

Oil · Gas · Petrochemicals

# Oil Review

## Middle East

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# The year of oil market stabilisation?

- Effective interpretation of seismic data
- Capitalising on technology trends
- Egypt's gas sector draws investment
- Protecting assets with energy insurance
- Building a skilled and competent workforce

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## → Editor's note

Oil market prospects for 2018 are looking distinctly more promising, with the biggest January increase in oil prices for five years. With global economic growth at a healthy level and the OPEC/non-OPEC production agreement continuing to hold, the oil market is steadily returning to balance. The past six months have seen a revival of confidence in the industry, and investment spending is set to recover. See our article on p10 for full analysis. The energy outlook for Egypt is looking particularly positive, as we discuss on p15, and the Egypt Petroleum Show (EGYPS), to be held in February in Cairo, will provide a gateway to the country's energy opportunities (see p18). While GEO 2018, to be held in March in Bahrain, will highlight the latest geoscience developments that could open new frontiers for current oil industry challenges (see p20). Also in this issue, we discuss the benefits of the effective interpretation of seismic data (p32) and the importance of investing in competence development (p22).

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## → Executives' Calendar 2018

FEBRUARY			
12-14	<b>Egypt Petroleum Show</b>	CAIRO	www.egyptps.com
19-21	<b>ME-TECH 2018</b>	DUBAI	www.europetro.com/events
MARCH			
5-8	<b>GEO 2018</b>	MANAMA	www.geo2018.com
6-8	<b>Middle East Electricity (MEE) 2018</b>	DUBAI	www.middleeastelectricity.com
6-7	<b>Saudi Downstream Forum</b>	YANBU	www.saudidownstream.com
11-13	<b>GPCA Research &amp; Innovation Summit</b>	DUBAI	www.gpcaresearch.com
19	<b>Kuwait Health &amp; Safety Forum</b>	KUWAIT	www.hse-forum.com
26-28	<b>Oman Oil &amp; Gas Exhibition &amp; Conference (OGWA)</b>	MUSCAT	www.ogwaexpo.com
26-27	<b>OpEx MENA 2018</b>	MANAMA	www.europetro.com
28-29	<b>Gulf Safety Forum</b>	MANAMA	www.europetro.com
APRIL			
17-18	<b>Kuwait Oil &amp; Gas Summit</b>	KUWAIT	www.cwckuwait.com
17-18	<b>StocExpo Middle East Africa</b>	DUBAI	www.easyfairs.com
17-19	<b>MOC 2018</b>	ALEXANDRIA	www.moc-egypt.com
29-3 May	<b>SOGAT 2018</b>	ABU DHABI	www.sogat.org
30-3 May	<b>OTC 2018</b>	HOUSTON	www.2018.otcnet.org
MAY			
7-8	<b>Homeland Security Middle East</b>	DUBAI	www.gulfhomelandsecurity.com
6-9 May	<b>Iran Int'l Oil, Gas, Refining &amp; Petrochems Exhibition</b>	TEHRAN	www.iran-oilshow.ir/English
29-1 June	<b>Caspian Oil &amp; Gas</b>	BAKU	www.caspianoilgas.az

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

### StocExpo Europe announces all new features for 2018

STOCEXPO EUROPE, THE industry's leading event for the tank terminal industry, returns to Rotterdam, Netherlands, on 20-22 March 2018, boasting more than 200 exhibitors.

Day One will welcome a series of workshops on the show floor from The Engineering Equipment and Materials Users Association (EEMUA). These will cover a range of topics, from updates to the industry standard EEMUA 159, to ways to make tank storage safer through inspection, validation and maintenance techniques.

On Day Two, the Innovation in Storage showcase will be hosted by iTanks, a Netherlands-based knowledge and innovation platform for the tank storage sector. Presentations will cover topics ranging from the Future of Robotics to Sustainability.

Running parallel to this will be a Start-Up Zone, allowing new entrants to the tank storage sector the opportunity to exhibit at a special introductory rate.

For Day Three, the all new 'Engineers of the Future' session specifically designed to solve the problem of the ageing workforce, will enable students from local engineering and technology universities to hear first-hand how a career in tank storage can offer a multitude of benefits.

Alongside these new features, StocExpo will be hosting its widely recognised three-day high level conference programme, including the all new Terminal of the Future stream. This will cover digitalisation, the Internet of Things, drones in action at the terminal and ways to utilise 3D terminal modelling.

The programme will also have a dedicated

session on safety, including ways to reduce incidents at the terminal, improving process safety at the terminal and lessons learnt from the chemical industry.

"Having spent time with our stakeholders understanding what they're looking to achieve by attending StocExpo Europe, we're delighted to be addressing these issues," says Nick Powell, divisional director at Easyfairs. "These include helping to recruit new talent through the Engineers of the Future Zone, providing more information on new technologies via the Innovation Showcase and allowing brand new exhibitors to exhibit on the show floor via the Start-Up Zone."

**For more information and to register to exhibit or attend please visit [www.stocexpo.com](http://www.stocexpo.com).**

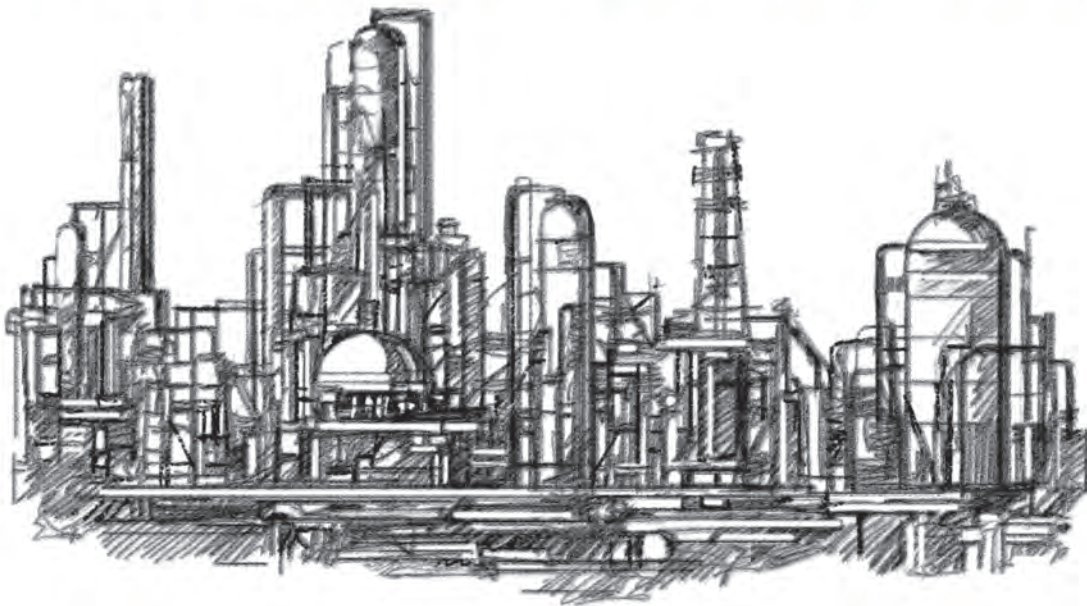




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## Saudi Aramco signs agreement to commercialise Thermal Crude to Chemicals technology

SAUDI ARAMCO, THROUGH its wholly-owned subsidiary Saudi Aramco Technologies, has signed a three-party Joint Development Agreement (JDA) with CB&I, a US-based leading provider of technology and infrastructure for the energy industry, and Chevron Lummus Global (CLG), a joint venture between CB&I and Chevron USA Inc., and a leading process technology licensor.

The JDA will serve to scale up and commercialise Saudi Aramco's Thermal Crude to Chemicals (TC2C™) technology, which enables higher chemicals yield than previously achievable. This innovation bypasses conventional refining steps by employing a proprietary direct conversion process, complementing Saudi Aramco's crude-to-chemicals conventional projects.

Saudi Aramco president and CEO Amin H. Nasser said, "Today's Joint Development Agreement with CB&I and CLG is a technological first which will position Saudi Aramco to maximise the value of each barrel of crude oil it produces in the near future. This is a further opportunity for Saudi Aramco to contribute to the development of a stronger, more diversified Saudi economy, one that creates high value employment opportunities for young Saudis in a further realisation of Vision 2030 objectives."

"It is an honour to partner with Saudi Aramco to develop the most competitive processing solution for crude to chemicals," said Patrick K. Mullen, CB&I's president and CEO. "This is a unique integration of advanced technology processes for the production of high-value petrochemicals from crude oil."

"CLG's hydroprocessing technologies and CB&I's ethylene cracker technology combined with Saudi Aramco's proprietary thermal crude to chemicals technology will provide a strong foundation for this joint development," said Leon de Bruyn, CLG's managing director.

## ADNOC to expand use of CCUS technology to enhance EOR

THE ABU DHABI National Oil Company (ADNOC) is planning to significantly expand its use of Carbon Capture, Use and Storage (CCUS) technology to meet a six-fold increase in the utilisation of CO<sub>2</sub>, for Enhanced Oil Recovery (EOR), over the next 10 years.

To meet the increased demand for CO<sub>2</sub>, which will be injected into Abu Dhabi's maturing oil reservoirs, ADNOC has drawn up ambitious plans to capture the greenhouse gas from its own operations. ADNOC aspires to achieve up to 70 per cent ultimate oil recovery rate from its reservoirs, which is twice as much as the global average, applying conventional recovery methods.

To date, ADNOC has stored approximately 240,000 metric tons of CO<sub>2</sub>, collected from Emirates Steel Industries (ESI), by injecting it into its reservoirs at Rumaitha and Bab oilfields to bolster oil recovery.

Starting in 2021, ADNOC will gradually increase the utilisation of CO<sub>2</sub>, expecting to reach 250 million standard cubic feet per day (MMscfd) by 2027 by capturing additional CO<sub>2</sub> from its gas processing plants and injecting it into different onshore oil fields.

Abdulmunim Saif Al Kindy, director of ADNOC's Upstream Directorate and Chairman of Al Reyadah said, "As we push forward plans to create value by maximising oil recovery over the life time of our fields, we will increasingly utilise a range of Enhanced Oil Recovery technologies, of which carbon capture, use and storage is not only good for the environment but also makes sound business sense.

"Replacing rich gas with CO<sub>2</sub> injection into ADNOC's maturing fields will allow the more productive use of valuable clean-burning natural



Image Credit : Dede Pictor/Fotolia

The CO<sub>2</sub> will be injected into Abu Dhabi's maturing oil reserves

gas, whether for power generation, desalination or as petrochemicals' feedstock. This is a prime example of how clean technology can be integrated with traditional energy to optimise resources and reduce the environmental footprint."

ADNOC was the first National Oil Company to pilot CO<sub>2</sub> injection for EOR in 2009. In 2016 ADNOC joined forces with Masdar to launch Al Reyadah, the first commercial-scale CCUS facility in the Middle East & North Africa (MENA). Al Reyadah is now fully owned by ADNOC and integrated into ADNOC Onshore.

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## Survey stresses benefits of digitalisation for hazardous industries

THE SECOND INSTALMENT of Petrotechnics' Operational Excellence Index (OEI) has revealed companies in hazardous industries are embracing digital transformation as a means of achieving Operational Excellence (OE), but the rapid pace of innovation and fear of change could pose barriers to widespread adoption.

Petrotechnics surveyed oil, gas and petrochemical professionals to gauge industry attitudes around OE and digitalisation. More than 73 per cent of companies surveyed noted that digitalisation – the advancement of Industry 4.0 technologies like the Industrial Internet of Things (IIoT) smart sensors, digital twins and threads, machine learning, artificial intelligence and cloud solutions – is accelerating the ability to deliver sustainable OE.

Enhanced KPIs and metrics (51 per cent) and improved prioritisation and planning (49 per cent) are the two areas where digital transformation is currently creating the biggest impact. Deriving insight from data is a major focus, with 65 per cent of respondents either currently deploying or planning to deploy predictive analytics.

However, fifty-one per cent recognise real challenges to embracing digitalisation including steep learning curves, too much data and disengaged workforces.

Scott Lehmann, VP product management and marketing at Petrotechnics, said, "Newer applications and technologies have the potential to disrupt long-standing models of operation. We know this can make people hesitant, worried and resistant to change. But in reality, digitalisation is meant to enhance, not replace, the human element of decision-making."

More than 83 per cent of organisations agree that digitalisation enables a single, shared view of operational reality – leading to greater levels of transparency, efficiency, and performance. Eighty-one per cent highlight real-time visibility of asset risk as a significant benefit.



Image Credit: artitcom/Adobe Stock

**Companies in hazardous industries are embracing the digital transformation as a means of achieving operational excellence**

Lehmann continues, "According to respondents, technology is having the greatest impact on areas that sit at the heart of a strong OE framework. For example, we know companies are benefiting from digitalisation to support strategic management and the deployment of operational resources."

"The question of OE adoption isn't if, but when. For each organisation, the answer lies in its ability to embrace technology as an enabler of a collaborative operational culture. But for digitalisation to become embedded in organisations, senior leaders must lead from the front and effectively communicate the benefits across the business. More importantly, they must be proactive in demonstrating how digitalisation is part of a wider strategy to ultimately enhance the way individuals and teams operate – dispelling people's fear of change. The only choice left for companies in hazardous industries is whether they're willing to pay the price to wait any longer."

## Record conformity levels reported for OPEC/non-OPEC production adjustments

THE OPEC/NON-OPEC JOINT Ministerial Monitoring Committee (JMMC), which convened in Muscat Oman on 21 January 2018, announced that OPEC and participating non-OPEC countries have achieved a record-breaking conformity level of 129 per cent with their voluntary production adjustments. The monthly average conformity level for the first year of the Declaration of Cooperation was 107 per cent.

Under the Declaration of Cooperation of December 2016, 11 (now 10) non-OPEC oil

producing countries cooperated with the 13 (now 14) OPEC member countries in a concerted effort to accelerate the stabilisation of the global oil market through voluntary adjustments in total production of around 1.8mn bpd for six months. The agreement has since been extended twice, and will now take effect for the entirety of 2018.

HE Khalid A. Al-Falih, Saudi Arabia's Minister of Energy, Industry and Mineral Resources, and chairman of the JMMC said, "Now, from an overhang in the market of around 340mn bbl of

oil we have eliminated more than 22mn bbl, while between June and December last year, floating storage dropped by nearly 50mn bbl. As a result, we are moving ever closer towards a balanced market.

"Improved market stability and strength is apparent, which is underpinning more broadly an improving global economy as well as resulting in a return of investment flows into future supply, crucial for not only meeting growth in oil demand but also offsetting natural declines in several producing regions."



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## New Algeria concession contract

CEPSA, SONATRACH AND Alnaft, the national resources development agency of Algeria, have signed a new concession contract for operating the Rhoude el Krouf (RKF) oilfield, located in the Berkine basin in Algeria.

The new agreement, which is set to last for 25 years, aims to redevelop the oilfield after 19 years, aiming to increase the production of crude and produce LPG for the first time.

The project, with an approximate investment worth US\$1bn, is expected to generate around 1,500 jobs during the peak construction stage.

It includes the drilling of 30 new wells, the construction of a new processing plant, including a LPG recovery unit, and installations for the expedition of LPG.

According to Cepsa, the new treatment facilities will have a daily production capacity of 24,000 bpd of crude and 10,000 bpd of LPG.



