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Oil Review Middle East

Covering Oil, Gas and Hydrocarbon Processing

VOLUME 19 | ISSUE 1 2016

What lies ahead for the oil market?

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- The Iran Petroleum Contract - challenges and opportunities
- Top technology trends
- Rig automation for safety and efficiency
- Well integrity management - past, present and future
- Big data and the cloud
- The transition to a low-carbon economy

Mike Lord, business development director at Iraq-based Harlow International, shares his thoughts on building local capacity in Iraq's security industry.

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Covering Oil, Gas and Hydrocarbon Processing

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Editor's note

THE NEW YEAR has heralded yet another wave of cutbacks and job losses in the global oil industry as the oil price sinks lower and lower. How long can it last? Our oil market feature on p20 makes for compelling reading. In the Middle East, however, the picture is more positive as operators continue to maintain production. The Baker Hughes rig count, a barometer of exploration and development activity, shows that the rig count in the Middle East rose by 4.7 per cent in 2015 compared with a worldwide drop of 44.6 per cent – the only region in the world to experience growth. *Oil Review* promises to bring you insight and intelligence to help you weather the downturn. Automation and big data will be hot topics this year, as our technology trends article on p30 highlights. While on p18 the ACCA outlines some key factors business leaders in the oil and gas sector need to master to steer their businesses through this challenging period.

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Front cover image: Christian Lagerek / Shutterstock

UAE oil & gas sector needs to commit to long-term thinking for meaningful cost-cutting, says DNV GL

MORE SENIOR OIL and gas professionals in the UAE felt their organisation had been successful in achieving its cost-efficiency targets over the past year than the global average (83 per cent versus 74 per cent globally), according to a new report published by DNV GL, the leading technical advisor to the oil and gas industry.

Despite strong cost efficiency achievements, UAE respondents still favour more short-term responses to the downturn. Short-term strategies include focusing more on onshore operations (40 per cent), shifting from CAPEX to OPEX efficiency, and favouring investments with a shorter time-frame (55 per cent) according to the report, *A New Reality: the outlook for the oil and gas industry in 2016,* based on a survey of 921 senior global industry players. UAE respondents also believe the sector has taken a short-term approach to innovation and R&D (36 per cent) and to skills and career development (45 per cent), compared to 32 per cent and 43 per cent respectively among global respondents.

Cost management has fallen slightly as a high corporate priority, but there is expected to be growing pressure on the supply chain (31 per cent of respondents in 2016 compared to 20 per cent in 2015). Reducing the headcount will be less important in 2016 as a cost management measure, down from 30 per cent last year to 24 per cent in 2016.

Anupam Ghosal, regional manager for Middle East and India, DNV GL – Oil & Gas, says, "Whilst the price remains low, some short-term cost cutting will continue with the supply chain still under pressure, and it is concerning that a short-term approach is being taken to skills and innovation. However, there are signs that the Middle East is adapting to the new reality of the low oil price and doing its homework in implementing long-term cost-management changes. Increasing standardisation and collaboration are high on the agenda, and will help put the region on a sustainable growth path for the future."

The UAE is receptive to standardisation and 66 per cent of

Top priorities for imposing stricter cost controls

respondents believe that organisations will achieve greater standardisation of tools and processes, while 60 per cent think that operators will increasingly push to standardise their delivery globally.

While only 17 per cent of UAE respondents plan to increase R&D spending, this is still more than the global average of 15 per cent. The most favoured strategy in order to maintain innovation within a cost-pressured environment is to increase collaboration with other industry players (43 per cent). Enhanced oil recovery (31 per cent), unconventional gas extraction technologies (29 per cent) and unconventional oil extraction technologies (28 per cent) are perceived as the new/emerging technologies that will have the greatest industry impact in 2016.

The top two barriers to growth cited are uneconomic oil prices (60 per cent) and a weak global economy (47 per cent). More than a third of UAE respondents (36 per cent) identified geopolitical instability as the third largest barrier to growth, compared to 13 per cent globally.

Download a complimentary copy of A New Reality: the outlook for the oil and gas industry in 2016 from: http://dnvgl.com/anewreality.

Need for transition to low-carbon economy highlighted at World Future Energy Summit

LAURENT FABIUS, PRESIDENT of COP21, said in an address to the World Future Energy Summit (WFES) which took place in Abu Dhabi from 18-21 January, that "fossil fuel players will need to rise to the challenges and opportunities presented by COP21 …oil and gas activities will have to adapt."

An international panel of government and corporate leaders shared their thoughts on practical ways to move away from dependence on fossil fuels at a session on "Accelerating Progress to a Low Carbon Future".

Nick Cochrane-Dyet, special advisor to the chief representative of BP, introduced the session with an announcement from the annual *BP Energy Outlook* report that while less coal and more gas is being utilised across the world, the 2°C temperature increase scenario could still occur before 2035. He urged the private and government sectors to "accelerate progress."

Dr Matar Al Neyadi, undersecretary to the UAE Ministry of Energy, outlined the progress made by the UAE since 1995, when ADNOC implemented a zero-flaring policy "wherever possible". He added that in 2014, Masdar was involved in a carbon capture and storage project that is still continuing. Removing the fuel price subsidy has been another UAE policy that has been put in place to encourage more responsible fuel consumption.

COP21 was the scene of "spirited debate", according to Kerry Adler, president and CEO of SkyPower Global. "We saw a turning of the tide, like going from a cassette tape to a CD." He said that much of the drive towards increasing the use of renewables has come from social media and this is "forcing a transition to a low-carbon economy."

Ahmed Al Hashmi, head of Upstream Technology, BP, spoke about the importance of economies transitioning from coal to gas, with gas producing half the carbon emissions of coal. He said that BP has signed up to the World Bank's zero flaring initiative and is using "very efficient technology to eliminate flaring."

"Only science and engineering" will be able to meet the challenges of transitioning to a low-carbon economy, according to Neil C. Hawkins, chief sustainability officer and corporate vice president for Environment, Health and Safety, Dow Chemical. He said that Dow has a "COAT strategy" which stands for "Conserve, Optimise, Accelerate and Transition".

"The most cost-effective tool to lower carbon remains energy efficiency," said Hawkins. "The energy that you save, that you never had to produce, is the most efficient."

"We need to grow renewables, we need to reduce coal, we need to reduce emissions from the hydrocarbon sector," said Bjorn Otto Sverdrup, senior vice president for sustainability, Statoil. He urged both governments and private companies to be responsible and to take action to meet carbon reduction goals because "the world is long on ambition but much shorter when it comes to actions." He spoke strongly in favour of the carbon tax: "It may sound strange for a company to ask for more tax, but we need to put a price on what we truly value."

In response to calls from SkyPower's Kerry Adler for fossil fuel companies to co-invest with them in renewable energy, Sverdrup said that companies are making such investments already. Statoil is developing offshore wind plants, including floating operations, he added.

Deb Frodl, global executive director, GE Operations, talked about GE's Ecomagination projects in renewable energy, putting forward a solid business case, with this part of the company's operations producing US$200bn in revenue.

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➔ Executives' Calendar 2016

FEBRUARY			
9-11	**International Petroleum Week**	LONDON	www.energyinst.org/events/ip-week
14-16	**ME-TECH 2016**	DUBAI	www.me-tech.biz
22-24	**PetroEnvironment**	DAMMAM	www.petroenvironment.com
22-24	**Iran Oil & Gas Post Sanctions Summit**	LONDON	www.iranoilgas-summit.com
MARCH			
7-10	**GEO 2016**	MANAMA	www.geo2016.com
8-10	**Saudi Downstream**	JUBAIL	www.saudidownstream.com
20-24	**SOGAT**	ABU DHABI	www.sogat.org
21-23	**Oil & Gas West Asia (OGWA)**	MUSCAT	www.ogwaexpo.com
22-25	**OTC Asia**	KUALA LUMPUR	www.otcasia.org
27-28	**'Moving Safety Into The Boardroom' Workshop**	DUBAI	www.hse-forum.com
APRIL			
10-11	**Kuwait Oil & Gas**	KUWAIT	www.cwckuwait.com
12-13	**Tank World Expo**	DUBAI	www.easyfairs.com
12-14	**International SAP Conference for Oil and Gas**	THE HAGUE	www.uk.tacook.com
13-17	**Iran Plastics**	TEHRAN	www.iranplast.ir
18-20	**GCC Environment & Sustainability Forum**	JEDDAH	www.gccenvironmentforum.com
19-21	**8th Mediterranean Offshore Conference (MOC)**	ALEXANDRIA	www.moc-egypt.com
20-23	**Erbil Oil & Gas**	ERBIL	www.erbiloilgas.com
24-26	**Big Data Analytics for Oil & Gas**	ABU DHABI	www.oilandgasbigdata.com
MAY			
2-5	**Offshore Technology Conference (OTC)**	HOUSTON	www.otcnet.org

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

Would you move your safety function to the boardroom?

HEALTH AND SAFETY practices in the Middle East are changing.

Gone are the days of simply ensuring lower accident rates or developing safety training programmes. Modern organisations are seeing the safety function as a business partner and an integral part of business success. Safety or SHE, HSE, HSSE and QHESH may need to redefine its role and accommodate more 'business' sensitive approaches to fully participate in the decision making process of the business.

Thinking of HSE as part of an integrated risk management strategy with a commercial angle inevitably moves discussions about the safety function into the boardroom.

Riad Mannan, course director, Alain Charles Managed Events, says, "The 'Moving Safety into the Boardroom' Workshop will examine the foundations and principles on which modern safety interventions are based, and explain how HSE should be a risk management issue and discussed at the board level. The sessions, including case studies, will challenge the traditional function of the safety professional in today's modern and dynamic business world and question whether it is compatible to the needs of the modern corporate business."

The 'Moving Safety Into The Boardroom' Workshop (27-28 March 2016, Dubai) will examine the foundations and principles on which modern safety interventions are based, including the recently 'in vogue' behavioural based safety programmes which are now being placed under ever increasing scrutiny in terms of value and sustainability. By attending this breakthrough workshop, you will be able to:

- Create an alternative 'corporate' approach to health and safety risk management.
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- Understand the concepts and principals of integrated risk management strategies.
- Appreciate the changing scenes within the boardroom regarding traditional health and safety risk.
- Redirect the 'safety' effort in order to support and achieve sustainable performance in risk management and achieve realistic corporate objectives.
- Effectively integrate operational and strategic risk, appreciating fully the prevailing risk appetite of a corporate organisation and potential risk exposures.

The course is aimed at senior directors, corporate risk managers, health and safety practitioners, corporate finance, insurance, compliance officers, internal auditors and human resources managers who would like to understand, analyse and explore potentially radical or controversial alternative approaches to health and safety risk management and the function of 'safety'.

This workshop is relevant to all sectors but particularly government, construction, facilities management, oil and gas, process industries, manufacturing, hospitality, healthcare, maritime, dock and harbours.

Workshop facilitator is Roy Bedson, Director, Consus International Limited, who has over 30 years' experience in the management of occupational and organisational risk. Roy undertakes training and seminars on an international basis, delivering courses in Europe and the Middle and Far East.

For more information on the sessions and the workshop brochure, please go to: http://www.hse-forum.com/ or email riad.mannan@alaincharles.com.


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Summit to reveal further details of Iran Petroleum Contract

THE INTERNATIONAL OIL and gas industry turned its collective attention to Tehran towards the end of last year as the Iranian Ministry of Petroleum formally unveiled the new Iran Petroleum Contract (IPC) and dozens of projects that are to be opened to international investment.

The IPC marks a significant improvement from the previous buy-back contracts that were unpopular with international oil companies, now in some cases allowing reserves to be booked, covering a period of up to 25 years and NIOC no longer limiting capital spend, in an effort to stimulate interest from international oil companies with the recent lifting of sanctions and the opening of the country's oil and gas sector to foreign investment.

Over fifty projects are being offered, worth more than US$30bn, which the Ministry hopes will boost total oil production capacity to 5.7mn bpd by the end of 2020, up from 2.9mn bpd in December 2015, and further increase Iran's gas output. The country has plans to boost oil production by an immediate 500,000 bpd following the lifting of sanctions and a further 500,000 bpd over the next six months. The US Energy Information Administration (EIA) forecasts that Iran's annual average production will r each 3.1mn bpd in 2016 and almost 3.6mn bpd in 2017. The country possesses the fourth largest proven oil reserves in the world and the second largest natural gas reserves.

The CWC Group's *Iran Oil & Gas Post Sanctions Summit*, taking place in London on 22-24 February, is a continuation of the Tehran Summit, and is held with the support of the Ministry and NIOC. Bringing together the global oil and gas industry, the Summit will provide clarity and greater details on some important points within the IPC and the projects that have proved most popular. Over the three days the Summit will feature senior representatives from across the Iranian and international petroleum industry including HE Mr Roknodin Javadim, deputy oil minister and managing director, NIOC; HE Mr Seyed Mehdi Hosseini, chairman of the Ministry's Oil Contracts Restructuring Committee; and HE Dr Amir Hossein Zamani Nia, deputy oil minister for International Affairs, Ministry of Petroleum.

For further information see the website at www.iranoilgas-summit.com.

ME-TECH 2016 to highlight latest downstream projects and technologies

ME-TECH, the Middle East Technology Forum for Refining & Petrochemicals, brings together producers and suppliers to share and discuss the very latest market trends, technology developments and projects in refining and petrochemicals. This year's event, taking place from 14-16 February in Dubai, has a particular emphasis on the challenges being faced by the industry – with the low crude price and the slowdown of the Chinese economy impacting global markets and investment for new projects.

Now in its sixth year, ME-TECH 2016 includes technology and project-related presentations as well as ample opportunity for networking. The Forum will begin on 14 February with a day of workshops hosted by leading service providers. It will continue on 15 and 16 February with plenary sessions followed by two parallel conference streams, one focused on refining and the other on petrochemicals.

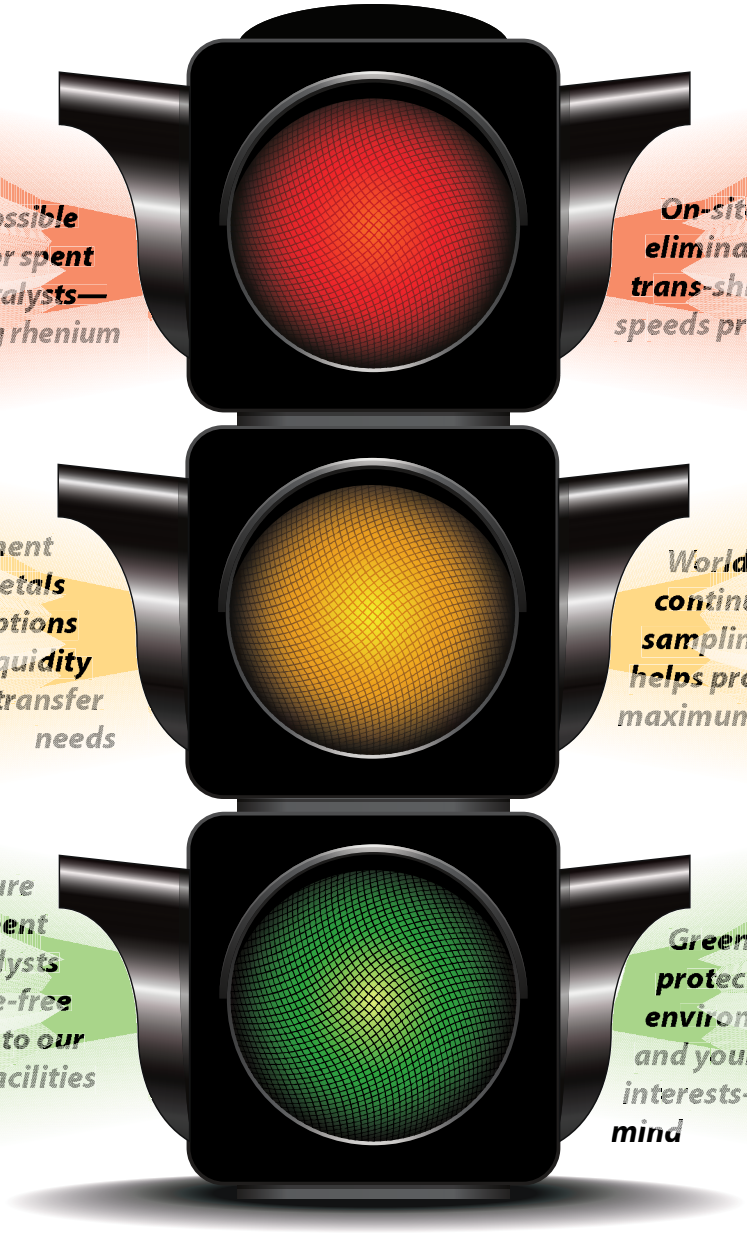
The plenary sessions will focus on the future outlook of the industry as well as showcasing major projects from across the region run by operators including KNPC, Takreer, ENOC, Sabic, Sadara Chemical Company and Liwa Plastics Industries Complex (LPIC).

The event will look at the latest technologies in refining and petrochems (Photo: Nan 123456 / Shutterstock)

Refinery and petrochemicals integration will once again be a leading topic during the conference. The event will also include discussions on breakthrough technologies and optimisation solutions.

ME-TECH has proved to be the essential meeting place for the Middle East downstream industry and an excellent platform to keep up-to-date with the latest technologies and key projects in this important region.

For further information see the website at https://www.europetro.com/en/metech2016



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Middle East less affected by project deferrals, says Wood Mackenzie

WHILE THE FALLING oil prices have led to projects and commercial reserves being deferred globally, the Middle East is not witnessing the same level of deferrals, reveals Wood Mackenzie's latest analysis.

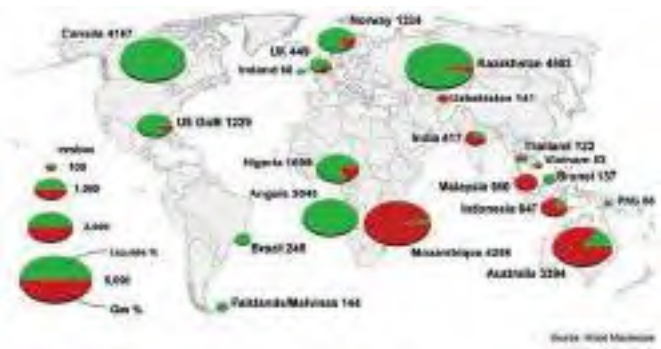
68 major projects worldwide containing 27bn boe of commercial reserves have been deferred since the oil price crash in 2014, according to the company's latest *Pre-FID project deferral update*, involving US$380bn of total project capex.

Wood Mackenzie's principal analyst for upstream research Angus Rodger said, "Tumbling prices and reduced budgets have forced companies to review and delay Final Investment Decisions (FID) on planned projects, to re-consider the most cost-effective path to commerciality and free up capital just to survive at low prices."

