representatives of state bodies, leading experts in the oil and gas industry and chief executives of major oil and gas companies scheduled to speak. ■

The Caspian Oil & Gas show is expected to showcase Azerbaijan's capability as an oil exporter and producer

Raccortubi Group extends its manufacturing range

THE RECENT ACQUISITION by Italy-based Raccortubi of Petrol Raccord S.p.A., manufacturer of butt weld fittings for the oil and gas, power generation, fertiliser and petrochemical industries, brings significant developments throughout the Group.

"The acquisition presents an exciting opportunity for Raccortubi Group and Raccortubi Middle East," explains Sunzeev Swami, managing director of Raccortubi Middle East FZE. "With the inclusion of Petrol Raccord in the Group, the integrated production range has been extended from ½" to 56", meaning that we can offer clients a complete range of fittings in stainless steel, duplex, superduplex, superaustenitics and nickel alloys without wall thickness limitations."

Petrol Raccord is working alongside Tecninox, Raccortubi Group's other integrated manufacturing plant, to enable Group companies to offer customers complete solutions, as well as added value. The butt weld fittings manufactured by the Group's plants are stocked and supplied by Raccortubi S.p.A. in Italy, Raccortubi Middle East FZE, Raccortubi do Brasil Ltda. and Raccortubi Singapore Pte. Ltd., alongside pipes, tubes and flanges in stainless steel and special alloys.

"We are now a Group of seven companies with a workforce of 220 people and a solid manufacturing and distribution base which operates worldwide," adds Swami. "The inclusion of Petrol Raccord within our Group is enabling us to propose more interesting solutions to our clients. The integration of a second butt weld fittings manufacturer within Raccortubi Group is allowing us greater availability and efficiency, thanks to our direct control over production, to provide our customers with complete packages and tailor-made offers."

The acquisition is enabling Raccortubi to enhance its offer to clients

Furthermore, as a result of the experience and expertise that the company has accumulated since its foundation in 1969, Petrol Raccord dedicates an increasing part of production to special/customised fittings such as flow or barred tees, "Y" pieces, laterals, manifolds and headers. Butt weld fittings can be manufactured to individual customer specifications.

Using the hot forming method, Petrol Raccord also has the capability to provide elbows, tees, reducers and caps in accordance with the most stringent market requirements. Petrol Raccord has its own internal laboratory and holds an impressive number of end-user approvals, including that of Saudi Aramco, as well as quality certification for the nuclear industry.

"All members of Raccortubi Group share a common commitment to quality," concludes Swami. "We are constantly moving forwards to keep on top of client requests and provide customers with added value in an industry and a region which are under continuous development."

Some of the most common corrosive elements are air and water, both of which affect oil vessels and offshore platforms. (Image source: Pixabay)

Guaranteed protection

With the increase in unconventional methods of drilling, surface coating protection has never been more relevant in the Middle East's oil and gas industry.

THE OIL AND gas industry faces a series of challenges, amid rising costs of maintenance. One of the main problems is wear-and-tear of surfaces of hulls, ships, pipelines and equipment. Investing in good brands that will ensure superior protection of oilfield equipment and machinery is vital.

There are several unconventional operations such as lateral and directional drilling, which can cause quicker degeneration of surfaces. Surface technology is making strides in innovations that can help overcome damage caused to surfaces due to extreme conditions.

Jotun, a leader in providing anti-fouling solutions, presented its Jotun Hull Performance Solution (HPS) on several new vessels, including those of the Mediterranean Shipping Company (MSC). Jotun's HPS concept combined premium marine coatings such as SeaQuantum X200 for MSC's vessels. In addition, Jotun also provided a technical service and on-board monitoring tools to measure hull performance over time. MSC's technical office issued a statement which said that they recorded significantly lower fuel costs over time using HPS.

> "The surface coatings industry appears poised to grow, especially in countries in the Middle East and Africa, where there is sustained activity in oil and gas."

Jotun was present at ADIPEC 2014, held in Abu Dhabi, where they showcased an advanced portfolio of their products for the petroleum industry. Jotun Protective Coatings marketing manager Venkat Krishnan said, "With the rapid infrastructure growth taking place in UAE and wider Middle East, we have witnessed robust growth for our protective coating solutions and we anticipate this trend to gain further traction as massive expansion projects will continue to develop in the region over the next three decades."

Another leader in the field is Hempel. The Danish company's Hempadur AvantGuard won the Frost & Sullivan Award for New Product Innovation earlier last month, which will be presented in May in London. The product's activated zinc primers include patented AvantGuard® technology to provide better anti-corrosive protection than zinc epoxies without AvantGuard®. The coatings are developed to protect industrial structures and equipment in C4 and C5 corrosive conditions, where saltwater and high humidity corrode unprotected steel. They can be used in a range industries and applications, from offshore oil and gas platforms to power plants and wind turbines. The AvantGuard technology uses hollow glass spheres and a proprietary activator to

activate more zinc and enhance the anti-corrosive properties of the coating. The increased protection and durability of Hempadur AvantGuard® coatings have been proven in extensive Hempel tests, including salt spray tests (ISO 12944 part 6), cyclic corrosion tests (ISO 20340 - NORSOK M-501 revision 6) and thermal cycling resistance tests (NACE cracking test and Hempel's welding test).

Investments in oil and gas run into millions, and industry leaders expect a certain level of reliability in products as projects extend for long periods of time. Companies appear willing to spend substantial sums on a reliable set of protective solutions. Industrial Nanotech, Inc., a global leader in nanotechnology based energy saving solutions, received a US$94,950 order for its patented High Heat insulation and corrosion prevention coating.

> "The aim of the products is not only to ensure minimal corrosion, but also to prolong the life of equipment"

The surface coatings industry is a thriving one and appears poised to grow, especially in countries in the Middle East and Africa, where there is sustained activity in oil and gas. The aim of the products is not only to ensure minimal to no corrosion, but also to prolong the life of equipment, a growing consideration in the low oil price era.

While there is interest in purchasing the latest products and investing in cutting edge innovations, its also prudent to identify the most beneficial technologies.

Thermal spray - Original equipment manufacturers (OEM) can supply equipment that can withstand the variety of stresses. Thermal spray results in a mechanical bond between the coating and substrate making this application optimal for prevention of corrosion that have no impact exposure, such as bearings, pump seal faces, valve parts and shafts. Thermal spray produces a very thin overlay, making product finishing easier and faster compared to welding parts. Mud rotors treated with thermal spray coating often have a service-life ten times longer than those treated with HCP. In the oil and gas industry, thermal spray works well for riser tensioners on offshore platforms.

Welding - For equipment used in high-pressure and/or high-temperature (HP/HT) environments, welding is a preferred method. In contrast to thermal spray's mechanical bond, welding melts both the material being applied and the surface of the substrate, forming a durable metallurgical bond. This is necessary for tools exposed to extreme conditions that cause heavy wear and tear. In particular, HP/HT environments often found in deep-water operations require Laser Cladding to produce a fully dense coating, without which the equipment can quickly become damaged and require downtime for repair.

Diamond like carbon (DLC) - This method transfers certain properties of diamonds, such as hardness, wear resistance and low friction, to the surfaces of tools. Because of its low co-efficient of friction, it can operate in the absence of lubrication, which saves on operating costs. The functional DLC layer has excellent sliding properties that can significantly increase performance. DLC coating improves drilling uptime, reduces maintenance and is best suited for applications with high friction. ■

MEOS 2015
Date: 8-11 March 2015
Venue: Manama, Bahrain

Society of Petroleum Engineers
MEOS 2015

Middle East oil and gas sector **remains robust**

The region continues to maintain production and invest for the long term, although the environment is becoming increasingly cost competitive.

THE 19TH SOCIETY of Petroleum Engineers Middle East Oil & Gas Show and Conference (MEOS 2015) attracted a record total of 8,227 attendees, according to the organisers, marking a 12 per cent increase over 2013, despite taking place against the background of the declining oil price. 240 regional and exhibitors from 28 countries participated in the event, which was held from 8-11 March in Bahrain.

Principal exhibitors included GCC NOCs ADNOC, Bapco, Kuwait Oil Company, Qatar Petroleum and Saudi Aramco – who participated alongside international supermajors, service industry giants and independent specialist suppliers and distributors from across the globe. The exhibition also featured a large national group from North America, and for the first time in the show's history, an official delegation of some of the largest oil and gas companies from Egypt.

Held under the theme 'Energy beyond limits through innovation and collaboration,' the conference opened with a ministerial session, a first for MEOS, which was very well attended. It was addressed by HE Dr Abdul Hussain bin Ali Mirza, minister of energy, Bahrain; HE Dr Ali Al-Omair, minister of oil, Kuwait; HE Eng. Suhail Mohamed Faraj Al Mazrouei, minister of energy, UAE; HE Abdalla Salem El-Badri, secretary general, OPEC; AbdulHameed Al-Rushaid, MEOS 2015 conference chairman and chief drilling engineer, Saudi Aramco; and Nathan Meehan, 2016 SPE president.

> "We will continue to plan long-term, invest in technology and create global partnerships and alliances"

Setting the tone for the event, HE Dr Mirza commented on the role of MEOS as one of the most important events in the Middle East's oil and gas calendar, showcasing the latest technology the industry has to offer, as well as the robustness of the regional oil and gas sector.

"Our industry has proven over the current decade to be resilient despite the ups and downs.....we will continue to plan long-term, invest in technology and create global partnerships and alliances," he said, comments echoed by HE Eng Suhail Al Mazrouei and HE Dr Ali Al-Omair. The ministers spoke openly about their countries' energy plans, EOR being a strong focus, and also emphasised the importance of energy security and the development of alternative sources of energy. HE Abdalla Salem El-Badri underlined the MENA region's critical role in satisfying the growing global demand for energy in the long term.

Plenary and panel sessions over the subsequent three days were led by CEOs, managers and presidents of NOCs, IOCs and the service industry. Discussion topics included academic and industry collaboration, in country value, unconventional resources, environmental stewardship, innovative collaboration and cyber security in the energy sector.

The exhibition was officially inaugurated by HH Shaikh Ali bin Khalifa Al Khalifa, deputy prime minister of Bahrain

Exhibitor displays featured the latest advances in technology, equipment, software and instrumentation, and technical presentations given at stands were very well attended. Some companies used the opportunity to introduce new products; Schlumberger for example unveiled its Signature Xtreme high -emperature quartz gauge, designed to withstand the harshest downhole conditions, while Belzona showcased its new coatings and composite materials.

