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VOLUME 19 | ISSUE 7 2016

- ADNOC goes for consolidation
- Iran - risks and rewards
- Choosing the most appropriate project strategy
- Connectivity choices for offshore applications
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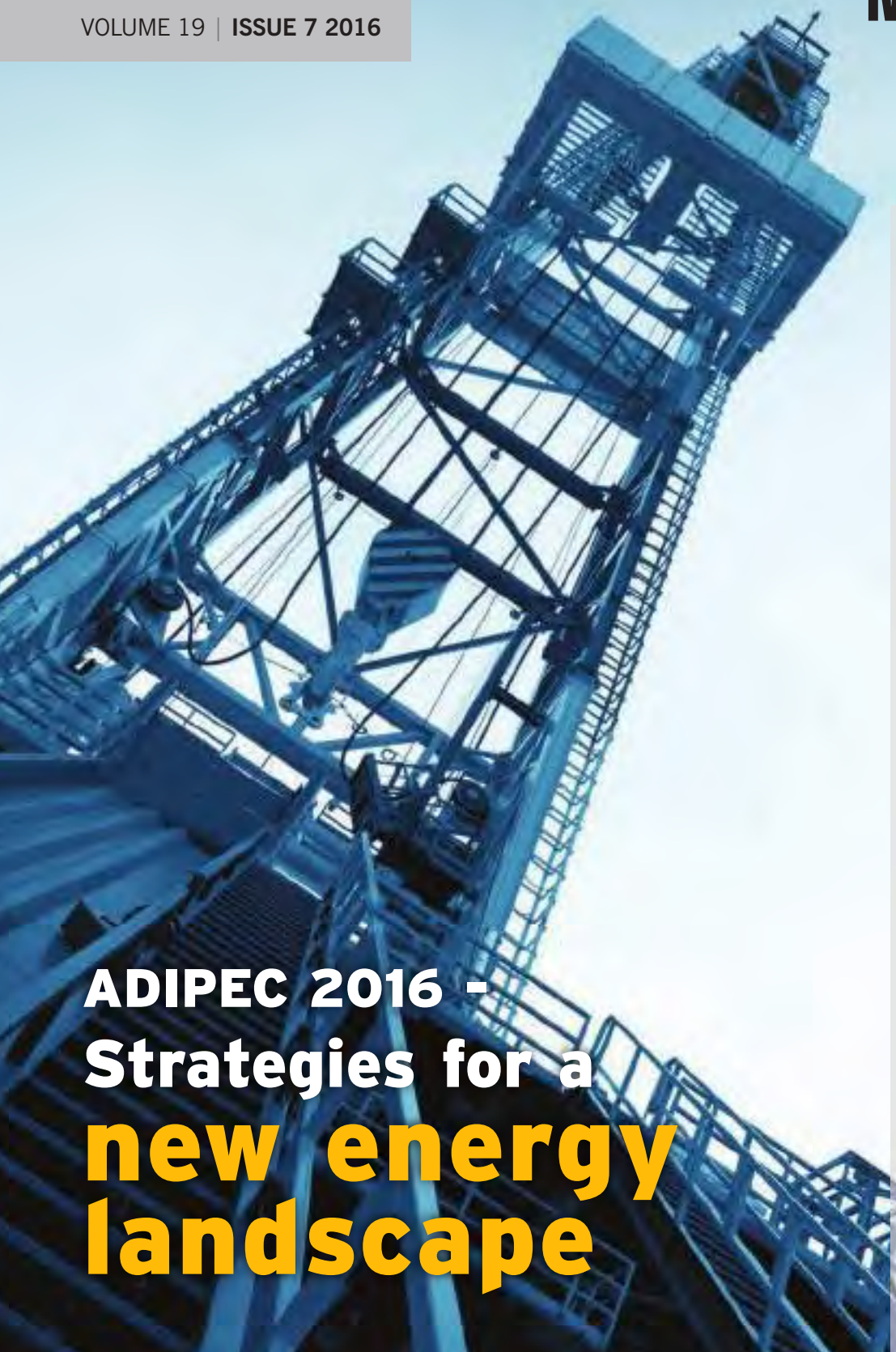

ADIPEC 2016 - Strategies for a new energy landscape

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Editor's note

ADIPEC 2016 IS set to take place at a time when the outlook for the oil market looks more positive. Saudi Arabia's energy minister recently remarked that a significant improvement in market conditions can be expected, and highlighted the positive atmosphere of collaboration between OPEC and non-OPEC members with prospects for co-operation to freeze or cut production to promote market stability. No doubt this will be a key topic for discussion at ADIPEC, where government officials, decision makers and oil and gas professionals are set to debate the issues and challenges facing the industry today. We bring you all the event and exhibitor news - see p.74. The Exhibition of the SABIC Technical Conference, to take place in Jubail, Saudi Arabia, is also set to be an exciting event, at a time when industrial development is a key priority in alignment with the Kingdom's Vision 2020 strategy (see p.116).