The project will produce LPG for the first time

Image Credit : Cepsa

## Iraq agrees gas processing deal

IRAQ HAS AGREED a deal with the USA's Orion Gas Processors to process natural gas extracted at its giant Nahr Bin Omar oilfield, according to a Reuters report.

The agreement, signed in Baghdad by representatives of the oil ministry and the US company, will allow Orion Gas Processors to build facilities to capture the gas from the field located in southern Iraq and to transform it into usable fuels.

Nahr Bin Omar, operated by state-run Basra Oil Co., is producing more than 40,000 bpd of oil and 25mn cubic feet a day of natural gas.

Orion will capture and process 100mn to 150mn cubic feet/day of gas, Oil Minister Jabar al-Luaibi said at the ceremony.

The gas captured will be used to supply power stations and to produce up to 10mn litres of gasoline, equivalent to 32 per cent of Iraq's total imports of the fuel.

He added that gas flaring across Iraq should end by 2021, and that Iraq is looking to conclude contracts with international gas companies to utilise the gas in southern areas. Iraq continues to flare significant amounts of natural gas due to a lack of processing facilities.

*Iraq flares a significant amount of its gas as a result of a lack of processing facilities*

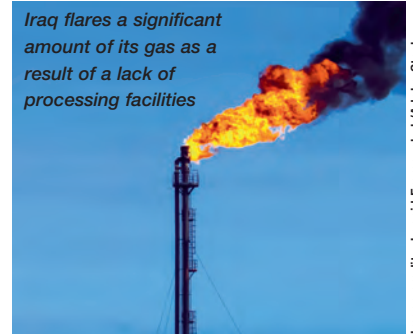


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# The year of oil market stabilisation?

The oil market is returning to balance, leading to a return of confidence and an upturn in investment, says Moin Siddiqui, economist.

**T**HE ANNUAL US\$2 trillion global oil market is steadily returning to balance after three years of persistent supply glut and bloated inventories, as evidenced by improving fundamentals and forward market structure. The past six months have seen a revival of confidence in the industry, with oil futures curve shifting from 'contango' to 'backwardation', i.e. where near-term prices are higher versus those for later delivery – hence making it unprofitable to store crude.

These positive signs are encouraging for oil producers. The OPEC Secretariat noted, "Both the global economic rebound, as well as strong oil market fundamentals, for the first time in so many years are all pointing in the right direction."

Between 2008 and 2015, non-OPEC liquids supply growth was 7.9mn bpd, while OPEC liquids production rose 1.5mn bpd in the same period. Concurrently, a total of 9.4mn bpd growth within seven years led to a global glut – resulting in a hefty 80 per cent decline in the oil price between June 2014 and January 2016. Not surprisingly, the oil industry was in deep recession. 2017 witnessed a spirit of collaboration among producers to stabilise the market.

**Table 1: World oil consumption & production (mn bpd)**

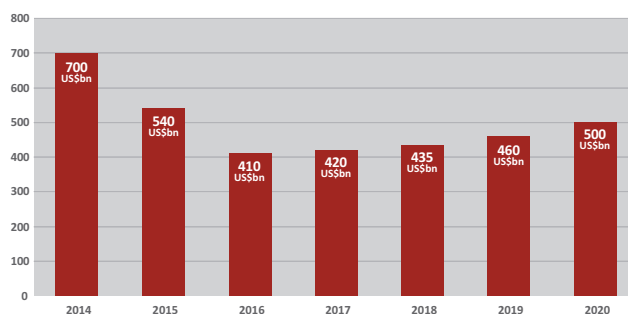
	2015	2016	2017	Proj. 2018
<b>Total petroleum demand</b>	<b>94.0</b>	<b>95.4</b>	<b>96.9</b>	<b>98.5</b>
OECD* (35 countries)	46.4	46.9	47.3	47.6
of which: USA	19.4	19.7	19.8	20.2
Emerging & developing economies	47.6	48.5	49.6	50.9
of which: China	11.1	11.8	12.2	12.6
<b>Total production **</b>	<b>95.4</b>	<b>95.7</b>	<b>96.5</b>	<b>98.0</b>
Non-OPEC supply	57.7	57.0	57.8	58.8
of which: USA	15.0	14.8	15.4	16.7
Russia	10.8	11.2	11.1	11.0
OPEC supply	31.7	32.6	32.4	32.7
of which: Saudi Arabia	10.1	10.4	9.9	
OPEC NGLs + other liquids	6.0	.1	6.3	6.5
<b>Global supply-demand balance</b>	<b>1.4</b>	<b>0.3</b>	<b>-0.4</b>	<b>-0.5</b>
<b>Dated Brent US\$/barrel</b>	<b>52.39</b>	<b>43.73</b>	<b>54.2</b>	<b>58-65</b>
<b>OECD commercial inventories</b>	<b>2,989</b>	<b>2,967</b>	<b>2,942</b>	<b>2,985</b>
Days of forward consumption	64	63	62	

\*Organisation for Economic Cooperation and Development representing industrialised nations

\*\*Crude oil, shale oil, oil sands & natural gas liquids

Sources: OPEC and US Energy Information Administration (EIA)

**Chart 1: Global upstream development capex**



Source: Wood Mackenzie

Analysts see a healthy world economy, led mainly by emerging Asia and a rebound in the US and Euro-area, fuelling oil consumption in 2018. Investment banks Goldman Sachs, JP Morgan, RBC and UBS are among the bulls, citing "solid fundamentals and tightening balances." Supportive factors are continuous demand for industrial and construction fuels; increased gasoline/diesel usage propelled by higher vehicle sales in the USA, China and India; and capacity additions and expansions in the US, China and Middle Eastern petrochemicals sector. For 2018, global oil demand growth estimations vary from 1.5mn bpd (OPEC data) to 1.7mn bpd from US Energy Information Administration (EIA), compared to 2017 growth of 1.4mn bpd.

“Analysts see a healthy world economy fuelling oil consumption in 2018”

## Big factors in price direction

- The 'Declaration of Cooperation', whereby 24 oil producers led by Saudi Arabia and Russia agreed to continue voluntary cuts of 1.8mn bpd until end-2018, could expedite market re-balancing and de-stocking, i.e. inventories drawdown. The main question is the durability of high compliance. OPEC members could abandon their pledges if tighter supplies in H2-2018 lead to price spikes. Russia has signalled its intention to exit when inventories drop to average levels. The OPEC June 2018 meeting will be critical as global crude oversupply narrows. The cartel will probably opt for gradual lifting of output limits to avoid a price slump (again). More recently, Saudi Arabia's Oil Minister Khalid Al-Falih said, "We should not limit our efforts to 2018. We need to be talking about a longer framework for our cooperation." OPEC's share of global 2017 production was around one third – down on previous years.
- Total Organisation for Economic Cooperation and Development (OECD) liquid fuels inventories last October were reportedly 100mn



# The Largest Drydocking Facility in Abu Dhabi



ADSB owns and operates two state-of-the-art drydocking facilities. Each year, an average of 300+ vessels are drydocked and serviced. The new floating drydock in Mina Zayed and the Synchro Lift in Mussafah are fully equipped to meet clients' needs with high quality services and competitive rates.

barrels above the five-year average, down two-thirds on January 2017. Over the coming months, inventories might edge toward the five-year average level with a controlled exit in the third or fourth quarter that keeps stocks near such a level. “Global inventories will have re-balanced by mid-2018, leading to a gradual exit from the cuts,” noted Goldman. Product inventories in the OECD regions are approaching the five-year average.

- The International Energy Agency (IEA) envisages oil demand and non-OPEC production, led by US tight oil, growing this year by roughly the same volume, which “might act as the ceiling for aspirations of higher oil prices.” EIA is forecasting US oil production to average a high of 10.3mn bpd this year. OPEC also predicts the USA to add over 1mn bpd of new supply in 2018. Rising drilling and completion costs could eventually cap US shale expansion. Also, there is a marked shift in tight oil investor sentiment from ‘growth at all costs’ to an emphasis on shareholder returns, cash generation and fiscal discipline. “Shale oil projects, which have been the source of a sizeable share of oil supply growth in the past three years, are going through a period of slowing well productivity, accelerating cost inflation, deceleration of rig count growth and constrained capital market access,” noted the OPEC Secretariat.
- Renewed geopolitical tensions causing supply outages in Libya, Nigeria, Iraq’s Kurdistan region and Venezuela, coupled with possible US sanctions on Iran are bullish for oil prices. The losses from Venezuela, combined with potential outages in Iraq, Libya and Nigeria, could reach 3mn bpd in 2018, according to Citi Bank. Conversely, a bearish factor could be a large correction in the US stock market spreading to sell-offs in commodities by hedge funds and money managers.

**Table 2: The world's major oil producers**

	Output (mn bpd)		Proved 2016 reserves* (bn barrels)	R/P ratio**
	2016	2017		
<b>OPEC (excl. NGLs)</b>				
Saudi Arabia	10.40	9.96	266.5	59.0
Iraq	4.39	4.44	153.0	93.6
Iran	3.51	3.81	158.4	94.1
UAE	2.98	2.91	97.8	65.6
Kuwait	2.85	2.70	101.5	88.0
Venezuela ~	2.15	1.93	300.9	341.1
<b>Total</b>	<b>26.28</b>	<b>25.75</b>	<b>1,078.10</b>	
<b>(%) of OPEC total</b>	80.5	79.4	88.3	
<b>Non-OPEC (incl. NGLs)</b>				
USA	14.86	15.43	48.0	10.6
Russia	11.24	11.10	109.5	26.6
Canada ~	4.59	4.90	171.5	105.1
China	4.87	4.79	25.7	17.5
Brazil	3.24	3.39	12.6	13.3
Mexico	2.49	2.29	8.0	8.9
<b>Total</b>	<b>41.29</b>	<b>42.0</b>	<b>375.3</b>	
<b>(%) of non-OPEC total</b>	71.2	71.5	78.0	

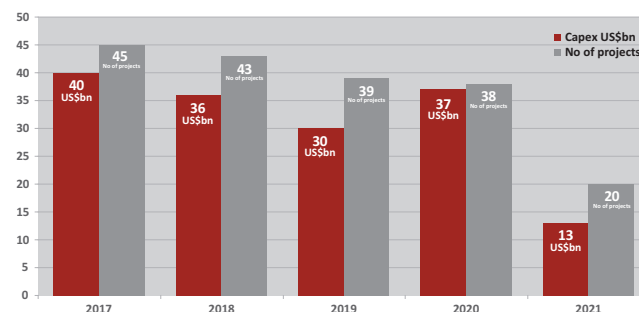
Sources: OPEC, BP, and EIA

\* Proved reserves refer to those quantities that geological and engineering data indicates with reasonable probability can be recovered in the future from known reservoirs under existing economic and operating conditions

\*\*Reserves-to-production ratio - if remaining reserves at the end of any year are divided by production in that year, the result is the length of time that those reserves would last if output were to continue at that rate.

~ In contrast to ‘low-cost’ conventional oil resources in the Middle East, Venezuelan and Canadian reserves comprise extra-heavy crude, bitumen deposits and oil sands (synthetic crude), whose production costs are higher

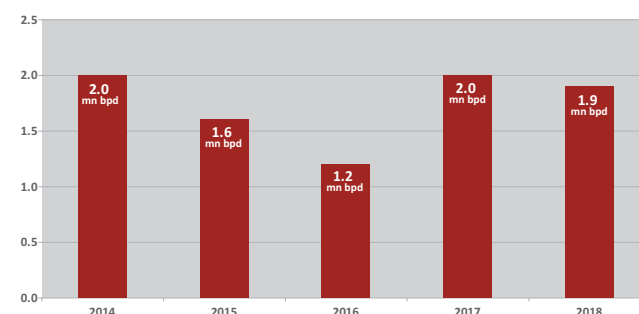
**Chart 2: OPEC upstream investment plans\***



\*These estimates are based on upstream project or field development requirements at field gate, excluding related infrastructure costs. In the medium-term, about 160 projects worth an estimated US\$156bn are being undertaken by OPEC member countries, mostly in the Middle East

Source: OPEC Secretariat

**Chart 3: OPEC surplus production capacity\***



\*Held mainly by Saudi Aramco, whose sustainable capacity stands at 12.5mn bpd

Source: EIA Short-Term Energy Outlook, December 2017

## Investment revival

Hydrocarbons companies are starting the New Year in their best shape since oil prices collapsed. Tom Ellacott, Wood Mackenzie (WoodMac) senior vice-president said, “Now that the belt-tightening is done, companies are looking to deliver profitable growth and build for the future. We also expect to see signs that the investment cycle is starting to turn and the sector has reset itself to operate at lower commodity prices.” Global exploration and production (E&P) spending fell by more than a quarter in both 2015 and 2016 (OPEC data). Exploration activities were worst hit, plunging more than 60 per cent between 2014 and 2017.

In its 2018 Upstream Outlook, WoodMac predicts global capital expenditure (capex) budgets, including for exploration, growing slightly this year to US\$435bn. Twenty-five energy projects are expected to receive final investment decisions (FIDs), up from nine and 20, respectively, in 2016 and 2017, representing a third consecutive annual rise since 2015 lows. Four-fifths of pledged FIDs are greenfield projects, a contrast from previous years. According to Rystad Energy, total capital and exploration spending this year could total US\$510bn, though down steeply from highs of US\$900bn in 2014.

Capex on unconventional and deepwater projects is predicted to increase 15 per cent compared with 2017 levels – the latter’s growth coming after three years of decline. WoodMac expects Iran and the UAE to award 10bn oil equivalent (boe) of discovered resources in 2018. There is also keen interest in South America, where 10bn boe of deepwater resources may be auctioned in Brazil alone. Analysts reckon sustained oil-prices of US\$75-80/barrel are needed to induce companies to develop those higher-breakeven and more technically challenging deep- and ultra-deepwater projects around the globe.

Barclays’ 2018 E&P survey indicates an eight per cent surge in global upstream spending, an uptick from the four per cent growth





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reported in 2017, which was preceded by two years of double-digit declines. “Spending by national oil companies (NOCs) is forecast to be up modestly in 2018, while spending of international oil companies (IOCs) is also up mid-single-digits following 15-20 per cent declines each year for the past three years (2015-17),” Barclays noted. But 2018 offshore spending is forecast to drop another 14 per cent, which should mark the final year of declines as effects of cost reductions for offshore projects could prompt a rebound in project approval leading to growth in 2019 – following an estimated decline of 19 per cent in 2017.

Barclays’ survey once again sees North America driving 2018 global capex growth (up one-fifth) on top of last year’s 35 per cent hike – based on US\$55/bbl West Texas Intermediate. The US rig count is expected to steadily increase throughout 2018 from 900 to 945 rigs and average 925 rigs, compared to the 2017 average of 850. While E&P spending in the Middle East should remain steady and flat in South America, according to Barclays. However, global recovery of upstream spending is unlikely to materially tighten many oilfield service and equipment markets, largely due to over-capacity in the sector.

## Risk aversion

Considering the past two recoveries in capex budgets showed much higher growth in year two (+12 per cent in 2004, +23 per cent in 2011), operators remain cautiously prudent with capital. ‘Survival,’ rather than ‘growth,’ has been a watchword for capital project spending in the upstream hydrocarbons sector. Thus, lower-risk, less expensive projects are being targeted. “Capital allocation was mainly driven by break-even points, stronger re-use of existing equipment and therefore less on expansion projects,” Patrick Brown, partner with A.T. Kearney told Rigzone.