Deepwater exploration has been hit the hardest, accounting for more than half of the total, as companies are forced to rework projects with high breakeven, large capital requirements and high costs. The countries with the largest inventory of delayed oil projects are Canada, Angola, Kazakhstan, Nigeria, Norway and the USA, while Mozambique, Australia, Malaysia and Indonesia have the largest deferred natural gas reserves.

However, Wood Mackenzie's MENA upstream research director Lindsay Grant commented, "We are not seeing the same level of project deferrals in the Middle East as elsewhere. This is largely because the strategic drivers for production – and therefore investment – are different to many other countries."

Most Middle Eastern economies are reliant on revenue from oil production and therefore, the NOCs continue to invest to ensure continued production for the medium and long-term. Additionally, securing domestic gas supplies is also important to many Middle Eastern countries and there is continued investment in key gas projects such as Khazzan Makarem in Oman and the Wasit Gas Project in Saudi Arabia. However spend is being reined in and costs are under the spotlight.



Deferred projects by country and commercial reserves (mn boe)

"With oil prices below US$35/bbl, oil and gas companies will be forced to go into survival mode in 2016," said Wood Mackenzie, comenting on the global situation. "Further project delays and cuts to discretionary investment are highly likely.

"That said, companies are being forced to re-evalulate how they can profitably develop large, high-cost conventional reserves at low prices.

"Not only will we see a genuine push towards standardisation, but it will also hopefully promote a level of innovation so far only seen in US tight oil."

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‘Gulf economics will drive O&G sector this year’

RISING DEFICITS AND constrained government budgets in the Gulf will have the biggest macroeconomic impact on the region’s energy industry in 2016, according to 43 per cent of respondents to a Gulf Intelligence Industry Survey of 250 energy industry professionals operating in the region.

Economies in the Gulf, including Saudi Arabia and the UAE, face challenging times in 2016 as the oil price hovers under the US$30 per barrel mark, hitting a 12-year low. Fiscal pressure has been steadily building since oil prices started a sharp downward trend in June 2014, with Saudi Arabia posting its biggest ever budget deficit last December, at US$86bn – equivalent to around 16 per cent of GDP. Kuwait posted its first budget deficit in fifteen years in mid-2015, with both the UAE and Oman also facing larger deficits.

“In 2015, we saw that most of the Gulf countries took a budget hit from lower oil prices, but they kept spending relatively high and their economies kept growing,” Marios Maratheftis, global chief economist at Standard Chartered Bank said.

“2016 will be different as it looks like Saudi Arabia is not willing to keep spending as it was and neither is Oman. If oil prices average US$40 per barrel this year, we should expect less spending from GCC governments, which will translate into lower economic activity.”

The majority of Gulf countries have taken the unprecedented move to reduce fuel subsidies in a bid to offset growing budget deficits. Kuwait, the UAE and Saudi Arabia, respectively, were among the first countries in the Gulf to introduce cuts in 2015. Another wave of subsidy reforms is expected in the Gulf this year, which is likely to include Oman’s first subsidy cuts.

Emmanuel Ibe Kachikwu, Nigeria’s minister of state for petroleum resources and current OPEC president 2015, said that an emergency meeting of OPEC members may be called during Q1 2016 to address lower oil prices.

Mubadala Petroleum and PEMEX sign MoU to explore E&P opportunities in Mexico

MUBADALA PETROLEUM AND Petróleos Mexicanos (PEMEX) have signed an agreement to provide the basis for discussions between the two companies and their affiliates about potential opportunities in Mexico’s energy sector.

The MoU was signed by Musabbeh Al Kaabi, CEO of Mubadala Petroleum, and Emilio Lozoya Austin, CEO of PEMEX, in Dubai in January 2016.

With providing a framework for discussions to identify potential upstream exploration and production projects, the MoU also identifies a number of broader areas for potential collaboration in the oil and gas midstream sector, and energy and power-related infrastructure that may be of interest to other Mubadala businesses.

Al Kaabi said, “This MoU is a first step to opening a concerted dialogue with PEMEX to look at collaborative opportunities in Mexico and reflects the strengthening relationship between the UAE and Mexico. We look forward to working alongside PEMEX to see how we might contribute to Mexico’s initiative to revitalise and develop its energy sector.”

Austin added that the Mexican energy reform allowed PEMEX to have partners for upstream and midstream projects. “Mubadala Petroleum is a world-class partner to establish a solid, long term relationship with. We will look into some primary projects, as well as to support infrastructure projects for the core business and decide joint investments that benefit both parties and may consider third party if required.”

Details of any specific opportunities and technical or commercial discussions were, however, not revealed.

Saipem signs MoUs for Iran projects

SAIPEM HAS ENTERED into a Memorandum of Understanding (MoU) concerning potential cooperation on major pipeline projects in Iran.

The MoU, signed with the National Iranian Gas Company (NIGC), envisages discussions aimed at Saipem’s potential cooperation in NIGC pipeline projects - including IGAT9 and IGAT11 - which cover 1800km.

The company has also signed an MoU with the Parsian Oil & Gas Development Company, which envisages discussions aimed at Saipem’s potential cooperation in revamping and upgrading the Pars Shiraz and Tabriz refineries. The agreement was signed on the first day of the official visit to Rome of Iranian President Hassan Rouhani, in the presence of Italian Prime Minister Matteo Renzi and the Iranian President.

Oman’s oil production rises by one per cent in December 2015

OMAN’S TOTAL PRODUCTION of crude oil and condensates touched 31.21mn barrels in December 2015, a daily rate of over a million barrels and a rise of 1.12 per cent compared to a month before.

The monthly report released by Oman’s Ministry of Oil and Gas pointed out that the total quantities of crude oil exported abroad in December 2015 stood at 25.62mn barrels, a daily rate of 826,547 barrels, which rose by 0.77 per cent.

As always, the Asian markets absorbed the largest proportion of the Oman’s oil exports. China topped the list of importers of Oman’s oil in December 2015 by 68.16 per cent, comprising a marginal rise of 0.69 per cent compared to November 2015.

The total amount of crude oil exported in December 2015 stood at 25.62mn barrels (Photo: jp26jp/Pixabay)

Omani crude oil imports by Taiwan and South Korea decreased by 5.3 per cent and 2.24 per cent respectively.

The percentage of the Omani crude oil imported by India comprised 3.85 per cent, Japan 1.98 per cent and Thailand 0.03 per cent in comparison to November 2015.

The report reflects the critical times experienced by the world oil markets and the remarkable slump of the trading in energy exchanges all over the world. It also reflects the direct and clear implications of this situation on the settlement prices for most reference oil prices in the world, pushing them sharply and consistently downwards, including Oman Oil future contracts.

According to the US Energy Information Administration (EIA), Oman is now the largest oil and gas producer outside OPEC. Production has been rising steadily since 2007, boosted by EOR techniques and new discoveries.

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Iran set to develop largest nitrobenzene plant

Nitrobenzene is mainly used to produce aniline. (Photo: Skeeze/Pixabay)

THE SECOND PHASE of construction on the Karoon Petrochemical Plant in Iran has been completed. The plant is being constructed by Iranian and Swedish engineering companies, and is expected to be the largest and sole nitrobenzene production unit in the Middle East.

Toluene diisocyanate (TDI) will be produced by the plant, which has a capacity of 40,000 tonnes per year.

Nitrobenzene is mainly used to produce aniline – a raw material to make rubber chemicals, pesticides, paints, explosives and medicines. Preparing nitrobenzene is dangerous, as it is a highly exothermic product.

In addition to TDI, Karoon produces hydrochloric acid and sodium hypochlorite in the form of by-products. The company's products and services are designed to provide domestic downstream industries with high quality raw material. The company is entering the global isocyanates market.

SABIC showcases ICEhouse™ at WEF

SABIC's product on showcase at WEF

SAUDI ARABIA'S SABIC showcased a range of its advanced materials at the World Economic Forum in Davos, Switzerland. These materials enable the creation of energy and material-conserving structures that are easy to assemble, disassemble and reuse.

Named ICEhouse™ – where ICE stands for Innovation for the Circular Economy – the chemical component that was showcased at Davos was built using SABIC's LEXAN™ sheet and systems for the walls, ceiling, roofing and windows – all mounted to an aluminium frame. LEXAN™ multi-wall sheets on the walls and ceiling are filled with an insulating nanogel for energy efficiency.

"This structure is a superb example of how SABIC's cutting-edge technological materials and ingenious designs from a world-leading architect, such as William McDonough, can combine to push the boundaries of architecture and sustainable development," said Yousef Al-Benyan, acting vice-chairman and CEO of SABIC.

ICEhouse™ is flexible and energy-efficient, providing architects unique materials to design elegant and durable structures. ICEhouse was conceived, designed and built by sustainability pioneer William McDonough and his companies, William McDonough + Partners and WonderFrame LLC. It was built with collaboration and support from SABIC.

YASREF refinery in Yanbu inaugurated

KING SALMAN BIN Abdulaziz Al Saud of Saudi Arabia and Chinese president Xi Jinping, have inaugurated the Yanbu Aramco Sinopec Refining Company (YASREF) refinery.

Saudi Aramco holds a 62.5 per cent share and Sinopec holds a 37.5 per cent share in YASREF. Both companies focus on driving downstream growth across the hydrocarbon chain.

In conjunction with the inauguration, the two companies also signed a "Framework Agreement for Strategic Cooperation" to enhance the competitiveness of the crude oil supplied by Saudi Aramco to Sinopec and to actively explore cooperation opportunities in key areas including oil and gas services, refining, chemicals, crude oil supply, sales, petroleum services, petrochemical services, technology development and promotion, and new energy.

Khalid A. Al-Falih, chairman of Saudi Aramco, said, "The mutually beneficial relationship between China and Saudi Arabia has rapidly strengthened in the last two decades. China is the Kingdom's largest trading partner and Saudi Aramco is proud to be China's number one supplier of energy. YASREF, which is a partnership between Sinopec and Saudi Aramco, is part of Saudi Aramco's strategy to expand and diversify its national and international investment portfolio."

According to the Saudi Aramco chairman, three strategic factors will help to further strengthen the relationship and transform it from transactional supply to a deeper, long-term partnership. "First is the doubling of Saudi Arabia's energy supply to China, coupled with continued downstream investment to support economic growth, both in China and the Kingdom. The second is implementing Jinping's 'One Belt-One Road' initiative which will enable both the Kingdom to become a stronger partner to China, and also increase China's investment in the Kingdom's economic and industrial cities so that Saudi Arabia is a hub for China to access its MEA markets. Third is the need to continually improve the mutual cooperation between the Saudi Arabia and China in the areas of research, innovation, knowledge transfer, and culture."

Borouge signs carbon pact with Maersk Line

BOROUGE HAS SIGNED a carbon pact with shipping major Maersk Line, becoming the first plastics producer in the Middle East to do so. With the help of Maersk, Borouge can now deliver its products to markets with the lowest possible carbon footprint.

"We are pleased to sign this carbon pact with Maersk Line to further enhance our collaboration in reducing the carbon footprint while transporting our products to customers' destinations across the globe," said Ahmed Al Shamsi, senior vice-president – supply chain management in Borouge. "As it reflects our commitment to improve the sustainability performance and strengthen our environmental stewardship, the carbon pact helps Borouge to significantly reduce CO2 emissions from transportation of our products and yet contribute to the growth targets set for our business."

Maersk will help supply Borouge's products to global markets with a lower carbon footprint. (Photo: Flickr)

Borouge aims to limit its shipment emissions. By 2020, Borouge and Maersk Line intend to create transparency on the environmental impact of Borouge's supply chain and reduce Borouge's CO2 emissions from its ocean transportation with Maersk Line by 15 per cent.

Sadara set to be a game changer for Saudi Arabia's petrochemicals sector

FOLLOWING THE START of the Middle East's first solution polyethylene facility, Sadara Chemical Company (Sadara) says it is on track to support Saudi Arabia's downstream industry in 2016.

Mohammad Alazzaz, director of Value Park Department at Sadara

At GPCA PlastiCon 2016, Sadara showcased its range of performance chemicals and plastics. In addition, its new PlasChem park is expected to support the chemical industry in Saudi Arabia.

The Sadara chemical complex, being built in Jubail Industrial City II, is currently more than 97 per cent complete. Following the launch of Linear Low Density Polyethylene, its first product, Sadara is going ahead with commissioning and start-up efforts to bring the remaining 25 units on stream safely and efficiently. Of the 26 world-scale manufacturing units in the Sadara Complex, 14 will deliver completely new products to Saudi Arabia, filling a gap that exists in the regional chemical industry where only 0.3 per cent of chemicals produced are considered specialty products. This will be achieved by deploying state-of-the-art technologies and technical knowledge that officials have gained access to through world-class training programmes, according to Mohammad Alazzaz, director of Value Park Department at Sadara.

Challenges and opportunities - Iran's IPC

Henry Smith, associate director, Control Risks Middle East, outlines some considerations relating to the revised Iran Petroleum Contract (IPC).

IRAN LAUNCHED ITS revised Iran Petroleum Contract (IPC) in November in Tehran to an audience of eager – and mostly Asian and European – upstream energy executives. The revision of the IPC had been announced shortly after President Hassan Rouhani came to office in 2013. The Iranian administration is keenly aware that its unattractive 'buy back' contracts needed to change to increase the country's attractiveness compared to other upstream markets, and particularly during a prolonged period of depressed oil prices. The IPC's launch did not answer every question; companies await the finer details of the IPC, the incentives it will provide, and the exact relationship in the contract between the variable rates of risk and return. These details should be presented in a follow-up event in London in February. Nonetheless, based on the research we have been doing, and our discussions with executives, it is possible to make some observations about the opportunities and challenges that the IPC will present:

- The IPC is improving the contractual terms available, although it is not overhauling the underlying legislation. The IPC will be closer to a production sharing agreement than its predecessor, although foreign companies will remain unable to own reserves and the Iranian government will not invest in exploratory or development work. However, the IPC will provide greater flexibility in calculations of companies' financial rewards, with a variable rate of return based on the risk associated with the specific field a company has invested in. It is unclear precisely how this mechanism will work, with investors waiting to get a better sense of how the rate of return will be calculated for specific projects. As with the previous regulation, no revenue will be made until production has begun at the field.
- The IPC is putting local content at the centre of contracts. Iran's constitution and much of its political establishment place significant emphasis on economic independence and self-sufficiency. As such, it is unsurprising that the IPC mandates the transfer of technical and managerial knowledge from foreign companies to the NIOC, its affiliates and Iranian private sector companies, and the formation of joint ventures with Iranian companies. Although there is still some debate about the precise requirements, this will be a central feature. This presents companies with challenges above and beyond identifying a partner with the technical know-how. Companies will need to think carefully about how a partner, or any potential beneficiary of their local content commitments, meets sanctions compliance standards in order to manage their reputation – more on this below. Nonetheless, companies that come with a proven record of successful local contact and stakeholder engagement campaigns, and have considered how they can implement these in Iran, will no doubt begin negotiations with their Iranian counterparts on a stronger footing.
- Although nuclear-related sanctions will have decreased by the time contracts are being signed later this year, reputational, public relations and compliance challenges for companies will still be significant. Entities that are politically exposed and subject to sanctions will continue to operate in and around the energy sector. Companies will need to have a full understanding of their partners and their relationships. They should also understand the tactics used by lobby groups, particularly those in the USA, that oppose the Iranian government and the nuclear agreement. These groups will attempt to force companies to divest by using a range of methods aimed at increasing the reputational challenges that companies need to manage. Finally, companies need to think about how their business elsewhere in the world could be affected by them entering Iran. Iran has poor political relations with a number of countries, and the consequences of this should be factored in to a company's decision.

> "The IPC is putting local content at the centre of contracts"

The IPC will represent a new opportunity for companies in Iran (Photo: rickyd / Shutterstock)

It appears very likely that when further details of the IPC are revealed in February, we will see a contract that is an improvement on the existing buyback legislation that Iran offered, albeit perhaps a smaller one than that initially hoped for by the industry. This will clearly represent a new opportunity for companies, with a range of onshore and offshore, and early and late stage projects available. However, companies' ability to realise these will depend on whether they can integrate a carefully considered compliance and risk management programme into their entry plan, that accounts for the challenges Iran will pose. ■

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Weathering the perfect storm

A new report from ACCA (the Association of Chartered Certified Accountants) outlines the key factors business leaders in the oil and gas sector need to master if they want to be successful in the current volatile and competitive market.

WITH OIL PRICES plummeting to below US$30/bbl and further drops in price not out of the question, Faye Chua, head of futures at ACCA and author of a report entitled *Low Prices, high expectations: oil and gas CFOs in demand*, has some advice for business leaders.

"Right now, the risk of going under is a very real one for many oil and gas companies. Three major factors have combined to create a perfect storm in the sector. One – lower cash flows due to depressed oil prices. Two – the existing debt overhang. And three – the so-called 'great crew change' as the impending retirement of senior professionals over the next five years leaves a talent vacuum in its wake."

Business chiefs who can successfully steer their organisation through this challenging period will be set to prosper. So what should the successful leader consider as he or she negotiates these challenges?

Chua says, "The key to navigating the choppy waters we are currently experiencing in the oil and gas sector is good management of growth, costs, funding and externalities. Get those four factors under control and you give your organisation the best chance of success."

Growth management

Identify and postpone projects with a high degree of uncertainty. Be especially ruthless with any at the early stages of development which can be killed without much fuss.

Seek partners to share in the risk – and of course, reward – of projects, for example, through part-sale of operating interest in new discoveries.

If you can, explore opportunistic growth via acquisition in areas with room for consolidation, for example oilfield services. There is no reason that the current environment should lead to a growth paralysis mindset. There could be valuable growth opportunities right now, for example via M&A or by continuing investment in nationally important, high-profile projects with longer-term value.

Cost management

Do not throw out the baby with the bath-water. Concentrate your asset sales on those not central to long-term strategy as much as possible. Organisations with a strong core focus are always better prepared in times of extreme stress or volatility.

Where redundancies are inevitable, manage them carefully to account for skills-gap impact, and ensure readiness for future growth when the oil price rebounds.

Re-negotiate discounts with contractors to manage service costs and on-going expenditure. There could be room here as many suppliers may prefer lower margins to idle machinery in the challenging times we are currently experiencing.

> "The key to navigating the choppy waters is good management of growth, costs, funding and externalities"

Business leaders and CFOs need to get key areas under control to succeed in the current environment (Photo: dotshock / Shutterstock)

Funding management

In the near term it can often all be about survival, but do not lose sight of a credible growth story for the longer-term. To give your organisation the best chance of attracting funding, ensure the security of your current income stream, even if it is reduced. That stability is key to ensuring there is a consistent stream of income.