Exhibitors were generally positive about prospects in the region (certainly in comparison to other regions of the world), and commented on the increasing openness to innovative solutions and technology that will assist in cutting costs, optimising production, increasing efficiency and facilitating strategic planning. Digital oilfield, process automation and artificial lift solutions were amongst those proving popular. While the stands of the major service companies attracted much interest, smaller companies providing niche technology solutions were also very well received. FEI, for example, is starting to make inroads into the Middle East with its digital rock imaging solutions, particularly in the area of EOR; while Sky-Futures, whose unmanned aerial inspections can help to cut manpower and thus reduce costs, is also doing well in the region. ■

> “Smaller companies providing niche technology solutions were also very well received”

A busy stand at the exhibition

CTS continues to flourish in Saudi Arabia

CTS, WHICH SPECIALISES in products used for the storage and transfer of fluids, is experiencing a strong demand for its products in Saudi Arabia.

A major part of the company's portfolio consists of aluminum geodesic domes, aluminum internal floating roofs, floating suction lines, tank seals (for both internal and external floating roof tanks), tank drain systems, and industrial supplies such as hose systems, dry break couplers, emergency release systems vapour bladders etc.

CTS has received a world record-breaking dome order from NWC, Saudi Arabia, for the supply of 44 domes of various sizes for the cities of Riyadh, Makkah, Jeddah, and the Breiman region. This includes four 120m diameter domes for the city of Jeddah, which will be the largest free span aluminium domes ever supplied to cover steel storage tanks. The order is also the largest ever dome contract in terms of square metres covered, representing a projected covered area in excess of 333,000 sq m.

The domes are scheduled to be supplied and installed in the course of 2015 and 2016. CTS will not only supply the materials but will also support the project by mobilizing experienced supervisors and crew with all the specialised tools required.

In early 2015 CTS was awarded a contract for supplying tank seals and Drainmaster drain systems for 12 tanks at Aramco Al Mujjaiz Terminal Rehabilitation Project. This involves supplying seals for 10 tanks with a diameter of 110.8m, and two tanks with a diameter of 15.24m.

CTS has been awarded many projects by Saudi Aramco for different bulk plants. These have included the supply of primary & secondary seals for a 125.57m diameter tank at Yanbu Crude Oil Terminal (YCOT) one of the largest tank terminals worldwide. The terminal has 11 floating roof storage tanks — each able to hold 1 million barrels — plus a 1.5 mmbbl tank, the largest diameter tank in Saudi Arabia, which was added in the 1992 capacity upgrade. The total storage capacity of the crude oil tank farm is 12.5 mmbbl. CTS was selected to supply and design the primary and secondary seal systems as well as maintenance spare parts with seal fabric for four of Aramco's bulk plants (Juaimah Terminal, Ras Tanura, Abha & Ain Dar).

CTS has been selected as vendor for the supply of three aluminum honey comb full contact internal floating roofs (IFR) for Ras Tanura Integrated Project (SOLUTION PE) for Sadara Chemical Company, a joint venture of Saudi Aramco and the Dow Chemical Company. The project involves the procurement and construction of a polyethylene and specialty elastomers package in Al-Jubail Industrial City II, in the eastern province of Saudi Arabia, where Sadara is constructing a world scale chemical complex.

CTS domes and parts are used in applications including storage tanks

For the last four years, CTS has been designated by Saudi Aramco as the supplier of choice for designing, manufacturing and installing gauge pole socks on Aramco tanks, in recognition of the company's ability to provide a tailor made design and installation service. In 2013 and 2014, CTS supplied Saudi Aramco with twenty three covers for single pole and multiple gauge pole tanks at the Yanbu Refinery. As part of the contract, CTS has also provided support for Aramco in installing the system.

In recognition of CTS's continuous support, efforts and commitment to Saudi Aramco, CTS was given a plaque of appreciation for the second time in December 3013, during Saudi Aramco Technology Day at Yanbu Refinery Area.

Caterpillar to supply land electric drive drilling units to UAE's National Drilling Company (NDC)

CATERPILLAR OIL & GAS has announced that 76 Cat® 3500 land electric drive drilling modules have been selected to power 18 new-build land drilling rigs to be built in China and operated in the United Arab Emirates. 50 Cat 3512C land electric drive drilling modules rated at 1101 ekW (60Hz) and 26 Cat 3516C (HD) modules rated at 1523 ekW (60Hz) will power the rigs. The units will be delivered over the course of this year to Baoji Oilfield Machinery Co. Ltd (BOMCO) and Sichuan Honghua Petroleum Equipment Co. Ltd based in China.

"We're honoured that NDC has been, and continues to be, a loyal Caterpillar customer," said Brandon Wang, Caterpillar Oil & Gas Asia Pacific – China direct sales manager. "Beyond the superior product attributes, the combined technical expertise of Caterpillar sales support and the breadth of the Cat dealer network proved to be significant factors in winning the project."

Developed specifically to meet the demands of oil and gas applications, Cat 3500 land electric drilling modules have established a reputation as proven, reliable power solutions after logging countless hours in rugged oilfield applications. The modules deliver market-leading power density and feature a robust base design to withstand shock loads during loading and unloading operations. Manufactured in Lafayette, Indiana, the drilling module provides customers with enhanced safety, performance and overall ease of use.

The 3512C land electric drive drilling module

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CTS Specializes in products used for the storage and transfer of fluids. A major part of our product portfolio is formed by **aluminium geodesic domes, aluminium internal floating roofs, floating suction lines, tank seals (for both internal and external floating roof tanks), tank drain systems and industrial supplies such as hose systems, dry break couplers, emergency release systems and vapour bladders** etc.

We design, supply and install these products around the world. The management of CTS has an extensive track record in this industry, and is therefore excellently capable of servicing your requirements in this area.

Aluminium domes

Internal floating roofs

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OTC 2015
Date: 4-7 May 2015
Venue: Houston, Texas

OTC2015

d5 will be 'The Next Big Thing' at OTC 2015

The annual offshore conference will inaugurate the debut event targeted to inspire innovations in the oil and gas industry.

THE OFFSHORE TECHNOLOGY Conference (OTC), to be held from 4-7 May 2015, will for the first time host d5 on 8 May at the University of Houston, Texas, USA.

The organisers have also revealed the final line-up of nine speakers for d5.

Themed "The Next Big Thing," speakers at d5 will address the industry's biggest current and future challenges and help identify the next big step for the offshore energy industry, in the way of technology game changers, leadership practices and competitive advantages.

> "The event will also offer opportunities to connect with thought leaders and experts from non-energy industries to expand business networks"

Attendance at the annual event reached a 46-year high of 108,300 in 2014, the highest in show history and up 3.3 per cent from the previous year

The speakers for d5 inlude Bjorn Lomborg, political scientist and author of the best-selling book *The Skeptical Environmentalist*; Jane McGonigal, author of *Reality Is Broken: How Games Make Us Better and How They Can Change The World*; Mike Abrashoff, former Commander of naval warship USS Benfold; Michael Bloomfield, former NASA astronaut and ex-officio member of the Columbia Accident Investigation Board; Frans Johansson, author, entrepreneur and consultant who has written books about how great ideas happen and business strategies; Lisa Bodell, futurethink founder; Juan Enriquez, one of the world's leading authorities on the uses and benefits of genomic research; Avi Reichental, president and CEO of 3D Systems; and Michael Porter, Harvard professor and leading authority on competitive strategies for corporations and nations.

In addition, OTC 2015 also hosted a preview webcast in March to formally introduce the inaugural d5 event and inform potential attendees about what the conference is about.

Steve Balint, d5 Advisory Board chairman, said, "For more than 45 years, OTC has helped industry professionals connect the dots — offering technical knowledge they can immediately apply to their jobs. At d5, we won't provide the connections. We will provide the dots, and attendees will be challenged with finding ways to creatively deconstruct the industry."

Art Schroeder, d5 Program Committee chairman, added, "Technology is changing so fast outside of our industry. We are trying to get some of that speed injected into our industry."

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The d5 event will also offer opportunities to connect with thought leaders and experts from non-energy industries to expand business networks.

OTC has also announced 17 technologies that will receive the Spotlight on New TechnologySM Award. The 2015 awards will be presented on 4 May in the NRG Center Rotunda Lobby.

Spotlight Winners for 2015:

- Baker Hughes, producer of MultiNode™ all-electric intelligent well system
- Cameron International, producer of Mark IV High-Availability (HA) BOP Control System
- FMC Technologies, producer of Annulus Monitoring System
- Halliburton Energy Services, producer of RezConnect™ Well Testing System
- Oceaneering International, producer of Deepwater Pile Dredge
- Oceaneering International, producer of Magna Subsea Inspection System™
- OneSubsea, producer of Multiphase Compressor
- SBM Offshore, producer of ARCA Chain Connector
- Schlumberger, producer of GeoSphere reservoir mapping-while-drilling service
- Schlumberger, producer of Quanta Geo photorealistic reservoir geology service
- Tracerco, producer of Tracerco Discovery
- Versabar, Inc., producer of VersaCutter
- Weatherford, producer of Red Eye™ Subsea Water-Cut Meter
- Weatherford, producer of Total Vibration Monitor with Angular Rate Gyro
- Welltec, producer of Welltec® Annular Barrier (WAB®)

Spotlight Small Business Winners:

- Fishbones, producer of Dreamliner
- WiSub AS, producer of WiSub Maelstrom™ Pinless Subsea Wet-Mate Connector

The Spotlight on New Technology Awards — a programme for OTC exhibitors—showcase the latest and most advanced hardware and software technologies that are leading the industry into the future.

In support and recognition of innovative technologies being developed by small businesses, OTC has created a new Spotlight on New Technology Small Business Award in 2015. The small business applications were evaluated using the same five criteria above, but were also required to have less than 300 employees.

According to Balint, "With the creation of the Small Business Awards, we are recognising the fact that companies both big and small are developing innovative technologies and creative solutions to meet the world's energy demands."

"I congratulate this year's Spotlight Award recipients for helping the industry reduce risk and increase productivity in ever-more extreme conditions," said OTC 2015 chairman Ed Stokes, adding that cutting-edge technologies like these are always a highlight of OTC, as they demonstrate the ingenuity and forward thinking that is advancing the industry to new levels of safety, productivity and efficiency. ■

Meeting the challeges of small-bore tubing systems for deeper and harsher offshore environments

AT OTC 2015, Parker will unveil new solutions for building tubing systems capable of meeting the immense challenges posed by higher pressures and corrosion mechanisms as oil and gas exploration and production move into deeper offshore environments.