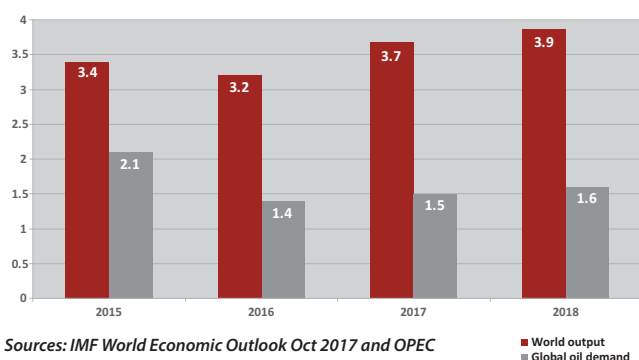
WoodMac broadly agreed, saying, “Optimising the core business, controlling costs and employing digital technology like predictive analytics will all play a part. We expect companies to continue to

**Table 3: Trends in GDP growth (by regions) and oil consumption**

	(annual per cent change)			
	2016	2017	2018	Proj. 2019
<b>World output</b>	<b>3.2</b>	<b>3.7</b>	<b>3.9</b>	<b>3.9</b>
USA	1.5	2.3	2.7	2.5
Euro Area	1.8	2.4	2.2	2.0
Japan	0.9	1.8	1.2	0.9
Emerging & Developing Asia	6.4	6.5	6.5	6.6
of which: China	6.7	6.8	6.6	6.4
Middle East & North Africa	4.9	2.5	3.6	3.5
<b>Global oil demand growth</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	

Sources: IMF World Economic Update January 2018 and OPEC

**Chart 4: Correlation between economic growth and oil demand growth (annual per cent change)**



Sources: IMF World Economic Outlook Oct 2017 and OPEC

**Table 4: Cost of producing a barrel of oil (based on data from March 2016)**

	(US\$)				TOTAL
	Average output cost	Capex	Administrative & transport costs	gross Taxes	
UK	17.36	22.67	4.30	0.0	44.33
Brazil	9.45	16.09	2.80	6.66	35.00
Nigeria	8.81	13.10	2.97	4.11	28.99
Venezuela	7.94	6.66	2.54	10.48	27.62
Canada	11.56	9.69	2.92	2.48	26.65
US shale	5.85	7.56	3.52	6.42	23.35
Norway	4.24	13.76	3.12	0.19	21.31
US non-shale	5.15	7.70	3.11	5.03	20.99
Russia	2.98	5.10	2.69	8.44	19.21
Iraq	2.16	5.03	2.47	0.91	10.57
Iran	1.94	4.48	2.67	0.0	9.09
Saudi Arabia	3.00	3.50	2.49	0.0	8.99

Source: Rystad Energy Ucube

develop high-value, low-cost oil. Building exposure to gas will also be a core strategic objective for most of the larger companies as they transition towards low-carbon portfolios.”

The industry is adjusting to a future where soaring oil prices and more generous capex budgets appear improbable. Upstream projects are being re-engineered to reduce costs and generate cash. The focus has tilted towards brownfield expansion activities rather than riskier long-term greenfield projects.

## Paltry conventional discoveries

The world is burning crude oil at a faster rate than the industry is discovering new reserves. Last year saw the lowest discoveries since the 1940s, totalling below seven billion boe – down sharply from 30bn boe discovered in 2012 (Rystad Energy data). Moreover, the reserve-replacement ratio (RRR) in 2017 reached only one-tenth (for oil and gas combined) – compared to more than half in 2012. RRR measures the volume of oil that is discovered relative to total production in a given year. In essence, the industry needs to discover 100 per cent of what it produces yearly in order to avoid depleting the reserve base.

A colossal US\$1trillion of investments has either been deferred or cancelled since 2015 – of which US\$300bn and US\$700bn, respectively, were earmarked for oil exploration and project developments. Amin Nasser, CEO of Saudi Aramco, explained, “This will have an impact on the future of energy if nothing happens. Investments are necessary because of natural depreciation of fields and normal rise in demand. But it will be decades before renewable energy takes a major share in the energy mix. If the industry doesn’t start investing again, the global oil supply/demand curve will reach a turning point in a couple of years.”

That echoes warnings from IEA that new projects are vital to offset 2.5mn bpd of supply lost annually to depletion, and ongoing effects of “near-record lows” of new conventional oil projects receiving FIDs could be profound. It estimates US\$630bn in global upstream investment is needed just to compensate for depleting volumes at existing fields, thereby keeping future production flat at today’s level. Aramco’s CEO believes while short-term trends indicate an oil surplus, an estimated 30mn bpd of new capacity is needed over the medium-term. “Incremental, short-term and lower capital investment projects are just not going to cut it,” stressed Nasser.

In sum, oil market stability is conducive to encouraging the type of long-cycle investments necessary to prevent future supply deficits. While stock levels in most regions are depleting, soaring oil prices are unlikely. An US\$60/bbl price is a good number for most companies to undertake new investments. ■



# Egypt's gas sector draws new investment

With natural gas production fast on the rise in Egypt's offshore Nile Delta, the energy industry is once again looking towards a brighter future, says Martin Clark.

**W**ITH NATURAL GAS production fast on the rise in Egypt's offshore Nile Delta, the energy industry is once again looking towards a brighter future.

Egypt's gas-fuelled economy is once again starting to take off in the wake of a slew of major offshore discoveries in recent years that are now entering production.

At the end of 2017, Italy's Eni launched first gas from the giant Zohr field. Its estimated 30 trillion cubic feet (tcf) of reserves makes it the biggest gas field in the Mediterranean.

Other large projects have also commenced recently, including the Nooros field, another Eni venture. Then there is BP's offshore Atoll field, north of Port Said, which also delivered first gas at the end of last year.

“ The Zohr field alone is certainly a good news story for Egypt”

Indeed, BP now expects its net production from Egypt's Nile Delta to increase six-fold to more than 300 million barrels of oil equivalent a day (mboed) by 2020, from 50 mboed in 2016. A year ago, the



*Egypt's offshore gas sector is booming*

company was investing more money in Egypt than any other country in the world, BP's chief executive Bob Dudley told a 2017 Cairo conference.

Understandably, officials are once again bullish about the North African state's energy future. Indeed, the Egyptian Ministry of Petroleum and Mineral Resources has reportedly signed an impressive 80-plus exploration and production agreements in the past four years alone, with minimum investment commitments tallying more than US\$15bn. It has sparked interest from all the world's other major international players too, the likes of ExxonMobil, not wanting to miss out on the opportunities.

But this turnaround follows a period of great political and economic uncertainty, in the wake of the ousting of former long-serving president Hosni Mubarak in 2011. Presidential elections planned for March will be a further test of how far Egypt has come; these will be the nation's third elections since the uprising that ended Mubarak's long rule.

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Onshore Egypt also continues to pull in investment

Image credit : Tom Carpenter/Adobe Stock

### The Zohr effect

The Zohr field alone – only discovered in 2015 – is certainly a good news story for Egypt in this often troubled post-Mubarak era. Located in the offshore Shorouk block, about 190 km north of Port Said, Eni's chief executive Claudio Descalzi has said it will “completely transform Egypt's energy landscape”, allowing it to become self-sufficient and to turn from an importer of natural gas into a future exporter. Regaining energy self sufficiency is one of the government's highest priorities.

Egypt's petroleum ministry said in December that the giant Zohr field had begun an initial production of 350 million cubic feet per day, although this is set to increase to around 1 billion cubic feet per day by mid-2018. Eni is the operator of the field, partnering BP and Russia's Rosneft.

Indeed, the Zohr development is central to Egypt's plans to shift away from a dependency on imported fuel. Cairo has been seeking to speed up production from all recently discovered fields, with an eye to halting imports by 2019 and once again achieving energy independence.

It has been a steep learning curve, however, given that the country was signing export deals for its gas in the late nineties and even piping it to arch rival Israel in a controversial contract that ultimately collapsed.

Just a decade or so later, Egypt had all but halted its exports, both pipeline and liquefied natural gas (LNG) – Egypt's two liquefaction plants currently sit idle – and was frantically signing foreign import deals to meet rising energy demand. The predicament fanned the flames of the highly charged political climate at the time of Mubarak's fall from grace.

### Confidence returns

More investment in the nation's upstream sector is expected to continue, and not just in the high profile offshore Mediterranean basin. Earlier this month, petroleum minister Tarek al-Mulla announced plans this year to invite bids for oil and gas exploration in various areas of the Red Sea after finishing preliminary seismic studies. Saudi Arabia is also keen to explore its Red Sea area potential as well, perhaps hinting at another major gas province to come.

Onshore Egypt also continues to pull in investment. Last year, the country signed exploration deals for 16 new fields in the Western Desert area, worth at least US\$81mn in total, with companies including Shell and the US-based Apex International Energy.

With confidence back, this has sparked investments in other areas of Egypt's energy sector too, in related infrastructure, transport and service areas. Most recently, that includes a new wharf for natural gas

and petroleum product tankers on the Gulf of Suez, a project developed by SUMED. The 2.5 km facility will have three berths to receive gas and products carriers. Other facilities, such as storage tanks, loading and offloading facilities, are also being built. SUMED, which is jointly owned by the Egyptian government and various Arab oil exporters, already operates two pipelines from the Red Sea to the Mediterranean.

With heightened investment in upstream exploration and production, this will further accelerate the need for similar infrastructure and services.

### Downstream

Downstream, there are other investments and initiatives underway that highlight Egypt's restored belief in its energy future.

The state-owned Middle East Oil Refinery Company (Midor) is upgrading capacity with aims to increase the company's refining output to 160,000 barrels per day (bpd) from 100,000 bpd. The centrepiece of this is a large investment in its Alexandria refinery, which has been well supported by foreign banks and investors. A trio of international banks – Credit Agricole and BNP Paribas both of France, and Italy's CDP – are providing the funding for the refinery upgrade.

Initial negotiations also took place late last year between Cairo energy chiefs and Saudi Arabian state oil company Saudi Aramco to refine oil in Egypt. Saudi Arabia agreed in 2016 to provide Egypt with 700,000 tonnes of refined oil products a month for five years.

Other foreign investments are being linked to Egypt's poor environmental track record. At the end of 2017, the European Bank for Reconstruction and Development (EBRD) announced a US\$200mn credit to modernise Egypt's gas infrastructure. The loan is to help the Egyptian Natural Gas Holding Company (EGAS) and its subsidiary Egyptian Natural Gas Company (GASCO) to fund the introduction of state-of-the-art technologies to recover waste heat from gas turbines used to drive gas compressors. The recovered heat will be used to produce additional energy, which will drive new electric compressors and replace fuels on-site. The introduction of the new technology will also lead to a reduction of more than 250,000 tonnes of carbon-dioxide equivalent emissions per year.

With upstream production on the rise, new investment pouring in and plenty of support for modernising Egypt's energy infrastructure and technology, it feels as though the good times are on the way back.

It is an exciting time for all involved in Egypt's dynamic oil and gas business. ■





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# Gateway to Egypt's oil and gas opportunities

EGYPS 2018 looks to cement Egypt's strategic position as a vital energy hub.

**R**ETURNING TO CAIRO in its second edition from 12-14 February 2018, the Egypt Petroleum Show (EGYPS) brings together the Egyptian and North African government representatives, key project owners, NOCs and IOCs, international service providers, EPC contractors, consultants and financiers to address the evolving opportunities in the Egyptian and North African energy arena.

Held under the patronage of His Excellency Abdel Fattah El Sisi, President of The Arab Republic of Egypt, and with the support of the Ministry of Petroleum and Mineral Resources, EGYPS 2018 provides the opportunity to gain insights into the upcoming oil and gas opportunities in Egypt and North Africa, from future licensing rounds and project requirements to short and long term strategic plans.

The event will bring together more than 400 regional and international exhibiting companies, 15,000+ trade professionals from across the globe and more than 150 industry expert speakers. NOCs and IOCs taking part include ECHEM, Ganope, EGAS, EGPC, BAPCO, Gasco and NOC Libya, Apache, Edison, Shell, BP, ExxonMobil, ENI, Total, DEA Group and Kuwait Energy,

Taking place at the Egypt International Exhibition Center, the three-day event will include strategic and technical conferences, women in energy sessions, as well as sessions on security and HSE in energy. New for 2018, EGYPS features an enhanced strategic conference agenda with interactive CEO roundtables dedicated to upstream, downstream, gas and LNG and petrochemicals, plus an optional finance and investment briefing dedicated to M&As, JVs, IPOs and project financing.



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“ The 2018 edition comes at a critical time during which we witness the redefinition of Egypt's energy sector”

Keynote speakers include HE Engineer Tarek El Molla, Egypt's Minister of Petroleum and Mineral Resources; HE Mohammad Barkindo, secretary general, OPEC; HE Cesar Abi Khalil, Minister of Energy & Water, Lebanese Republic; HE Jabbar Ali Hussein Al Luiabi, Minister of Oil, Republic of Iraq; as well as global oil and gas business leaders including the CEOs of ENI, BP, Mubadala, EGAS, Hellenic Petroleum, EGPC, NOC Libya, ECHEM, Kuwait Energy, MIDOR and BHGE.

The exhibition, spanning an area of around 20,000 sq m, hosts 12 international country pavilions, four of which are new for 2018, reflecting the growing international interest in the region's oil and gas industry.

HE Engineer Tarek El Molla noted, “EGYPS is well on its way to becoming a global industry lynchpin. The 2018 edition comes at a critical time during which we witness the redefinition of Egypt's energy sector. Egypt is currently accelerating all ongoing projects to bring all resources and discoveries together – and onstream – as fast as possible. We are working to achieve gas self-sufficiency by the end of 2018, and thus resume exports utilising surplus gas domestically. Egypt is steadfast when it comes to realising its ambitious goal of achieving its full petroleum potential by 2021, transforming the country into a regional hub for oil and gas.

“EGYPS is an excellent platform to share our success story and drive it forward, supporting not only Egypt but the advancement of North Africa as we shed light on region-wide opportunities,” HE Engineer El Molla added.



“Egypt’s economic potential is closely tied to its ability to develop a robust energy industry”

“With abundant resources, some of the most competitive production costs worldwide and a government committed to reforming its oil and gas sector, now is the time to explore the opportunities on offer in Egypt,” said Terry Willis, director, Middle East and Africa, the Energy Industries Council (EIC), which is hosting the UK pavilion.

Roman Gavrilin, Russian Promotion Group, said, “It will be the first time we bring the Russian pavilion to this event and there will more than 20 companies from Russia. We see strong interest expressed by Russian manufacturers in the fast growing Egyptian market and North Africa region in general. Russian NOCs are involved in a number of major oil and gas projects in Egypt and we are confident that EGYPS is the best platform to promote Russian companies to regional buyers.”