It is important to model the impact of rising interest rates on sourcing bank and debt funding. Seek a realistic picture as oil prices cannot be modelled on a safe, upward trajectory to pay for higher rates with future income, as they have been in the past.

As minimising risk and exposure becomes critical, explore non-debt options for funding. For example, with specialist equity investors who operate exclusively in the oil and gas sector. In short, private equity funds are going to be your friends.

Managing externalities

Your organisation should aspire to be a clear and respected voice on key sector issues such as the advocating role of government, whether via regulations and global transparency frameworks, or tax incentives to support reduced revenues.

On a similar note, the inevitable short-term fire-fighting should not come at the expense of the long view. You should also be looking at on-going evaluation of strategic issues such as climate change policy (COP 21), and its implications in the near and longer term. ■

The full report can be downloaded at: http://www.accaglobal.com/content/dam/ACCA_Global/Technical/oil-gas/oil-and-gas-report-low-prices-high-expectations.pdf

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What lies ahead for the oil market in 2016?

The boom and bust cycle of the commodity markets suggests that a recovery is inevitable – but it is likely to be limited in scope, says Moin Siddiqui, economist.

DURING THE PAST five years, spot crude prices have hit highs of over US$120 a barrel and lows of below US$30. The best cure for weak prices is cheap oil, which causes a drop in investment and drilling activity, thus shifting the supply curve backward and driving prices higher as high-cost or existing oilfields that can be tapped at relatively low marginal cost are depleted. Currently, the futures market remains in 'contango', a price structure where prompt supply trades at a discount to longer-dated contracts, usually indicative of a well supplied, or even oversupplied, market.

The industry faces ongoing uncertainties in the New Year, including the effects of China's slowdown on global fuel consumption growth; the pace and volume at which Iranian oil re-enters the market; the impact of geopolitics and excessive market speculation; environmental concerns; advances in light tight oil (LTO) extraction technologies and their impacts on exploration and production; and the responsiveness of OPEC's kingpin (Saudi Arabia) and key non-OPEC producers (the USA and Russia) to the depressed investment climate.

There are huge upstream investment needs, but most future projects are commercially unviable at current prices, which are at their lowest level since the 2008 financial crisis. The forward price is below the marginal cost for many projects, especially technically complex and expensive deepwater Gulf of Mexico, Canadian tar sands, Gulf of Guinea in West Africa, North Sea and US LTO developments. PIRA Energy Group estimates that US$60-80/barrel is required to develop unconventional resources.

> "The industry faces ongoing uncertainties in the New Year"

World oil consumption and production (mn bpd)

	2013	2014	2015	Proj. 2016	% chg. 2015-13
Total petroleum consumption	**90.4**	**92.4**	**93.8**	**95.2**	**3.7**
OECD* (34 countries)	46.0	45.7	46.3	46.6	0.6
of which: USA	18.7	19.1	19.4	19.5	3.7
Emerging & developing economies	44.4	46.7	47.5	48.5	7.0
of which: China	10.1	10.8	11.1	11.5	10.0
Total production**	**90.2**	**92.6**	**95.7**	**95.9**	**6.1**
Non-OPEC supply	54.3	56.4	57.5	56.8	5.9
of which: USA	11.6	14.0	15.0	14.6	29.3
OPEC supply	30.2	30.0	31.6	32.1	4.6
of which: Saudi Arabia	9.6	9.7	10.1		5.2
OPEC NGLs + non-conventional oils	5.6	6.2	6.6	7.0	17.8
Global oil supply-demand balance	-0.2	0.2	1.9	0.7	
OECD* commercial oil stocks, mn bbl	2,589	2,698	3,061	3,132	18.2
Brent US$/bbl	108.6	98.9	52.3		-51.8

*Organisation for Economic Cooperation and Development

**Includes crude oil, shale oil, oil sands and natural gas liquids

Sources: OPEC and Energy Information Administration (EIA)

Pressure on prices

The US-led shale boom driven by hydraulic fracturing ("fracking") and horizontal drilling technologies, has added around 4.2mn bpd to the market, contributing to a mega glut. Inventories in OECD regions have swollen to a record 3bn barrels, according to the International Energy Agency (IEA) – ample to supply worldwide needs for over a month. This stock build is putting storage infrastructure under increasing pressure. Bloated inventories musc first decrease before any sustainable price rally happens. Meanwhile, OPEC's 'over-supply' continues unabated as Saudi Arabia and Iraq combined have added around 1mn bpd during 2015. Iran could potentially boost output by 0.5-0.7mn bpd, potentially reaching a 2011 pre-sanctions level of 3.6mn bpd – hence delaying the rebalancing of oil markets in 2016. At that point, Saudi Arabia, traditionally a swing producer, must decide either to accommodate Iran by cutting its output, or keep fighting for market share.

"The potential impact of Iranian oil and gas exports on global and regional markets could be large over the long term if Iran can attract the necessary foreign investment and technology to leverage its substantial reserves," says Ayhan Kose, director of the World Bank's Development Prospects Group. Sanctions were recently lifted after the international nuclear watchdog, the IAEA, confirmed Tehran had complied with a deal with P5+1 struck in July 2015, designed to prevent it developing nuclear weapons.

The greenback's strength – boosted by expectations of further hikes in US interest rates – raises the local currency cost of oil imports in countries that are not pegged to the dollar, making for weaker demand in those countries. Furthermore, some displacement of oil by substitutes (mainly renewable energies) has reduced crude oil's share of primary energy consumption in recent years. These forces point to a "low

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for long" scenario, even after the oversupply legacy left by the high-price era of the 2000s has dissipated, according to the International Monetary Fund (IMF).

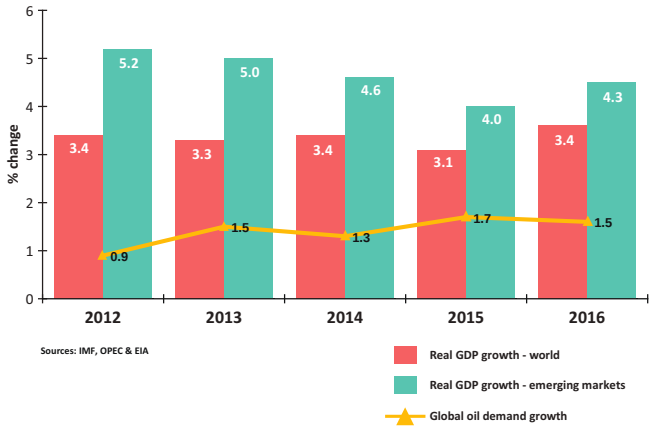
Supply/demand dynamics

OPEC envisages more balanced fundamentals during 2016; the cartel's secretary general, Abdalla Salem El-Badri, said in late 2015, "We see global oil demand maintaining its recent healthy growth. We see less non-OPEC supply. And we see an increase in the demand for OPEC crude." Fitch Ratings observes, "While the gap between oil supply and demand appears to have peaked at 3mn bpd in Q2 2015, the market is unlikely to balance until H2 2016 at the earliest, when it will still have to digest elevated oil stocks. We have therefore effectively pushed back the recovery we had assumed by one year and now include a modest price recovery only in 2017."

Global real gross domestic product (GDP) weighted by oil consumption is expected to rise by 2.7 per cent in 2016, up from 2.4 per cent in 2015, according to the US Energy Information Administration (EIA). The latter's assessment puts demand growth for 2016 at an average of 1.42mn bpd, versus OPEC and IEA estimations of 1.26mn and 1.2mn bpd, respectively. Demand in non-OECD regions is projected to grow by 1.1mn bpd, reflecting gains notably in India and China, thus offsetting sluggish fuel consumption in advanced economies.

The EIA projects 2016 global supply (including liquids) at 95.93mn bpd – almost static over the previous year – due to declines in US onshore and North Sea production, which would represent the first annual drop in non-OPEC supply since 2008 (estimated at 0.6mn bpd). But OPEC's output is forecast to rise by 0.5mn bpd to 32.16mn bpd – on account of increased Iranian exports. The global supply glut – the driving factor behind the price slump – should fall from last year's highs of 1.94mn bpd to 0.74mn bpd in 2016 – hence leading to slower inventory build-up during the year – estimated at around 400,000 bpd.

Correlation between economic growth and oil demand growth



The current values of futures and options contracts continue to suggest high volatility in oil price outlook, although prices are now unsustainably low, driven mainly by heavy speculative selling and perceived fears of a severe global economic downturn which, however, appears an unlikely scenario.

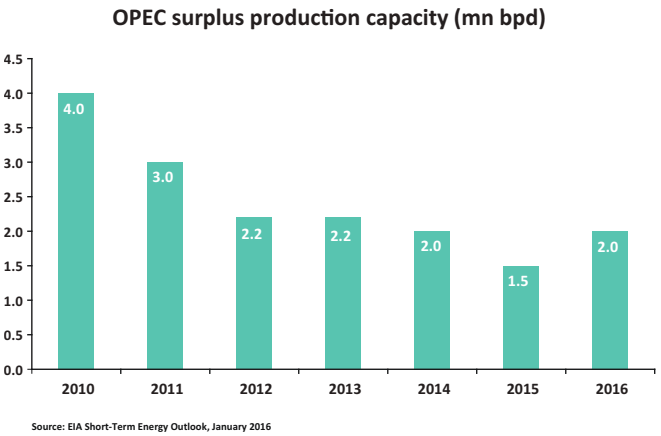
Lower US production during 2016 should help reduce global oversupply, but that alone cannot quickly restore current imbalances. 'Rebalancing' the market requires one or more of the following scenarios to occur: 1) Saudi Arabia reverses from its "maintain market share at all costs" policy and cuts output; 2) world demand surprises on the upside from current projections of 95.1mn bpd in 2016 and 96.6mn bpd in 2017; 3) shale and oil sand production in North America drops sharply; 4) geopolitical crisis, for example, political upheaval or supply outage in a major exporting nation.

> "The overall effect of a demand surge will be a marginal to moderate hike in prices"

Oil geopolitics

Russia, the world's second largest oil producer, is forging closer strategic ties with Shiite-dominated Iraq and Iran. Moscow's OPEC partners could be joined by revenue-hit Angola, Nigeria, Libya, Algeria and Venezuela. This sizeable group, along with Iran and Iraq – accounting for almost half of OPEC's output – favours supply cuts to revive prices, contrasting with the 'Saudi-Sunni bloc', which includes the UAE, Kuwait and Qatar. Russia's energy minister, Arkady Dvorkovich, is adamant that Saudi Arabia's intention to eliminate 'non-conventional' production is inflicting severe financial woes on weaker states.

Riyadh cannot depend on Washington's support. Indeed, Russia's economic downturn is advantageous to the USA, but its shale industry is also suffering from Saudi Arabia's market-driven strategy – shedding 15,000 jobs per month. Russia might well inspire a split within OPEC, where members with smaller cash reserves effectively collaborate to isolate the Saudi camp. It could decide to finance Iran's oil capacity expansion to exert pressure on Riyadh. Given good relations between Moscow and Beijing, a strategic alliance with



Source: EIA Short-Term Energy Outlook, January 2016

Russia could enable Iran and Iraq to snatch future market shares from Saudi Arabia.

The Gulf States too are under pressure to spend more at home. According to market intelligence company Insight Discovery, Saudi Arabia, the world's largest oil exporter, withdrew US$70bn during 2015 from global asset managers to finance its national budget. The IMF projects that the Gulf Cooperation Council (GCC) countries will again post sizeable fiscal deficits this year.

> "Very few projects are now receiving final investment decisions (FID)"

Slashing exploration budgets

2015 witnessed rapid cuts in global upstream capital expenditure (capex) and deferrals or cancellations of nearly 5mn bpd of future projects – mainly affecting US shale, deep/ultra-deep waters (including in Nigeria and Angola) and Canadian oil sand developments. Very few big-ticket projects are now receiving final investment decisions (FID) – industry analysts reckon barely half a dozen could be approved in 2016, compared to an annual average of 50-60 in recent years. Some companies have also reduced capex on productive oilfields, including on enhanced oil recovery or infill drilling techniques that are deployed to offset natural declines.

The IEA estimates that oil-related investment during 2015 fell by one-fifth - the steepest decline in history – and a similar trend could persist this year. Annually US$630bn in global hydrocarbons investment – representing the total amount the industry spent on average in the past five years – is needed just to compensate for depleting volumes at existing fields, thereby keeping future production flat at today's levels, according to the IEA.

Supply capacity growth is poised to decline over the medium-term as energy giants have shelved planned projects worth US$200-250bn. According to Wood Mackenzie, projects representing 20bn barrels of oil resources (equivalent to almost the total proven reserves of China) were cancelled last year. Rystad Energy reported infill drilling in 2015 dropped by 60 per cent in three major offshore basins (US Gulf of Mexico, Southeast Asia and Brazil).

At current prices, Wood Mackenzie reckons that a 'colossal' US$1.5 trillion of new investments are at risk. The Financial Times reported this would amount to a one-third cut in oil supply, implying that spillovers of the recent price slump "could resemble the savage downturn of the mid-1980s." High-cost North America production will be hit especially hard, as flexible shale drilling has "reacted fastest to the market collapse." This could signal a shift in the supply dynamics, which in turn, could support future oil prices.

There has been an annual decline in global oil and gas foreign direct investment (FDI), according to greenfield investment monitor fDi Markets. In 2014, 207 investment projects were recorded in the sector, compared to 560 in 2008. During the first nine months of 2015, fDi Markets shows a one-third decline in the number of projects recorded compared with 2014. Investment capital has also fallen over the past seven years, from a high of US$274.93bn in 2008 to a low of US$78.89bn in 2014. As of late 2015, capital investment in the hydrocarbons industry stood at US$70.69bn.

> “The IEA believes that the oil market is entering a new era, with markedly changing demand dynamics”

The end of the US shale boom?

Despite large declines in US drilling activity, production was resilient during 2015, averaging 9.4mn bpd (up 8 per cent on 2014), based on EIA data. With fracking technology maturing, operators were able to shorten drilling time and increase the number of wells per rig. Roughly half of US shale output derives from three huge tight oil fields: Bakken, Eagle Ford, and Permian Basin. Besides improved productivity and falling drilling and completion costs, many producers were also well hedged – thus mitigating the effects of weak spot prices with West Texas Intermediate (WTI) averaging US$48.6, compared to US$91.9/barrel over 2010-14. Much of the 2015 surge in US supply was due to investments that were committed to projects before the late 2014 oil price slump.

Oil reserves & production of Arab countries

	Proven* reserves (bn bbl) end-2014	R/P ratio**	Production*** (000' bpd) 2010	2014	% chg. 2014-10
Algeria	12.2	21.9	1,689.0	1,525.0	-9.7
Egypt	3.6	13.8	725.0	717.0	-1.1
Iran	157.8	100+	4,352.0	3,614.0	-17.0
Iraq	150.0	100+	2,490.0	3,285.0	32.0
Kuwait	101.5	89.0	2,562.0	3,123.0	21.8
Libya	48.4	100+	1,656.0	498.0	-70.0
Oman	5.2	15.0	865.0	943.0	9.0
Qatar	25.7	35.5	1,655.0	1,982.0	19.7
Saudi Arabia	267.0	63.6	10,075.0	11,505.0	14.2
Syria	2.5	–	385.0	33.0	-91.4
United Arab Emirates	97.8	72.2	2,895.0	3,712.0	28.2
Yemen	3.0	56.7	306.0	145.0	-52.6
Others	0.6	–	272.0	266.0	-2.2
Arab region total	875.3	77.8	29,927.0	31,348.0	4.7
World total	1,700.1	52.5	83,190.0	88,673.0	6.6
Middle East & North Africa	51.5		36.0	35.3	
% of world total					

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

*** Includes crude oil, shale oil, oil sands and natural gas liquids.

Source: BP Statistical Review of World Energy June 2015

Until recently it was estimated that shale producers required an oil price of US$60-75 to break even, and around US$90 – (plus easy access to capital) to fund capex needed to deliver sustained growth in output – these figures have been revised down thanks to greater efficiencies and cost savings that have enabled companies to maintain production levels with reduced rig counts.

Nevertheless, medium-sized shale producers find it uneconomical to produce at current prices. Oilfield services provider Baker Hughes reports that the US rig count has fallen to its lowest level since 2003. Investment into unconventional fuels has dropped by US$46bn compared to 2014. “Continued declines in US drilling activity suggest steeper drops in US light tight oil output lie ahead,” notes the EIA – which projects 2016 output falling to 8.7mn bpd. LTO supply is expected to drop by 100,000 bpd, compared to annual growth of 1.2mn and 600,000 bpd, respectively, in 2014 and 2015, according to industry experts. Perhaps the Saudi strategy of driving out high cost producers could be working, but large US production declines are unlikely to materialise this year.

Global capital expenditure (capex), US$mn

	Upstream E&D capex 2014	2015	Y-o-Y chg. in capex (US$mn)	Y-o-Y % chg. in capex
Oil multinationals	190,256	167,680	-22,576	-11.8
NOCs	109,778	79,819	-29,959	-27.3
Large-cap. independents	119,398	80,767	-38,631	-32.3
Mid/small-cap. independents	96,235	60,027	-36,208	-37.6
Master Limited Partnership*	2,025	780	-1,245	-61.5
TOTAL	**517,692**	**389,073**	**-128,619**	**-24.8**
Crude oil price Brent (US$/bbl)	98.9	52.3	46.6	-47.1

*MLP refers to a form of investment in oil/gas drilling operations

Deferred reserves by resource theme, bn bbl of oil equivalent (boe)

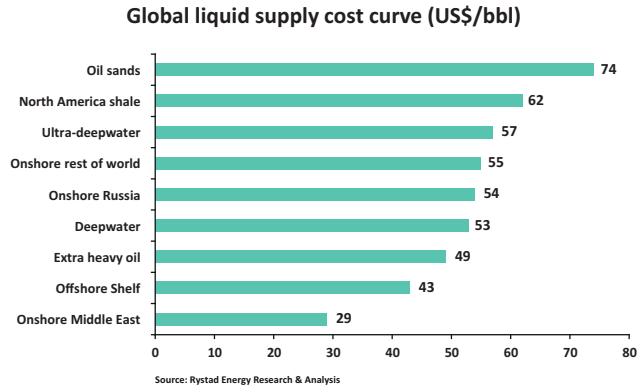
Deep/ultra-deep (10.6bn boe); oil sands (5.6bn boe); shallow waters (2.6bn boe); and onshore (1.1bn boe).

Source: Wood Mackenzie

Forward fundamentals

Looking ahead, the IEA believes that the oil market is entering a new era, with markedly changing demand dynamics – as the global economy, reshaped by ICT innovation, becomes less fossil-fuel intensive – coupled with significantly different roles for OPEC and non-OPEC producers in regulating upstream supply. Shale is still at a fledgling stage of the exploration and production (E&P) cycle, hence its learning scope is substantial, and with declining costs of unconventional production technologies, shale producers could emerge as prominent players.