The new technology will evolve the well-known ranges of small-bore tube fittings and valves from the Instrumentation Products Division of Parker Hannifin - the global leader in motion and control technologies.

An example of a Parker fitting

Engineers constructing tubing systems for high pressure hydraulics, chemical injection systems and other higher-pressure topside and subsea offshore applications will be presented with new tube connection technology that provides easy-to-apply solutions for pressures up to 15,000 or 20,000 PSI.

At pressures of 15,000 PSI and more, tubing failures can pose an enormous threat to asset integrity. Ensuring asset integrity is a critical element of the new tube connection designs. Parker's engineering spans the spectrum of potential failure modes - from guarding against mechanical failures to combating corrosion mechanisms. The new connection technology is supported by Parker's heritage of materials expertise, which provides users with the highest possible quality of materials and the widest choice of corrosion resistant alloys to meet corrosion threats. Although metallurgy know-how is becoming quite common on the project teams run by operators and their engineering, procurement and construction contractors, Parker claims that it almost certainly has the broadest and deepest understanding of metallurgy in this market today, and is ready to help users with expert advice and education.

Parker's Instrumentation Products Division will be exhibiting at Booth 4809.

Lowering operator costs

TRELLEBORG STRESSES THAT it is better to reduce total cost and improve efficiency than to buy low-cost and potentially poorer quality products.

Trelleborg's offshore offering

Fredrik Meuller, BA president Trelleborg Offshore & Construction, says, "It remains important to invest in solutions which will continuously deliver high performance over a long lifecycle, to protect projects in the long term, even in tough times."

At OTC, Trelleborg's on-stand experts will demonstrate innovative solutions which can help operators bridge the gap between cost and performance. Trelleborg will exhibit its range of innovative offshore solutions at OTC in Hall A at stand 5541. Products include high performance pipeline protection and insulation, buoyancy, floatover technology, seals and hoses.

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SledgeHammer

COMMITMENT TOWARDS PERFECTION

Managing the oil & gas workforce for long-term growth

As the industry adjusts to low oil prices, the importance of a more sustainable resourcing strategy with a long-term outlook becomes clear, says Petroplan's Huw Rothwell.

OIL AND GAS firms are influenced by macroeconomic factors and exposed to substantial levels of risk relating to market volatility, uncertainty, and geopolitical instability. Despite the fact they are operating in a strategic global industry, many firms tend to be reactive. This can result in a form of short-termism.

Costs have increased substantially in recent years against the backdrop of high oil prices. But when oil prices slide, there is shareholder pressure to cut costs across operations, including the workforce. This has been illustrated by the recent oil price slump, with several international operators and service companies announcing job losses and cuts to contractor rates.

To date, the majority of announcements have been focused around mature markets with aging assets and marginal fields, such as the UK North Sea. But the fact that this pattern has been repeated numerous times in recent history demonstrates that lessons need to be learned. Other industries have developed slicker, leaner operations as part of a more sustainable strategy by seeking to drive out inefficiency in the supply chain, as opposed to cutting the workforce.

Some oil and gas firms are recognising that a better balance between contract and full time employees is required. Contractor rates have increased three times more than staff rates over the last five years, thus it can be more cost-effective for firms to hire contractors as permanent employees and pay their benefits and medical cover.

More importantly, firms are able to secure the skills and experience they need for when new opportunities arise. Australia's LNG boom highlights how projects can suffer from delays and cost overruns as a result of shortages in skilled labour.

Although the industry is experiencing the lowest oil prices since 2009, history illustrates that boom follows bust. The cyclical nature of the market therefore makes it essential that oil and gas firms adopt a strategic approach to recruitment if they are to ensure they have the appropriate resources in place when oil prices recover.

Seeking the right efficiencies

Unsurprisingly, efficiency and cost effectiveness are the watchwords for the industry today, especially for those operating marginal assets in mature fields. Yet efficiency has been a focus for exploration & production firms for some time. Production costs have continued to rise as many developments become more technically challenging, while exploration continues to move into more remote regions.

> "History illustrates that boom follows bust"

Some oil and gas firms are recognising a better balance between contract and full time employees is needed (Image source: Lindsey G/Flickr)

The workforce and rate cuts seen to date are hitting the support functions hardest. These are the layers above operations where cost pressure is being brought to bear. Yet there are other ways in which efficiencies can be created – with the supply chain being a key area.

For example, if there is less demand for the rigs and equipment required for drilling, day rates will fall and firms will have a stronger negotiating position with suppliers. This is why there has been a growing trend for oil and gas players to recruit professionals in supply chain management, HR, and finance who are experienced in driving efficiencies from outside of the industry. This bucks the conventional 'square pegs for square holes' approach of only hiring individuals with a background in oil and gas.

The fact is that many back-office or support function disciplines require the same skills and knowledge to drive greater operational efficiency – irrespective of the industry in question. There are several major oilfield services companies within the supply chain that are actively looking to hire people specifically for their experience in low margin high volume industries.

Automotive or consumer goods are examples of such industries. They have been through some tough times in recent years and have developed lean and effective supply chains by necessity. This offers a sharp contrast to large oil companies that have been through many acquisitions and divestitures over the years and tend to have more cumbersome supply chains as a result.

Sustainable strategy

In previous years, recruiting supply chain professionals from other industries would have been relatively easy. In the USA for example, while the automotive and consumer goods sectors have only just started to rebound from the global economic downturn brought about by the 2008 financial crisis, the oil and gas industry has been strong for the last three years. Candidates have therefore found the prospect of moving into oil and gas very attractive – not only because it was booming, but because key locations such as Houston offer a cost-effective place to live and a desirable way of life.

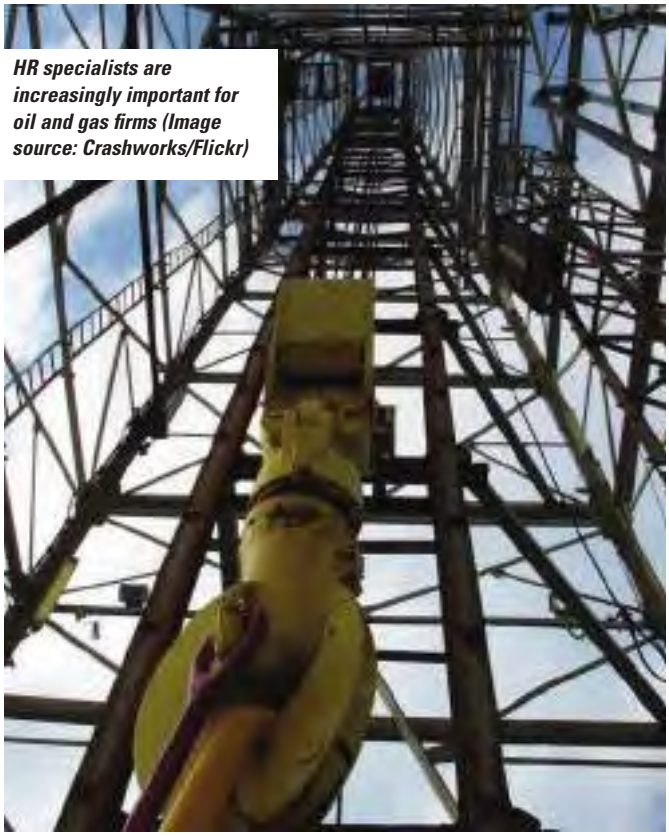
Ironically, the growing job market coupled with lower oil prices means that the oil and gas industry is no longer such an easy sell to these types of candidates – especially in respect of job security. Operators therefore need to be more proactive in mitigating risk by adopting a sustainable approach to managing their workforce requirements.

> "Many support function disciplines require the same skills to drive greater efficiency"

This means resisting the knee-jerk reaction to make substantial layoffs now that could prevent firms from making the type of efficiencies that would improve shareholder return further down the line. It also means ensuring greater elasticity in the supply of personnel. With the labour supply likely to fluctuate between direct hire and contract during this period of uncertainty, oil and gas firms must partner with recruitment specialists that have equal capability to supply both types of personnel.

But, whilst there are plenty of large companies with a good reputation in the contract space, there are few that can provide quality talent on the permanent side too. The same applies for those experienced in recruiting front-end professionals (i.e. engineers) versus support function staff. Only partners with integrated expertise can help firms to gain more control over the supply of skilled labour and prepare for tomorrow's opportunities, against a backdrop of a global skills shortage and rising demand for talent.

Several companies are looking to hire people with experience in low margin high volume industries (Image source: BP Plc)



HR specialists are increasingly important for oil and gas firms (Image source: Crashworks/Flickr)

> "Oil and gas firms must partner with recruitment specialists"

Managing Talent in Oil and Gas

The 'Managing Talent in Oil and Gas' conference will be held from 17-19 May at the Al Raha Beach Hotel, Abu Dhabi. It will provide a valuable platform for talent management professionals to network, as well as to discuss and share information and experiences. The event encompasses a Seminar on 17 and 18 May and two interactive workshops on 19 May.

Speakers include:

- **Winifred Wolderling-Kuller,** *HR director MENA at Gates Engineering & Services*
- **Chris Shennan,** *global head of Oil and Gas at Hay Group*
- **Rob Veersma,** *director Training & Development at Gazprom International*
- **Achmad Verdiarmand,** *HR specialist (Rewards & Policy) at RasGas*
- **Vivek Sharma,** *country manager – Qatar at Hay Group*
- **Wael Hatoum,** *partner at Bain & Company*
- **Rajesh Kalra,** *HR manager at Schlumberger WesternGeco (Global Land Operations)*
- **Kanika Stephen,** *manager Talent Management at McDermott International*
- **Dr Shahid Mahmood,** *senior personnel officer at Abu Dhabi Oil Refining Company (TAKREER)* ■

For further information see the website at ***http://www.managing-talent.net***.

Rigzone survey indicates continued scale-back in hiring

ACCORDING TO RIGZONE'S latest Global Hiring Survey, which polled hiring mangers and recruiters who recruit oil and gas professionals across the globe from February-March 2015, many companies are continuing to scale back on hiring plans due to ongoing market volatility and low oil prices. 47 per cent of survey participants indicated that they reduced their hiring plans in the past three months, while an additional 16 per cent said they had halted their hiring plans completely for the time being.

53 per cent of global hiring managers surveyed said they had decreased their hiring plans for the next six months as a result of the market environment, with only 18 per cent saying that present market conditions actually caused them to increase their hiring plans over this same timeframe.