Eng. Gasser Hanter, VP Egypt and chairman, Shell said, “Egypt’s economic potential is closely tied to its ability to develop a robust energy industry, and the country is now in the golden age of energy possession. The government is working hard and taking steady steps towards enhancing Egypt’s position as an influential player on the

global energy map. Shell is keen on furthering its investments in Egypt; providing an optimistic vision for the Egyptian oil and gas industry towards fulfilling the country’s energy needs.” ■

For further information, see the website at [www.egypt.com](http://www.egypt.com)

## Why Egypt?

- US\$27bn worth of investments across Zohr, North Alexandria and Noras gas fields
- 87 oil and gas discoveries in recent years with more than 4.4bn bbl of proven oil reserves and more than 77 trillion cubic feet of proven gas reserves, attracting investments worth billions of dollars
- Nine refining projects with investments of US\$8.1bn through to 2020, increasing refining capacity to 41 million tonnes
- 76+ new upstream exploration concession agreements signed with major IOCs, to the value of US\$15.3bn
- Approved new gas law, paving the way for further reforms across the gas sector
- Upgrading existing oil and gas infrastructure: gas processing, storage and distribution networks, import and export terminals, LNG facilities
- Access to Gulf of Suez and Alexandria world class refining centres



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# Pushing the technical limits

GEO 2018, the premier showcase of oil and gas exploration technology and services in the Middle East, takes place from 5-8 March 2018 at the Bahrain International Exhibition and Convention Centre.

**H**ELD UNDER THE patronage of the Prime Minister of Bahrain HRH Prince Khalifa bin Salman Al Khalifa, the 13th Middle East Geosciences Conference and Exhibition (GEO 2018) will host more than 3,500 geoscientists and petroleum industry professionals from 50+ countries, who will gather to debate and shape the future of the industry, build skills and network with their peers.

The biannual event, established 24 years ago, is the premier meeting place for the Middle East's petroleum geosciences community, and the largest and most comprehensive geosciences showcase in the region. It incorporates a four-day high-level conference under the theme 'Pushing the Technical Limits: Shaping the Energy Landscape' organised by the world's three largest professional geoscience associations (AAPG, EAGE and SEG), and a parallel three-day exhibition organised by UBM.

GEO 2018 is also supported by an organising committee of NOCs, IOCs and major service providers.

The technical programme covers many disciplines of upstream activities including reservoir characterisation, seismic acquisition, processing and interpretation, borehole seismic, basin modelling and petroleum system, petrophysics, exploration drilling, unconventional resources, integrated case studies as well as data management and information technology, with emphasis on advances in technology and their application in the Middle East.

A combination of local and international expertise ensures that the programme is highly technical, with leading edge science brought together from around the world mixed with local knowledge from the region's leading geoscientists.

"The GEO conference and exhibition is always considered to be an inspirational gathering that industry professionals look forward to, to enhance the Middle East's hydrocarbon development. We are confident that GEO 2018 will provide wide opportunities



Stand discussions at GEO 2016

“GEO 2018 will open new frontiers for current oil industry challenges”

to address current challenges and indicate upcoming prospects,” said Ahmad Al Eidan, GEO 2018 general chair and deputy CEO - Drilling & Technology Directorate, Kuwait Oil Company.

“The conference will host a number of executive sessions led by technical influencers, and we encourage professionals to take this opportunity to share valuable ideas and knowledge. It will focus on geological studies, reservoir challenges and the role of geoscience in the environment, safety, risk management and innovation.”

“GEO 2018 will be an extraordinary platform which will provide all participants with unlimited benefits and will open new frontiers for current oil industry challenges,” he added.

A three-day exhibition of oil and gas products and services will run parallel to the conference from 6 - 8 March. Set to feature more than 120 exhibitors from 20 countries, the exhibition covers all areas of the oil and gas exploration industry, enabling participants to source new products and services that will take their E&P programmes to the next level.

Social events, workshops, field trips and networking opportunities complete the programme, offering opportunities for participants to develop business relationships and strategies for their operations. ■

For further information see the website at [www.geo2018.com](http://www.geo2018.com).



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# Building a skilled and competent workforce

Susan Fraser, global head of training and development at Sparrows Group, discusses the importance of investing in competency-based training and development programmes in the Middle East.

**A** GLOBAL PROVIDER OF engineered products and services to the energy industry, Aberdeen-based Sparrows Group specialises in delivering structured and bespoke solutions in the safety critical areas of lifting and mechanical handling, cable and pipe lay and fluid power.

Fraser explains that as an engineering company, with skilled technical personnel who can be deployed across the globe, Sparrows provides the entire package from the design stage to implementation.

For such safety critical operations, training is key. Having worked in the offshore industry since 1975, when the North Sea oil industry was in its infancy, Sparrows has unrivalled experience in offshore lifting operations and has recently diversified into the renewables and onshore industrial markets. The company has its main training operation at its base in Aberdeen, which is a centre of excellence, and a number of training centres worldwide, including a small but growing training facility at its operation in Abu Dhabi. Sparrows offers structured training and development programmes leading to competence assessment on a range of lifting and handling operations, from crane operation and inspection to rigging, rope access, lifting engineering and boom mechanics. These are mainly staged programmes involving basic training, on the job experience and competence assessment. There are, for example, three levels for crane operator and rigger training, or four including reassessment for continuous competence.

"The training centre in Aberdeen was originally designed to develop our own workforce, and we were in fact one of the first companies to focus on competence, developing our global offshore crane operator training and competence standard in the early 1970s and introducing competence standards for other trades in the mid-1990s, so we have been ahead of the curve in this respect," says Fraser, who joined the company back in 1978 and is responsible for the company's extensive global training and competence operation.



*Sparrows is a world leader in offshore lifting and crane engineering services. (Image credit: Sparrows)*

"The message we are trying to get over is that investing in training results in lowering risk. If you invest in training and competency development you get that investment back, because you lower the volume of incidents and the operational risks." In the Middle East this has traditionally been quite a hard sell, she says, as competition is fierce and selection has not always been based on quality. "This position is certainly changing, but there still isn't the same emphasis on competence you would get in the North Sea."

However there are encouraging developments. "We do receive support from a number of organisations including ADMA-OPCO which has created its own Lifting Standard CP113 drawing together best practice from available international lifting standards. Sparrows is one of their approved

lifting technical training providers, guaranteeing that the delivery structure and examination of theoretical and practical capability aligns with client requirement."

Sparrows is the only company in the world to offer onshore coaching in a real offshore pedestal crane and a crane simulator. At the company's centre of excellence in Aberdeen, a pedestal crane is mounted over a flooded quarry, representing the sea, with a pontoon representing a supply vessel. This set-up provides a hands-on experience and enables trainee operators to practice and build their skills in the offloading and backloading of supply vessels.

In other training locations, including its Abu Dhabi facility, the company combines training on a mobile crane and a simulator, and can also offer bespoke training at the client's



location, whether onshore or offshore. "It is important that we accommodate what the client is looking for," says Fraser.

Simulators are great training aids, complementing rather than replacing training on a real crane, she comments. "That's how we've developed people and continue to develop people." With the simulator, variables such as wind speed and obstacles in the way can be adjusted to provide a variety of training scenarios. "The key benefit of the simulator is that you can simulate emergency situations, so you can drop a load or shut off the crane engine and the operator has to react. So it is a magnificent tool from a safety perspective to ensure someone can react quickly in emergency situations and understand what they are doing. We have crane operators going through the cycle every two years to maintain their competence, and the feedback we are getting is that this has helped them think more clearly in a difficult situation."

Fraser stresses the hazardous nature of lifting operations. "From our perspective it's important to train and assess very thoroughly where lifting operations are concerned, as catastrophes can happen; cranes can come off installations or drop loads, for example."

Training a global clientele is not without its challenges. There is often a language barrier to contend with, in which case training can be supported by interpreters. "You have to take care that you are assessing the student's knowledge rather than the interpreter's knowledge – it can be complicated!" says Fraser. However, actions speak louder than words in some cases. "A lot of information can be conveyed and demonstrated on a piece of equipment."

In the Middle East, theory sessions can be adapted and delivered relative to educational attainment; for example a session of theory may have to be broken up into three sessions rather than being delivered in a single session.

"We find that most people can readily adapt their practical skills; they can operate a crane, move a load, understand shackles and so on, but they might not understand the underpinning safety that goes along with that."

"We undertake assignments wherever it is safe for us to go," adds Fraser. "A thorough risk assessment is conducted to ensure our trainers' personal safety, as they may be travelling alone, and our clients work with us

to assure the safety of our personnel. Assignment duration varies considerably depending on content – a series of training programmes delivered onshore may span 28 days or longer whereas competence re-assessments are considerably shorter."

The Middle East is one of the company's main growth areas, along with Africa and the Far East. In October, for example, Sparrows secured two crane contracts with Dubai Petroleum, one for maintenance services and the other for the delivery of rental cranes. "The Middle East is a huge market, onshore as well as offshore," says Fraser. "There is a strong focus on nationalisation and developing local populations, and it is great that skills are being passed on to them."

Sparrows has ongoing work in the Kurdistan region of Iraq, and in Qatar, where it is training a group of an operator's employees in rigging. Key to the company's growth strategy will be the establishment of a presence in Saudi Arabia, where the company has its eyes on the burgeoning construction market. "We are looking at the substantial onshore crane market; the level of construction activity is phenomenal," Fraser comments. ■



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# Protecting people and assets

John Kay, general manager at RedGuard Specialist Services, discusses the company's blast-resistant buildings.

**A** MAJOR EXPLOSION OR blast can occur without warning within oil and gas, refineries and petrochemical facilities or other hazardous environments, as we have recently witnessed at a gas plant in Austria and a refinery in Turkey. A proven defense is therefore required to protect people and assets.

RedGuard Specialist Services is a joint venture company based in Dubai, created between two leading names in the industry: RedGuard from the USA and Specialist Services from Dubai. RedGuard is an industry leader in the blast buildings field, providing proven design, engineering and manufacturing of highly certified and field-tested blast-resistant modular buildings. These can include amenities usually present in a traditional brick and mortar office buildings.

With more than 35 years of experience in the offshore and onshore oil and gas industry, Specialist Services' expertise covers the upstream, mid-stream and downstream sectors in the modular buildings market. Combining these capabilities, RedGuard Specialist Services has the design, engineering, manufacturing and distribution capability to address the needs of customers in the downstream segments of the oil and gas industry in the Middle East, Asia Pacific, Europe, Africa and North America.

"From our manufacturing space of 350,000 square feet in Dubai, we have successfully combined Specialist Services' manufacturing capabilities with RedGuard's engineering and design quality all in one place," explains John Kay, general manager at RedGuard Specialist Services.

In areas where there is a risk of accidental explosions, you need modular buildings of the highest quality to rely on for protecting people, equipment and critical operations. With the highest standards in quality and safety in mind, RedGuard Specialist Services specialises in four key solutions.

First, LeaseFleet is their rental fleet of blast-resistant modular buildings ready for immediate deployment. SafetySuite is then a premier line of customised blast-resistant buildings, which are built to meet clients'



Image credit : RedGuard Specialist Services

One of RedGuard Specialist Services' blast-resistant modular buildings

requirements for everything from control rooms to administration facilities. Focused on government, military and industrial security, CoverSix Shelters are the ultimate solution in blast-resistant and ballistic-resistant modules to keep personnel, equipment and electronics safe and secure at any threat level. And lastly, RedGuard Specialist Services has a dedicated service team, perfectly positioned to satisfy required support demands of customers in all regions, through their teams located in their Dubai, Jubail, Aberdeen, Singapore and Houston facilities.

Kay adds, "RedGuard Specialist Services' blast-resistant modules are specifically designed to maximise safety and are certified to the highest industry standards in blast-resistance. With continuous investment and commitment to innovation, we evolve our blast-resistant modules to ensure they protect people and assets."

RedGuard Specialist Services' blast-resistant modules are engineered to industry-leading safety specifications, where each module adheres to API RP 752 and 753 guidelines and applies a proven, successfully blast-tested design. The company also holds

national and international certifications, which verify that these products meet the highest quality and safety standards. Even their custom made units, which are designed in line with client specific requirements, can be certified by any of the major third party surveyors, such as DNV GL, Lloyd's, USCG, ABS, BV, Genesis Oil and Gas, or others.

To properly assure the quality and safety of their blast-resistant modules, RedGuard conducted a field blast test, where an explosive charge was detonated a set distance from the building being tested. Following the blast, the building's interior, exterior and structure were closely examined to determine any damage. The assessment results proved successfully the quality and safety of these strong and reliable modular buildings.

As Kay concludes, "Anyone can build a modular building and say it can withstand certain challenges, but we have unrivalled engineering and manufacturing capabilities to build modular buildings that are sure to meet and exceed industry standards. This is why our customers trust us and continue to partner with us in many projects." ■



# Protecting assets with energy insurance

Rohan Puranik, underwriting manager, energy at Oman Insurance Company speaks to *Oil Review Middle East* about the important role energy insurance plays in the oil and gas sector.

## What are the main risks that energy companies in the Middle East should insure themselves against?

At the onset, it is interesting to note that the requirement for offshore energy insurance was borne out of the marine market, which could not cover these risks on their terms and conditions. Similarly, the downstream energy insurance was carved out of the property market as the risks were far too complex to have property insurance offer their terms. Hence was fostered a niche for specialised underwriters, offering specific covers to complex energy risks.

There are a wide and varied set of energy companies in the Middle East. As one of the leading local insurers with a well-defined energy risk appetite, we see a large book of business from the region comprising functions such as oil and gas offshore and onshore drilling operations and units, offshore oil and gas construction, onshore oil refineries, onshore petrochemicals and fertilisers, onshore and offshore pipelines and ancillary service providers.

The main risks that are required to be insured against for all of the above are fire, explosion, machinery breakdown, business interruption, third party liability and protection against natural catastrophes, terrorism, and cyber threats. The drilling operations in particular would require coverage for damage due to blowouts in wells, and costs incurred in making wells safe etc.

All of the above covers are offered in various packages that the energy markets offer – and are customised according to each client's requirements.

As mentioned above, terrorism and cyber-attack are a real threat to energy installations,



Rohan Puranik, underwriting manager, energy at Oman Insurance Company

and there are specialised markets that cover terrorism and cyber risks.

## Are security threats (both physical and cyber) posing an increasing risk?

The energy insurance market defines insurable physical risk as one that is sudden, direct and unforeseen, for it to be covered under insurance policies. Physical threats borne out of fire, explosion or catastrophic perils are usually what is covered under any basic energy insurance policy, be it onshore or offshore. However, we enter a new arena of threat when the risk becomes that of

terrorism. As per the T3 wordings in insurance parlance, "Act of terrorism means an act, including the use of force or violence, of any person or group(s) of persons, whether acting alone or on behalf of or in connection with any organisation(s), committed for political, religious or ideological purposes including the intention to influence any government and/or to put the public in fear for such purposes." Onshore terrorism is more often than not excluded from onshore energy policies given these are insured separately into various locally available products. There is however, a provision for terrorism to be covered for offshore assets, ie, oil and gas assets out in the regional or international waters. These assets will usually be offshore drilling units, offshore platforms, barges, or construction happening offshore. There is a provision for this terrorism cover to be "bought back" as it is originally excluded. The security threat on an offshore asset is usually not as perilous as it is for an onshore asset, given the ease of approach towards an onshore facility vis-à-vis an offshore facility. As result of this, energy underwriters ensure the risk engineering reports of various refineries, petrochemical assets are mentioning that the assets are compliant with the best security standards.

As seen in the recent past, cyber-attack is becoming the dominant new challenge for the energy insurance market.