LTO projects – extracting oil from tight



rock formations – however differ from conventional drilling operations because they have much lower capital costs and a vastly shorter life-span (three years) from first investment to full extraction, compared with decades for conventional drilling. The USA continues to hold large spare capacity in the form of available oil rigs.

Low-cost OPEC producers need to expand capacity since most (excluding Saudi Arabia and Iran) are producing at near peak capacity. The EIA expects OPEC surplus production capacity to average 2mn bpd this year, which is largely held by Saudi Aramco. Output growth in Iraq and Iran faces major challenges: the risk of instability, alongside weaknesses in infrastructure and institutions affects Iraq, whilst Iran badly needs FDI and access to sophisticated technologies of the super-majors for reviving an outdated petroleum industry.

The pace of non-OECD oil consumption growth will dictate long-term prices. Global demand is projected to grow closer to 1mn bpd each year, but a repeat of the early-2000s robust demand looks improbable. China's average annual oil consumption growth reportedly fell from 7.2 per cent in 2002-2011 to 4.1 per cent in 2011-2014. While other emerging economies, where consumption was booming a decade ago, have also entered a new, less oil-intensive stage of development. The OECD countries' demand will remain subdued, reflecting increased use of renewable energies and natural gas.

> "Prices need to rise to a level that induces more upstream investments"

Since neither OPEC nor western multinationals have invested sufficiently in new capacity, this indicates stagnation in world output in 2016-18. E&P investment fell by US$130bn over 2014-15. An unforeseen production disruption would be felt because current global spare capacity (2mn bpd) is vastly lower than the 15mn bpd seen during the mid-1980s. Oil stocks in such a scenario will quickly deplete – hence boosting oil prices. "Cuts to non-OPEC non-shale and shale production, heightened geopolitical risk and lower spare capacity offer medium-term oil price upside," note Citigroup analysts.

The market rebalancing will likely occur in coming months, but will be relatively limited in scope, with prices stabilising at levels higher than current lows, but significantly below the highs of the last three years. While US$70-80/barrel is improbable, prices need to rise to a level that induces more upstream investments – vital for the long-term stability of the global economy.

As Dr Emmanuel Ibe Kachikwu, Minister of State for Petroleum Resources of Nigeria and president of OPEC's December 2015 conference puts it, "This industry is one that lives in cycles. It has seen hard days on many occasions in the past, and each time, it has shown great resilience." ■

Building a local security industry

Better living conditions and employment opportunities could help to reduce the potential for social unrest in southern Iraq, says Mike Lord, business development director at Iraq-based Harlow International and managing director of its local security businesses, Al Thaware Security Services (ATS-109) and Al Murabit Security Services (AMS-91).

THE NEWSPAPERS ARE full of the destruction and devastation which Isis has wrought on northern Iraq. But in the south, where ISIS has no significant presence, it is social unrest and criminality that is the main security threat, says Lord, who has a distinguished military background and around 30 years' security experience in the oil and gas sector.

Despite being home to 70 per cent of Iraq's gas reserves and 59 per of its oil reserves, Basra continues to suffer from the legacy of decades of war, sanctions, occupation and infighting. The economic and social infrastructure is in need of rehabilitation, diseases such as TB are endemic, poverty and unemployment are rife, and the average wage is less than 500 dollars a month.

"Basra needs homes, electricity, clean running water, job opportunities, needs which have to be addressed by the central government," says Lord. The new governor of Basra is pragmatic and keen to draw on 'oil dollars' to expand public services, he adds – but the drop in the oil price and the impact of reduced oil revenues on the central government budget means that those oil dollars are slow to flow in.

"The people in the street see the oil and gas coming out of the ground, but are not reaping the benefits. When they are suffering from power cuts in the searing heat and salty water coming out of the tap, it causes resentment." This had led to demonstrations on the street in and around Basra and rising levels of criminality and social unrest, Lord says.

However, while there have been some demonstrations around the West Qurna and West Qurna 2 area, oil companies in the field have been largely unaffected, and work continues.

"Isis has not to date targeted the hydrocarbons sector in southern Iraq, but the security threat remains as a result of other challenges and threats, so people are still being picked up at the airport by meet and greet services, going in armoured vehicles to the oilfield, and from there to secure bases where they operate their day-to-day activities," says Lord.

There is scope for providing more employment opportunities for Iraqis in the country's security services sector (Photo: Harlow International)

> "Companies are looking to cut security budgets by around 20 per cent"

"Iraq is a very complex, tribal, sectarian environment, so my advice to any oil company looking to enter the market would be to be prepared as you possibly can be before you do so. Iraq is a market where you don't want to go in and learn by your mistakes. You need to be aware of the socio-economic, stability, security issues in country; if you get it wrong, it is likely to impact on the business very quickly.

"There is opportunity in Iraq, but its remoteness and the lack of key services means it is an expensive place to do business. With the oil price currently under $US40 a barrel, and a break-even price of US$62-64, the wheels are slowly grinding to a halt. The cost of doing business has gone up while the oil price has gone down, which is leading to more consolidation and competition, particularly in the services industries."

Security services under pressure

Security services are amongst those suffering from cutbacks at the service provision level. "Companies are looking to cut security budgets by around 20 per cent – which really has an impact where margins of 8-9 per cent are the norm," comments Lord. The big international security companies which came to Iraq post-conflict are still

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here, but may be questioning their future in the market.

This situation could, however, pose an opportunity for Harlow's two licensed local Iraqi security businesses, Baghdad-based Al Thaware Security Services (ATS), which provides construction, defence and VIP security services; and Basra-based Al Murabit Security Services (AMS), which is focused on supporting the oil and gas industry.

Under Lord's leadership, the two companies have begun to challenge the dominance of the traditional global security firms, and recently became the first Iraqi private security companies to achieve the PSC1.1. international standard, one of the highest recognitions of industry excellence.

Both companies employ 95 per cent of their workforce from the local market, building local knowledge, skills and expertise.

"Our Iraqi companies are now on a par with any international security company in terms of accreditation and standards, and being local entities, are very price competitive," states Lord.

"We are now able to tender for work with the IOCs and are looking to prime contracts rather than subcontracts. We are gaining traction and starting to make an impact; we are the largest owner of armoured vehicles in Iraq."

Given the role the companies are playing in providing jobs and opportunities for the local community, rather than bringing in people from outside, the Minister of Interior has been very supportive, adds Lord, who is keen to promote further opportunities for Iraqis in the security industry. "We're looking at supporting and mentoring other Iraqi companies to help them raise standards, so they are in tune with the requirements of the IOCs and can do what we are doing."

The IOCs and major investors should do more to contribute to social and economic development, he feels, and help the country to address issues such as transparency. "Most western companies look to bring in an external solution rather than take the time to understand and work through the complexities of Iraq's tribal environment and the Sunni/Shi'a divide. It is better to train and offer positions to the local community rather than bring in people from outside – that is the way Iraq has to go. That would help to build trust and heal wounds, and if there were more money around so that people could buy products such as air conditioning units and bottled water, it would help to reduce the potential for social unrest. The work ethic is there – it just needs time to embed the right culture.

"Programmes do exist to train and employ locals," he continues. "In the oil sector, for example, selected individuals are sent abroad or to specialised institutions to study. But these programmes need to be bigger, faster and more effective in providing employment opportunities."

While Iraq as a whole faces huge challenges in restoring law and order, uniting its disparate factions and combating Isis, in addition to tackling its social and economic problems, it is not all gloom and doom. "There are positive things happening," says Lord, citing as an example the US$7.75bn Bismayah New City project, which Harlow is developing in partnership with a Korean contractor. Located on the outskirts of Baghdad, this involves the building of 100,000 units between 2012 and 2019.

"Iraq wants to work to move forward, once we have a coalition solution to its problems," he adds. "There are good things happening, old wounds that need healing, new things that need to be brought in, problems that need to be resolved. The government recognises this, the governor of Basra recognises this and wants to do more. We need to get the oil and gas flowing, get the oil price back up again and help Iraq to rebuild and move forward," he concludes. ■

Harlow International is an international conglomerate based in Iraq, working across oil and gas, defence, construction, government services and the media. 95 per cent of its employees are Iraqi citizens. Harlow's network of companies advise and support international governments and leading FTSE100 companies operating across the region.

Top tips for staying safe in Iraq

- Do your research. Make sure you know where you are going, what the risk level is there and who will be there to support you.
- Who will take care of you when you get off the plane? Make sure you have good security logistics and support in place from the outset.
- Make sure people know where you are. Harlow uses sophisticated tracking systems that monitor people and vehicles wherever they go in Iraq. This means we can respond quickly if something goes wrong.
- If you're sick, don't expect to go to a local hospital. How are you going to be looked after and taken out of the country?
- Build relationships of trust with the locals. Good contacts and communication are key. Use an interpreter to facilitate your contacts with locals.
- At the same time, avoid unnecessary risks when building local partnerships: make sure you have good background information on your contacts and do your due diligence.
- Everybody should go through some sort of HET (Hostile Environment Training). However, learning unarmed combat is not necessary.

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Top technology trends for energy in 2016

Innovation and technology development will be critical in 2016 as companies seek to adjust to the reality of sustained low oil prices. Solutions to streamline processes and increase efficiencies will continue to be in demand in the drive to cut costs and create more resilient businesses.

THE ENERGY INDUSTRY must commit to innovation in order to successfully navigate a period of significant uncertainty, according to consultants Booz Allen Hamilton.

Its report *Top Energy Trends for 2016* produced in collaboration with IDC, highlights five key technology trends for the energy industry in 2016. They include:

- Cybersecurity spending is set to rise, as threats will need to be identified and managed well before they have a direct operational effect – replacing the traditional compliance-oriented approach to cybersecurity. Around 75 per cent of the oil industry will have a full risk-based cybersecurity strategy in place by 2019.
- There will be a spike in energy demand and associated infrastructure, mainly driven by emerging economies. Innovation will rise correspondingly to meet the unique needs of these markets.
- Customer demand for information, service and control will drive digital transformation to touch every aspect of the industry (e.g. information sharing, outage notification, bill payment, sale of energy products and services, in connected homes).
- Advanced analytics will be deployed to drive down overhead costs. The increasing use of big data will create an industry where leadership decisions are more and more data-driven. In 2016, a majority of CIOs will push innovation funding to minimise operational costs.
- Companies will automate more and more manual processes to reduce effort, streamline functions, and improve results. The demand for next generation IT skills is rising faster than the talent pool in most companies, creating a demand for more training and recruiting in this area.

Knut Moystad, industry director for Oil and Gas at enterprise resource planning software company IFS, comments, "In 2016, the oil and gas industry will jump on the opportunity that big data presents: machine-learning strategies will become ubiquitous as oil and gas companies will start rolling out condition-based maintenance; and equipment suppliers will move increasingly to a services-based business model.

"Equipment manufacturers have begun to embed machine-learning technologies into equipment for condition-based maintenance, to help customers extract maximum value and efficiency from their infrastructure. These suppliers are looking to provide support services such as data monitoring, which will help customers optimise equipment utilisation and maintenance strategies, and will also provide data that can be used in the design phase of new products.

"Increasingly oil and gas companies are looking for ways to own the data they generate and technology that enables them to manage condition-based maintenance programmes. In the next twelve months we'll also start to see this become a reality as more oil and gas companies take steps to capture and learn from big data to make their operations smarter and reduce costs.

> "Around 75 per cent of the oil industry will have a full risk-based cybersecurity strategy in place by 2019"

"The more advanced businesses will have automated learning up and running in their machines so that they can replicate the best results their businesses are seeing across their operations and benefit from experience across the entire organisation to increase productivity and performance."

3D printing will emerge as an innovative alternative for companies in the oil and gas industry in 2016, as they look for smart ways to cut costs and scrutinise their supply chains and engineering practices, he adds. 3D printing technology is already being used in two different ways:

"Firstly to create models that can be used for training purposes. 3D printing is becoming particularly valuable in teaching onsite equipment repair and maintenance, particularly for offshore and subsea equipment.

"Secondly, businesses are using 3D-printed tools and parts as replacement for traditional tools and parts, helping access and maintain equipment in remote areas.

"Although oil and gas is traditionally a more conservative industry, technological developments that enable businesses to cut costs and improve performance and asset integrity are beginning to be rolled out in maintenance and operations due to necessity," he concludes. ■

3D printing will emergy as an innovative alternative for the oil and gas industry in 2016 (Photo: cherezoff / Shutterstock)

Saudi Downstream 2016
Date: 8 - 10 March 2016
Venue: Jubail, Saudi Arabia

Promoting downstream **opportunities**

The Kingdom's largest gathering of downstream professionals returns in March, and will be held under the Patronage of the Custodian of the Two Holy Mosques, King Salman bin Abulaziz Al Saud.

SAUDI DOWNSTREAM 2016 will take place between 8-10 March 2016 at the King Abdullah Cultural Center, Jubail, Kingdom of Saudi Arabia.

Hosted by the Royal Commission for Jubail and Yanbu, Saudi Downstream is the largest and most prestigious downstream event in the region. The event has grown rapidly over the past five years, attracting support from globally renowned companies and thousands of top level visitors from the public and private sectors. Saudi Downstream 2014 was an outstanding success, attracting 600+ conference delegates, 45 exhibitors, 15 sponsors, and thousands of visitors, with the invovement of key government associations.

Saudi Downstream 2016 will consist of a strategic conference and international exhibition. The exhibition is a major focal point for the sector, which attracts representatives from the industry including key decision makers from ministries and leading private companies. Alongside this will be the strategic conference, which will focus on investment opportunities in the region. Attendees can expect access to key decision makers from The Royal Commission for Jubail and Yanbu, SABIC, Saudi Aramco, Sadara and many more.

The opening day will consist of a morning workshop, 'The German experience' followed by the opening ceremony, opening speeches by various VIPs, and the VIP tour of the exhibition, followed by a gala dinner.

Day Two will introduce key themes for the event, touching on the current oil price environment and the strategic direction Saudi Arabia must take in order to achieve economic sustainability in a volatile market. The morning session will highlight the opportunities for the development of the manufacturing sector in Saudi Arabia, looking at primary industries and their contribution to downstream industry formation. This will be followed by a panel discussion covering fundamental challenges and the demand to facilitate investment into the Kingdom's downstream sector, including a discussion of opportunities for Saudi Arabian producers to expand their presence in international refineries.

> "The exhibition is a major focal point for the sector"

Day Two will also look at downstream prospects in the Kingdom, highlighting Saudi Arabia's leading role and current opportunities, including Jizan Economic City and the establishment of a world class industrial park for chemical and conversion industries – RCJY's Plaschem Park.

The final presentation on Day Two will discuss the conversion industry, specifically looking at plastics, packaging and speciality products. The session will identify the challenges faced by the conversion sector, and the growing need to maximise efficiency, lower costs and continuously innovate.

The final day will examine global trends in new downstream applications, followed by a panel discussion relating to the support for industrial R&D; process improvements and new materials and products. It will touch on topics relating to the progress in the development of focused technology incubation centres and enabling new and innovative industry creation unique to the Kingdom. ■

For more information please visit: www.saudidownstream.com, or contact James Lamb, email: james@bme-global.com, tel: +44 203 328 9581.

Ali Al-Naimi, Saudi Arabia's Minister of Petroleum & Mineral Resources, addressing a previous event

Two views of rig automation

What do rig inspection and drilling have in common? They're both at the centre of efforts to use automation to make rigs safer and more effective places to work. However, as Vaughan O'Grady discovers, automation efforts in each case are progressing at very different speeds.

SOME DEGREE OF automation on rigs has undoubted advantages. The two most obvious are that safety concerns are diminished and money is saved. And in some areas of the rig this is already happening. But the speed at which it is happening rather depends on the application.

Take inspection. Increasingly this is being done by drones – also known as UAVs (unmanned aerial vehicles) or UASs (unmanned aircraft systems). They can be used for inspecting and monitoring offshore rigs, pipelines, storage tanks, flare stacks and other infrastructure. The pipeline version is likely to require a fixed wing unit. The rest are, as Colin Snow, CEO and founder of research and advisory group Drone Analyst, said, "small quadcopters (four rotors), hexacopters (six) or octacopters (eight); they just hover in place, have cameras, and the cameras zoom [so] they can get in close".

Worried about rust? Possible storm damage? Send a drone to have a look. It's quicker than humans at assessing the state of a rig and better able to cope with cold, rain or high winds. And if it does fall into the sea you don't necessarily need to rescue it.

Sky-Futures is a world leader in oil and gas drone inspections

Great cost savings with drones

Also, said Snow, it can save a lot of money. For example, he says, when the flare stack has to be inspected, and crew is assigned to the job "they have to shut it down. They have to let it cool down and then they send somebody up and they do a visual inspection and work out what parts need to be replaced". A drone can do that without a shutdown. And, as Snow pointed out, both the flare stack and other pieces of infrastructure have to be inspected at regular intervals. "This is where the energy companies are finding great cost savings," he points out.

And yet drones aren't particularly complex or expensive. "They're just radio-controlled units operating in the same spectrum that you would if you were a hobbyist," said Snow. However they don't do this on their own; this is not a completely automated function. It takes some skill to operate correctly. "You're putting them down underneath [the rig] in very tight spaces. You're not just sending them out and doing an inspection. It is sophisticated."

But they are small and light and can work with and carry simple technology – the cameras used are not much more sophisticated than a camcorder. They can carry infra-red sensors too, where required. Above all, they are much, much quicker than humans. There are limitations, of course. "Regulations don't allow beyond visual line of sight operations," Snow said. But there are continuing advances too; "things like object recognition and sense-and-avoid technology on the drones, stereoscopic cameras to prevent them crashing into anything… incremental pieces of technology that allow for closer-in inspections."

> "Drones are small and light and can work with and carry simple technology."

A leading company in this field is Sky-Futures. Chris Blackford, the company's COO, said, "We cut our teeth in the North Sea – on production platforms that are, in some cases, more than 40 years old. We have offices in London, Aberdeen, Houston, Kuala Lumpur and Abu Dhabi. We operate in around 85 per cent of the world's oil markets and around 80 per cent of that work is offshore inspection work."

Rig inspection drones

The drone rig inspection market has a lot going for it and Blackford thinks it's going to get even better – and more intelligent. A drone, for example, might be trained to fly around specific structures and to operate on command without a human flying it, or – somewhat further down the line – could be

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designed to make certain decisions alone, like being aware of the damage a storm can do and checking a structure after the storm passes.

With few regulatory questions to worry about, relatively low costs and no obvious drawbacks, the advance of inspection drones is clearly set to continue.