Contents

Front cover image: huyanshu/Shutterstock

➔ Executives' Calendar 2016 - 2017

NOVEMBER			
6-9	**Exhibition of the SABIC Technical Conference**	JUBAIL	www.exhibitionofSTM12.com
7-10	**ADIPEC**	ABU DHABI	www.adipec.com
21-23	**Plastics & Petrochem Arabia**	DAMMAM	www.paschem-4p-arabia.com
27-29	**GPCA Forum**	DUBAI	www.gpca.org/ae/events
29-1 Dec.	**Valve World**	DUSSELDORF	www.valveworldexpo.com
DECEMBER			
5-7	**Kurdistan-Iraq Oil & Gas**	LONDON	www.www.cwckiog.com
5-7	**OpEx MENA 2016**	ABU DHABI	www.opex.biz
JANUARY 2017			
16-18	**GEO India**	NEW DELHI	www.exportsolutions.com.au
16-19	**World Future Energy Summit**	ABU DHABI	www.worldfutureenergysummit.com
22-24	**Intersec**	DUBAI	www.intersecexpo.com
26-27	**North Africa Oil & Gas Summit**	MILAN	www.nas.theenergyexchange.co.uk
30-1 Feb.	**Petroleum Conference Iran 2017**	TEHRAN	www.petroconfex.com
FEBRUARY 2017			
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APRIL			
11-12	**Middle East Heavy Oil Congress**	MANAMA	www.meheavyoil.com

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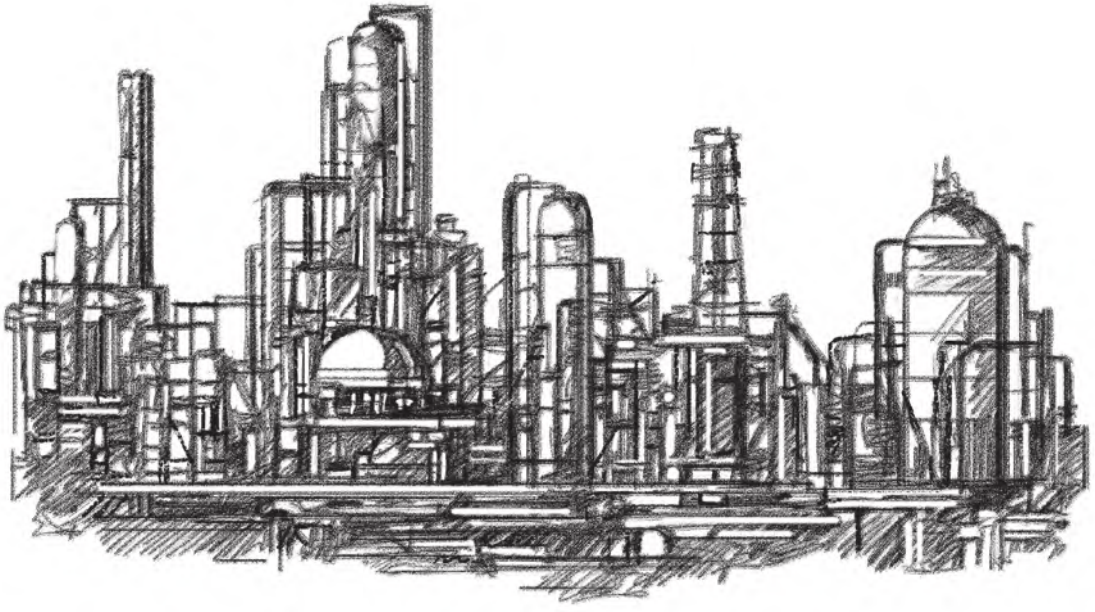

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Promoting co-operation in Iran's **oil and gas industry**

The Petroleum Conference – Iran 2017 will take place from 30 January – 1 February 2017, with a particular focus on midstream and downstream opportunities.