Cyber threats to oil and gas facilities become an even bigger issue considering refineries and petrochemical assets are monitored and controlled from a central control room consisting of various computers. If there is a situation where the systems fail to respond as a result of sabotage, we can be looking at significant direct and indirect losses to these facilities which could plunge the oil market into a crisis. Cyber-attack is an excluded peril in energy policies, and all losses whether directly or indirectly caused by a cyber-attack have been excluded in the policy wordings. However, this is now witnessing a change as the cyber-attack exclusion clause is being modified to exclude

“Terrorism and cyber-attack are a real threat to energy installations, and there are specialised markets that cover terrorism and cyber risks”

direct losses from cyber-attacks but covered for any indirect losses from the same. To put this as a common example, if the cyber-attack was to harm the control station of a plant, the loss of data would not be covered, but any fire loss happening as a result of loss in control of the plant could in fact, now be covered. While there has been a lot of debate among brokers and markets on this, the international energy market does realise cyber as a very real threat. And given the losses that oil and gas companies have faced due to cyber-attacks, there has been a conscious decision to have very specific covers for these threats, which are available with specialised markets.

### **What are the main factors to consider when selecting an insurance provider in the energy sector?**

The energy insurance market is a highly specialised one, where there is a requirement for specialised underwriters who have had prior experience either in the oil and gas industry or exposure in the energy insurance sector.

Considering the complexity of risks that are placed in this business, since the risks dealt into are oil and gas exploration and production, refinery processing, petrochemical

operations, etc and the high potential for claims, it is important that clients place their insurance policies with markets that have had experience in placing this business. It is also imperative that the insurance buyers identify markets that have had a good track record of analysing and settling energy claims on a timely basis, and have an acceptable security/financial rating that is essential for these high risk policies.

### **How are you looking to expand your business in the energy sector, and are there any areas you see as offering particularly good prospects?**

Oman Insurance Company is one of the respected energy markets not just in the Middle East but across the globe. This is due to the fact that we have a long history of being a trusted and favoured energy insurer/re-insurer. We also have a strong financial rating that helps energy brokers approach us with business that requires minimum security ratings. We have a global presence in the market, as we are able to participate on a worldwide book of business with some of the largest oil companies as our clients. Our underwriters are some on the

most qualified and experienced in the market, and our professional claims settlement and handling is well regarded.

At Oman Insurance, our agile capability in terms of being keenly proactive, with the ability to react and adapt quickly to constantly evolving market dynamics, bodes well for our clients. The downstream markets, which comprise refineries, petrochemicals, LNG, fertilisers and pipelines, are still seeing reductions in premiums as there is a significant market capacity available to underwrite these risks. The upstream market on the other hand, has seen a better premium scale for the risks, given the insurance loss record over the past 36 months.

Having said this, we are conscious that the global energy market is dynamic and volatile, and with the recent losses experienced by the underwriters, there is a sense of caution while underwriting complex risks. One cannot be too aggressive or too conservative while defining risk appetite. It is a fine balance that must be achieved on a case by case basis. We have, however, seen that oil prices are now somewhat stabilising, and are confident that there will be a return of favourable premiums for the businesses we insure. ■



*Cyber threats are a growing risk in oil and gas operations.*

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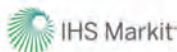
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## Tendeka completes field testing of wireless intelligent completions technology

INDEPENDENT GLOBAL COMPLETIONS service company Tendeka has successfully completed field testing of its wireless intelligent completions technology, PulseEight.

With funding support from the UK's Oil & Gas Technology Centre, Tendeka installed a PulseEight downhole device and a newly developed PulseEight surface system with OMV Group in Austria in December. During the installation, various operations were undertaken to test the downhole device and prove the surface decoding system.

John Hunter, Tendeka's Emergent Technology director, said, "Our initial two-week trial was a complete success and we actually overachieved what we planned to do. We demonstrated accurate two-way wireless communication in a flowing gas well and proved that the data and results could be shared over the cloud to anyone connected.

"The technology will continue to be trialled and tested at the site over the next few months as we explore commercial opportunities. Our team will also be developing the technology for use in other new and emergent products."

CEO Brad Baker, added, "In the oil and gas industry, early stage installations are hard to come by in live wells. We appreciate the continued support from both OMV Group and the Oil & Gas Technology Centre for recognising the potential of this important technology. This trial has allowed us to demonstrate the full capabilities of PulseEight as the sector's first cloud connected wireless intelligent completion system.

"The impact on the industry of fully wireless data and control is significant and will allow more optimised well planning and ultimately greater recovery."

Tendeka's PulseEight system uses unique pressure pulse telemetry to channel wireless communication between a well's downhole monitoring and control system and the wellhead. The company has now increased the offering to include an autonomous data decoding system which allows the seamless transmission of well data to any location in the world.



Image Credit : Tendeka

**PulseEight Surface allows the user to see real-time the data transmitted from the reservoir**

Commissioned as either a standalone surface unit with cloud data management or embedded on existing well control systems, PulseEight Surface allows the user to see real-time the data transmitted from the reservoir. The system autonomously measures surface choke changes and confirms that the surface to device pulse sequence is correct.

Headquartered in Aberdeen, UK, Tendeka operates in strategically positioned bases, located at global energy hubs including the North Sea, Asia-Pacific, Middle East and USA.

For more information on PulseEight, visit: <http://www.tendeka.com/technologies/wireless-completions/pulseeight/>

## Hytera's latest Tetra handheld radio meets the highest safety standards

HYTERA, A WORLD leading solution provider of professional mobile radio communications, has launched its latest Tetra handheld radio, PT790Ex. It is, according to the company, the world's first land mobile radio meeting the highest standard for intrinsic safety.

The PT790Ex has been designed to comply with the highest ia level for intrinsic safety since its development was initiated in 2012. "This Hytera radio is the first to give you the highest level of protection," said GS Kok, senior vice president of Hytera and head of the terminal division. In contrast with the ib-rated radios in the market, PT790Ex is the first land mobile radio that can be used in the Zone 0 area which has explosive gas-air mixture existing for long periods. This marks its capability of being used safely in a wide

range of applications where explosive gases and vapours may be present – from petrol filling stations and airport aprons to oil and gas installations, from the manufacturing industry to mining.

Since its launch, the PT790Ex has successfully acquired certificates of all mainstream explosion-proof standards in the world such as ATEX, IEC Ex, FM and CSA, and filed with the Mine Safety and Health Administration (MSHA) for the feasibility of its utilisation in mines. "We are complying with nearly everything the safety committee in the USA has thrown at us," Kok said. "The PT790Ex will be the safest radio in the world."

In addition to the safety design, the PT790Ex has a number of advantages such as long battery life, large full-colour

screen, IP67 protection and built-in GPS. "We, as designers, will embrace the latest technology because we think it is good for our customers. But we have to make sure that we do not put our customers' lives at risk," GS Kok commented. "Today I am very proud that we have successfully presented this latest Tetra portable radio to you."

Hytera is a global leader in two-way radio communications, developing and manufacturing innovative solutions to meet varied customer requirements. With a reputation for high-quality, reliable, feature-rich handsets and systems, Hytera can be found all over the world, from Shenzhen metro to the Etihad stadium, via North Sea oil rigs, railway networks, conference centres and construction sites.



Image credit: Hytera

**The Hytera PT790Ex Tetra handheld radio**



## Positive reception in the region for Churchill Drilling Tools

CHURCHILL DRILLING TOOLS, an oilfield services company specialising in dart-activated downhole tools, has seen a record demand for its technologies and services since establishing a presence in the UAE.

“It’s been a fantastic year, and we see our investment paying off,” says Nicholas Kjaer, the company’s general manager for the Middle East. “Whenever we introduce new equipment or technology to the market, we receive great interest from clients, even in this price-conscious environment. If we can help them improve their operations and drill faster and safer, they are willing to listen.”

Churchill’s range of industry-leading dart-activated technologies has redefined and improved many of the oil and gas industry’s existing downhole processes, from exploration through to abandonment. Quick and easy to deploy, the company’s suite of pump-in darts has delivered thousands of hours of savings to operators worldwide.

At ADIPEC in November 2017 the company introduced its ‘SFF Trigger™’ to the Middle East market, a dart-less evolution of its Self Filling Float™, a range of floats that remain dormant until activated. The ‘Trigger’ version of its Self-Filling Float™ maintains the capability to run in hole quickly in a dormant mode, but with an added automatic activation system which is ‘triggered’ when the tool reaches pre-set depth and pressure.



Nicholas Kjaer

This new automatic system provides operators with superior inter-operability with other tools in the drill string. It is unaffected by shallow-hole testing and can also be positioned below any other tool that needs thru-bore access providing faster trip times and a unique level of flexibility and performance for deep water operations.

“We’re the first on the market with this new, unique technology,” says Kjaer, adding that it has generated interest from both existing and new clients.

Kjaer says that the company will continue to expand in the region and is recruiting new personnel. “The UAE market is crucial to us, so we decided it would be our regional hub. We have our regional headquarters in Dubai, with the operational base in Abu Dhabi, which caters to the entire UAE market, as well as serving as a central hub for the Middle East. We will continue to develop the UAE market; we’ve got a good footprint now with our

existing technology, and we believe the market will develop dramatically as clients look for new technology that will improve their operations.

“We are a premium service providing premium, high-end equipment,” he goes on, saying that it is appreciated that the quality and reliability of its equipment can bring a dollar saving to the client. “We have been expanding over the last three years, while others have been consolidating. Our end clients have become much more open to collaboration, because they are

looking for an overall cost reduction.”

“A lot of our technology is bespoke, and because we are so flexible and adaptable, we can come up with a solution to a particular challenge a client may have, and deliver physical equipment to them within two months. That sets us apart from other service companies.”

Kjaer adds that another differentiator is its 24/7 technical support, with the relationship with the client being as a partner rather than as a supplier or vendor.

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# What next for the Middle East?

*Optimising the design and operation of refineries and megaplants can result in huge cost savings*

The Middle East can leverage its competitive advantages and capitalise on major technology trends in the drive to develop innovation economies, says Antonio Pietri, president and CEO, AspenTech.

**T**HE MIDDLE EAST faces real challenges as it seeks to transform its economies – but it has critical competitive advantages on its side, says Pietri.

“The Middle East is facing one of those forks in the road, in that the last few years have been very disruptive to its economies and business model,” he says. “The question is what’s going to be next for the region? Middle East countries are looking to become innovation economies and capture more value from their natural resources by developing manufacturing in the region. That raises the question of skills and capabilities. But whereas the rest of the world faces the prospect of an ageing workforce and populations set to decline, in the Middle East 60 per cent of the population is under 25 years old, and of that group, the median average age is 22. That’s a huge competitive advantage, and the question is, how are they going to leverage that competitive advantage, and what do they need to do from a skills and capabilities standpoint?”

Pietri also highlights the strong emphasis on women’s leadership and increasing the participation of women, as part of the 60 per cent of the population that is under 25 years old. “Diversity drives innovation, and innovation societies are normally those that are most diverse.” He points to the USA, and the generation of business leaders born outside the USA, such as Satya Nadella, CEO of Microsoft, and Elon Musk. “The ecosystem benefits from that diversity.”

All this is in the context of the major technology trends that are underway, such as artificial intelligence, IoT and analytics. Here, the region has youth on its side. “Young people are very comfortable with technology. Leveraging artificial intelligence and machine learning to make their assets as efficient as possible, is the foundation to start to think about the next 30 years of transformation.”

“Young people are very comfortable with technology”

It is the optimisation of the design and operation of refineries and megaplants that has been the focus of AspenTech in its 35 years of operation. “From this, huge value is created,” says Pietri. “We estimate that from the installed base and use of our technologies around the world, around US\$50bn in value is generated every year.”

## Disruptive technologies

Pietri explains how the convergence of new technologies is disrupting the way that maintenance is carried out in plants, moving away from manual work processes and workflows for preventive maintenance, towards predictive maintenance.

“The technology behind machine learning, analytics and artificial intelligence, ie the algorithms, is not new,” he points out. “It is high performance computing in the cloud which provides the ability to handle very large volumes of data in the cloud and process it in very short times. The computing capacity of the cloud now enables the use of machine learning and analytics in a way that you can predict when equipment is going to break down and prescribe what actions to take, almost on a realtime basis.” Studies indicate that breakdowns and unplanned shutdowns in the process industry cost in the region of US\$1.4 trillion a year, he adds. “The value of preventing breakdowns and shutdowns dwarfs the US\$50bn that AspenTech generates from process optimisation.”

“There’s a big opportunity in going after the maintenance phase with what we call the science of maintenance, not the traditional maintenance approach but one that is based on artificial intelligence, machine learning, chemicals engineering protocols, with the knowhow and expertise to bring all this together to capture even greater value.”

Pietri views cloud technology as an “unstoppable trend”, but says that the process industry is adopting a cautious approach. “The process industry is a conservative industry in the adoption of technology, not just in this region, but throughout the world. Operators in the process industry are managing very complex and dangerous processes, so are very careful about the adoption of new technology. They want to make sure it works, that it’s safe and that it creates value, before they start deploying it. Eventually the process industries will take



advantage of these trends, but they're not going to be the leaders.”

With the cloud, cyber security is the key concern, he adds, with many companies operating private clouds that they manage within their firewalls.

**Efficiency and sustainability**

Pietri underlines the link between efficiency and sustainability. “Sustainability includes the ability to run your business in the most efficient manner, and detect trends that are going to have an impact on your business. Aspentech drives efficiency and operational excellence, taking advantage of some of these mega trends, to help you sustain your business. We are contributing to environmental sustainability because everything we do is about efficiencies.”

He points out that the global economy is projected to double in value in the next 20 years, but that energy consumption is forecast to rise by only 25 per cent, due to efficiency gains. While renewables will become an increasing component of the energy mix, fossil fuels will continue to have a place due to the growth in energy demand. “The question is how can we produce them in a much more efficient manner, and lessen the impact on the environment. That is what a lot of companies are focusing on, and that is our focus as well.”

Addressing the skills and capabilities issue is critical. “In the Middle East, one of the factors we see as a hurdle for driving efficiencies is organisational excellence, skills and capabilities, and the ability to sustain those skills and capabilities over time. Around the world we see companies that are good from an organisational excellence standpoint, and have built the capabilities and skills to implement these types of technologies, but you will also see companies that are

not as good. Here in the region you have companies like Saudi Aramco, who are very progressive in use of these technologies, while others are less so. The key requirement we are starting to see from companies in the region is a commitment to help them develop the skills and capabilities of their people. The 60 per cent of the population that is under 25 is going to be the generation that is going to sustain this region for the future, so that's a point of discussion with all our customers.”

With its regional headquarters in Bahrain, Aspentech now has offices in various countries of the Middle East and views the region as a very promising market.

“It is projected that the Middle East going to be home to 25 per cent of the global capacity of chemicals, and refining activity continues to grow. If the region makes the transition to speciality chemicals there will be even more chemicals, so if you are in the business of oil, gas and chemicals you need to be committed to the Middle East, as we are. The next 10 to 15 years are going to be very exciting for the region, and there are things it needs to make sure it gets right, such as tapping into its huge base of young people and opening up its economies.”

He adds that the capital markets will also need to play a role. “The renewal of the economy in the USA for example is driven in a large part by private equity and investors that are pushing companies to innovate or die. Capital markets also play a big role. In countries where you see private capital being deployed behind innovation, you see new companies and new technologies. If the Middle East wants to be an innovation-driven economy, it is not only governments that need to play a role, but also private capital that has to be put to use in the region.” ■



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# Innovation and big data drive oil optimism

Kurt Kuckein, director of marketing, DDN Storage, discusses the potential for effective interpretation of seismic data to drive efficiency and profitability in oil exploration.