Drilling automation more complex

By contrast, the much more complex business of drilling automation has made some impressive advances, but will nevertheless move at a fairly measured pace.

The incentives for drilling automation are admittedly similar to those driving drone use: cost control and safety. Eric Cayeux, chief scientist drilling and well modelling of IRIS (International Research Institute of Stavanger**), explains, "There are some variations that can be observed for drilling complex wells and people want to have better control of the costs. But safety is definitely one of the major aspects – trying to avoid having many people on the drill floor and being able to automatise."

However, outside places like the North Sea, he said, the number of people on the drill floor is "the same as many decades ago. There's still a lot of manual work and not much embracing of the use of mechanisation at all". When it comes to adapting to some technologies the oil industry "is very slow… it's not unusual to have 10 years from the start of the research to getting something which is ready for implementation".

He continued, "Even if new drilling technology is ready for industrialisation or implementation there are many bottlenecks because of incompatibilities between different rigs." Most of all, though, unlike drones, this is a much more dangerous area of rig work. "You need to really prove that the prototype or first version you are implementing is safe before you can use it."

Humans are still involved, however. There will need to be an experienced driller to 'drive' an automated drill, usually from a control room on the rig. Could that eventually become one person monitoring many different rigs working autonomously? "That's really very long term: there are many steps before we get to that vision," said Cayeux.

Which is hardly surprising. Shale gas and shale oil are fairly predictable, but they are not the norm. Drilling conditions are rarely similar. A mature field, for instance, which may

> "There will need to be an experienced driller to 'drive' an automated drill, usually from a control room on the rig."

DrillScene is a model-based diagnosis system based on real-time data, produced by IRIS.

experience subsidence or where the cap rock has been over pressurised and the reservoir is depleted, is much more demanding — not least if you want to get to the nooks and crannies where oil or gas can actually be found.

Cayeux added, "Deepwater often means very narrow pressure windows. So the margins that you have to drill are very small and the smallest mistake escalates very quickly. You have two gradients: the pressure gradient coming from water and the pressure gradient coming from the build-up of pressure inside the earth." Shallow water, by contrast, may be easier "but even in shallow water or onshore you may have very complex wells to drill: very snaky, or extremely long".

And there are few indicators of what's downhole. Most of the sensors are placed at the rig side and a few close to the bit, perhaps. Thus, in a seven or eight km-long hole that's completely dark "you really need to use models to try to understand what is happening and try to control the process. And this is quite challenging because you can't calibrate much because you don't have very much information measured". Nevertheless, that is what IRIS tries to do.

Cayeux explained:"We work both on modelling, for example, and maybe on things that are not yet ready for implementation or industrialisation. Our contribution so far has been on using physical models of the drilling process in real time, which is a challenge because of the speed at which complex calculations need to be done and the fact that you have very little information." It is a balancing act of sorts, between aiming for the fastest performance and avoiding high-level risk.

Nevertheless, IRIS has achieved, and continues to achieve, a great deal, including commercial products like DrillScene Advanced Monitoring, an exception-based method for detecting deteriorating hole conditions that may lead to significant drilling problems, and DrillTronics, a real time system for monitoring, diagnostics and control of the drilling process. It can also offer the services of Ullrigg, a full-sized drilling rig for a variety of drilling and completion tests. Cayeux himself was awarded Statoil's research prize in 2012 for his work within automated drilling.

Given the complexity of its work, IRIS has been helped a lot by advances in processing power. "When we started our research project in 2004, we couldn't have made it work with the computer power that was available at that time," Cayeux says. There's no doubt that automating the drilling process is a difficult business from a technical and computing point of view. But there's also an organisational problem: there are many companies involved, among them the drilling contractor, several service companies and the operating companies. "And," says Cayeux, "the goal of each of them is not necessarily the same. Trying to automate may mean that you want to have all of them working together for the same goal – and that's a challenge… People will not analyse the changes in organisation and work processes before the technology is in place. But when it is in place it's very hard to change processes and organisation."

It is perhaps unfair to compare rig inspection to one of the more risky and complex areas of rig work. Nevertheless, they do have in common the hope that, at a time of diminished margins and greater safety concerns as we work further from shore and drill deeper than ever, continuing automation will make both of them less expensive, more effective and above all safer. ■

**Drone Analyst Research and Advisors is a research and consulting firm supporting all participants in the commercial UAS industry. http://droneanalyst.com*

***IRIS (International Research Institute of Stavanger) is an independent research institute whose main areas of focus are improved oil recovery, automated drilling and environmental monitoring. www.iris.no*

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Well integrity management: past, present and future

Well integrity management has come a long way in the 25 years that Wood Group Intetech has been in business, says Dr Liane Smith, the company's managing director and founder.

THE SEEDS OF modern well integrity management were sewn in the early 1990s, in the fields of corrosion assessment and materials selection. Even as recently as 12 years ago, it was still a function struggling for definition. With only a bare understanding of the terminology, it was seen by many in the industry as a reactive process for analysing well failure, rather than a proactive function that could extend the life of the well.

Today, well integrity management is a hot topic in the industry, the development of which has coincided with and been driven by a number of factors. There is the tightening of regulation around health, safety and the environment. There has been growing awareness that working towards the long-term sustainability of wells and platforms can deliver much more than short-term safety measures. And there have been significant developments in information technology to enable far greater levels of automation and data management, making advanced analysis and real-time assessment possible.

Nonetheless, the industry's current experience of well integrity management remains fairly broad. Some companies have yet to embrace well integrity management as a dynamic, automated and real-time risk and asset management process. They have turned paper records into electronic ones, and have a dedicated folder in their office-based system, but that is about as far as they go.

These businesses still find it hard to add context to new information as it comes in. They don't have ready access to the inventory of equipment installed on wells – instead they have to search through different documents to see what a given well looks like, and piece details together to find out what is installed on it. These companies still face operational inefficiencies and can end up prioritising work that is not critical.

> "More forward-thinking operators have attempted to instil more of a management approach"

More forward-thinking operators have attempted to instil more of a management approach by using generic spreadsheets to record well information. Depending on the parameters they choose, this enables them to identify which wells look worse than others and develop some form of risk ranking capability. It is, however, still very manual and prone to human error.

More problematic is the fact that a spreadsheet can only provide a snapshot of what's happening. Whether data is updated once a week or once a month, it still doesn't provide trending information or give users the ability to look at historical data and identify recurring anomalies or issues.

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

Real-time capability

A growing number of proactive operators are integrating more data-driven and specialist well integrity software into their operations. Greater well instrumentation along with a drive for more automated data collection, has created a situation that lends itself to using database software systems that can process and analyse data in real time.

This is the immediate future for well integrity management: a move away from tolerating daily or weekly snapshots of well activity to insistence on a real-time capability that enables operators to respond quickly to any change in circumstance or potential problem. This kind of software can identify immediately when a well goes out of its safe operating envelope and alerts relevant personnel that there is something that needs attending to.

These kinds of database system give operators all the information they need about the well in a single view, plus access to background

Well integriy will play an important role in shale gas operations in the future (Photo: NeonLight / Shutterstock)

documentation. An efficient, single source of truth, the system is easy to interrogate so that pertinent information can be readily extracted. Crucially, it also ensures that everyone involved in a well's management has access to exactly the same information at exactly the same time. When decisions have to be made regarding clashing priorities, everyone involved understands the precise status of the well.

Greater automation also allows for global pooling of non-proprietary data for better understanding of operational effectiveness. For example, by comparing performance of a piece of equipment in use on the North Sea with other deployments of the same kit worldwide, operators can see whether their installation has a below or above-average lifespan. From there, they can establish whether it is the environment that is affecting performance, or whether training, maintenance or other controllable factors are at play.

> "We are already seeing more and more operators opting for dynamic, real-time data over static snapshots"

As the idea of the digital oilfield becomes more firmly established in the industry, this type of system will be seen as the standard to aspire to. We are already seeing more and more operators opting for dynamic, real-time data over static snapshots to give decision-making an immediacy it did not have previously.

This serves two purposes: on the one hand it helps operators identify whether they have a problem that needs immediate mitigation. On the other, it enables a degree of production optimisation where operators can set and monitor an individualised safe operating envelope for each well. In other words, well integrity becomes an enabler of smarter well management.

Balancing act

For operators currently wrestling with rapidly diminishing margins caused by the precipitous drop in the oil price, this is welcome news. The oil business has always been a series of careful balancing acts between safety, profitability, efficiency and regulation. The current market conditions have thrown that into stark relief, and highlighted where the industry has been running itself too expensively.

Those that have implemented modern well integrity management software are in a better position to address some of the resulting challenges and ensure that every dollar spent on the well brings in a return.

Companies that have real-time insight into the status of their wells can optimise operations to extract maximum value out of their assets – at minimum cost. By providing operators with a realistic view of a well's risk status, essential interventions like chemical treatment or well workovers can move to an appropriately timed schedule rather than sticking to an automated, but possibly over-cautious, timetable. Unnecessary shut-downs are minimised, maintenance time is optimised, and even the use of a descaling or anti-corrosion agent becomes more efficient – without compromising safety or production.

We are also seeing an increasing drive from operators interested in extending the life of existing wells that had previously been considered at the end of their life, or even bringing older well sites back into production after being suspended for long periods. The same system that can assess real-time operations of live wells can determine whether there is value to be gained from rehabilitating old wells with relatively straightforward casing patches or tubing replacements. It could deliver another ten years of active service at a fraction of the cost of drilling a new well.

Further into the future, well integrity will play an important role in shale gas operations. There is plenty of scope for optimising equipment to prevent well leakage, and ensuring much faster detection of and response to potential leaks. In particular, it can support the smart control of chemicals injected to achieve optimal fracking characteristics. Equally important, well integrity can provide the reassurance and confidence that will be needed to bolster public support for the shale gas sector.

Well integrity management has become a proactive, highly automated, data-driven process. It is just one example of the big data phenomenon that has swept through every industry, and an illustration of how that 'data lake' can be turned to advantage. With high-performance software offering real-time insights, it will be a vital component for realising the digital oilfield. And whatever developments are to come, its foundations in comprehensive corrosion and structural analysis, and consistent focus on long-term sustainability, will ensure well integrity management remains a major success factor for operators for a significant time to come. ■

Big data and the cloud

The drop in oil prices has affected innovation and growth across many countries and global businesses, leading to major budget cuts. Awad Ahmed Ali El Siddig, senior database administrator and technology team leader at ADNOC Distribution, discusses how IT innovation can be sustained by exploring new and cost-effective ways to optimise and manage essential data-driven projects that can deliver better business growth.

The importance of big data and cloud computing

In every sector and industry, data has become the key element in influencing decisions and actions. Data collected and analysed from different data sources can deliver many insights, and with the use of predictive analytics can be used to forecast and predict the best possible outcomes. The use of big data is becoming a crucial way for companies to outperform their peers. In most industries, established companies and new entrants alike will leverage data-driven strategies to innovate, compete and capture value.

Big data is not just another buzz word – it has now become one of the key innovational concepts and trends that promise to change the way we live, think and act. Organisations using big data and predictive analysis will be able to improve their services and products, increase customer satisfaction, derive more net profit and optimise their businesses to cope with the various challenges they face.

Cloud computing is the future of the IT service delivery model. Cloud is simply internet-based computing. Whereas people in the past relying on business applications being physically installed on their data centre servers and computers, today cloud enables organisations to conduct their business anywhere at anytime, with the ability to scale capacity according to demand. The cloud model has changed the way services are offered and results in better total cost of ownership. Cloud computing can differentiate your business by speeding infrastructure and application rollout, as well as time to market, compared with the traditional IT model.

Key facts about big data

The power of big data relies on the ability to collect and analyse a vast amount of data (volume), from many different data sources (variety) and at an amazing real-time speed

Organisations are missing potential opportunities because of the failure to process and analyse the unstructured data sitting outside their systems

(velocity) in order to generate actionable insight (values) that lead to better decision making processes (potential outcomes).

90 per cent of data in existence has been created in the last two years, and the total amount of data captured and stored by industry doubles every 1.2 years. The industry will require over six million big data specialists and data scientists to work on data-driven and predictive analytics projects from now until 2020. Most organisations are missing out on the potential benefits of big data because of a failure to process and analyse the unstructured, ie hidden, data sitting outside their systems, which

> “90 per cent of data in existence has been created in the last two years”

Human thinking is evolving over time by using data and information to think ahead

comprises almost 80 per cent of the data around the globe.

Human thinking is evolving through "intelligent data"

Human thinking is evolving over time by using data and information to think ahead and predict the next possible actions. Analytics is defined as three different techniques, as follows:

Descriptive analytics: Uses data aggregation and data mining techniques to provide insight into the past and answer the question "What has happened?" Descriptive statistics can be used when you need to understand at an aggregate level what is going on in your company and when you want to summarise and describe different aspects of your business.

Predictive analytics: Uses statistical models and forecast techniques to understand the future and answer the question "What could happen?"

Prescriptive analytics: Uses optimisation and simulation algorithms to advise on possible outcomes and answer the question "What should we do?"

> "IT organisations should look to the cloud as the new delivery model to support big data initiatives"

Big data challenges

While big data brings many advantages, it also brings many challenges that organisations need to overcome to maximise its value, such as:

Uncertainly of the data management landscape: With many competing technologies available, the selection of the right data management platform must be carefully done to ensure its full integration with the organisation's existing IT landscape, meeting future scalability and supportability.

Big data talent gap: In today's marketplace there are real shortages for data scientists and advanced business analytics specialists who can interpret data and generate insights for better decision making. There is also a shortage of key technical and infrastructure specialists who can manage and support big data projects on day to day basis. According to analyst firm McKinsey & Company, "By 2018, the United States alone could face a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions."

Big data projects funding and sponsorship: Sponsors of key projects would prefer to guarantee the outcome and benefits before approving capital expenditure for business or technology investments. One of the key strategies to motivate them is to deliver 'quick wins' by demonstrating one key problem or issue that an organisation wants to resolve, and be able to build the data modeling and statistics to show the resolution and possible outcomes. In this context, cloud computing can play a major role in reducing the startup cost to the minimum, as discussed below.

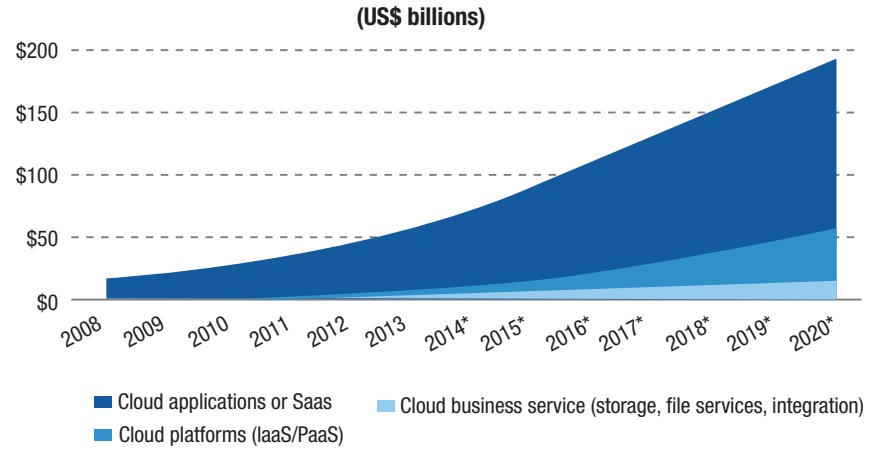
Big data governance and security: With the large datasets that organisations are expected to collect, process, and analyse, governance and security aspects will be even bigger to manage and control. This might lead to privacy breaches, information leakage and legal consequences if not managed and planned according to industry best practices.

Getting data into and out of the big data platform: Many people may not be aware of the complexity of facilitating the access, transmission, and delivery of data from numerous sources, and then loading those data sets into the big data platform. Business Intelligent (BI) tools must be able to connect to one or more big data platforms, provide transparency to the data consumers and reduce or eliminate the need for custom coding. This can create a huge burden and threaten the real value of the data being captured.

Big data tips (takeaways) for success

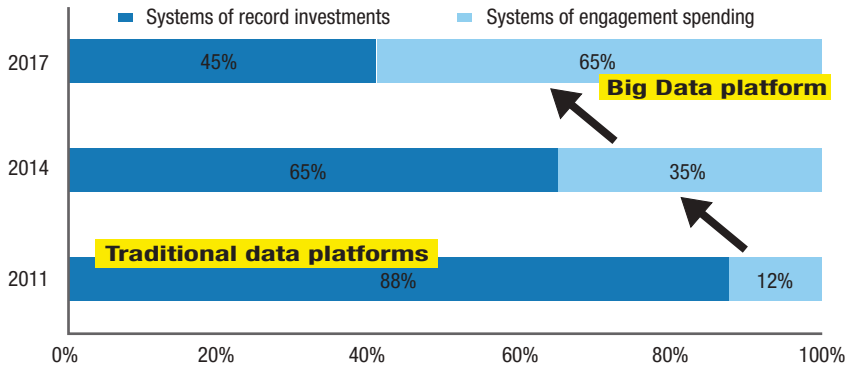
Public cloud services will grow to nearly $200 billion by 2020...

Global public cloud purchases will rise from $72 billion in 2014 to $191 billion in 2020



*Forrester forecast

Changing face of IT spending....



Source: Forrester estimates

Overcoming the challenges – big data on the cloud

Both big data and cloud technologies are evolving very fast. Nowadays organisations are moving from asking how to collect and store data, and focusing more on how quickly to extract meaningful insights to derive better business decisions. The cloud can play a huge role in speeding adoption and removing many of the underlying technology and infrastructure deployment and cost challenges, especially when dealing with very large datasets. IT organisations should look to the cloud as the new delivery model to support big data initiatives. Big data requires a cluster of servers, storage, specialised tools and software which is often found to be costly to implement on premise. Not to mention the cost of the deployment, installation, configuration and technical skilled resources required to complete the mission successfully.

> “Cloud-based big data analytics is not a one-size-fits-all solution”

Cloud computing is seen as a fundamental solution to overcome these challenges, accelerating the potential for scalable analytics solutions. Clouds offer flexibility and efficiencies for accessing data, delivering insights and driving value. However, cloud-based big data analytics is not a one-size-fits-all solution. Organisations using cloud infrastructure to provide ‘Analytics As Service’ (AaaS) have multiple options. By weighing factors of workload, cost, security, and data interoperability, IT organisations have the option to integrate the public cloud for their big data initiatives with their on-premise (private cloud) deployment, and get the best of both worlds, which is known as Hybrid Cloud deployment, or reply fully on the public cloud. The advantages of using the cloud model for delivering analytics and big data projects can be summarised as follows:

Lower cost (total cost of ownership): Using the cloud there is no need to have capital expenditure for infrastructure servers, compute cluster nodes, networking or technical IT resources to carry out the setup and installation. Cloud computing provides all of that.