AS THE VOICE of the petroleum industry's private sector, uniting all seven major associations for the first time, Petroleum Conference – Iran 2017 will be addressed by Iran's minister of petroleum Bijan Namdar Zanganeh and president deputy in Science and Technology Sorena Sattari.

High level international speakers will also present their expertise at the conference from amongst the leading international oil companies and service companies. Delegates will obtain updates on current commercial projects and an insight into the investment opportunities presented by Iran's petroleum sector. Focused workshops will explore the regulatory and fiscal frameworks supporting partnership, growth and development and how to win and develop business in Iran. The conference also has the support of the chairman of the Iranian Parliament, Ali Larijani, for its role in developing the private sector.

The associated international exhibition will provide a commercial platform for companies to showcase their products, services and technologies. It will also provide important networking opportunities to encourage the formation of business partnerships. In addition, there will be a series of social events and round table discussions to facilitate this, which are open to all delegates.

Dr Seyyed Hamid Hosseini, head of the Petroleum Conference – Iran 2017 said, "The oil and gas sector has always been the motor drive of Iran's economy. The development of upstream and downstream sectors is only possible if national and international capacities are utilised. The Joint Comprehensive Plan of Action has provided a platform for cooperation, and we can hope that the country will pursue a growing trend.

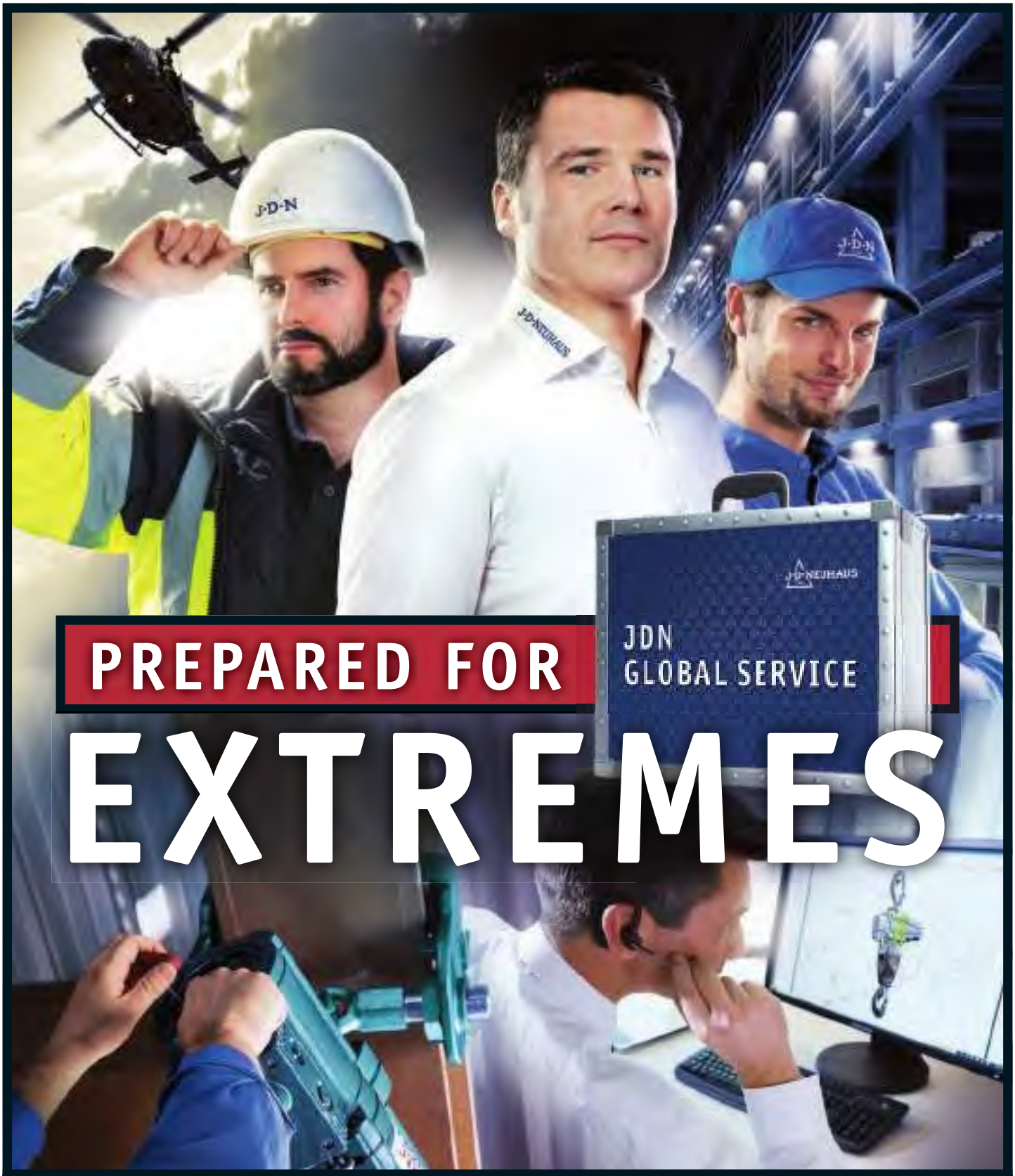
"During the past three months, organisers of the Petroleum Conference – Iran 2016 have had productive negotiations with officials of Competition Committee, National Development Fund, Export Guarantee Fund, Export Development Bank and Iranian Council (Majlis) Energy Commission, and have made progress. By resolving national issues, we will be able to cooperate with international investors and counterparts, and the petroleum conference of 2017 will be a platform for the private sector in Iran to find counterparts, with the cooperation of international experts and specialists."