For companies still in the market for talent, now is the opportune time to look, says Rigzone, with 76 per cent of global hiring managers surveyed seeing an increase in the number of candidates applying for positions now as compared to three months ago.

Current market conditions have caused global oil and gas professionals to remain cautious in the negotiating process, according to the survey. More than 55 per cent of global hiring managers reported that they have not seen an increase in the number of candidates asking for more money in the last three months.

Emerson and Kuwait Oil Company sign MOU on competency development

EMERSON PROCESS MANAGEMENT signed a Memorandum of Understanding (MOU) with Kuwait Oil Company (KOC) in February 2015, whereby it will support KOC by providing educational services consulting. The two companies will work together to promote automation knowledge and technology transfers, identify necessary technical training for the company's operations and maintenance staff, and develop learning and development programs in order to prepare personnel for future projects.

The MOU came two years after Emerson provided a comprehensive 19-week training programme to KOC's engineers, which covered field instrumentation, the DeltaV™ automation system, and cyber security, as well as process control – including advanced control and complex control strategies. It was conducted at Emerson's regional training centres in the USA.

The signing of the MOU

Hi-Force experiences growing demand to deliver training

HI-FORCE, THE UK's leading manufacturer and supplier of hydraulic tools, has experienced an increase in demand for training since establishing its state of the art training school and tailored training packages.

Hi-Force is approved by the ECITB (Engineering Construction Industry Training Board) for the provision of Mechanical Joint Integrity (MJI) training courses in line with industry standards and practices. With many years of 'hands on' experience in the oil, gas and petrochemical industries, as well as power generation and construction, Hi-Force's ECITB approved trainers have the technical and practical knowledge and understanding to deliver the accredited training courses, the company says. Courses are held on a regular basis and are carried out in ECITB approved training schools located in the UK and the Middle East, with additional ECITB approved training schools being set up in Malaysia and South Africa later this year.

The extensive Hi-Force range of first class bolting products are used to deliver the MJI training courses, as specified and required by the ECITB. The TWM and HTW range of manual torque wrenches, designed to allow bi-directional torque control, offer output torque capacities between 5 and 2,000 Nm, with a choice of square drive sizes from 3/8" to 1". In cases where high output torque is required, the TWS-N square drive and TWH-N low profile hydraulic torque wrenches are available in torque capacities up to 48,181 Nm. Operating at 700 Bar maximum pressure, all hydraulic torque wrenches are designed for fast, easy operation and allow for accurate and consistent tightening and loosening of bolts.

Hi-Force hydraulic bolt tensioners are manufactured using Mori Seiki CNC machines, using only the highest quality materials, to ensure the tolerances needed for operating at pressures of 1,500 Bar are accurately maintained. Available in torque capacities up to 2,649 kN, the STS topside and SBT spring return range of bolt tensioners, suitable for imperial bolt sizes up to 4" and metric bolt sizes up to M100, are specially designed for user friendly operation in single and multi-tensioning applications.

An ECITB Mechanical Joint Integrity (MJI) training course being carried out at the Hi-Force training school in Dubai

Through investment in facilities and with the best technology and world-class manufacturing principles, quality control is assured in the Hi-Force brand, according to the company.

For further information, visit www.hi-force.com or contact your Hi-Force representative.

GE invests another US$100mn in technical programmes in Saudi Arabia

GE HAS ANNOUNCED a US$100mn investment in new programmes that are expected to further the company's localisation efforts, build innovation capacity, and create jobs in advanced manufacturing and software analytics. This new investment is additional to GE's US$1bn commitment over the past three years in the Kingdom, and aligns the company with the country's Vision 2024 and Ninth Development Plan to diversify the economy, drive industrialisation and manufacturing, and build the next generation of human capital skill-sets in materials and data science.

The research and manufacturing programmes will aim at enhancing the energy efficiency and sustainability priorities of the country. In manufacturing, GE will expand its facilities in Saudi Arabia for the region with the production of GE's HA gas turbines, said to be the world's largest and most efficient gas turbines, at GE Manufacturing Technology Center in Dammam.

The oil and gas facility in Dammam will include the manufacturing of wellheads, 'Christmas Trees' and other pressure control technologies as well as well performance services repair capability for submersible pumps. GE is also planning a first of its kind regional LED manufacturing facility.

In R&D, according to the multinational company, the announcement places the Saudi GE Innovation Center in Dhahran Techno Valley at the heart of the company's technology innovation ecosystem in the Kingdom. The programmes include a 'Hot & Harsh' Global Research & Development Program, Software & Analytics 'Industrial Internet' Lab, a GE 'in Saudi for region' hub for energy efficiency technology development as well as a monitoring & diagnostics center at GE Manufacturing Technology Center.

GE Chairman & CEO Jeffrey Immelt said, "We are proud to work with our partners to co-create solutions that will find application both in Saudi Arabia and globally. We believe that future skill-sets demand strong capability in both software and hardware; and we are committed to delivering that to our Saudi Arabian workforce and our ecosystem of partners, such as Saudi Aramco and Saudi Electricity Company, as well as SMEs."

GE's distributed power solutions are focused on power generation at or close to the point of use

In addition, GE will collaborate with King Abdullah University of Science and Technology (KAUST) on material testing and combustion research to support the development of GE's HA gas turbines, which will be manufactured at GE Manufacturing Technology Center in late 2016. GE and King Fahd University of Petroleum & Minerals (KFUPM) will also collaborate on advanced prototyping and additive manufacturing, working with the planned state-of-the-art Technology Advanced Prototyping Center (TAPC). The programme addresses the need to develop capabilities and skill-sets in material sciences, applied development and advanced prototyping. The partnership will also provide training, consultation, educational, supply chain and engagement support to TAPC and its staff at GE's global advanced manufacturing and micro factory facilities.

Success for Hydra-Cell pumps

FOLLOWING SITE TRIALS pumping aggressive oxygen scavenging chemicals, Occidental Petroleum in Oman has approved Hydra-Cell pumps, from Wanner International, for use in one of their most demanding applications. Dissolved oxygen in injection water can cause destructive oxygen corrosion to metal pipes and process equipment. By-products of this corrosion form sludges that cause plugging and blockages. This oxygen is generally removed through the introduction of oxygen scavenging chemicals into the high-pressure stream.

Oxygen scavenging chemicals such as sodium and ammonium bisulfites are renowned for damaging pumps. A Hydra-Cell P200 with mechanical speed control has however solved the problem. The seal-less design of this multi-diaphragm pump removed the leakage problem completely, reducing downtime and eliminating seal maintenance.

OXY engineers were also impressed by the Hydra-Cell's small footprint, its ability to handle particulates without damage and its ability to run dry indefinitely.

The Hydra-Cell pump

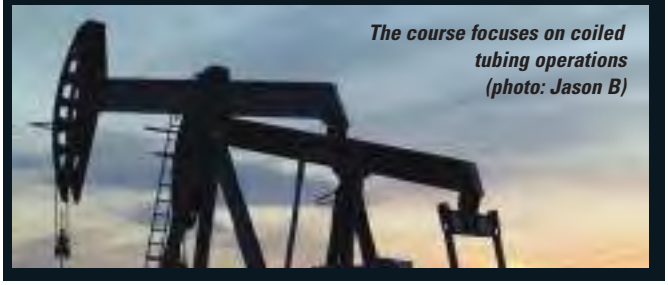
New coiled tubing e-learning course

WELL CONTROL SCHOOL (WCS) has announced the release of its supervisor-level IADC WellCAP® accredited coiled tubing course through its e-learning programme, System 21 e-Learning.

This course uses advanced instruction and workshops on pressure control methodologies in coiled tubing operations. The course, designed for experienced, coiled tubing supervisors, operators and assistant operators, uses instruction and workshops to train students based on the latest methodology and industry standards for well intervention in coiled tubing operations.

Participants who successfully complete and pass the course will receive The Well Control School and IADC WellCAP® Coiled Tubing Supervisor Level certifications along with 3.7 continuing education units (CEU).

See www.wcsonlineuniveersity.com.



The course focuses on coiled tubing operations (photo: Jason B)

Top Oilfield continues to experience success

TOP OILFIELD INDUSTRIES Limited continues to experience a demand for its products and services in the region. Top Oilfield is a Middle East based leader in the manufacture, supply (including rental), repair and maintenance of oil and gas drilling rigs and their associated equipment.

Established in 1995, the company has developed a wide range of specialist products and services which it provides to major offshore and onshore drilling companies throughout the Middle East, North Africa and India.

Top Oilfield is a leader in the manufacture, supply, repair and maintenance of drilling rigs (Photo: Mike Towber)

The company's field service teams can be deployed anywhere within its operational regions to undertake emergency or routine repairs and maintenance within hours. Top Oilfied says that this ability to respond expertly and rapidly has earned it an unbeatable reputation and enhances its ability to promote other product and service lines.

SLIC continues to experience growth

SAUDI LEATHER INDUSTRIES Company (SLIC) has grown to become a leading supplier of industrial safety and work footwear in Saudi Arabia and throughout the Gulf, Middle East and Africa. By utilising the latest technology, the company produces footwear that is tough, comfortable and flexible to the highest levels of quality and performance at its factory in Dammam, Eastern Province. Products meet the highest international safety standards, with features such as composite toes, and are guaranteed against manufacturing defects for a period of six months. SLIC has undergone several stages of expansion to enhance production capacity to cover the growing in demand for its products, and supplies companies such as Saudi Aramco, Saudi Electricity Company (SEC), SABIC, Saudi Arabian Airlines and LUBREF as well as the military sector in Saudi Arabia and the Gulf states.

The SLIC premises in Dammam

www.slicshoes.com

Halliburton drill technology ensures faster penetration

HALLIBURTON'S MEGAFORCE™ DRILL bit with SelectCutter™ PDC technology provides a faster rate of penetration (ROP) with longer drilling intervals, enabling the customer to drill almost double the planned footage.

The same technology was applied to drill through hard, abrasive rock in a Kuwaiti field. The challenge was to drill a vertical 16-inch hole section through sandstone and limestone. The customised bit needed to endure high abrasiveness and repel the high torque at the bottom. The MegaForce™ drill bit's aggressive cutting structure due to the SelectCutter™ technology kept the elements sharper for longer periods. The bit's multi-level force-balancing technology, along with the optimised dual-row cutting structure, cut a 305 metre-section at an average ROP of 9.8 mph and delivered the longest interval with the fastest ROP in the field. It had to be drilled at a faster ROP than the field best of 6.1 mph. The advanced tungsten carbide matrix material reduces erosion, while the multi-level force balance increases bit stability during drilling. The micro nozzles enhance fluid flow across the cutting structure. The reduced drill bit length of MegaForce™ drill bit increases directional control.