**T**HE OIL INDUSTRY has every reason to be optimistic. While the market continues to experience weak crude prices, increasing competition from low-cost US shale resources and renewables, the heightened M&A activity and requisitioning of projects that were delayed during the downturn just a few short years ago are sure signs of recovery and growth.

Often it is the lessons learned during downturns that are forgotten when growth occurs. For companies operating more cost-consciously, a disciplined eye on operating cost means the difference between prosperity and failure. And in this recovery period these lessons learnt will pay dividends.

If we look back just two years, during the worst of the downturn, when capital spending remained under extreme pressure, investment in high performance computing (HPC) technology carried on apace. You would be perfectly within your rights to question why that was so.

Numerous economic strategists encourage investment in bear markets. For oil, scratch below the surface and reasons for investing in HPC in a restrictive fiscal market are plentiful. In my view, at least, there is one factor that has had the biggest impact on profitable/reduced risk exploration – effectiveness of interpretation of seismic data.

For oil companies, a better understanding of subsurface structures directly translates to reducing exploration risk and cost. Essentially, the higher the accuracy of the company's view of the geological area, the better its chance of success when it drills.

To get the best subsurface view, oil companies rely on high fidelity simulations and modelling. Outside of the use of higher-fidelity images the only discernible factors to faster discovery is the mathematical algorithms you apply to the data; the amount of data and the speed in which you can model it.

To achieve these increases in competitive advantage, oil companies have two options: improve the mathematical algorithms, which takes substantial time; or, add to and improve



*Improvements in HPC infrastructure can play a major role in improving productivity in operations.*

Image credit : Cobalt/AdobeStock

their infrastructure to improve data processing sizes and speeds. The latter can be achieved in just a few months or even weeks. Emerging storage technologies, like Non-Volatile Memory (NVMe), can be applied strategically to directly improve application performance.

The fastest route to gaining competitive advantage in exploration sits directly on top of improvements in HPC infrastructure – specifically on the amount of data that can be analysed and reanalysed in the least amount of time.

Many external sources and industry publications focus primarily on the increase in compute power. But, if you look across HPC environments there is an interesting pattern emerging.

Petascale environments are embracing solutions that are tightly integrated to specialised high performance storage. These IT organisations are often leveraging a combination of commodity based hardware and specialised storage components to achieve the greatest gains.

The companies involved at this scale are

driven by the need to out-compete and maximise returns of their competitors and exploration activity. They are growing their high performance storage capacity at around 120 to 500 per cent year on year.

There a number of petaflop systems in existence in the oil and gas industry and DDN powers over 50 per cent of them. Storage is enabling them to handle tens of thousands of cores at an extremely high rate of performance. The key metric though is efficiency – how well is the storage infrastructure matched to drive the performance the applications require.

With the new competitive oil price at half of historic norms, the industry must look at ways in which operational efficiencies and success of oil exploration can be increased. While the effectiveness of interpretation of seismic data remains the largest differentiator in your arsenal, it is no wonder investment in HPC – including high performance storage, networks and data management – is continuing at a significant pace. ■





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# Dolphin leading in the heat transfer industry

UAE-based Dolphin Heat Transfer LLC (DHT) is looking forward to a busy year, with several big projects lined up.

**D**OLPHIN HEAT TRANSFER LLC (DHT) recently celebrated its 30th anniversary of doing business in the MENA region, and 2018 is already looking like a dynamic year ahead for the company, with several major project awards already booked into production.

Dolphin Heat Transfer is a leading company engaged in the field of design and manufacture of shell and tube heat exchangers, air-cooled heat exchangers, pressure vessels, storage tanks and finned tubes. This equipment can be offered with ASME 'U' 'U2' & 'S' stamps for design and manufacture and with National Board 'R' stamp for repair and alteration. The company is also ISO 9001: 2008, ISO 14001: 2004 & ISO 18001: 2007 certified by TUV. Its ASME authorised inspection agency is Lloyds Verification Ltd.

DHT caters to the above requirement of various clients in the oil and gas,

petrochemical, chemical, refining, power plants and refrigeration industries. Dolphin has a state-of-the-art facility covering two manufacturing shops of 3,000m<sup>2</sup> each, with all modern fabrication infrastructure, in the Ajman New Industrial Area.

The company exports its products throughout the Middle East, Africa, Asia and Australia, with a reputation for on time manufacture in their state of the art production facilities to the highest international standards such as ASME, API & TEMA.

This reputation has led to contract awards with blue chip clients in the oil and gas, petrochemical and power and desalination sectors. DHT has built up a strong reputation with clients over the years with an experienced design team, and we are proud of our continued relationship with prestigious companies including ADNOC, Dugas, ADGAS, PDO, Orpic, Kuwait Oil Company, KNPC and Siemens, among others.

DHT is currently designing and manufacturing a 110-ton sulfur condenser unit for ADGAS in Abu Dhabi, as well as shell and tube heat exchangers for the New Refinery Project for KNPC, Kuwait and air-cooled heat exchangers for a project in Australia, to name a few.

## DHT specialises in the following products:

**Shell and tube heat exchangers:** Thermal and mechanical design, detailed fabrication drawings and fabrication of shell and tube heat exchangers as per ASME Sec VIII Div. 1, Div. 2 & TEMA. Fabrication facilities include CNC drilling machines, orbital welding machine (for tube-to-tube sheet welding), microprocessor-based telescopic expansion machine (for tube-to-tube sheet expansion), CNC plasma cutting and column & boom SAW machine, in addition to the regular machines like plate bending, TIG / ARC welding, grinding and two 25-ton EOT overhead cranes etc.

**Air-cooled heat exchangers (fin fan coolers):** Thermal and mechanical design and manufacturing. These coolers are supplied with various types of finned tubes such as 'L', 'G', 'KL' and extruded, manufactured on in-house finning machines. The coolers are supplied with forced draught / induced draught fans procured from leading worldwide manufacturers. This equipment is designed as per ASME Sec VIII Div. 1 & API 661 and can be manufactured for sour service as well as lethal service applications.

All heat exchangers can be manufactured in various materials such as carbon steel, stainless steel, nickel alloy, monel, inconel, hastelloy, titanium, duplex, brass and cupro nickel.

**Finned tubes:** Finned tubes are manufactured on the latest state-of-the-art McElroy Mark IV & V finning machines from the USA. Various types of fins such as 'L', 'G' & 'KL' can be manufactured with aluminum and copper fins. Base tube size ranges from 5/8" OD to 2" OD, and tube material can be selected as per application. ■

*Dolphin units being transported to their destination*



Image credit : Dolphin Heat Transfer LLC



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# Diversifying the product range

Abu Dhabi-based Emirates Steel participated in ADIPEC for the third year, to meet with both existing and potential customers and promote its high quality steel.

**E**STABLISHED IN 1998, Emirates Steel is the only integrated steel plant in the UAE, with a capacity of 3.5mn MTPA of rebar, wire rod and heavy sections. The company is evolving from its roots of being a simple and relatively low value-added processor of steel into a sophisticated, highly productive manufacturing business with a high added-value business model and diversified product range.

In an exclusive interview with *Oil Review*, Saeed Ghumran Al Remeithi, the company's CEO, expressed optimism about the company's prospects in the oil and gas sector, explaining how it is moving to more specialised and value-added products to accommodate the specific needs of the industry.

"We have supplied more than 400,000 tonnes of steel for oil and gas applications, which demonstrates the efforts we are making in this field," says Al Remeithi. He adds that the current focus is on enhancing quality, to meet the particular specifications for certain grades of steel required for offshore applications, that can withstand the harsh and corrosive environment. The company has also been working on certification, and now possesses many accreditations for the supply of materials for the oil and gas sector. Emirates Steel is now qualified by most of the NOCs in the region as well as internationally and is supplying major regional and international projects, such as Ras Tanura, Sadara and the Mastergas project in Saudi Arabia, Ras Al Zour in Kuwait, and TAKREER's carbon black project at Ruwais Refinery, as well as ADNOC projects.

Al Remeithi says that Emirates Steel has recorded an increase of 70 per cent in its exports and is supplying 34 countries. "This is



Saeed Ghumran Al Remeithi, CEO, Emirates Steel

Image credit : Emirates Steel

proof of how our materials are accepted internationally," he stresses. He adds that the company's production of heavy section steel has risen from 79,000 tonnes in 2016 to 170,000 tonnes in 2017.

**“ An important milestone has been the development of sheetpiles, as the company expands into new families of steel”**

An important milestone has been the development of sheetpiles, as the company expands into new families of steel. "We now have more than three different families of steel and are looking to expand further," he says, noting that the company has received an order from Fujairah port for 5,000 tonnes of sheetpiles. He comments that this is a very specialised field, with only five or six producers, and is a good illustration of how the company is evolving from a producer of traditional commercial grades to value-added

and more specialised products, to keep ahead of aggressive competition.

Demand for steel has always been high in the Middle East given the buoyant construction activity, and the company is expecting growth of 4.3 per cent in the demand for long material this year compared with 0.2 per cent in 2017. Al Rumeithi notes the link between the oil market and construction activity, and adds that in the GCC, oil and gas projects to the value of US\$92bn have been announced up to 2025, with projects worth around \$380bn currently under execution. He expressed confidence that this will create big opportunities for the company.

"It's an open market in the UAE, and there is strong competition," he remarks. "But we have been used to operating in a competitive environment, and it has made us stronger. Even when the market was depressed, our sales were buoyant and we were fully operational, which has not been the case with most regional and international players."

He adds that another strength of the company is its wide geographical footprint, which minimises the impact of problems in any particular market. ■



## Meeting the needs of the South Caucasus Pipeline Project

MB Crusher, as partner in the development of the South Caucasus Pipeline (SCP) and Trans Anatolian Pipeline (TANAP), is providing 13 screening buckets MB-S18 S3 for operations in Azerbaijan, Georgia and Turkey.

The 692km SCP has been designed to transport gas from the Shah Deniz field in the Azerbaijan sector of the Caspian Sea, through Georgia and on to the Georgia-Turkey border.

At full capacity, and after additional stages of development, it is envisaged that the pipeline will export up to 25bn cubic metres of gas a year. At the border, the pipeline links up the Turkish-built extension joining SCP to the domestic supply grid at Erzurum.

The SCP, built in the same corridor of land as the BTC (Baku-Tbilisi-Ceyhan) pipeline through its passage in Georgia, is buried underground. SCP carries natural gas from the Shah Deniz field in the Caspian Sea to customers in Azerbaijan, Georgia and



The screening buckets allow the possibility of directly reusing recovered materials

Image credit: MB

Turkey. The expanded SCP system will tie into the TANAP at the Eastern Turkey border which, in turn, will connect with the Trans Adriatic Pipeline (TAP) at the Western Turkey border some 1,900 km away. TAP crosses Greece and Albania, from where it continues under the Adriatic Sea to Southern Italy. The total length of TAP is about 870 km.

The MB-S18 S3 screening buckets, suitable for excavators from 20 to 35 tons, allow the possibility of directly reusing recovered materials, particularly useful in road building, construction and

maintenance of pipelines. They allow the entire process to be completed without transporting excavating materials, with the highest regard for the environment.

MB-S18 S3 screening buckets can be implemented with the magnet and the nebulizer kit, increasing the versatility for the separation of iron, as well as allowing their use in inhabited centres due to suppression of dust.

MB screening buckets are perfect for the screening and selection of natural materials, both before and after the crushing phase. Equipped with baskets formed by interchangeable modular panels, and available with different size holes, depending on the needs of job, the easy assembly and disassembly of the panels makes for quick change to obtain different output material.

The unique and innovative conical shape of the drum is specially designed to significantly increase the hourly production performance and to screen all the collected material, residue-free.

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# Leading in energy process systems

AES Arabia has built on its success with Saudi Aramco to win a new contract for the supply of tie-in modular skids.

**S**AUDI ARAMCO HAS awarded AES Arabia a new SR100mn project to supply several tie-in modular skids to the oil and gas wells for Khurais and Haradh sites in the Eastern Province of Saudi Arabia. The scope of work of AES includes detailed engineering, procurement, manufacturing and fabrication in Saudi Arabia, as well as testing and commissioning. The skids will be installed near the respective wellheads in order to control the flow and pressure of oil or gas and also inject the appropriate chemicals.

AES Arabia is one of the few approved vendors to have an in-kingdom dedicated engineering team to work on the details of



Image credit : AES Arabia



AES has state-of-the-art facilities in Saudi Arabia to build and commission water desalination plants and modular skids




process, electrical, instrumentation, automation and telemetry. It also has state-of-the-art facilities in Saudi Arabia to build and commission water desalination plants and modular skids.

AES Arabia has been awarded many Aramco contracts over the years. These include the seawater reverse osmosis (SWRO) plant for the Jizan refinery currently under construction with a capacity of 60,000 m<sup>3</sup>/day, in accordance with oil industry standards.

“ AES Arabia has been awarded many Aramco contracts over the years”

Meanwhile, AES Arabia has adopted the IKTVA (In-Kingdom Total Value-Add) programme from the date of its announcement, through introducing modifications to its organisational strategies to eventually meet the Aramco target of 70 per cent localisation rate by 2021. AES is in coordination with Aramco to work on achieving this rate in a fast yet sustained manner. Achieving this target will enable AES to maintain its position as one of the most favoured partners with Aramco. ■




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## CGG supports E&P digitalisation with Smart Data Solutions

CGG HAS REPOSITIONED its data management services business as Smart Data Solutions after extending its E&P data optimisation portfolio.

Smart Data Solutions is engaged in projects that address the digital transformation programmes of its global oil and gas industry customers, complementing its widely used data management technology and services.

CGG's Smart Data Solutions aim to assist the industry in transitioning data management from a support function to a value generator, providing new business insights and enabling effective data-driven strategies.

Being an early adopter of emerging technologies, such as machine learning and public cloud, Smart Data Solutions aims to provide both better access to, and increased value extraction from, E&P data.

Combining existing services with increasingly automated conversion, classification, extraction and unification technologies, Smart Data Solutions enables E&P companies to convert inactive data and information into valuable machine-accessible formats. Legacy collections of structured, semi-structured and unstructured data can be converted and

delivered faster than ever before. Using advanced Extract, Transform and Load technology and expert services, this data is made available alongside current volumes in next-generation platforms that meet the industry's data management requirements well into the future.

Sophie Zurquiyah, chief operating officer for geology, geophysics and reservoir at CGG, said, "As a leading provider of geoscience data, technology and integrated solutions, CGG is uniquely qualified to work with its clients on their digitalisation agendas."

## TGT's well diagnostics breakthrough

TGT OILFIELD SERVICES, provider of through-barrier diagnostic systems, has announced the successful validation of its electromagnetic EmPulse well inspection system in high chromium tubulars.

In three Middle East deployments, TGT engineers demonstrated that the EmPulse system aims to quantitatively determine the individual tubular thickness of up to four concentric barriers, even when there are high amounts of chrome in the tubulars.



Image credit: TGT

Ken Feather, chief marketing officer at TGT, commented, "This achievement marks an important industry breakthrough as operators endeavour to protect well integrity in more challenging production environments. Increasing chromium content helps to protect well completions from highly-corrosive fluids, such as carbon dioxide, hydrogen sulphide and chloride. But high-chrome can cause serious problems for ordinary electromagnetic pipe inspection systems."