The event will focus on midstream and downstream opportunities. (Photo: mr.water/Shutterstock)

The event follows a petroleum conference held at the Iran Chamber of Commerce in October with high level participation from both the private sector and government, which discussed issues such as challenges and capacities of the contracting sector, manufacturing equipment for the petroleum industry, exporting technical and engineering services as well as petroleum and petrochemical products, and the improvement of the business environment. Also discussed was private financing in Iran and the need for the provision of financial facilities and guarantees, in the presence of the chairman of the export development bank, the head of the export guarantee fund and other experts.

Participants included Mohammad Reza Tabibzadeh, member of the board of directors of oil, gas and petrochemical engineering and construction companies (APEC), Massoud Bagher Tajrishi, member of board of directors of Iranian industrial manufacturers association (SATSA), Farzan Golchin, head of the exporters of oil, gas and petrochemical products union (OPEX), Reza Khayamian, head of the board of directors of Iranian petroleum industry equipment manufacturers union (SIPIEM), Hassan Hashemi, head of the board of directors of the syndicate of engineering and manufacturing companies of petroleum and energy industries (ECCA OPI), Ahmad Mahdavi, secretary general of the association of petrochemical industry employers (APIC), Ahmad Gharavi, secretary general of the exporters of technical services syndicate of Iran (ICCA), Ahmad Doost Hosseini, head of the national development fund, Reza Shiva, head of the national competitiveness center and Mohsen Ghamsari, director of international affairs, National Iranian Oil Company. ■

For further details of the Petroleum Conference Iran 2017, see the website at www.petroconfex.com or email r.percival@petroconfex.com.



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Libya resumes output from Waha oilfield

LIBYA HAS RESUMED production from the Waha oil field bringing the country's total production to 580,000 barrels per day (bpd), according to a senior Libyan oil official.

The Waha field, operated by the Waha Oil Co, is one of the main contributors of the major Es Sider export grade. It is the first Es Sider field to resume production and was producing 50,000 bpd. Oil output from the field is currently being redirected to the Ras Lanuf export terminal rather than the usual Es Sider port due to limited storage.

Exports resumed from the Ras Lanuf port in September and exports of the Es Sider grade are expected to be resumed this month. (Photo: zhengzaishuru/Shutterstock)

Output from the field, which was around 330,000 bpd before the war in 2011, was reduced due to damage to infrastructure. The Es Sider port currently has only its storage capacity of 1.2mn barrels compared to 5mn barrels before the war. Therefore, as output increases, the Es Sider grade storage is now divided between Ras Lanuf and Es Sider.

Gas leak delays start-up of Qatar's Barzan gas project

QATAR HAS DELAYED the start-up of its Barzan Gas project because of a leak discovered in a gas pipeline, Reuters has reported.

The Barzan Gas project is a RasGas-operated joint venture between Qatar Petroleum and Exxon Mobil. The US$10bn project is designed to meet rising domestic energy demand in the country as it prepares to host the FIFA World Cup in 2022.

The first phase of the project was due to start in November and boost the country's gas production by up to 2bcf per day when it reached capacity in the first half of 2017. However, the discovery of a leak in recent weeks has delayed the commencement of the project, according to sources.

"There was a gas leakage in one of the project's upstream pipelines, the impact of which is still being assessed," a Doha-based source familiar with the project told Reuters. "A start-up this year is unlikely."