Halliburton has also introduced the CoilComm service to help maximise well production and the success rates of coiled tubing well interventions. The service allows operators to identify which producing zones are benefitting from a stimulation treatment and which are being bypassed by measuring depth correlation and temperature profiles in a single trip down the wellbore. For jetting and underbalanced operations, the CoilComm service allows monitoring of critical downhole data to maintain the coiled tubing and tools within their safe operating envelopes.

With the CoilComm service, depth can be accurately controlled with the casing collar locator, eliminating uncertainty about where to perforate or set a packer. Temperature-related properties such as acid corrosion rates and chemical effectiveness can be maintained within optimum efficiency ranges through real-time downhole monitoring.

The matrix body of MegaForce™ drill bit is designed to stay sharper longer, providing more footage at higher ROPs

Schlumberger launches new coiled tubing system

SCHLUMBERGER HAS LAUNCHED ACTive OptiFIRE coiled tubing real-time selective perforating and activation system, which can be repeated at different precise depths with positive indication of each firing and hydrostatic pressure control, all in a single run, saving time and operational costs.

Sameh Hanna, president of Well Intervention, Schlumberger, said, "Operators currently have no method for perforating multiple non-contiguous zones when deploying guns on coiled tubing without requiring multiple runs or using a CT logging reel. The ACTive OptiFIRE system facilitates efficient operations with fibre-optic real-time telemetry for depth correlation and selective activation and confirmation." This new technology does not require a ball drop, pressure pulse system or fluids to detonate for reduced risks during perforating. It can be used in low pressure wells or unconsolidated reservoirs.

During lab testing, the ACTive OptiFIRE system successfully actuated more than 40 simulated detonators at the full temperature rating of 175ºC

CSI unveils in-situ degassing system for gas plants

CONTROLS SOUTHEAST, INCORPORATED (CSI), has announced the launch of its new ICOn™ Degassing System. Its the first in-situ degassing system designed for refineries and gas plants and dramatically reduces the residual hydrogen sulfide in the liquid sulfur prior to storage or transport and without additional air, pressure, rotating equipment, or waste recovery requirements.

"ICOn is a major step forward for our organisation and the industry in treating hydrogen sulfide (H_2S) within the Claus process and upstream of the sulfur pit," said Jackson Roper, executive vice-president at CSI/AMETEK. "Operators struggling with the maintenance and cost limitations of existing technologies will find ICOn very beneficial for both retrofit and green-field applications."

Within plants and refineries, the Sulfur Recovery Unit (SRU) converts hydrogen sulfide into elemental sulfur and water via the modified Claus process. The ICOn degassing process works within the SRU to optimise the Claus process without the need of additional air, pressure, ejector or rotating equipment. ICOn is the first in-situ degassing process to remove the residual H_2S from the elemental sulfur before storage, greatly reducing the risk to onsite workers and environmental exposure.

Project Databank

Compiled by Data Media Systems

OIL, GAS AND PETROCHEMICALS PROJECTS - OMAN

Project	Facility	Budget ($ US	City	Status
BP - Block 61 - Khazzan and Makarem Gas Fields Development	Gas Field Development	24,000,000,000	Oman	EPC ITB
BP - Block 61 - Khazzan Gas Fields Development - Phase 1 - Overview	Gas Field Development	15,000,000,000	Al Dahirah	Engineering & Procurement
BP - Block 61 - Khazzan Gas Fields Development - Phase 1 - Package 1	Gas Field Development	1,500,000,000	Al Dahirah	Construction
BP - Block 61 - Khazzan Gas Fields Development - Phase 1 - Package 1 - Central Processing Facility	Gas Processing	1,200,000,000	Al Dahirah	Construction
BP - Block 61 - Khazzan Gas Fields Development - Phase 1 - Package 2	Gas Field Development	700,000,000	Al Dahirah	EPC ITB
Buzwair Industrial Gases Factories - Cryogenic Gas Separation Plant	Oxygen	300,000,000	Sur	On Hold
Caustic Soda and Ethylene Dichloride (EDC) complex	Caustic Soda	500,000,000	Salalah	On Hold
Circle Oil Oman - Block 49 & 52 Oilfield Development	Oil & Gas Field	40,000,000	Oman	Engineering & Procurement
DRPIC - Duqm Refinery & Petrochemical Complex	Refinery	6,000,000,000	Duqm	FEED
DRPIC - Duqm Refinery & Petrochemical Complex - Petrochemical Complex	Aromatics	4,500,000,000	Duqm	EPC ITB
DRPIC - Duqm Refinery - Ras Markaz Crude Oil Terminal Pipeline	Oil	250,000,000	Duqm	FEED
MOG - Block 18 Offshore Exploration and Production	Exploration	30,000,000	Batinah	EPC ITB
MOG - Block 41 Offshore Exploration and Production	Gas Exploration	133,000,000	Northern Oman	Engineering & Procurement
MOG - Block 48 Onshore Exploration and Production	Exploration	30,000,000	Al Dahirah	EPC ITB
MOG - Block 51 Onshore Exploration and Production	Exploration	30,000,000	Northern Oman	EPC ITB
MOG - Block 54 Onshore Exploration and Production	Exploration	50,000,000	Al Wusta	EPC ITB
MOG - Block 55 Onshore Exploration and Production	Exploration	45,000,000	Al Wusta	Engineering & Procurement
Oman Gas Company - Murayrat PLS Upgrade	Gas Processing	100,000,000	Adam Ad Dakhliya	EPC ITB
Oman Gas Company - Muscat Gas Network	Gas Network	100,000,000	Muscat	FEED ITB
Oman Gas Company - Oman - Iran Subsea Natural Gas Pipeline	Gas Pipeline	600,000,000	Muscat	Feasibility Study
Oman Gas Company - Saih Nihayda to Duqm Special Economic Zone Gas Pipeline	Gas	250,000,000	Duqm	EPC ITB
Oman Gas Company - Salalah Loopline	Gas Pipeline	90,000,000	Salalah	EPC ITB
Oman Gas Company - Salalah LPG Extraction	Liquefied Petroleum Gas (LPG)	100,000,000	Salalah	FEED
Oman Oil Company - Acetic Acid Manufacturing Plant	Acetic Acid	600,000,000	Duqm	Feasibility Study
OMPET - Sohar PTA/ PET	Purified Terephthalic Acid (PTA)	850,000,000	Sohar	EPC ITB
OOCEP - Block 60 Concession - Onshore	Oil & Gas Field	1,100,000,000	Oman	Engineering & Procurement
Orpic - Flare Gas Recovery System		40,000,000	Sohar	FEED ITB
Orpic - Liwa Plastics Project (LPP) - NGL Extraction Units	Natural Gas Liquefaction (NGL)	800,000,000	Sohar	EPC ITB
Orpic - Liwa Plastics Project (LPP) - Overview	Polyethylene	3,600,000,000	Sohar	EPC ITB
Orpic - Liwa Plastics Project (LPP) - Polyethylene and Polypropylene Units	Polyethylene	800,000,000	Sohar	EPC ITB
Orpic - Liwa Plastics Project (LPP) - Steam Cracker	Ethylene	900,000,000	Sohar	EPC ITB
ORPIC - Muscat-Sohar Product Pipeline (MSPP)	Oil	320,000,000	Muscat	Engineering & Procurement
ORPIC - Sohar Integrated Petrochemical Complex	Petrochemical Complex	1,800,000,000	Sohar	FEED
ORPIC - Sohar Refinery Improvement Project (SRIP)	Refinery	1,500,000,000	Sohar	Construction
OTTCO - Main Line Oil - Ras Markaz Crude Oil Terminal Pipeline	Oil	300,000,000	Duqm	FEED
OTTCO - Ras Markaz Crude Oil Park - Crude Storage Facility	Oil Storage Tanks	80,000,000	Duqm	FEED
OTTCO - Ras Markaz Crude Oil Park - Export Terminal	Export Terminal	400,000,000	Duqm	FEED
PDO - Al Noor and Sakhiya Fields Enhanced Oil Recovery (EOR)	Enhanced Oil Recovery (EOR)	47,000,000	Various	PMC
PDO - Amal Steam Phase 1C Surface Facilities	Gas Field Development	80,000,000	Amal Oilfield	Design
PDO - Budour Gas Field Development	Oil Field Development	3,000,000,000	Salalah	FEED
PDO - Carbon Steel pipeline from Barik to BVS-8	Gas Pipeline	50,000,000	Barik	Engineering & Procurement
PDO - Gas Operators Processing Plant (GOPP)	FPF (Field Processing Facility)	70,000,000	Various	FEED
PDO - Ghaba North Gas Field Re-Development	Gas Field Development	500,000,000	Northern Oman	EPC ITB
PDO - Lekhwair DME Pilot Project	Enhanced Oil Recovery (EOR)	25,000,000	Lekhwair	FEED
PDO - Nimr G and Karim West Water Flooding Project	Water Injection	100,000,000	Nimr	Construction
PDO - Rabab-Harweel Integrated Plant (RHIP)	Gas Processing	3,000,000,000	Harweel	Engineering & Procurement
PDO - Saih Nihayda Condensate Stabilization Plant	Gas Treatment Plant	100,000,000	Saih Nihayda	Construction
PDO - Saih Rawl Depletion Compression Phase II	Gas Processing	250,000,000	Saih Rawl	Engineering & Procurement
PDO - SRCPP & SNGP Condensate Recovery Maximisation	Gas Processing	300,000,000	Adam Ad Dakhliya	Engineering & Procurement
PDO - Yibal Depletion Compression - Phase 3	Gas Processing	300,000,000	Yibal	Engineering & Procurement
PDO - Yibal Khuff Sudair Field Development	Oil Field Development	3,000,000,000	Northern Oman	FEED
PDO - Zauliah Gas Plant Project	Gas Processing	110,000,000	Al Wusta	Construction
RAK - Block 8 Oil & Gas Field Development	Gas Field	45,000,000	West Bukha	Construction
SEZAD - Duqm Liquid Jetty	Export Terminal	200,000,000	Duqm	FEED
Takamul Investment - Metaxylene/Purified Isophthalic Acid Plant	Purified Terephthalic Acid (PTA)	500,000,000	Sohar	FEED
Takamul Investment - Salalah Ammonia Plant (Luban)	Ammonia	700,000,000	Salalah	FEED

Project Databank

Compiled by Data Media Systems

Project Focus

Compiled by Data Media Systems

Project Summary

Project Name	OMPET - Sohar PTA/ PET
Name of Client	Oman International Petrochemical Industry Company LLC (OMPET)
Budget ($ US)	850,000,000
Facility Type	Purified Terephthalic Acid (PTA)
Status	EPC ITB
Start Date	Q4-2012
End Date	Q4-2017
FEED / PMC	WorleyParsons
Award Date	Q2-2015

Project Background

OMPET plans to build 1.1 million tonnes PTA and 500,000 tonnes of polyethylene terephthalate (PET) per annum plant. The project will be executed in two phases. Feedstock will be supplied by the Sohar aromatics complex owned by Oman Refineries and Petroleum Industries Company (ORPIC). Sohar port will be used for import of plant equipment and other raw materials.