Fast time to value: Cloud is a subscription-based delivery model, meaning that organisations can subscribe to however much computing, storage and network capacity they need. The required IT environment, along with all the pre-requisites for starting a big data project, will be provided in few days, unlike the traditional on-premise deployment approach, which typically requires months to complete.

Automation and simplification: Most of the cloud platform technical management aspects, such as software patching and upgrades, are carried out by the cloud provider, allowing your organisation to focus on their business and generating more insights from the data being collected.

Scale on demand: Many organisations deal with very large datasets, which can become both costly and complex to manage. The cloud allows a scale on demand (pay as you go) model for those working with data driven projects, which opens the door for deeper analytics at any time, regardless of the size of data.

Controlled governance and security: Data privacy and security following best practices are essential nowadays for all organisations. Information leakage due to lack of security awareness and measurement can badly impact an organisation’s public image and even destroy the real value of their analytics decision-making process. Cloud solutions nowadays come with the best security and governance standards embedded for all verticals, making it a more appealing option for many organisations. ■

The 2nd Big Data Analytics for Oil & Gas conference

Alain Charles Managed Events will be holding the *2nd Big Data Analytics for Oil & Gas* conference from 24-26 April in Abu Dhabi (see www.oilandgasbigdata.com). The technical report from the first highly acclaimed *Big Data Analytics for Oil & Gas* conference is available now and highlights how data can be securely gathered, mined and analysed to maximise value in the oil and gas industry. Download your free copy at ***http://www.oilandgasbigdata.com/component/rsform/form/261-Big_Data_Report_2015.***

Strategies for sustainable talent management

Muhammad Fahd Khan, an Abu Dhabi-based human resource management professional and coach, suggests strategies for facing the talent crunch in the oil and gas sector.

THE OIL AND gas industry is facing a difficult situation from a talent management perspective, as half of the workforce is eligible to retire in the next five to 10 years. There are not enough well trained personnel available to bridge this knowledge gap.

Talent refers to those individuals who can make a difference to organisational performance through their skillset, mindset and toolset. Talent management is the systematic attraction, identification, development, engagement, retention and deployment of these individuals. When a long term view is taken it becomes sustainable, correlating directly with critical operational goals and overall business strategy. An evidence-based and data-driven approach taking a long-term view provides critical and valuable insights and gives a well defined view of future workforce needs.

Technological advances are paving the way to untapped economic resources and changing market demands, ultimately causing workforce redeployment, realignment of human resources and refinement in talent management. A systematic talent management strategy which facilitates a multi-skilled workforce is the only solution for companies to maintain a competitive position in the market.

To devise and implement a talent management strategy, companies need to properly define their talent and talent management needs across the company. Leadership teams should be equipped to analyse talent, create career paths, identify high potential team players and prepare succession plans. The ultimate objective of all these activities is to lead, manage and ensure the company's growth. A well designed talent management strategy complements business growth, identifies skill gaps, ensures results and achieves business goals, guaranteeing long-term and sustainable growth.

The main components of a sustainable talent management system are attracting talent (sourcing and recruiting); developing talent (grooming and managing); and retaining talent (compensating and rewarding).

> "A well designed talent management strategy complements business growth"

Attracting talent

Oil and gas companies must define current and future talent needs and devise a talent sourcing strategy accordingly. Operational goals, growth factors and current workforce skill gaps should be taken into account in evidence based workforce planning for external and internal recruitment. This helps the company stay ahead of the competition. In addition, attracting talent requires a well-designed and targeted projection of the company's image and brand value in the market. In today's connected world, new joiners are well informed and educated, and cultural aspects must be given serious consideration at the time of sourcing and recruiting talent.

The oil industry is facing a shortage of skilled workers (Photo: alexjey / Shutterstock)

Developing talent

Investment in learning and development plays a crucial role for long term success, both for a business and for its employees. Structured training, grooming and coaching programmes have strategic importance, ensuring knowledge transfer from experienced employees to newer employees. It also helps in bridging the skills gap in the case of talent hired from other industries. Educating managers how to coach juniors is very useful in specialised roles. Developing company future leaders and managers, job rotation and enrichment, performance assessment and career development help in retention of high potential employees and enhance the strength of the talent pool.

Retaining talent

A well-articulated strategy for talent retention and recognition is a game changer. Talent loss directly impacts business performance. Lack of investment in compensation, benefits and retention plans can increase sourcing costs. As the skilled workforce nears retirement age, there is a strong need to retain experienced employees and utilise their skill and knowledge for the development of new joiners. Special benefits, recognition and reward programmes need to be introduced to retain talent. Pay for performance can be used to retain high potential employees. The introduction of flexible workplace and cultural specific programmes also gives a greater advantage in talent retention. ■

Innovation is all about customer satisfaction, says Huawei

DRAWING ON ITS broad range of products and services, Huawei has developed a complete set of ICT solutions for oil and gas exploration, production and transportation that can be easily customised to meet the challenging demands of any environment.

According to Saleem Bitar, VP, Middle East Energy & Petrochemicals, Huawei, the solutions provider drives innovative 'smart' oilfield technologies aimed at boosting production efficiency and creating an environment that is safe to work.

Talking about HSE as a risk management for any company, Bitar added that HSE is a valuable part of any organisation. "Our HSE practices at Huawei are at the top. We have cyber security checks, fire drills, loss prevention detection."

With ICT being in increasing demand in the Middle East region, Bitar said that it is their bigger responsibility to provide the right infrastructure to achieve their client's KPIs with cost effectiveness. "We are not trying to oversell our IT product. We know what our customers' requirements are and we give the best in the market."

Huawei has also recently opened an innovation centre in Saudi Arabia, dedicated to oil and gas industry. Bitar said that the centre fulfils three objectives – firstly, to equip young Saudi Arabian nationals with a technology skill set; secondly, to customise and tailor more ICT solutions in oil and gas for IOCs and NOCs; and finally, to show the world that Huawei is the right partner for the O&G sector.

"We put the right platform in place. The innovation centre is the proof that we capture requirements and start processing. It's a big commitment globally."

The smart technologies include:

Digital oilfield production technology solution

- The Huawei LTE + WLAN solution provides an LTE network that is compatible with multiple terminals, enabling comprehensive wireless coverage and service access.
- Enables greater levels of efficiency for oil companies to accurately detect risks and potential faults that could compromise its assets: from cyber threats or physical intrusion to accidental pipeline leaks.
- Helps to ensure health and safety standards of an oil company's workforce when offsite.

Multimedia digital trunking communication solution

- A wireless network-based multimedia digital trunking communications system for oil and gas companies to effectively manage production and operations with video surveillance security for emergency rescues, pipeline preventive maintenance, and field operations at oilwells, gas fields and stations. By combining voice, data, and video services into one, users can monitor site conditions in real-time.

Saleem Bitar at ADIPEC 2015

Digital production video surveillance solution

- With Huawei video surveillance, pipelines, production centres and fields are connected with cameras that are integrated into an intelligent video surveillance (IVS) system.
- The video surveillance system rapidly detects exceptions such as intrusions and thefts and generates alarms.

Intelligent pipeline solutions

- Huawei's intelligent pipeline solutions enable greater levels of efficiency for oil companies to accurately detect risks and potential faults that could compromise its assets: from cyber threats and physical intrusion to accidental pipeline leaks.

OptaSense revolutionary fibre optic technology aids efficient production

OPTASENSE'S FIBRE OPTIC cable has enabled a new era of data collection and management to deliver security, tracking, protection and new applications for optimising performance in upstream oilfield services. The technology combines the capture and analytic capabilities of the primary interrogator unit with advanced software algorithms that deliver instant identification and alerts; simultaneous four mode monitoring of pipelines for leak prevention and detection and PIG tracking; and enhanced yield and cost reduction for down-well measurements and management.

OptaSense chief technology officer David Hill says, "Because of the lower oil prices at the moment, companies want to ensure that they can still go on producing effectively, and we believe that our technology is the most efficient in achieving what our clients want."

Noting OptaSense's patented distributed acoustic sensing (DAS) technology, Hill adds, "With our DAS technology, you can optimise well designs and completion models, monitor production performance, reduce operational costs and improve yields, while ensuring risks are minimised. It helps protects pipelines from third party threats like hot tapping or accidental damage. Today, in the Middle East region we have 4,000 km of pipeline instrumented with our system."

OptaSense CEO James Pollard

Using fibre optics in oilwells has a myriad of advantages, according to CEO James Pollard. He reveals that fracking, stimulation and production flow in real time are made easy by attaching the cables on the sides of the well walls. In demand for EOR projects, operators prefer using fibre optics to understand the dynamics of the wells and take steps accordingly to improve production.

Pollard also notes that the market for pipeline protection is big and OptaSense is looking at expanding the fibre optic technology to the entire gamut of the oil and the gas industry.

In this regard, OptaSense entered into an agency agreement with Abu Dhabi's Gulf Automation Services and Oilfield Supplies (GASOS) in November 2015 during ADIPEC.

The new deal will see OptaSense's oilfield services division cover upstream activity including well completion, production and evaluation. Its infrastructure security monitoring division will support downstream activity, mainly related to pipeline integrity monitoring.

"We have high optimism and expectations that our combined technical capabilities and award-winning DAS solutions, with the in-depth market expertise of GASOS, will yield great benefits and efficiency gains for our clients in the UAE, particularly given the current low oil price," Pollard adds.

Rockwell releases new controller

ROCKWELL AUTOMATION HAS expanded its Allen-Bradley ControlLogix family of controllers to enable faster system performance and support the growing use of smart devices in manufacturing and industrial operations. The new ControlLogix 5580 controller provides up to 45 percent more application capacity and includes an embedded 1-gigabyte Ethernet port to support high-performance communications, I/O and applications with up to 256 axes of motion.

"With this new controller, users can meet future capacity and throughput needs as they design smart machines and work toward building a connected enterprise," said Dennis Wylie, global product manager, Rockwell Automation. "The new port and additional capacity cut the amount of control and communications hardware required, reducing system complexity, costs and required panel space."

In addition, the product selection process is easier with the ControlLogix 5580 controller because users can now select the appropriate model using the total number of Ethernet nodes required. A single ControlLogix 5580 controller can support up to 300 Ethernet nodes.

The controller also supports enhanced security as part of a defense-in-depth approach to help protect facilities, assets and intellectual property. It incorporates advanced security technologies and software features, such as digitally signed and encrypted firmware, change detection and audit logging.

As with other Logix controllers, engineers can use the Rockwell Software Studio 5000 design software to configure the ControlLogix 5580 controller and develop all elements of their control system. Data can be defined once, and then easily accessed and re-used across the entire Studio 5000 environment to speed system development and commissioning.

The ControlLogix 5580 controller

New rock core imaging solution introduced

The new solution provides high resolution rock core imaging

A NEW 3D magnetic resonance imaging (MRI) solution, the ImaCore 3017, is being introduced to the oil and gas sector for high resolution rock core imaging. The UK's MR Solutions, and Canada-based Green Imaging Technologies, have combined technologies to bring a complete rock core imaging solution to the sector.

Traditionally, rock core analysis is an exercise in providing measured data, but equipment limitations can result in final analysis that involves using theories to understand what is happening at the pore level. The ImaCore 3017 will virtually remove these resolution limitations by allowing customers to bolster the theory with actual images of all the fluid present in the rock core sample, and thus the pore network.

MR Solutions' MRI technology, including the latest 3D imaging pulse sequences, is combined with Green Imaging's software products to provide an easy to use interface. This provides workflow management, easy calibration, system monitoring and end results matching the industry's best practices for rock core analysis. The ImaCore system allows oil and gas sector customers to understand the complex mechanisms and processes happening within rock core samples and interpolate that understanding across entire reservoirs.

Seismos announces K-View™ CO2 EOR surveillance platform

SEISMOS INC, A provider of subsurface fluid-flow imaging technology for the oil and gas industry, has announced the launch of K-View™ CO2, a new flood surveillance platform for enhanced oil recovery (EOR) operations.

K-View™ CO2 focuses on increasing CO2 EOR production by providing continuous, real-time information about the subsurface movement of CO2 and areas of unswept oil. The solution is a cloud-based geophysical data processing platform connected to surface-installed low-impact emitters and sensors that generates images of CO2 movement over time. "With a rapid return on investment through immediately actionable information, K-View™ CO2 provides visualisation of flood fronts that help operators maximise pattern effectiveness and produce more oil," said Seismos founder and CEO, Panos Adamopoulos. Seismos has so far installed K-View™ CO2 in fields in Texas and New Mexico.

Churchill Drilling Tools unveils world's first hydraulic pipe recovery tool in the Middle East

Nicholas Kjaer

CHURCHILL DRILLING TOOLS, the specialist engineering company delivering market-leading drilling solutions to the global oil and gas industry, has launched its HyPR HoleSaver™ in the Middle East. The expansion follows successful deployments of the innovative hydraulic pipe recovery tool in the North Sea and Gulf of Mexico.

Stuck pipe situations cost operators hundreds of millions of dollars a year in non-productive time. The HyPR™ cuts that cost significantly by enabling operators to free pipe in just a few hours, as opposed to using traditional methods, which can take several days.

Nicholas Kjaer, general manager of Churchill's new Dubai office, said, "This is an exciting time for the company and our clients, as we continue to expand our global offering and make the HyPR tool available to the Middle East region for the first time. The tool has already been recognised by the oil and gas industry for its ability to deliver ground-breaking time savings for operators."

HyPR™ was developed following extensive collaboration between Churchill Drilling Tools and deepwater Gulf of Mexico drilling teams in 2013. Since then the tool has experienced rapid up-take, having been deployed by major operators in Houston, Aberdeen and Norway.

The HyPR™ tool offers the simplest method to recover the drill pipe rapidly and to begin side-tracking right away. It also delivers a clean cut for operators wanting to maximise BHA recovery options.

INMARCO launches eco-friendly non-asbestos sheet

AFTER SUCCESSFUL TRIAL, testing and certifications, INMARCO has launched its new generation gasketing eco-friendly non-asbestos sheet – NA series.

At its state-of-the-art manufacturing facility, INMARCO has produced the world's first unique technology without the use of toluene and volatile organic compounds (VOC) contents.

Examples of the new non-asbestos sheet

Besides being cost-effective, the sheet can be used in multi-applications and has excellent sealability at low seating stress with superior gas permeability. The sheet also displays good electrical isolation performance and less deformation at high compression load. It can be easily removed for flange protection and is suitable for steam applications as well.

According to the gasket manufacturer and supplier, the green technology is mandatory and many products in the company conform to these standards.

The NA series also reduces creep and cold flow. Its built-in features offer the highest flexibility. The surface finish is extremely high and suitable for flange irregularities, in comparison with conventional jointing sheets.

Serving industries from chemical processing to construction and oil and gas, INMARCO has already begun selling the gasketing sheet for various applications in the UAE market.

SLIC continues to experience success

SAUDI LEATHER INDUSTRIES Company (SLIC), a Saudi Arabian company, has grown to become a leading supplier of industrial safety and work footwear in Saudi Arabia and throughout the Gulf, the Middle East and Africa. By utilising the latest technologies, the company produces footwear that is not only tough and flexible, but comfortable too, with features such as composite toes. Manufactured using simple and durable processes, products meet the highest safety and quality standards, and are guaranteed against manufacturing defects for a period of six months.

The SLIC facilities in Dammam

Clients include Saudi Aramco, SABIC, Saudi Electricity Company (SEC), Petro Rabigh, Satorp, Marafiq and Saudi Arabian Airlines, as well as the military sector in Saudi Arabia and the Gulf states.

www.slicshoes.com

Honeywell's enhanced process controller helps manage oil and gas assets better

HONEYWELL PROCESS SOLUTIONS (HPS) newest RTU2020 process controller helps operating companies in oil and gas, mining and other process industries effectively manage complex remote automation and control applications.

Today's industrial operations are increasingly challenged with converting Big Data from complex automation systems and into relevant, actionable information. The growth of unconventional exploration and production in oil and gas has also increased the number of remote assets and data to manage.

Brendan Sheehan, senior marketing director, projects and automation solutions at HPS, said, "Distributed operations are under constant pressure in all production environments. Critical assets are often widely scattered over areas where operating conditions are demanding.

"With the RTU2020, companies have more flexibility to implement highly effective remote operations strategies across their businesses. They can benefit from reduced equipment monitoring and diagnostic time, as well as reduced travel and increased safety by not sending personnel to the field to troubleshoot device issues."

The RTU2020, enhanced with native redundancy, expanded input/output (I/O) modules and wireless I/O is a modular process controller that provides complete visibility into efficient utilisation of distributed assets through expanded remote monitoring, diagnostic and asset management. The unit is designed to withstand harsh environments and can be deployed at remote sites with very low power consumption (1.8W), which is ideal for use with solar power. It also allows for remote maintenance and cuts equipment monitoring and diagnostic time from hours to minutes.

The RTU2020 controller's 28 channels of onboard I/O can now be extended by adding one or more of the new 28 channel mixed I/O modules. Like the onboard I/O, the new mixed I/O module is HART-enabled. No extra hardware is needed with this solution and digital HART data and diagnostics are available locally for use in control and alarming as well as remote instrument health monitoring.

RTU2020's innovative design meets multi-well operational requirements in the oil and gas field, including electronic flow metering for gas per API 21.1 with per metre run licensing. Additionally, RTU2020's flow calculations have been independently validated against Alberta Energy Regulator (AER) Directive 17. ISO equations have been added to the flow calculation library alongside the existing AGA and API based calculations.

Honeywell's RTU2020 offers numerous best-in-class features, including removable and plug-in terminal blocks to simplify wiring and reduce time for cabinet assembly (Photo: Honeywell)

Integrated with Honeywell's Experion supervisory control and data acquisition (SCADA) system, it eases configuration over thousands of assets and enables operational efficiency with an advanced human-machine interface (HMI). Users gain perfect 20/20 vision into realising the production potential of their distributed assets. Honeywell's distributed system architecture (DSA) allows multiple Experion SCADA servers to operate as one within a single asset or across the enterprise.

Paired with Honeywell's field device manager (FDM), the RTU2020 provides an effective method of remotely interrogating instrument data and diagnostics, as well as running methods like valve signatures – all via the RTU2020 process controller.

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Date: 22-24 February 2016
Venue: Dammam, Saudi Arabia

Putting the focus on **sustainability**

PetroEnvironment, the 8th Symposium & Exhibition on Environmental Progress in the Petroleum & Petrochemicals Industry, returns to the Eastern Province of Saudi Arabia in February 2016.

TAKING PLACE BETWEEN 22 - 24 February at the Dhahran International Exhibitions Center, this year's event will be held under the patronage of HRH Prince Saud bin Nayef bin Abdulaziz Al-Saud, Governor of the Eastern Province.