## DNV GL's certification framework and recommended practice for CCS

DNV GL HAS launched both a framework for certifying geological storage of CO2 and a recommended practice for the design and operation of CO2 pipelines.

The certification framework serves to improve stakeholder dialogue and investor predictability, and the recommended practice aims to provide a recipe for the safe transportation of CO2.

The DNV GL certification framework focuses on enabling verification of conformity with the new ISO standard, ISO 27914:2017 CO2 capture, transportation and geological storage. This standard represents an international consensus on the requirements for the safe and effective storage of CO2 in geological formations.



Image credit: Carbon Visuals/Flickr

The recommended practice DNVGL-RP-F104 Design and Operation of CO2 pipelines, provides guidance on safe and reliable design, construction and operation of pipelines intended for large-scale transportation of CO2.

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## WORKING TOWARDS A HEALTHIER AND SAFER KUWAIT



**HSE Forum Kuwait 2018** is a premier conference highlighting the best practices and challenges. In 2018, the conference will be bringing together experts from all over the world to share new ideas, process improvements, technological advancements, and innovative applications to enhance HSE performance in Kuwait. It also provides a neutral forum where a wide range of perspectives and concerns from a variety of stakeholders can be explored.

The event will attract health, safety, security, environment, and social responsibility leaders and professional working in the international oil, gas and construction sectors from Kuwait. Alongside the conference, the exhibitors will showcase the latest technologies, products, and industry services from around the world

## OVERVIEW

### BAHRAIN HEALTH & SAFETY FORUM 2018

5th November, 2018 - Manama, Bahrain

**HSE Forum- Bahrain** will be held on 5th November, 2018 in Bahrain. The event will attract health, safety, security, environment, and social responsibility leaders and professional working in the international oil, gas and construction sectors from Bahrain. Alongside the conference, the exhibitors will showcase the latest technologies, products, and industry services from around the world

### 4<sup>th</sup> ANNUAL HEALTH, SAFETY & SECURITY Forum 2018

22nd - 23rd October 2018 - Dubai, UAE

Continuing our highly acclaimed annual HSE event series, the **4th Annual Health, Safety & Security Forum 2018** is being held on the 22nd - 23rd October 2018 in Dubai. The forum will provide a platform to promote discussions on critical issues such as emergency preparedness and response, unforeseen hazards, legislation for occupational safety etc. through keynote presentations, interactive panel discussions and delegate Q&A sessions.

The forum, promises to be a roaring success,  
providing attendees with a rich networking and learning experience.

[www.hse-forum.com/kuwait](http://www.hse-forum.com/kuwait)

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# Project Databank

Compiled by Data Media Systems

## OIL, GAS AND PETROCHEMICAL PROJECTS - EGYPT

Project	City	Facility	Budget (\$ US)	Status
SUMED - Ain Soukhna Product Hub (ASPH) Project - Tank Farm & Topside Facilities (LOT 2)	Ain Soukhna	Oil Storage Tanks	250,000,000	Construction
ECHEM - Formaldehyde and Derivatives Project	Kafr El Sheikh	Formaldehyde	40,000,000	Feasibility Study
ECHEM - Alexandria Propylene Derivatives Project	Alexandria	Propylene	1,000,000,000	Feasibility Study
EEHC - 180 MW Gulf of Suez Wind Power Station	Suez		250,000,000	Engineering & Procurement
AQFCIC - El-Wady Complex for Phosphate and Compound Fertilizers	Abu Tartor	Ammonium Phosphate	900,000,000	Feasibility Study
MIDOR - Midor Refinery	Alexandria	Refinery	1,400,000,000	Engineering & Procurement
ERC - Mostorod Refinery	Mostorod	Refinery	3,700,000,000	Construction
Petro Shorouk - Zohr Gas Field Development	Mediterranean Sea	Gas Field	7,000,000,000	Construction
PhPC - Atoll Gas Field	Damietta	Gas Field	300,000,000	Construction
EPPC - Propane Dehydrogenation (PDH) and Polypropylene (PP) Complex - Phase 2	Port Said	Polypropylene	1,200,000,000	Engineering & Procurement
BP - West Nile Delta Gas Field - Gas Reception and Processing Facility	Various	Gas Processing	1,000,000,000	Construction
EHC - Tahrir Petrochemicals Complex - Utilities and Offsite Facilities	Suez	Offsites & Utilities	2,000,000,000	Engineering & Procurement
EHC - Tahrir Petrochemicals Complex	Suez	Petrochemical Complex	7,000,000,000	Engineering & Procurement
AQFCIC - Nitric Acid Plant	Ain Soukhna	Ammonia	160,000,000	EPC ITB
Burullus Gas Company - West Nile Delta Gas Field	West Nile Delta	Gas Field	12,000,000,000	Construction
ASORC - Naphtha Complex	Asyut	Continuous Catalytic Cracker (CCR)	250,000,000	Design
ASORC - Hydrocracker	Upper Egypt	Hydrocracker	1,500,000,000	Engineering & Procurement
ENI - Nooros Exploration Prospect (Abu Madi West)	Nile Delta	Gas Field	2,000,000,000	Engineering & Procurement
Burullus Gas Company - West Nile Delta Gas Field - Giza, Fayoum, and Raven Gas Fields Offshore	West Nile Delta	Gas Field Development	800,000,000	Engineering & Procurement
Petro Shorouk - Zohr Gas Field Development - Grassroot Natural Gas Processing Plant (Phase 2)	Port Said	Gas Processing	200,000,000	Design
ASORC - Hydrocracking Diesel Complex	Asyut	Hydrocracker	1,800,000,000	Engineering & Procurement
Burullus Gas Company - West Nile Delta Gas Field - Taurus and Libra Subsea Fields	West Nile Delta	Gas Field	550,000,000	Construction
El Nasr For Intermediate Chemicals - Phosphate and Fertilizer Complex	Ain Soukhna	Phosphoric Acid	600,000,000	Engineering & Procurement
Egyptian Chemical Company (KIMA) - Aswan Fertilizer Complex (KIMA 2)	Aswan	Ammonia	592,000,000	Construction
Eni - South-West Melehia Block license	South-West Melehia.	Exploration	40,000,000	Engineering & Procurement
Eni - Block 9 (North Leil Offshore)	Mediterranean Sea	Exploration	300,000,000	Engineering & Procurement
Eni - British Petroleum (BP) - Block 8 (Karawan Offshore)	Mediterranean Sea	Exploration	140,000,000	Engineering & Procurement



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# RIG COUNT ←

## 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.

Country	THIS MONTH			VARIANCE From Last Month	LAST MONTH			LAST YEAR		
	Land	OffShore	Total		Land	OffShore	Total	Land	OffShore	Total
<b>Middle East</b>										
ABU DHABI	37	12	49	2	38	13	51	32	16	48
DUBAI	0	2	2	0	0	2	2	0	2	2
IRAQ	54	0	54	-3	51	0	51	41	0	41
JORDAN	0	0	0	0	0	0	0	0	0	0
KUWAIT	53	0	53	0	53	0	53	44	0	44
OMAN	55	0	55	0	55	0	55	59	0	59
PAKISTAN	0	0	0	19	19	0	19	21	0	21
QATAR	3	3	6	0	3	3	6	5	5	10
SAUDI ARABIA	92	19	111	4	98	17	115	110	15	125
SUDAN	0	0	0	0	0	0	0	0	0	0
SYRIA	0	0	0	0	0	0	0	0	0	0
YEMEN	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>294</b>	<b>36</b>	<b>330</b>	<b>22</b>	<b>317</b>	<b>35</b>	<b>352</b>	<b>312</b>	<b>38</b>	<b>350</b>

### North Africa

ALGERIA	50	0	50	5	55	0	55	52	0	52
EGYPT	17	5	22	0	19	3	22	18	6	24
LIBYA	0	1	1	0	0	1	1	0	1	1
TUNISIA	0	0	0	0	0	0	0	1	1	1
<b>TOTAL</b>	<b>67</b>	<b>6</b>	<b>73</b>	<b>5</b>	<b>74</b>	<b>4</b>	<b>78</b>	<b>71</b>	<b>8</b>	<b>78</b>

Source: Baker Hughes





ضمان سلامة العاملين لابد أن يحظى بالأهمية القصوى

أجهزة استشعار الحركة - في إحدى البطاقات - في الكشف عن الحركة لمدة قابلة للتعيين، مما قد يشير إلى فقدان أحد العاملين القدرة على الحركة، أو إبلاغ رجال الأمن عند الكشف عن سقوط أحد الأفراد. ويمكن إعداد الحد الأقصى لفترات مكوث الأفراد، بحيث يتسنى تنبيه موظفي الأمن والسلامة على الفور في حالة تجاوز هذه الفترة. ويمكن إرفاق شارات بالأصول، مثل الأجهزة والمعدات والمركبات، لإمكانية رؤيتها بشكل متواصل. هذا بالإضافة إلى توفير الوقت والحيلولة دون وقوع خسائر.

#### أنظمة تحديد الهوية باستخدام موجات الراديو لا تتف على قدم المساواة

تتواصل جهود تحديث وتحسين قواعد ولوائح البيئة والصحة والسلامة في الشرق الأوسط في محاولة لتقليل الإصابات في أماكن العمل والحد من خسائر الإنتاج، إلى جانب تعزيز سلامة البيئة. والتطور التقني الذي شهدته حلول مراقبة الإخلاء والحشد، يلبي متطلبات السلامة والالتزام الأكثر صرامة، سواء للمنشآت الداخلية أو الخارجية في الحالات الطارئة أو العمليات اليومية.

وإلى جانب التطور التقني، هناك عدة عوامل يجب أخذها في الاعتبار عند اختيار نظام مراقبة الإخلاء والحشد الأكثر ملاءمة للموقع. إذ تتطلب عمليات النفط والغاز اعتماد المعدات بعلامة EX، وتصنيف الفئة ١ والشعبة ١ لعناصر مثل البطاقات التي يُصرّح لحاملها بدخول المناطق شديدة الخطورة. قد لا تتوفر القدرة على استخدام مصادر الطاقة أو الاتصال بالشبكة في بعض المناطق، مثل نقاط الحشد الموجودة خارج المنشأة. والسؤال الذي يتبادر إلى الأذهان، بشأن هذه النوعية من المواقع، هو ما إذا كان بوسع النظام توفير قارئ بطاقة ذاتية القدرة ولاسلكية يمكن استخدامها في هذه المواقع. مع العلم بأن هذا النظام ذو أهمية قصوى. ومن المهم أيضاً تخصيص شبكة للنظام بدلا من استخدام شبكة مشتركة حتى لا تتأثر مهامه. ولا يجب أن تتطلب العناصر التي يحملها المستخدمون (البطاقات والشارات) الصيانة الدورية، مثل شحن البطاريات بصفة منتظمة، إذ قد يمثل ذلك نقطة ضعف في الأوقات الحرجة.

إن لكل ثانية قيمتها خلال الإخلاء، ويمكن للأنظمة التي تغني عن الاعتماد على التدخل اليدوي توفير أدق المعلومات. وقد تمتد هذه القدرة على الرؤية إلى عمليات المنشأة بغرض تحسين إجراءات السلامة وتحقيق الالتزام التنظيمي. هذا، وتعتبر إمكانية الرؤية في الوقت الفعلي أمراً حيوياً خلال حالات الطوارئ لضمان سلامة الأصول الأكثر قيمة على الإطلاق، ألا وهي البشر.

وبخلاف الأنظمة المعنية فقط بتسجيل وصول الأفراد، توفر أنظمة تحديد الهوية باستخدام موجات الراديو النشطة كشف الحضور المستمر، وبذلك تضمن تحديد أي فرد يبتعد عن الجوار المباشر على الفور. وقد عملنا على نشر نظام تجريبي في أحد معامل التكرير في أبوظبي لتتبع الأفراد الخارجين من إحدى البوابات آلياً خلال أحد تدريبات الحشد، والتأكد من وصولهم إلى نقطة تجمع منفردة. وقد تم إنشاء نقطتي اختناق عند البوابة بهدف استشعار اتجاه الحركة. إذ أن الكشف عند نقطة اختناق منفردة لا يدل - بشكل قاطع - على المرور خلال نقطة الاختناق، الأمر الذي يعزز دقة البيانات. لهذا يجب أن تحدد حلول الحشد أماكن وجود الأفراد في وقت فعلي للحد من وقوع حالات الطوارئ في أماكن العمل.

#### أوقات الاستجابة الفعالة للأفراد حاملي الشارات

يمكن لمثل هذا النظام الأساسي توفير ديموغرافيات الأفراد بدقة في وقت فعلي، والكشف عن غادر المنشأة ومن وصل إلى نقطة التجمع، إلى جانب هؤلاء الذين ظلوا بداخل المنشأة. غير أن تكنولوجيا تحديد الهوية باستخدام موجات الراديو النشطة لا تتيح فقط الكشف الآلي عن المحيط ونقطة التجمع، وهي أمور أساسية لكفاءة الحشد، بل يمكن استغلال إمكانات الكشف بعيد المدى التي تتميز بها هذه الأنظمة عبر توظيف القارئ بداخل المنشأة لإمكانية تحديد الموقع في وقت فعلي، ومن ثم مراقبة وإدارة الأفراد حاملي الشارات والمعدات في وقت فعلي. إن أنظمة تحديد الموقع في وقت فعلي تعمل على تحسين المعلومات الديموغرافية التي يتم الحصول عليها من النظام خلال فعاليات الحشد عبر توفير مواقع الأفراد الباقين بداخل المنشأة، أو تحديد آخر موقع معلوم لكل منهم، لجعل أنشطة الاستجابة أكثر كفاءة. وفي حالات الإخلاء، يجب ألا تقل حلول الحشد كفاءة عند مراقبة الأفراد غير المتواجدين في نقاط الاختناق ممن يظلون بداخل المنشأة، أو هؤلاء الذين يمكن الكشف عن آخر مكان لتواجدهم سريعاً.

#### شواغل السلامة اليومية في المنشأة

بالإضافة إلى ما سبق، يمكن للأنظمة تحديد الموقع في وقت فعلي، إتاحة مراقبة وإدارة شواغل السلامة اليومية في وقت فعلي داخل المؤسسات، وبذلك يرتفع العائد على الاستثمار بعيداً عن حالات الإخلاء والطوارئ. كذلك يمكن إنشاء مناطق افتراضية بداخل المنشأة للتحكم في الوصول إليها. وهذا يعيدنا بالذاكرة إلى الحادث المؤسف الذي وقع في حقل «شاه» في دولة الإمارات عام ٢٠٠٩ والذي أسفر عن وفاة ثلاثة أشخاص جراء التعرض لغاز كبريتيد الهيدروجين في أحد الآبار عند إجراء اختبار التآكل. وكان رئيس العمال وخمسة من العمال قد باشروا العمل من دون الحصول على تصريح عمل. لهذا يمكن تهيئة بعض أنظمة تحديد الموقع في وقت فعلي بحيث تصدر تحذيرات أو إنذارات عند الكشف عن أفراد يجازفون بدخول مناطق غير مُصرح لهم أو غير مؤهلين لدخولها.