Project Status

02 Mar 2015	OMPET is targeting financial close on its PTA/PET complex by 30 June 2015. Construction work is scheduled to start before the end of 2015.
02 Mar 2015	Technology licence agreements have already been signed with Uhde Inventa-Fischer (UIF) for PET proprietary technology, and with BP for the PTA production know-how.
08 Feb 2015	The EPC-ITB was released. OMPET plans to award the EPC contract by June 2015.
22 Dec 2014	An invitation to prequalify for the EPC contract was issued.
30 Oct 2014	The FEED for the PTA and PET plants, and the utilities and offsite works have been completed.
28 Oct 2014	The FEED stage is almost complete. The ITB for the EPC contract is being prepared in order to be released in early 2015.
30 Mar 2014	WorleyParsons was awarded the PMC contract. WorleyParsons will also do the FEED design for the utilities & off sites.
23 Jun 2013	Majis signed a MoU with the client, Oman International Petrochemical Industry Company LLC (OMPET) (under formation), to provide them with 30,500 m3/day of industrial water for the project.
14 May 2013	LG Corp. has acquired 30 per cent of shares in the Oman International Petrochemical Industry Company LLC. LG Corp bought the stake as a part of a strategy to secure supply for project.

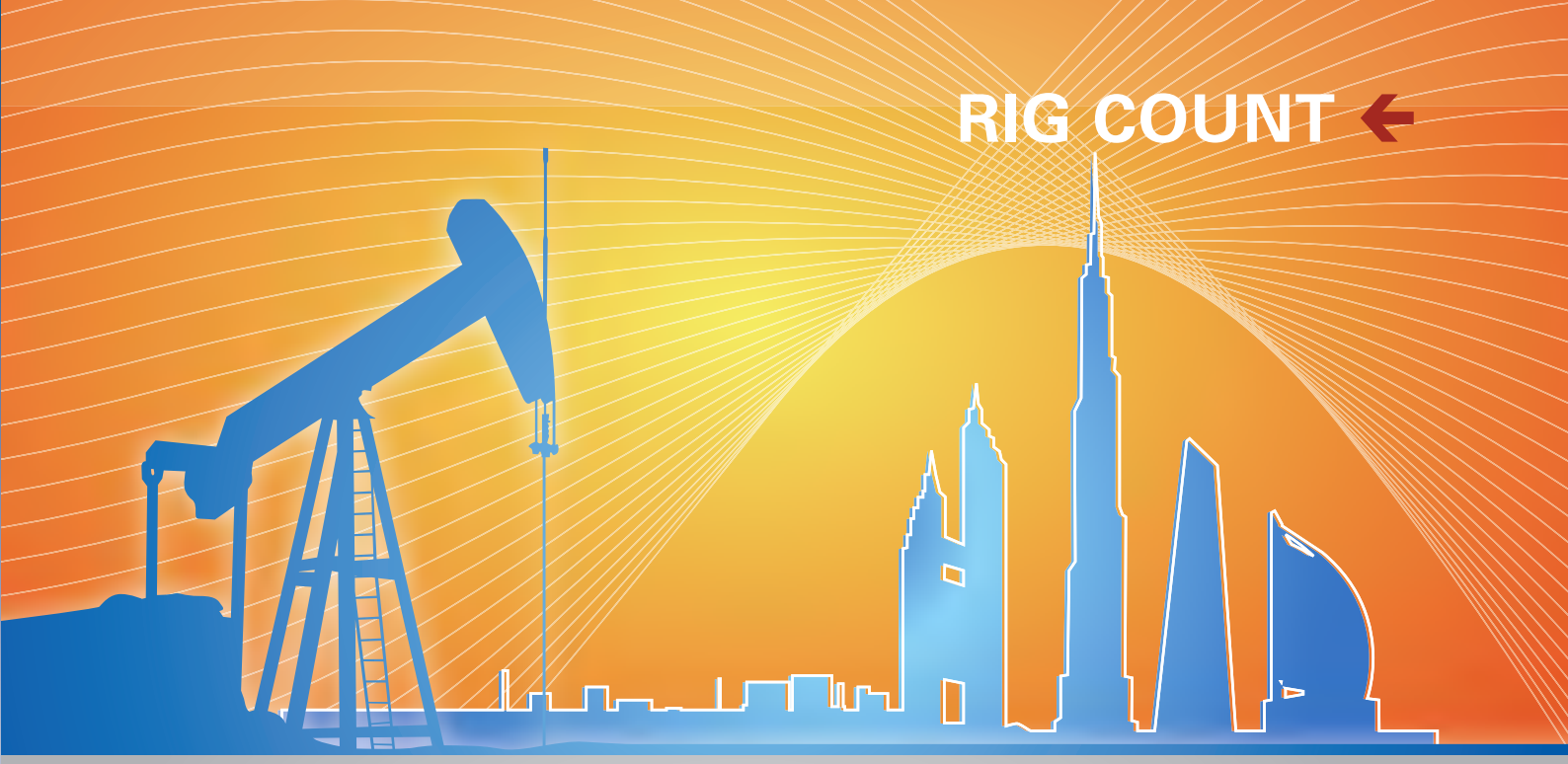
Project Schedules

4Q-2012	FEED	**2Q-2015**	Engineering & Procurement
1Q-2014	PMC	**1Q-2016**	Construction
2Q-2015	EPC ITB	**4Q-2017**	Completed

Project Finance

The client is a JV of:

- Oman Oil Company (OOC) - 50%
- LG International (LGI) - 30%
- Takamul Investment Co - 20%



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	26	10	36	1	25	10	35	25	11	36
DUBAI	0	2	2	0	0	2	2	0	2	2
IRAQ	57	0	57	-3	60	0	60	61	0	61
JORDAN	0	0	0	0	0	0	0	0	0	0
KUWAIT	51	0	51	4	48	0	48	45	0	45
OMAN	63	0	63	2	61	0	61	57	0	57
PAKISTAN	23	0	23	1	22	0	22	19	0	19
QATAR	3	7	10	1	2	7	9	2	7	9
SAUDI ARABIA	100	24	124	5	101	18	119	97	18	115
SUDAN	0	0	0	0	0	0	0	0	0	0
SYRIA	0	0	0	0	0	0	0	0	0	0
YEMEN	2	0	2	1	3	0	3	3	0	3
TOTAL	325	43	368	12	322	37	359	309	38	347
North Africa										
ALGERIA	54	0	54	7	47	0	47	49	0	49
EGYPT	39	4	43	-6	46	5	49	46	6	52
LIBYA	3	3	6	0	3	3	6	4	3	7
TUNISIA	1	0	1	-1	2	0	2	3	0	3
TOTAL	97	7	104	0	98	8	106	102	9	111

Source: Baker Hughes

في نظام واحد في الوقت الفعلي. فبمجرد أن تصبح الأرقام أمامك، لن يكون من الصعب تحديد كيفية إجراء العمليات على نحو أكثر كفاءة. وبالطبع إذا لم تتوفر المعلومات في الوقت الفعلي، فإن ما تفكر في حدوثه سيكون قد حدث بالفعل، وبالتالي لن تستطيع القيام بأي شيء حياله. ولهذا فمن المهم جداً الحصول على المعلومات من المصدر والإبلاغ بها أثناء حدوث الأمر.

التراسل الفوري: إن القصص المتواترة بشأن العمال الذين يتسكعون ولا يفعلون شيئًا حتى قدوم أصحاب العمل، أمرٌ شائعٌ في قطاع النفط والغاز. ورغم أنه من الصعب التخيل في عالم التراسل الفوري، فقد لا تتوفر شبكات بيانات في المواقع النائية، أو تحظى بنفس القدر من الثقة الذي تحظى به في المناطق الحضرية. قد تكون بعض الاستثمارات مطلوبة لضمان بقاء العاملين على اتصال مستمر. فليس من الصعب الاتصال عبر محطة قمر صناعي احتياطية، على سبيل المثال، وتوزيعها على الأجهزة المحمولة.

بوابات المورّدين على الإنترنت: ليس معنى قيام شركات مختلفة بالمهمة أنه لا يمكنها تبادل المعلومات والتعاون معا. فالشركات المنتجة للنفط والغاز يمكنها تنفيذ بوابات دخول المورّدين للإنترنت بحيث يتسنى لشركات الخدمات الاطلاع على جميع المعلومات التي تحتاجها للقيام بالمهمة بكفاءة، والتنسيق مع الموردين الآخرين. كما يمكن للموردين أيضا الإبلاغ بالمهمة على الفور عبر التطبيقات المتنقلة، بحيث يتسنى للشركة المنتجة متابعة ورؤية الأنشطة في الوقت الفعلي.

التطبيقات المتنقلة: إن عدم امتلاك الكثير من العاملين في القطاع خبرة التعامل مع جهاز الكمبيوتر، لا يعني أنه لا يمكنهم الاستفادة من تقنية المعلومات. فبفضل البرامج التطبيقية بالمؤسسات الحديثة، أصبح الآن من السهل الحصول على المعلومات والإبلاغ بها مرة أخرى عبر التطبيقات المتنقلة التي تعمل على الهاتف المحمول أو جهاز الكمبيوتر اللوحي أو جهاز التابلت. ولاشك أن حث العاملين على استخدامها قد يمثل تحدياً أكبر. فقد تحتاج الشركات إلى التفاعل عن كثب مع القوى العاملة لديها لجعل

أصبح الآن من السهل الحصول على المعلومات والإخبار بها عبر تطبيقات المحمول

التطبيقات متناسقة وسهلة الاستخدام، مما يمنحها المعلومات المناسبة لكل مهمة، على سبيل المثال، للتأكد من تطبيق النظم الجديدة بنجاح.