The unique event will focus on environmental progress in the petroleum and petrochemical industries, highlighting the importance of environmental and sustainability issues in the upstream and downstream sectors. The event will be held under the auspices of the Environmental Technology and Management Association (ETMA) and will unite all the environment and petroleum/petrochemical professionals to explore solutions to current and future challenges. The event will attract both local and international experts to discuss a number of issues and challenges that are currently of maximum importance in the Kingdom of Saudi Arabia.

The event will feature a range of interactive workshops across the two days, which will cover a wide spectrum of issues in the environmental sector, such as the remediation of petroleum hydrocarbon impacted sites and industrial hazardous waste management. The symposium will provide attendees with the opportunity to meet with senior level speakers and fellow delegates and provide an insight into the latest developments and upcoming challenges affecting the industry.

> "The event will focus on environmental progress in the petroleum and petrochemical industries"

Keynote speakers will include Dr. Abdul-Majeid Haddad, regional climate change coordinator, manager of implementation, United Nations Environment Programme (UNEP) Regional Office for West Asia (ROWA); Khalid Abuleif, advisor to the Minister, Ministry of Petroleum & Mineral Resources, Kingdom of Saudi Arabia; Dr. Benno Böer, ecological sciences advisor – Africa, and science specialist – Ethiopia, UNESCO office Addis Ababa; and Yves Thelier, vice president, oil & gas, VEOLIA.

The event will provide a forum to showcase pioneering technologies and provide opportunities to discuss how to become more eco-friendly

Hub of activity

The 2016 international exhibition is set to be a hub of activity and will include prestigious exhibitors such as Saudi Aramco, Sadara, GEMS, EDCO and many more. These leading organisations will display the very latest pioneering technologies and services that are currently available to the industry and discuss with visitors how to become more eco-friendly. The exhibition offers an unprecedented opportunity for vendors in the environmental services and solutions sector to meet face to face with purchasing decision makers from some of the world's largest petroleum and petrochemical organisations.

PetroEnvironment 2016 is the only event of its kind to be endorsed by Saudi Aramco, the principal sponsor, while Veolia will be sponsoring the event as bronze sponsor. The event is the perfect opportunity for companies to enhance their market profile by representing their brand at the event. ■

For further information please visit the website at www.petroenvironment.com or contact Marco Colombara, email: marco@bme-global.com, tel: +44 203 328 1023.

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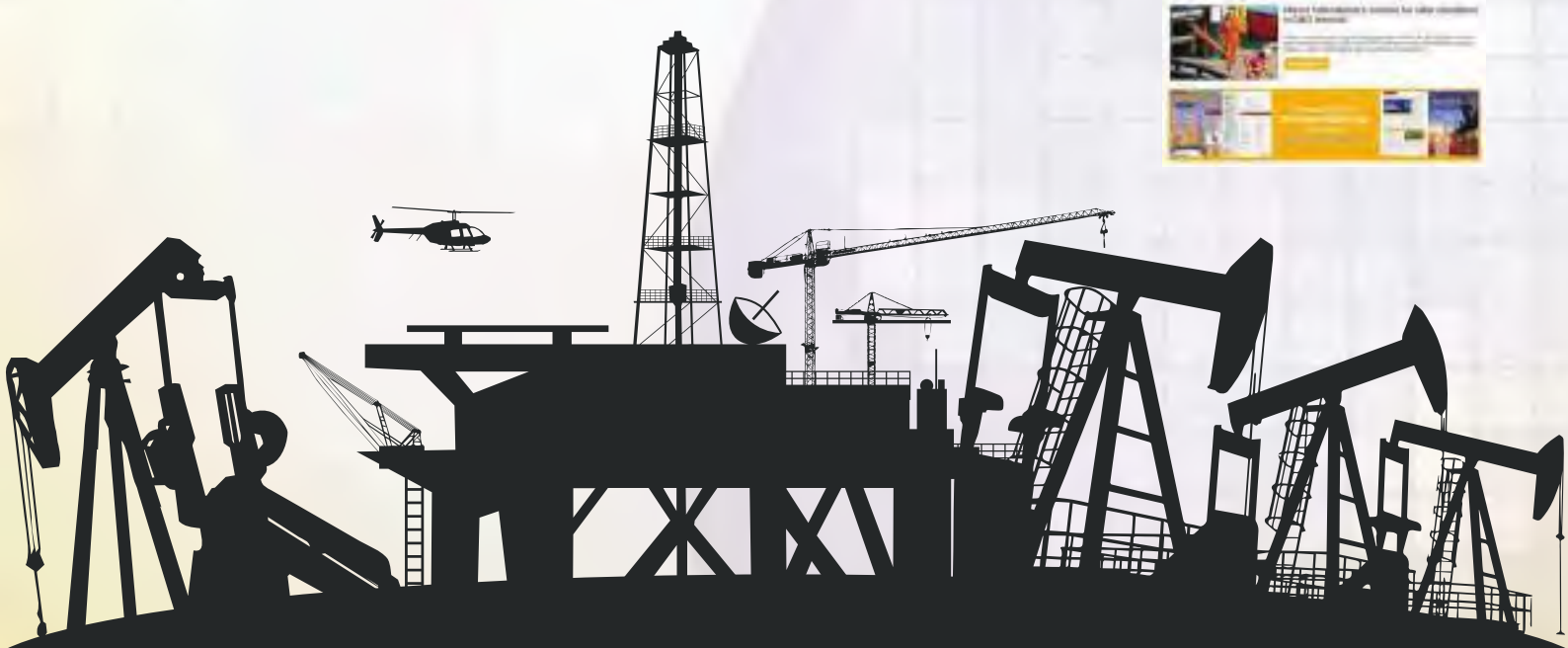

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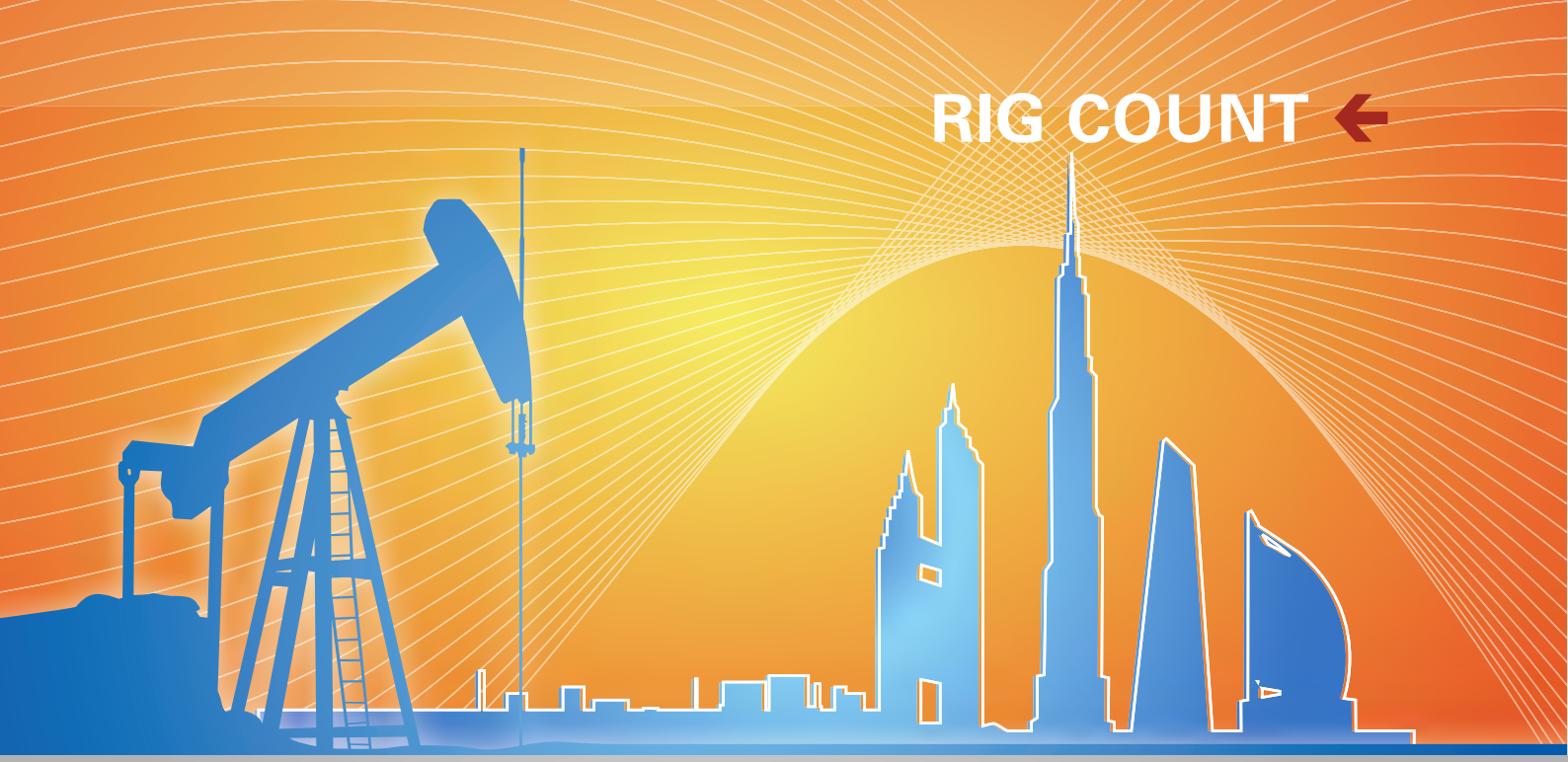

Middle East & North Africa

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

	THIS MONTH			VARIANCE	LAST MONTH			LAST YEAR		
Country	Land	OffShore	Total	From Last Month	Land	OffShore	Total	Land	OffShore	Total
Middle East										
ABU DHABI	31	18	49	-3	26	26	52	25	11	36
DUBAI	0	2	2	0	0	2	2	0	2	2
IRAQ	51	0	51	0	51	0	51	61	0	61
JORDAN	0	0	0	0	0	0	0	0	0	0
KUWAIT	43	0	43	0	43	0	43	45	0	45
OMAN	73	0	73	1	72	0	72	57	0	57
PAKISTAN	23	0	23	2	21	0	21	19	0	19
QATAR	2	5	7	2	2	3	5	2	7	9
SAUDI ARABIA	110	19	129	2	110	17	127	97	18	115
SUDAN	0	0	0	0	0	0	0	0	0	0
SYRIA	0	0	0	0	0	0	0	0	0	0
YEMEN	1	0	0	1	1	0	0	3	0	3
TOTAL	334	44	377	5	326	48	373	309	38	347
North Africa										
ALGERIA	49	0	49	1	48	0	48	49	0	49
EGYPT	33	11	44	-1	34	11	45	46	16	52
LIBYA	0	1	1	0	0	1	1	4	3	7
TUNISIA	0	0	0	0	0	0	0	0	3	3
TOTAL	82	12	94	5	82	12	94	102	9	111

Source: Baker Hughes

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التفتيش البرية المداخن المشتعلة وفتحات التهوية وشبكات المداخن وأبراج الاتصالات وشبكات الأنابيب المرتفعة. أما عمليات التفتيش البحرية فتمتد لتشمل مناطق تماس الأحمال بالمياه، وآلات الرفع، ومناطق التخزين تحت المنصات والأوناش الواقعة على المنشآت. وكل ذلك أثناء اتصالها بشبكة الاتصالات وفي وقت عمل لا يتجاوز ما يحتاجه شخصاً واحداً. وبذلك يمكن لشركات التشغيل أن تخطط بشكل أفضل لعمليات الصيانة والوقت المستغرق حتى إتمامها، علاوة على توفير الكثير من الموارد، بغض النظر عن حجم برنامج إدارة المنشآت.

وقد أثبتت «سايبر هوك» - بالفعل - أنه فيما يستغرق مشروع تفتيش منطقة معقدة، بالاستعانة بفريق الوصول عن طريق التدلي بالحبال، وقتا قد يصل إلى ١٤ أسبوعاً، فإن عملية تفتيش تجريها طائرة مشغلة عن بعد تستطيع إنجاز المشروع نفسه في ثلاثة أيام، وهو ما يعني زيادة وقت عمل المنشأة، وتقليل فترات تأجيل العمل، مما يؤدي إلى توفير تكاليف باهظة، وزيادة وقت الإنتاج، وتحسين كفاءة الجداول الزمنية.

ومن الأمثلة الأخرى على الموارد المهمة التي يتم توفيرها من حيث التكلفة، توفير عملية تفتيش بحرية، أجريت مؤخرا لأحد العملاء، ٢,٣ مليون دولار بسبب عدم الحاجة إلى الاستعانة بفريق تدلٍ من أعلى، وإيقاف عمل المنصة، الأمر الذي كان سيستغرق سبعة أيام حتى اكتماله. وعلاوة على الوقت والتكلفة اللذين يتم توفيرهما، تحظى عمليات التفتيش باستخدام الطائرات المشغلة عن بعد بمزايا ضخمة من حيث الأمان. فالعمل على ارتفاعات كبيرة يمثل أكثر أسباب الوفيات في أماكن العمل. ولهذا، فإن استخدام الطائرات المشغلة عن بعد يقلل بشكل كبير من الاضطرار إلى الاستعانة بفنيين يتدلون بحبال إلا إذا اقتضت الحاجة إلى الصيانة والإصلاح من خلال عملية التفتيش الجوي.

توسيع نطاق العمل بالطائرات إلى مختلف دول العالم

لا تزال التشريعات المتعلقة باستخدام الطائرات بدون طيار في الشرق الأوسط، سواء لأغراض ترفيهية أو تجارية، قيد النظر والإعداد، كما قد يكون الحصول على التصريح اللازم لتشغيل الطائرات بدون طيار للأغراض التجارية بشكل قانوني، أمراً صعباً.

و«سايبر هوك» لديها خبرة هائلة في مجال الطيران، وأدت مهام في أكثر من ٢٠ دولة في الشرق الأوسط وأوروبا وآسيا وأفريقيا وأمريكا الشمالية، كما تحظى «سايبر هوك» أيضا بخبرة هائلة في قطاع النفط والغاز بفريقها المدرب على مستوى عالٍ لضمان إجراء التفتيشات بأمان وكفاءة، ولضمان تقديم تقارير على قدر كبير من الجودة.

ورغم أن الإقبال على الطائرات بدون طيار، التي تستخدم في الأغراض التجارية، يسير في الشرق الأوسط حتى الآن بخطى أبطأ منه في أوروبا، فإننا نتوقع، مع تزايد إدراك قطاع النفط والغاز لفوائد تقنيات الطائرات المشغلة عن بعد، أن نرى هناك المزيد من «العيون الطائرة».

دراسة حالة

في شهر سبتمر/أيلول ٢٠١٥، كلفت إحدى شركات النفط والغاز الكبرى في دولة الإمارات العربية المتحدة «سايبر هوك» بإجراء عمليات تفتيش بحرية آمنة لست مداخن مشتعلة، و١٢ شبكة تهوية، وعدة جسور وأبراج ثلاثية القوائم، وأبراج اتصالات بحرية في الخليج. وكان الدافع وراء استعانة الشركة بالطائرات المشغلة عن بعد، هو تجنب الاضطرار إلى إيقاف عمل المنصة أثناء إجراء التفتيش، كما كانت الشركة تريد تقليل تعرض القوة العاملة البشرية لبيئات العمل الخطرة؛ كالعمل على ارتفاعات كبيرة، علاوة على الابتعاد لمسافة آمنة عن المنشآت العاملة. إضافة إلى ذلك كانت هناك حاجة للحصول على بيانات عالية الجودة من أجل تحسين خطط الصيانة والوقت اللازم لها، وبالتالي دعم القرارات التي تتخذها الإدارة. وقد كان الأسلوب البديل المقترح لتفتيش رؤوس المداخن المشتعلة هو استخدام طائرة مروحية، إلا أن هذه الطريقة لم تكن لتوفر إمكانية الرؤية بزاوية ٣٦٠ درجة للمدخنة بالكامل؛ كالمناطق الموجودة أسفلها والهيكل الداعم لها. علاوة على ذلك أدت الطائرة المشغلة عن بعد العديد من أعمال التفتيش الصعبة؛ كالتفتيش على الجسور والأبراج ثلاثية الأعمدة وأبراج الاتصالات التي أمكن إجراء التفتيش عليها في نفس المهمة. ولذلك اعتبر أن استخدام الطائرة المشغلة عن بعد، عقب النظر فيه، هو الأسلوب الأفضل لمعالجة تلك المشكلات.

وقد سهلت الخبرة، التي تحظى بها 'سايبر هوك' عبر العمل في أكثر من ٢٠ دولة، الحصول على تصاريح الطيران اللازمة من هيئة الطيران الإماراتية وكذلك الموافقات الأخرى من سلاح الجو المحلي. وقد تم تخصيص فريق ثنائي للعمل على المنصة يتكون من طيار طائرات مشغلة عن بعد ذي خبرة، ومهندس مختص بالتفتيش على منشآت النفط والغاز. وبهذا، استطاع فريق 'سايبر هوك' للتفتيش على منشآت النفط والغاز تقديم تقارير تفتيش مفصلة، إلى جانب تحليل أعده خبير المداخن المشتعلة حول حالة رؤوس المداخن. وقد أقرت الشركة بأن العمل قد تم إنجازه بأمان وكفاءة، وقُدمت عنه تقارير عالية الجودة في الوقت المناسب.

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«العيون الطائرة»: انطلاق عمليات التفتيش عن بعد في الشرق الأوسط

في هذا المقال، يناقش «فيليب بوشان»، مدير العلاقات التجارية بشركة «سايبرهوك إنوفيشن» كيفية إجراء الشركة لعمليات التفتيش الجوية على المنشآت الخطرة، والتي يصعب الوصول إليها، وعمليات المسح الأرضي في قطاع النفط والغاز، وذلك من خلال مركبات جوية - أو طائرات - يتم تشغيلها عن بعد.

شركات النفط والغاز، في كافة أنحاء العالم، تمتلك الكثير من البنى التحتية والمنشآت البرية والبحرية، هذا علاوة على إدارتها وصيانتها. ومن الضروري، وغالبا من الواجب قانوناً، إجراء تفتيش دوري على تلك المنشآت لمنع حدوث مشاكل قد تؤدي إلى خسائر في الإنتاج بل، وهو الأهم، خسائر في الأرواح أيضا. ويتعين إجراء هذا التفتيش الدوري من أجل رصد المشاكل المحتمل وقوعها ومعالجتها في أسرع وقت ممكن. لكن برامج التفتيش قد تستهلك كمّاً هائلاً من الموارد البشرية، الأمر الذي قد تنتج عنه تكاليف باهظة، وقد يعني - أحيانا - أن يعمل العمال في بيئات خطرة ومناطق يصعب الوصول إليها. كما قد يستلزم الأمر، في بعض الأحيان، أن يعمل فنيو التفتيش على ارتفاعات هائلة. ورغم المزايا الأمنية الحقيقية التي توفرها بعض الأساليب المستخدمة؛ مثل الوصول عبر التدلي بالحبال بدلًا من العمل على السقالات، فلا تزال هناك مخاطر قائمة.