بالإمكان أيضاً استخدام النظام للتحكم التلقائي في الوصول إلى الموقع، أو إلى مناطق معينة، وتوفير السجلات الزمنية وسجلات الحضور آلياً. ويمكن إقران البطاقات النشطة لتحديد الهوية باستخدام موجات الراديو التي يحملها الأفراد، وذلك للكشف عن مدى قرب الزملاء أو المرافقين وزائريهم من بعضهم البعض، وإطلاق الإنذارات في حالة انفصالهم عن بعضهم البعض لأبعد من المسافة المحددة. بل ويمكن للأفراد استخدام الشارات التي تتضمن أزراراً لطلب المساعدة، مع قدرة النظام على تحديد موقع الإشارة.

هذا النظام يمكن أيضاً إعداده بحيث يُطلق التحذيرات أو الإنذارات عندما تخفق



زهير أبجي، الرئيس والمدير التنفيذي لشركة GuardRFID

## حلول مراقبة الإخلاء والحشد

في هذا المقال يناقش زهير أبجي، الرئيس والمدير التنفيذي لشركة GuardRFID التحسينات المنوط بها تعزيز السلامة وتطبيق أنظمة الجيل التالي لمراقبة الإخلاء والحشد. وهو يقول إن هناك ثلاثة أوجه للتطور التكنولوجي يجب أخذها في الاعتبار عند البحث عن حل لإدارة الحشود يوفر مستويات عالية من السلامة والالتزام. وإن لكل ثانية قيمتها في عمليات الإنقاذ، ويمكن للأنظمة، التي تغني عن الاعتماد على التدخل اليدوي، توفير أدق المعلومات.

التي توفر التعقب الآلي للأفراد عند خروجهم من أحد المواقع أو وصولهم إلى نقطة حشد، في عصرنا هذا، هي الطريقة المفضلة لإدارة الأفراد خلال حالات الطوارئ. هناك ثلاثة أوجه للتطور التكنولوجي يجب أخذها في الاعتبار عند البحث عن حل لإدارة الحشود يوفر مستويات عالية من السلامة والالتزام.

### الكشف المستمر عن المحيط ونقاط التجمع في الوقت الفعلي

تناسب تكنولوجيا تحديد الهوية، باستخدام موجات الراديو عبر البطاقات النشطة، هذه التطبيقات بشكل جيد. فهي توفر الكشف بعيد المدى، ومن ثم مراقبة حركة الأفراد حاملي الشارات في الوقت الفعلي من دون أي تدخل يدوي. بل وتتميز هذه الأنظمة النشطة ثنائية التردد بأمر آخر، وهو الجمع بين قدرات الكشف بعيد المدى وقصر المدى، والذي يمكن استخدامه في النقاط المكتظة بالأفراد - كبوابات الخروج - لتأكيد دخول وخروج الأفراد. فضلاً عن ذلك، يمكن استخدام ميزة الجمع بين إمكانيتي الكشف بعيد المدى وقصر المدى في نقاط الحشد لنداء أسماء الأفراد الوافدين إلى هذه المواقع آلياً.

أثناء فعاليات معرض ومؤتمر أبوظبي الدولي للبترول (أديبك) في العام الماضي، التقيت بنواب رؤساء شركات ومديري أقسام ومهندسين من شركات النفط والغاز من بينها أدكو وأدما وجاسكو وأرامكو. وأعرب جميعهم عن رغبتهم في مواصلة تحسين أنظمة السلامة لديهم باستخدام أحدث التقنيات المتاحة، والتحول عن الأنظمة القديمة التي لم تف بتوقعاتهم.

فعند وقوع الكوارث والحالات الطارئة، تكتسب إدارة الأفراد أهمية قصوى. ولطالما كانت جداول الخدمة الورقية عنصراً أساسياً في هذا النشاط. وخلال العقد الماضي أو نحو ذلك، تم توظيف الآليات الإلكترونية لجمع هذه البيانات من خلال استخدام تقنيات تحديد الهوية باستخدام موجات الراديو (RFID) عبر البطاقات السلبية أو النشطة، فضلاً عن أنظمة تحديد الموقع في الوقت الفعلي، أو الرسائل النصية القصيرة عبر الجوال.

وعادة ما تكون الأنظمة، التي تتطلب أي نوع من التدخل اليدوي، مثل جداول الخدمة الورقية أو الإلكترونية، أو مطالبة الأفراد بإبراز شاراتهم لدى قارئات البطاقات المخصصة، عرضة للخطأ ومن ثم تفتقر إلى الدقة. وقد باتت الأنظمة



## توقعات 2018 للمنافسة من أجل تحقيق الأهداف الرئيسية للتنقيب



توقع وود ماكنزي توشي شركات النفط الحرس تجاه التنقيب

أكد تقرير «وود ماكنزي» أن الفترة المقبلة ستشهد منافسة كبيرة لتحقيق أهداف التنقيب الرئيسية. فقد بدأ قطاع النفط والغاز - بالفعل - في التعافي من التراجع الحاد للأسعار في ٢٠١٨. وقال الدكتور أندرو لاثام، نائب رئيس شركة وود ماكنزي العالمية للبحث والتنقيب: «نتوقع أن تواصل أغلب الشركات اتباع نهج حذر للغاية في التنقيب. وستكون المنافسة شرسة للوفز بأفضل الفرص. بينما من المتوقع أن يشهد عام ٢٠١٨ انخفاضاً حاداً في الاستثمارات في هذا المجال وأعداد الآبار».

وقد حددت المجموعة الاستشارية العالمية خمس قضايا بارزة هذا العام، نخص اثنتين منها بالذكر. «أولى هذه القضايا هي انكماش عدد شركات التنقيب الملتزمة بتنفيذ المشاريع، في حين من المتوقع أن يظل التنوع المؤسسي منخفضاً على نحو غير معتاد. وثانياً، من المتوقع أن تستهدف أغلب الشركات فرصاً مماثلة لبعض الشيء. كما يظل تنوع المشاريع الأحواض محدوداً أيضاً على غير المعتاد. وهو ما يؤدي إلى زيادة حدة المنافسة وتقليص هوامش الربح، وهو خطر لم نشهده منذ ٢٠١٤».

وفيما يلي العوامل الخمسة الرئيسية التي تؤثر على قطاع التنقيب في ٢٠١٨ حسب توقعات وود ماكنزي:

- وجود عدد أقل من شركات التنقيب يركز على عدد أقل من المشاريع.
- تظل الاستثمارات مُقيّدة.
- تتواجد الآبار الكبيرة - بشكل رئيسي - في المياه العميقة والمناطق الحدودية.
- زيادة رقعة المساحات المستغلة بوتيرة سريعة.
- عودة الأرباح التي طال انتظارها.

وقال الدكتور أندرو لاثام: «سيطال اللاعبون الكبار - مجدداً - المشهد من بعيد. فلا يسع مثل هذه الشركات العملاقة التأقلم مع تقليص الإنتاج الناجم عن وفرة إنتاج الغاز الصخري الأمريكي من قبل الشركات الأمريكية المستقلة، وهي تعلم أن التنقيب التقليدي سيكون مطلوباً لإحداث التجديد بعيد المدى».

على الجانب الآخر، من المنتظر لشركات النفط الوطنية الآسيوية زيادة أعمال التنقيب في ٢٠١٨، بما يتماشى مع استراتيجية تجديد الموارد المستدامة للتعامل مع خفض الإنتاج الهيكلي. ولفت تقرير وود ماكنزي إلى أن التوقعات مختلطة للشركات المستقلة.

ومن المتوقع وجود المشاريع الأكثر تفضيلاً في مناطق المياه العميقة التي تبشر بوفرة الموارد، وسرعة التسويق

التجاري، وتقل أسعارها عن ٥٠ دولاراً للبرميل. وتتواجد أغلب هذه المواقع المفضلة حول الجرف الأطلنطي. بينما تأتي التوقعات مختلطة للأحواض، التي ثبت احتواؤها على النفط مثل غويانا وموريتانيا وخليج المكسيك، وتلك التي لم يثبت احتواؤها على النفط مثل نونا سكوتيا وجنوب إفريقيا وناميبيا. كما يتوقع التقرير أيضاً أن يعزز التنقيب في المياه العميقة التعرض للغاز، وهو هدف استراتيجي رئيسي لكبرى الشركات.

وأضاف دكتور لاثام بأن هناك دلائل مبكرة على أن قطاع التنقيب سيعود سريعاً لتحقيق الربح. وقال: «بناءً على الأحجام التي يمكننا قياسها بالفعل، فإن تكاليف اكتشاف الموارد تناهز دولارين أمريكيين لكل مكافئ برميل نفط. وإذا كانت قيم التطوير المتوسطة لهذه الأحجام تبلغ نحو دولارين لكل مكافئ برميل نفط، فإن قيمة اكتشافات العام ستفوق تكلفة التنقيب عنها».

ويتعين أن تحقق الصناعة عائدات مكونة من رقمين في ٢٠١٨. وقد بدأت التعديلات التي أُجريت على المحافظ الاستثمارية وخفض التكاليف تجني ثمارها. فقد انخفضت تكاليف التنقيب لدى العديد من الشركات إلى النصف في مقابل العام ٢٠١٤ إذ بلغت ذروتها، مما أسهم في سرعة حفر أغلب الآبار. وسوف تتجنب أغلب الشركات إبرام عقود باهظة التكلفة لإنشاء أبراج الحفر في الآبار المرتقبة كما كان الحال في أعوام الازدهار. وتساعد عوامل مثل الركود وتوحيد المقاييس وإعادة تصميم المشاريع جميعها في خفض تكاليف التطوير.



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مارس/آذار

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الأرض - GEO 2018 ..... المنامة  
٦ - ٨ ... معرض كهرباء الشرق الأوسط ..... دبي

## المغرب يعتزم إنجاز مشروع للغاز الطبيعي باستثمارات 4,6 مليار دولار

يخطط المغرب لتقديم عطاء لإقامة مشروع لتنمية الغاز الطبيعي بقيمة 4,6 مليار دولار أمريكي، وذلك تماشياً مع استراتيجية الدولة لتنويع مصادر الطاقة لديها، وتحقيق الاكتفاء الذاتي. وقال وزير الطاقة المغربي، عزيز رباح، بمناسبة الإعلان عن المشروع، إن مشروع الغاز الطبيعي سيتضمن إنشاء محطة للغاز الطبيعي. وذكر أيضاً أن الحكومة المغربية قد استقرت بالفعل على المستشارين الماليين والفنيين الذين سيتم تكليفهم بهذا المشروع. ويتمشى هذا المشروع مع مبادرة الدولة التي تهدف إلى تقليل اعتمادها على الوقود الأحفوري المستورد. وقد تم اعتماد خطة التنمية الوطنية المغربية للغاز الطبيعي المسال في أواخر العام 2014، وهي تشمل إنشاء محطة للغاز الطبيعي المسال في منطقة الجرف الأصفر. ومن المقرر الانتهاء من هذا المشروع بتكلفة كلية تبلغ 4 مليارات دولار أمريكي. ومن المنتظر أن تبلغ سعة المحطة خمسة مليارات متر مكعب من الغاز المسال سنوياً. وهي تتضمن إنشاء رصيف بحري، ومعامل لإعادة تحويل الغاز، هذا فضلاً عن مد أنابيب جديدة لنقل الغاز عالي الضغط. وفي ديسمبر/كانون الأول 2017، وضعت الحكومة مشروع قانون لدعم مشاريع الغاز المسال في البلاد. وتهدف مبادئه التوجيهية إلى وضع نظام تعريفات لسوق الغاز الطبيعي في المغرب. كما يركز مشروع القانون أيضاً على تشجيع المستثمرين الأجانب على إنشاء البنية التحتية للغاز المسال، لاسيما شبكات النقل والتوزيع.



المشروع يشمل إنشاء محطة لمعالجة الغاز

## أدنوك تمنح عقدي التصميم الهندسي الأولي لمشروع إنتاج الغاز الحامض



مشروع إنتاج الغاز الحامض من الحقول البحرية بشمال غرب الإمارات

اكتسبتها من تطوير حقل «شاه». ومع بدء مرحلة الأعمال الهندسية الأولية، من المنتظر أن تطبق أدنوك نهجاً متكاملاً لتنفيذ المشاريع، بهدف تقليص الجدول الزمني، وخفض تكاليف تطوير المشروع، وذلك من خلال التنسيق والتكامل بين كافة الشركاء المعنيين. ومن بين هؤلاء مقدمو عروض الأعمال الهندسية والمشتريات والإنشاءات المحتملون والمصنعون الرئيسيون والهيئات الحكومية، والذين يؤدون دوراً مهماً لتحسين جودة التصاميم ورصد التحديات والارتقاء بدقة المهام الهندسية المطلوبة.

أدنوك لمنح خمسة عقود لمركبي التكنولوجيا، والتي تشمل تراخيص تقنيات معالجة الغاز، ووحدة استخلاص الكبريت، وسوائل الغاز الطبيعي، واستخلاص المكثفات (بالمعالجة المائية)، وتوليد الهيدروجين. وتعتبر هذه التقنيات في غاية الأهمية لنجاح تنفيذ مرحلة الخدمات الهندسية الأولية. من جانبه، قال عبد المنعم سيف الكندي، مدير دائرة التنقيب والإنتاج في أدنوك، إن الشركة تهدف من خلال هذين العقدتين إلى تعزيز قدراتها وإمكاناتها للاستفادة من نجاحها وخبرتها في إنتاج الغاز عالي الحموضة، والتي

منحت شركة بترول أبوظبي الوطنية «أدنوك» عقدي خدمات التصميم الهندسي الأولي لمشروع إنتاج الغاز الحامض من حقول «حيل» و«غشة» و«دلما» البحرية على شركة «بكتل» البريطانية و«تكيب إف إم سي» الإماراتية. وقد حصلت «بكتل» على عقد حقلي «حيل» و«غشة» بينما حصلت «تكيب إف إم سي» على عقد «دلما».

ويعتبر عقدا التصميم الهندسي الأولي - مجتمعين - أكبر عقدين تقوم شركة النفط والغاز بمنحهما من حيث ساعات العمل، وهو ما يعكس أهمية مرحلة التصميم الهندسي الأولي التفصيلي لتحقيق التوازن الأمثل بين تكلفة المشروع والجدول الزمني. ومن المتوقع أن يلي المشروع، الذي يقع في المنطقة البحرية شمال غربي إمارة أبوظبي، 20 في المائة من الطلب على الغاز في دولة الإمارات، بحلول النصف الثاني من العقد التالي.

وقال معالي الدكتور سلطان أحمد الجابر، وزير الدولة والرئيس التنفيذي لمجموعة أدنوك: «تبذل «أدنوك» جهوداً حثيئة لتلبية الطلب المتزايد على الغاز في أبوظبي وفي دولة الإمارات بوجه عام، بما في ذلك ضمان الاستغلال الأمثل لموارد الغاز، تماشياً مع استراتيجية 2030 للنمو الذي سيسهم هذان العقدان في تمكين أدنوك من استثمار مكامن الغاز الحامض غير المطورة، والتقدم نحو تحقيق هدفنا الاستراتيجي المتمثل في ضمان إمدادات مستدامة واقتصادية من الغاز».

وإلى جانب منح عقدي التصميم الهندسي الأولي، تخطط





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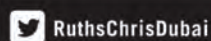
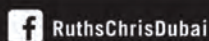
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