لوحات المعلومات التنفيذية: بالرغم من أن المنتجين ومزودي الخدمات يدركون وجود جوانب قصور في عمليات التشغيل لديهم، فأن الكثير منهم يسعى جاهدا، في الوقت الحالي، لقياسها كميا وتحديد وقت حدوثها بالتحديد. حيث إن وضع مقاييس بسيطة وتنبيهات بشأن الأداء والتكلفة والامتثال، ومراقبتها في الوقت الفعلي عبر لوحات معلومات بيانية يمكن للمديرين المتحملين للمسئوولية الاطلاع عليها، يمثل وسيلة رائعة للبدء.

مراقبة الامتثال: هذا مجال أساسي يمكن لنظم المعلومات المساهمة من خلاله في تحقيق الاستدامة على المدى البعيد في قطاع النفط والغاز. فإن خلق تدفق سلس للمعلومات بين الأطراف المعنية، مثل المُلاّك والحكومة، يمثل أداة قيّمة لإرساء الثقة والحفاظ عليها. وهذا في المقابل يقلل من احتمالية فرض متطلبات امتثال أكثر صرامة وشاقة.

ونظم معلومات الشركات يمكنها أيضا أتمتة عملية الإبلاغ وإدارة عمليات الاتصال مع المجموعات المختلفة بهدف خفض تكاليف الامتثال.

بالرغم من الزخم القوي للقطاع، فإن عام ٢٠١٥ ما زال يمثل عاما صعبا للغاية. غير أنه يمثل أيضا فرصة رائعة للشركات التي لديها رغبة في الاستثمار في قدراتها وكذلك في مستقبل القطاع.

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تيســـير ســلســـلة الـقيمـــة

الشركات التي يمكنها إيجاد طرق للعمل على نحوٍ أسرع وأكثر فعالية من حيث التكلفة، ستكون هي الباقية على قيد الحياة في ظل السيناريو الحالي لانخفاض أسعار النفط. علما بأن نظم تكنولوجيا المعلومات تمثل عنصراً اساسياً لتيسير العمليات.

هذا ما يبينه في هذا المقال ايان فليمنج، عضو مجلس الإدارة المنتدب بشركة ألانظمة الصناعية والمالية IFS الشرق ألاوسط وأفريقيا وجنوب آسيا.

ايار فليمنج عضو مجلس الإدارة المنتدب بشركة IFS الشرق ألاوسط وأفريقيا وجنوب آسيا

بالرغم من الانخفاضات الحادة في أسعار النفط، مازالت المملكة العربية السعودية، ودول خليجية أخرى، تحافظ على الإنتاج والاستثمار على المدى البعيد. ومع ذلك فالانخفاض في أسعار النفط يعرض هذه الصناعة للعديد من الضغوط من أجل التحكم في التكاليف. فالشركات المتواجدة في هذه المنطقة، والتي نمت في بيئة ترتفع فيها أسعار الطاقة، يتعين عليها آلان العمل بهوامش ربح أقل. وهذا يعني اختبار اقتراحات ألاعمال والاستثمار لتحقيق الاستدامة على المدى البعيد. الأ أن السيئ في ألامر هو أن التغييرات، التي تأخرت إلى حد بعيد، سوف تواجه بلا شك بعض المقاومة الثقافية.

اولا: ثمة مساحة كبيرة لرفع الكفاءات في المشروعات الجارية من خلال إتاحة نظم معلومات أفضل وتنسيق ألانشطة. كما يمكن للشركات أيضا تعزيز الكفاءات في الحفاظ على ألاصول والتحكم في تكاليف الامتثال. لم تكن مثل هذه الإجراءات بالضرورة تمثل أولوية كبيرة لقطاع الطاقة، على ألاقل حتى وقت قريب. فالشركات المستعدة للاستثمار في سلسلة القيمة، والتي تبحث عن طرق للعمل بشكل أسرع وأكثر فعالية من حيث التكلفة، ستتمكن من زيادة هوامش أرباحها. بينما الشركات الأخرى، والكثير منها شركات خدمات تتعاقد من الباطن مع المنتجين الرئيسيين، قد لا تبقى على قيد الحياة لكي تشهد أسعار الطاقة ترتفع مرة أخرى، وهو ألامر الذي قد يستغرق وقتا طويلاً.

وتمثل نظم تكنولوجيا المعلومات، التي تقدم رؤية آنية للمشروعات والصيانة والامتثال، عنصراً رئيسياً لتيسير العمليات عبر سلسلة القيمة. وفي هذا الصدد، يرتكز القطاع على قاعدة منخفضة جداً (في بعض الحالات) مع استثمارات محدودة في التقنيات. ويتمثل جزء من هذه المشكلة في هيكل العمل. ففي هذا المجال، عادة ما يتم العمل في هياكل منفصلة حيث تتواجد وحدات عمل مختلفة وشركات متعاقدة تعمل كل منها بصورة مستقلة. ومشكلة أخرى تتمثل في الثقافة. فبصفتها مورداً متخصصاً في تقديم رؤية مع التحكم في التمويل والعمليات في قطاع النفط والغاز على مستوى العالم، فإن إحدى إضافات القيمة ألاساسية لشركة IFS تتمثل في تكامل المعلومات عبر جميع جوانب ألاعمال.

تبدأ هذه التغييرات بعمليات تحسين التقنية لتحليل مخازن المعلومات التي تجعل من الصعب العمل بكفاءة مثل:

الرؤية في الوقت الفعلي: لا يمكنك تحسين ما لا يمكنك قياسه. إذ يجب أن تكون الأولوية لجمع المعلومات المالية والتشغيلية ودمجها

مفكرة رجال الاعمال

ابريل/نيسان

٢١ - ٢٣ المعرض العربي للنفط والغاز ـ دبي

٢٢ - ٢٥ معرض اربيل للنفط والغاز ـ اربيل

مايو/أيار

٤ - ٧ مؤتمر تكنولوجيا الحقول البحرية - OTC ٢٠١٥ هوستون

١٧ - ١٩ مؤتمر ادارة القدرات في قطاع النفط والغاز أبوظبي

١٩ - ٢١ مؤتمر الشرق ألاوسط لسلامة المعالجة أبوظبي

يونيو/حزيران

١ - ٣ المؤتمر الدولي للتكرير والبتروكيماويات أبوظبي

١ - ٥ المؤتمر الدولي للغاز باريس

٨ - ١٠ مؤتمر النفط العراقي لندن

سبتمبر/أيلول

٨ - ١١ مؤتمر ومعرض حقول أوروبا البحرية أبردين/اسكتلندة

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المحلي. وتتوقع شركة بي بي مضاعفة إنتاجها الحالي من الغاز الطبيعي في السوق المحلي تدريجيا قبل نهاية العقد الحالي بمجرد وصول مشروع غرب دلتا النيل لطاقته الإنتاجية القصوى». وقالت بريتش بتروليوم انه سيتم انتاج الغاز من مناطق امتياز شمال الإسكندرية وامتياز المياه العميقة لغرب البحر المتوسط التي تعمل بها الشركة. وأضافت أنه يمكن اضافة كميات جديدة تتراوح من ٥ إلى ٧ تريليون قدم مكعب من خلال التنقيب المستقبلي . كذلك أعلنت الشركة عن اكتشاف غاز رئيسي آخر في شرق دلتا النيل في شهر مارس/آذار. وصرحت شركة النفط والغاز العملاقة متعددة الجنسيات بأنها تتوقع أن يكون الاكتشاف الذي تحقق في امتياز منطقة شمال دمياط البحرية أعمق بئر يتم حفره في الدولة.

سيتم ضخ الغاز المنتج مباشرة في شبكة الكهرباء الوطنية المصرية

وصرح بوب دادلي، الرئيس التنفيذي لمجموعة بي بي، بقوله: «إن الإمكانات المتوقعة لهذا الامتياز تتجاوز ٥ ترليون قدم مكعب. ولدينا آلان نقطة بداية إيجابية للمشروع الرئيسي المحتمل القادم في مصر بعد مشروع غرب دلتا النيل الخاص بشركة بريتش بتروليوم».

جنرال إليكتريك تستثمر ١٠٠ مليون دولار في السعودية

سوف تستثمر شركة جنرال اليكتريك متعددة الجنسيات ١٠٠ مليون دولار أمريكي في برنامج تحليل برامج وتصنيع جديد في قطاع النفط والغاز في المملكة العربية السعودية. ويضاف الاستثمار الجديد إلى التزام شركة جنرال الكتريك باستثمار مليار دولار أمريكي في المملكة خلال الأعوام الثلاثة الماضية. ووفقا لما ذكرته جنرال اليكتريك، فإن تركيز برنامج تحليل البرامج المتطور سوف ينصب على تطوير تقنيات جديدة ومعززة في قطاعي التنقيب والإنتاج والصناعات التحويلية بهدف رفع الكفاءة وزيادة الإنتاج. وأضافت الشركة: «سيتضمن ذلك حلول البرامج الجديدة وكذلك الجيل التالي من تقنية فوهات آلابار والمضخة الكهربائية الغاطسة (ESP)، والتي من المحتمل أن تغيِّر قواعد اللعبة في مجال الصناعة في كل من المملكة العربية السعودية وفي جميع أنحاء العالم». كما ستتعاون الشركة مع جامعة الملك عبد الله للعلوم والتقنية بشأن اختبار المواد ودراسة الاحتراق. وسوف تدعم النتائج تطوير التوربينات الغازية (HA) بشركة جنرال اليكتريك والتي سيتم تصنيعها في أواخر عام ٢٠١٦. وقال جيفري إيملت، رئيس مجلس إدارة شركة جنرال اليكتريك:«نحن فخورون بالتعاون مع شركائنا لابتكار حلول فعّالة يمكن تطبيقها على مستوى المملكة والعالم بشكل عام. وانطلاقا من إيماننا بحاجة أصحاب المهارات الواعدة إلى امكانات قوية سواء في مجال البرامج أوالتجهيزات، فإننا نلتزم بتوفير هذه القدرات للكوادر السعودية وللمنظومة البيئية لشركائنا، مثل

ستتعاون جنراك الكتريك مع جامعة الملك عبد الله للعلوم بشأن اختبار المواد ودراسة الاحتراق.

أرامكو السعودية والشركة السعودية للكهرباء. وبالإضافة إلى ذلك، فإن برنامج تحليلات البرامج سوف يهدف أيضا إلى تطوير تقنيات مراقبة ومقاومة الصدأ، وذلك بهدف تحسين مقاومة المعدات وسط البيئات المفعمة بالغاز الحمضي لحقول النفط والغاز في المملكة العربية السعودية».