لهذا، وإذا عدنا إلى عام ٢٠٠٨، نجد أن فريقا من العقول المبدعة قد تمكن من اكتشاف مساحة في مجال التفتيش على منشآت النفط والغاز تسمح باستخدام الطائرات المشغلة عن بعد، أو ما يطلق عليها طائرات بدون طيار أو الدرون. وقد أكملت «سايبرهوك إنوفيشن»- الشركة الرائدة عالميا في استخدام الطائرات المشغلة عن بعد في أعمال التفتيش والمسح الجوي - أول عملية تفتيش برية وبحرية على منشآت النفط والغاز، واضعة تكنولوجيا الطائرات بدون طيار في مسارها الصحيح نحو سلسلة من النجاحات المتتابعة في قطاع النفط والغاز.

وشركة «سايبر هوك» تستخدم الطائرات المشغلة عن بعد في إجراء عمليات التفتيش على الهياكل الخطرة، والتي يصعب الوصول إليها، كالمداخن المشتعلة، ومناطق التخزين تحت المنصات، والصهاريج الداخلية، ومخارج العوادم وشبكات التهوية. وقد أدت القدرة على جمع البيانات، بما فيها الصور الفوتوغرافية والحرارية التي تحظى بمستوى عالٍ من التفصيل، إلى زيادة حجم أعمال «سايبر هوك» إلى أكثر من الضعف خلال العامين الأخيرين.

وتعد «سايبر هوك»، التي يقع مقرها الرئيسي في اسكتلندا، مزوداً موثوقاً به لدى شركات النفط والغاز الست الكبرى، والعديد من شركات النفط المحلية والشركات المستقلة؛ مثل شركة تنمية نفط عمان، وشركة بترول أبوظبي الوطنية، والشركة السعودية للصناعات الأساسية، ودبي للبترول، وأوكسيدنتال، والشركة العمانية للغاز الطبيعي المسال، وجاسكو، ودليل للنفط، وشل، وتوتال.

وقد عمل فريقٌ يضم مجموعة من طياري الطائرات المشغلة عن بعد من ذوي المهارة العالية، وعدداً من مهندسي التفتيش ذوي الخبرة، على إنجاز أكثر من عشرة آلاف طلعة طيران تجارية، و ٢٠٠٠ عملية تفتيش على الأبنية، و ٢٠٠ عملية تفتيش على مداخن مشتعلة. ووصلت أنشطتهم إلى أكثر من ٢٥ شركة من أكبر الشركات، إلى جانب توسيع عروض خدماتهم لتصل إلى مجالات الطاقة المتجددة، والمرافق العامة وقطاع السكك الحديدية.

وأدى ازدياد الإقبال على تقنيات الطائرات المشغلة عن بعد في أوروبا إلى زيادة سايبر هوك حجم ما تعرضه عالميا، وبدء العمل في مكاتبها بالشرق الأوسط وجنوب شرق آسيا عام ٢٠١٥. وقد أنجزت «سايبر هوك» - بنجاح - العديد من المهام الموكلة إليها في السعودية وأبو ظبي وعُمان ودبي. وذلك انطلاقا من قاعدتها في دبي، وبالاعتماد على معرفتها بالسوق المحلية وقدراتها العملية وخبراتها التفتيشية.

الابتكار في خدمة الصناعة

من المنتظر، وفقا لتقرير شركة «رادينت إنسايتس» لأبحاث السوق والاستشارات الصادرعام ٢٠١٥، أن يصل حجم سوق الطائرات بدون طيار، المستخدمة في الأغراض التجارية، إلى ٤,٨ مليار دولار بحلول عام ٢٠٢١، وأشار التقرير، على وجه الخصوص، إلى أن الطائرات بدون طيار قد «أحدثت تغييراً جوهرياً في مستوى دقة عمليات التفتيش على المرافق العامة ومنشآت النفط والغاز». ويرجع سبب هذا النمو السوقي إلى خصائص التصور الاقتصادي، والملاحة الأفضل التي توفرها نظم الطائرات بدون طيار، والتي تشمل رسم الخرائط والتفتيش الجوي.

وتعتبر القدرة على إجراء عمليات تفتيش متعددة النطاقات في عملية واحدة أمرا عظيم الفائدة، وبخاصة في قطاع النفط والغاز. وتشمل عمليات

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حتمية الابتكار من أجل تعزيز عمليات إنتاج النفط

طبقا لرؤية مؤسسة بوز الين هاملیتون، يتحتم على الشركات العاملة في مجال الطاقة الالتزام بالابتكار لضمان تجاوز هذه المرحلة من عام ٢٠١٦، التي تشهد الكثير من التغيرات والشكوك المتعلقة بأمور محورية.

وأضافت الشركة، المختصة بتقديم الاستشارات الإدارية، في تقرير لها بالتعاون مع مؤسسة البيانات الدولية، أنه وفي وسط أزمة انهيار أسعار النفط، وظهور توزيع جديد لخريطة القوى، يجب أن يحمل منتجو وشركات النفط على عاتقهم مسؤولية التكيف مع تغيرات السوق والتفاعل السليم معها لضمان استمرار أعمالهم رغم تعقد الأمور في السوق.

ويسلط التقرير الضوء على الاتجاهات الخمسة الرئيسية لعام ٢٠١٦، والتي تشمل:

- زيادة معدل الإنفاق على الأمن الإلكتروني، وذلك نظرا للحاجة إلى التعرف على التهديدات بصورة أفضل قبل أن ينعكس أثرها مباشرة على الكفاءة التشغيلية، ومعنى هذا استبدال الأمن الإلكتروني الذي يتم بالطريقة التقليدية المعتمدة على الامتثال. وبحلول عام ٢٠١٩، سوف تتبنى نسبة كبيرة من الشركات العاملة في مجال النفط – تصل إلى ٧٥ في المائة – استراتيجية مبنية على الأمن الإلكتروني لمواجهة المخاطر بشكل كامل.
- سيكون هناك اتجاهٌ نحو ازدياد الطلب على الطاقة، والبنية التحتية المرتبطة بها، تتزعمه الاقتصادات الناشئة. وهذا ـ بالتالي ـ يبرز الابتكار والتجديد كآلية حتمية لتلبية الاحتياجات الفريدة والمميزة لتلك الأسواق. وقد أفادت وكالة الطاقة الدولية، في تقريرها ، بأن الاقتصادات الناشئة سوف تستأثر بما يزيد على ٩٠ في المائة من صافي نمو الطلب على الطاقة بحلول عام ٢٠٣٥.
- طلب العملاء للحصول على المعلومات والخدمات والإدارة ، سوف يدفع التحول الرقمي إلى الوصول إلى جميع نواحي الصناعة (على سبيل المثال، تبادل المعلومات وإخطار الانقطاع وسداد الفواتير وبيع منتجات الطاقة وخدماتها والمنازل المتصلة بخدمات الإنترنت).
- نشر التحليلات المتقدمة والمتطورة للمساهمة في تخفيض التكاليف العامة. وسوف تؤدي زيادة استخدام البيانات الضخمة إلى جعل إدارة العمل في هذا المجال تعتمد، بصورة متزايدة، على البيانات. ومن المتوقع في عام ٢٠١٦ أن يتجه أغلب المسؤولين الماليين نحو الابتكار في وسائل التمويل من أجل تقليل التكاليف التشغيلية.
- توجه الشركات نحو الاعتماد المتزايد على التشغيل الآلي للعمليات اليدوية لتقليل الجهود وترشيد وتبسيط حجم الوظائف، ما ينعكس بدوره على تحسين النتائج. وقد أصبح هناك طلبٌ متزايدٌ في أغلب الشركات على مهارات الجيل القادم من تكنولوجيا المعلومات، ما يعني أن الصناعة ستشهد توجها أكبر نحو التدريب والتوظيف على مدار العام.

العراق تسعى إلى تمويل مشروع الاستخراج المُحسّن للنفط

صرح مسؤول عراقي رفيع المستوى، أن العراق، وهي ثاني أكبر دولة منتجة للنفط في منظمة أوبك، قد اقتربت من إبرام صفقة مع بتروشينا وإكسون موبيل للاستثمار في مشروع تقدر عائداته بمليارات الدولارات، وذلك من أجل زيادة إنتاج النفط من حقولها النفطية الصغيرة الواقعة في الجنوب.

ويتكون مشروع الجنوب المتكامل من مدّ خطوط أنابيب للنفط، وإنشاء مرافق تخزين ومشروع للإمداد بمياه البحر لضخ الماء من الخليج للحفاظ على الضغط والاستخراج المحسن للنفط.

وقد صرح السيد باسم عبد الكريم، نائب رئيس شركة نفط الجنوب لوكالة رويترز، بأن شركة نفط الجنوب الحكومية تسعى جاهدة للحصول على استثمار من أي من الشركتين أو كليهما، لبناء البنية التحتية اللازمة لزيادة إنتاجية الحقول التي تديرها الشركة. وأضاف بأن الانخفاض الحاد في أسعار النفط منذ منتصف ٢٠١٤ قد أضر بقدرة بغداد على تمويل أعمال تطوير حقول النفط، وأن الشركة بحاجة إلى الاستثمارات الأجنبية.

ويستهدف مشروع الاستخراج المحسن للنفط حقول النفط الواقعة في لحيس والناصرية وطوبا ونهر بن عمر وأرطاوي. إذ تنتج هذه الحقول حاليا ما يقرب من ٢٤٠ ألف برميل يوميا، فيما تستهدف الخطة الأولية لشركة نفط الجنوب رفع الإنتاج اليومي ليصل إلى ٣٥٠ ألف برميل يوميا في عام ٢٠١٦.

كما سيستخدم مشروع مياه البحر أيضا في التغلب على تراجع معدلات الانتاج في الحقول الأكبر، مثل حقول غرب القرنة ومجنون والزبير والرميلة، والتي تديرها شركات النفط الكبرى مثل بريتش بتروليوم وشل وإيني ولوك أويل.

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١٤ - ١٦ منتدى الشرق الأوسط للتكنولوجيا ـ دبي
٢٢ - ٢٤ معرض البيئة البترولية - PetroEnvironment ـ الدمام

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خبراء الطاقة يتوقعون استمرار انخفاض أسعار النفط

وفقا لما يراه ٥١ في المائة ممن شاركون في استطلاع أجراه مركز استعلامات الخليج، وشارك فيه ٢٥٠ من المتخصصين في هذا المجال ويعملون في دولة الإمارات العربية المتحدة، من غير المتوقع أن تعود أسعار النفط إلى الارتفاع هذا العام فوق معدل ٤٠ دولارا للبرميل، وهو ما يضع عبئاً إضافياً على كاهل الحكومات وشركات الطاقة من أجل تخفيض حجم نفقاتها الرأسمالية.

وكانت أسعار النفط قد هبطت في شهر يناير/كانون الثاني إلى أدنى مستوياتها منذ ١٢ عاماً، إلى جانب أن سياسة منظمة أوبك في الحفاظ على حصتها السوقية – الأمر الذي أسهم في تهاوي أسعار النفط – لم تنجح في تقليل حجم إنتاج الدول المنتجة غير العضوة في منظمة أوبك، ومن بينها شركات نفط الصخر الزيتي الأمريكية. ومن المتوقع استمرار زيادة المعروض من النفط خلال ٢٠١٦.وقال الدكتور إيمانويل إيبي كاشيكو، وزير الدولة النيجيري للموارد البترولية والذي تولي رئاسة منظمة أوبك لعام ٢٠١٥ : «أسعار النفط أصبحت تنخفض حتى قبل خروج براميل النفط من السوق». وقال الدكتور كاشيكو إنه قد تتم الدعوة لاجتماع عاجل لمنظمة الأوبك خلال الربع الأول من هذا العام لمعالجة ومناقشة الأثر الاقتصادي السلبي الناجم عن تراجع أسعار النفط. فخام برنت يشهد، في الوقت الحالي، ترجعا في الأسعار حتى وصل إلى ٣٠ دولاراً للبرميل. فيما تساءل زميله في أوبك، وزير الطاقة الإماراتي الشيخ سهيل بن محمد المزروعي، عن الجدوى من الدعوة إلى اجتماع طارئ يركز فقط على دور ومساهمة الأوبك فيما يتعلق بزيادة المعروض في السوق العالمية. وقد حمّل انخفاض أسعار النفط الحكومات، التي تعتمد ميزانياتها بشكل كبير على عائدات الطاقة، تكاليف باهظة. كما بدأت شركات البترول والغاز في تقليل نفقاتها وزيادة إجراءات تقليل العمالة في دول الخليج وغيرها. وأشار ما يقرب من ٤٥ في المائة من المشاركين في استطلاع مركز استعلامات الخليج، إلى أن التوجه الذي انتهجته دول الخليج العربية، والذي يتمثل في تقييد ميزانياتها، سيكون من أهم عوامل الاقتصاد الكلي المؤثرة على قطاع النفط والغاز في عام ٢٠١٦، ويليه في التأثير الضعف الاقتصادي الذي تواجهه الصين (وفقا لما أشار إليه ٣٨ في المائة من المشاركين). فيما أكدت أغلبية كبيرة (٧١ في المائة)، أن منتجي وشركات النفط سوف ستنظر في تقليل حجم استخراج احتياطياتها من الوقود الأحفوري، عملًا بالاتفاق الذي تم في قمة الدول المشاركة في مؤتمر الأمم المتحدة للتغير المناخي الذي عقد في باريس خلال شهر ديسمبر/كانون الأول الماضي، والذي أوصى بضرورة الحد من ظاهرة الاحتباس الحراري العالمي إلى أقل من درجتين، مع السعي بقوة لإبقاء درجات الحرارة فوق مستويات ما قبل المرحلة الصناعية بدرجة ونصف.

في شهر يناير/كانون الثاني هبطت أسعار النفط إلى أدنى مستوياتها منذ ١٢ عاما

التشـغيل الآلي لمشـروع «التحريـر للبتروكيمـاويـات» في مصـر

أعلنت مؤخرا كل من شركة إيمرسون، الرائدة في مجال التشغيل الآلي للمعالجات، وشركة كربون القابضة، وهي شركة بتروكيماويات مصرية خاصة، عن اختيار «إيمرسون بروسيس مانجمنت» لتقديم تقنيات وخدمات التشغيل الآلي والمتابعة لمشروع «التحرير للبتروكيماويات» التابع لشركة «كربون القابضة» في منطقة العين السخنة في مصر. ومن المتوقع أن تبلغ تكلفة النطاق المبدئي للمشروع حوالي ١٥٠ مليون دولار أمريكي. وعند اكتماله، سيمثل مشروع التحرير للبتروكيماويات، البالغة تكلفته حوالي ٦,٩ مليار دولار أمريكي، أكبر مجمع للصناعات البتروكيماوية في مصر، وأكبر منشأة لتكسير النفثا في العالم . إذ أنه سينتج ١,٥ مليون طن سنويا من الإيثيلين الذي سيُعالج لتحويله إلى البولي إيثيلين. وتشمل المنتجات الأخرى التي سيقدمها المجمع، كلا من البولي بروبيلين والهيكسين والبوتادين والبنزين والستايرين. ومن المتوقع أن يوفر المشروع، في مرحلتي البناء والتشغيل، آلاف فرص العمل الدائمة المباشرة وغير المباشرة في مصر، فضلاً عن العديد من الوظائف في مجال البناء والتشييد. وستعمل إيمرسون، بصفتها أحد أكبر المقاولين في خدمات التشغيل الآلي، على تطبيق أفضل التقنيات والخدمات التي من شأنها أن تضمن إنجاز العمل في المشروع في الوقت المحدد والميزانية المخطط لها. وتشتمل الخدمات الهندسية على تصميم المجمع الصناعي بشكلٍ يحقق أقصى استفادة تشغيلية، كما ستقدم برنامج متابعة قوياً يضم خدمات استشارية ومراقبة كفاءة المعدات ومركز خدمة موثوقاً يُعتمد عليه في تقديم الدعم الداخلي المستمر، وتوفير الخبرات الضرورية. وسيقام «مشروع التحرير للبتروكيماويات»، الذي سيقدم خدماته للسوق المحلية وأسواق التصدير، في المنطقة الاقتصادية الخاصة الواقعة في شمال غرب خليج السويس، معتمدا على مواد خام يتم استلامها، ومنتجات يتم شحنها من خليج السويس. ومن المتوقع أن توفر التمويل، لهذا المشروع الضخم، عدة شركات من الولايات المتحدة وكوريا وإيطاليا، فضلًا عن مؤسسات استثمارية خارجية خاصة ومستثمرين مباشرين آخرين. ووفقا لمذكرة التفاهم، ستقدم شركة «إيمرسون» استثماراتها في مشروع التحرير للبتروكيماويات على شكل حيازة حصة سوقية من الأسهم الممتازة.

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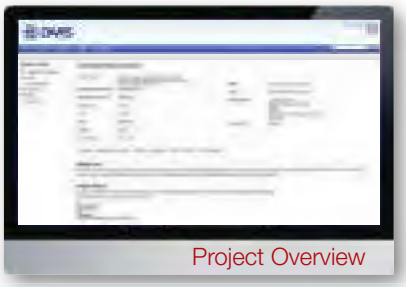

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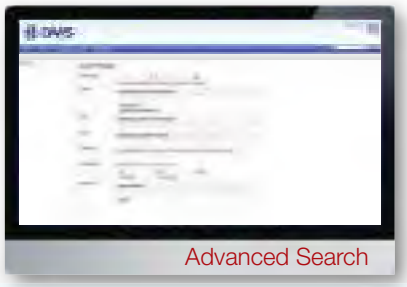

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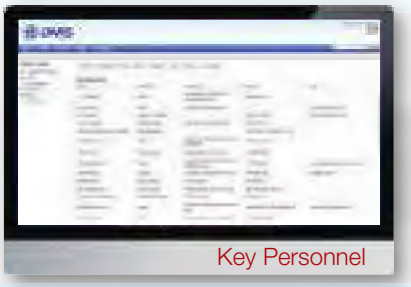
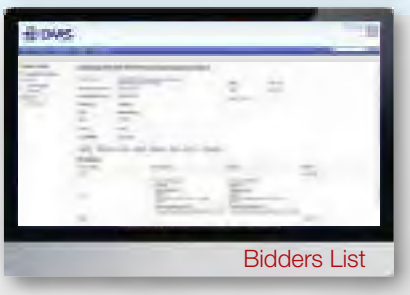


Key Personnel

Market Forecast



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- Deeper Project Financing Data

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