أميك فوستر ويلر تفوز بعقد خدمات تقنية في عُمان

منحت شركة النفط العُمانية للمصافي والصناعات البترولية (أوربك) شركة أميك فوستر ويلر، التي يقع مقرها في المملكة المتحدة، عقد اتفاقية تقديم خدمات تقنية لمصفاة ميناء الفحل، ومصفاة صُحار ومصنع العطريات ومصنع البولي بروبلين.

ووفقا للعقد الذي يمتد لثلاث سنوات، ستقدم الشركة القائمة على إدارة المشروع عملية متخصصة ودعماً هندسياً للتقنية ومعالجة تعزيزات السلامة ودعم برامج الصيانة للمصافي ومصانع الكيماويات. كما تتضمن خدمة مكتب دعم خبيرة لاستكشاف المشكلات بعمليات المصانع وحلها، وتعزيز الإنتاج، وخفض استهلاك الطاقة، وتكاليف المرافق، وتحسين موثوقية المصانع والسلامة والأداء البيئي. وقد صرح روبرتو بينو، رئيس أسواق آسيا والشرق الأوسط وأفريقيا وجنوب أوروبا بشركة أميك فوستر ويلر، قائلاً: هذا العقد يفتح أمامنا الفرص المثيرة في المنطقة. حيث تغطي الاتفاقية مجموعة واسعة من قدراتنا، بما في ذلك زيادة الطاقة القصوى، ونحن نتطلع إلى اظهار امكاناتنا وتقديمها لشركة أوربك.

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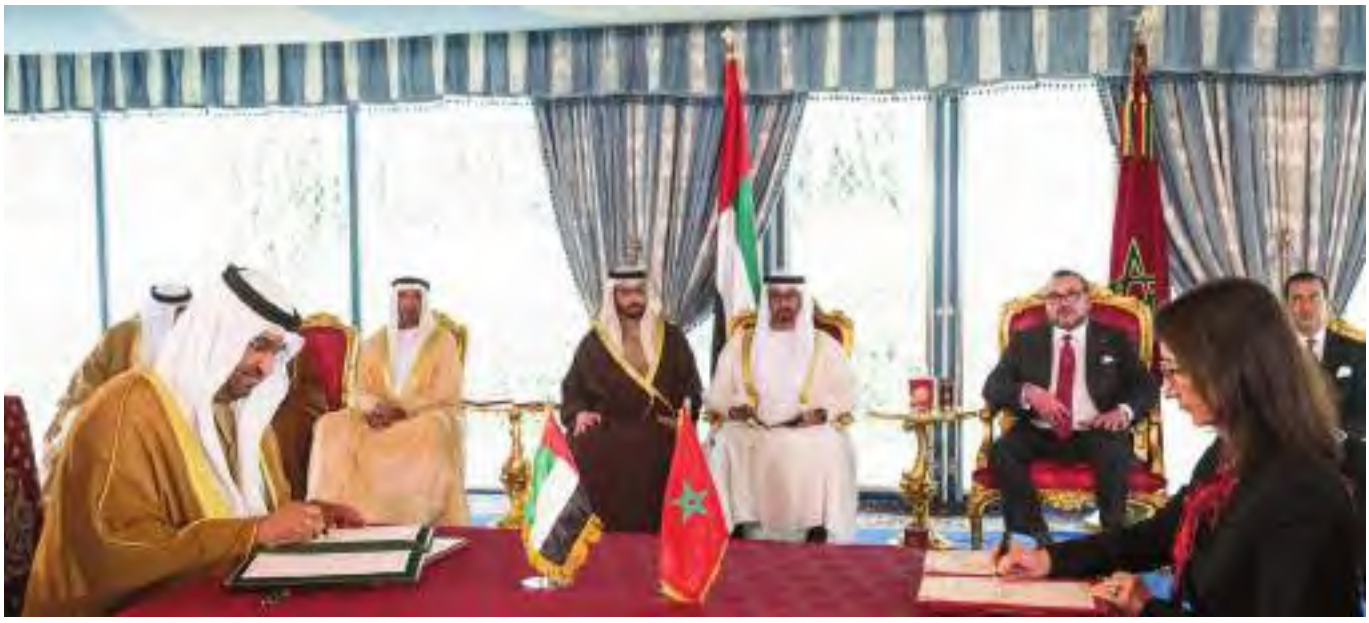

حفل توقيع الاتفاقية

مبادلة للبترول توقع اتفاقية دراسة جيولوجية مع المغرب

قامت شركة مبادلة للبترول بتوقيع اتفاقية مع المكتب الوطني للهيدروكاربورات والمعادن (YMONH) بالمغرب لاجراء تقييم لامكانيات الهيدروكربون بمنطقة بحرية ضخمة مواجهة للساحل المغربي على البحر المتوسط. وفي حضور الشيخ محمد بن زايد آل نهيان، ولي عهد أبو ظبي ونائب القائد الأعلى للقوات المسلحة لدولة الإمارات العربية المتحدة، قام بتوقيع الاتفاقية كل من الدكتور سلطان الجابر الرئيس التنفيذي لقطاع الطاقة بشركة مبادلة، والسيدة أمينة بن خضرا، المدير العام للمكتب الوطني للهيدروكاربورات والمعادن بالمملكة المغربية، وذلك في حفل أقيم في الدار البيضاء. وتعليقًا على هذه الاتفاقية، صرح السيد مصبح الكعبي، الرئيس التنفيذي لشركة «مبادلة للبترول» قائلا: «نحن سعداء بهذه الاتفاقية التي ترسخ متانة العلاقات الوطيدة بين دولة الإمارات العربية المتحدة والمملكة المغربية الشقيقة بهذه الطريقة الملموسة. كما نتطلع حثيثا نحو تمهيد الطريق لمزيد من التعاون مع المكتب الوطني للهيدروكاربورات والمعادن في كل من المزيد من الاستكشاف التفصيلي لمنطقة غرب البحر المتوسط، وأيضا في مشروعات أخرى». وهذه الاتفاقية تمنح شركة مبادلة للبترول ترخيص استكشاف حصرياً لاجراء تقييم جيولوجي تفصيلي لامكانيات الهيدروكربون بمنطقة مخصصة مثل منطقة غرب البحر المتوسط. فهذه المنطقة تبلغ مساحتها ٣,٤٣٣ كيلومتراً مربعاً قبالة الساحل المغربي. وستقدم شركة مبادلة للبترول الى المكتب الوطني للهيدروكاربورات والمعادن نتائج تقييمها عند الانتهاء منه.

بـريتـش بتـرولـيوم تطـور حقـول غـاز غـــرب دلتـا النيـل

أعلنت شركة بريتش بتروليوم أنها تتوقع استثمار ما يقرب من ١٢ مليار دولار أمريكي مع شركائها المحليين في مشروع لتطوير وانتاج الغاز في منطقة غرب دلتا النيل. وباعلانها عن توقيع الصفقة في بداية شهر مارس/آذار، قدرت شركة النفط والغاز الضخمة متعددة الجنسيات احتياطيات الغاز بخمسة ترليون قدم مكعب و٥٥ مليون برميل من المتكثفات في منطقة غرب دلتا النيل، والتي تتوقع أن تنتج بمعدل يصل الى ١,٢ مليار قدم مكعب يوميا.

واذا صدقت ألارقام المتوقعة وكانت دقيقة، سوف يحقق هذا المشروع ما يوازي نسبة ٢٥ في المائة من انتاج الغاز الحالي تقريبا بمصر، والذي سيوفر امداد الطاقة للدولة التي هي في أمس الحاجة اليه. فزيادة الطلب، الى جانب هبوط الإنتاج، قد تسبب عنها حدوث عمليات انقطاع منتظمة للكهرباء خلال السنوات ألاخيرة، ودفع بمصر الى استيراد قدر أكبر من الطاقة أكثر مما تصدره. هذا وقد صرحت شركة بريتش بتروليوم أنها تتوقع أن يبدأ الإنتاج في عام ٢٠١٧. وأضافت أن جميع كميات الغاز التي ستنتجها منطقة غرب دلتا النيل سوف يتم ضخها مباشرة الى الشبكة القومية، مما يساعد في تلبية النمو المتوقع والمستمر للطلب على الطاقة في مصر التي تعتبر أكبر بلدان شمال أفريقيا من حيث عدد السكان.

وقد صرح رئيس شركة بريتش بتروليوم، هشام مكاوي، قائلًا: «يُعد هذا المشروع علامة فارقة وبالغة ألاهمية في تاريخ قطاع الغاز والنفط المصري، حيث يبرز بداية مشروع قومي ضخم لضخ كميات هائلة من الغاز الطبيعي للسوق

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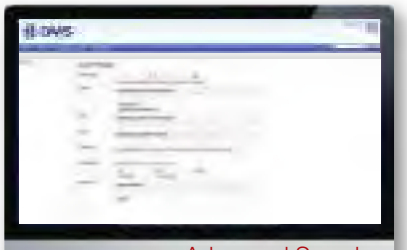

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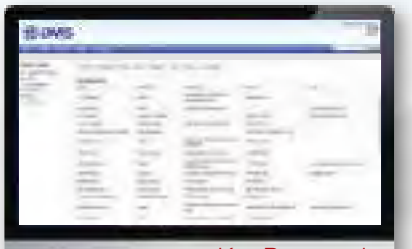
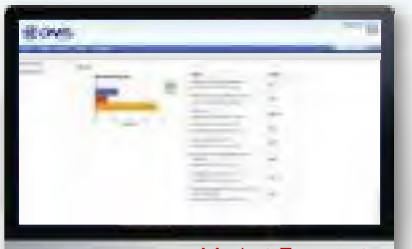


Key Personnel



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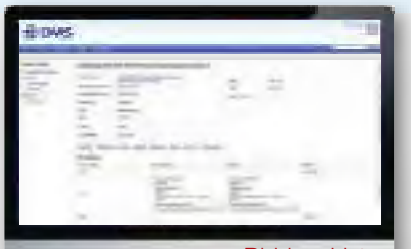

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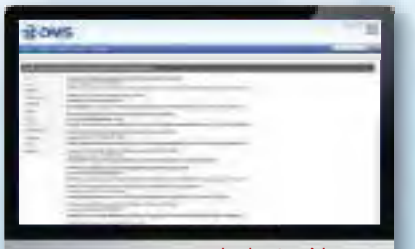

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