The source declined to comment on the size of the leak or whether it had been fixed.

Qatargas, Petronas ink LNG supply deal

QATARGAS, THE WORLD'S largest LNG producer, has signed a five-year sales and purchase agreement with the UK unit of Petronas LNG, the national oil and gas company of Malaysia.

According to the agreement, Qatargas will deliver 1.1mn tonnes of LNG annually to Petronas until the end of 2023. The agreement extends a current five-year contract that was due to expire on 31 December 2018.

The new deal is strategically important with Europe in the face of a looming global glut of gas supplies. (Photo: corlaffra/Shutterstock)

The LNG will be supplied from Qatargas 4, a joint venture between Qatar Petroleum and Shell and will be delivered to Dragon LNG terminal at Milford Haven in the United Kingdom.

Qatargas chairman Saad Sherida Al-Kaabi said, "This extension will enhance Qatar's leading position in the LNG market and will further reinforce Qatargas' commitment to meeting the needs of its customers of this clean energy source."

Qatargas is looking to the UK and the Netherlands in an effort to weather an impending global gas glut through expanding import deals into Europe's most liquid markets, Reuters reported.

Iran to launch oil and gas fields tender in November

IRAN IS PREPARED to launch its first new style tender to develop oil and gas fields since the lifting of international sanctions in November, a leading oil official said.

After months of internal discussions over the terms, the new tender is intended to be more attractive to foreign companies. This move comes as a part of the country's attempts to revive its energy sector following the lifting of the sanctions in January after years of under investment.

National Iranian Oil Company (NIOC) managing director Ali Kardor said at an oil conference in Tehran that Iran expects to tender new oil and gas contracts, known as IPCs, in November.

Iran hopes that its new tender will attract more foreign investments. (Photo: Aunging/Shutterstock)

He noted that oil companies will be able to bid for a contract to develop the South Azadegan oil field as early as 19 November and NIOC will award the contract by early 2017. After South Azadegan, NIOC will start tendering one field month by month, Kardor said. There are a total of 11 oil and gas fields available for tendering, he said.

NIOC signed the first oil output contract under IPC earlier this month. The national oil company has begun taking applications for its upstream oil and gas projects, aiming to sign exploration and production contracts early next year.

The oil companies can upload pre-qualification documents on to NIOC's website, following which the NIOC will evaluate and select companies for the first tender in November within two weeks.

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Saudi Aramco signs MoUs with Turkish firms

SAUDI ENERGY GIANT Aramco has a series of MoUs deals with 18 Turkish companies to enable them to bid in energy projects. Saudi Energy Minister Khalid al-Falih said the deals will generate a legal framework for many capital projects in the near future.

According to Saudi Aramco, the MoUs will strengthen Saudi–Turkish business and economic cooperation, which has been growing steadily over the past decade, reflected in increased bilateral trade and investment between the two leading economies. The agreements also have the potential to expand commercial partnerships between the two countries.

The signing ceremony was presided by the minister of energy, industry and mineral resources Khalid Al Falih and Turkish minister of energy and natural resources Berat Albayrak and President and CEO of Saudi Aramco Amin H Nasser (back row, left to right).

The Turkish companies represent leading players in a diverse range of business activities, including power generation, airport construction and management, petroleum, and roadways. Some of the companies have an existing track record of successful investment in Saudi projects such as the Manifa Field development, the Jeddah Storm Water projects, Medina Airport, Riyadh Water Transmission System, the Jubail Railway Network, and the Yanbu Industrial City Residential Facilities.

Total to invest US$200mn in Egypt

FRENCH OIL FIRM Total announced that the company is set to invest more than US$200mn in the Egyptian market within the upcoming five years.

The announcement was made during Egyptian Prime Minister Sherif Ismail's meeting with officials at the integrated oil and gas company. Ismail met with Total's senior vice-president, Africa and Middle East, Stanislas Mittleman in the attendance of Egyptian Oil Minister Tarek El-Molla.

Accoridng to cabinet spokesman Hossam Qaweesh, the officials asserted that the Egyptian market is a prominent one and considered by the company as the main gateway to expand its business in Africa.

The Egyptian prime minister has emphasised that the Egyptian government is willing to provide all facilities necessary for attracting more investment to different service sectors, notably oil and energy. Ismail urged the French company to establish specialised stations all over Egypt to provide inclusive oil services for trucks, in addition to boosting the number of such stations in Upper Egypt, the spokesman added.

Kuwait Energy starts oil output in Basra

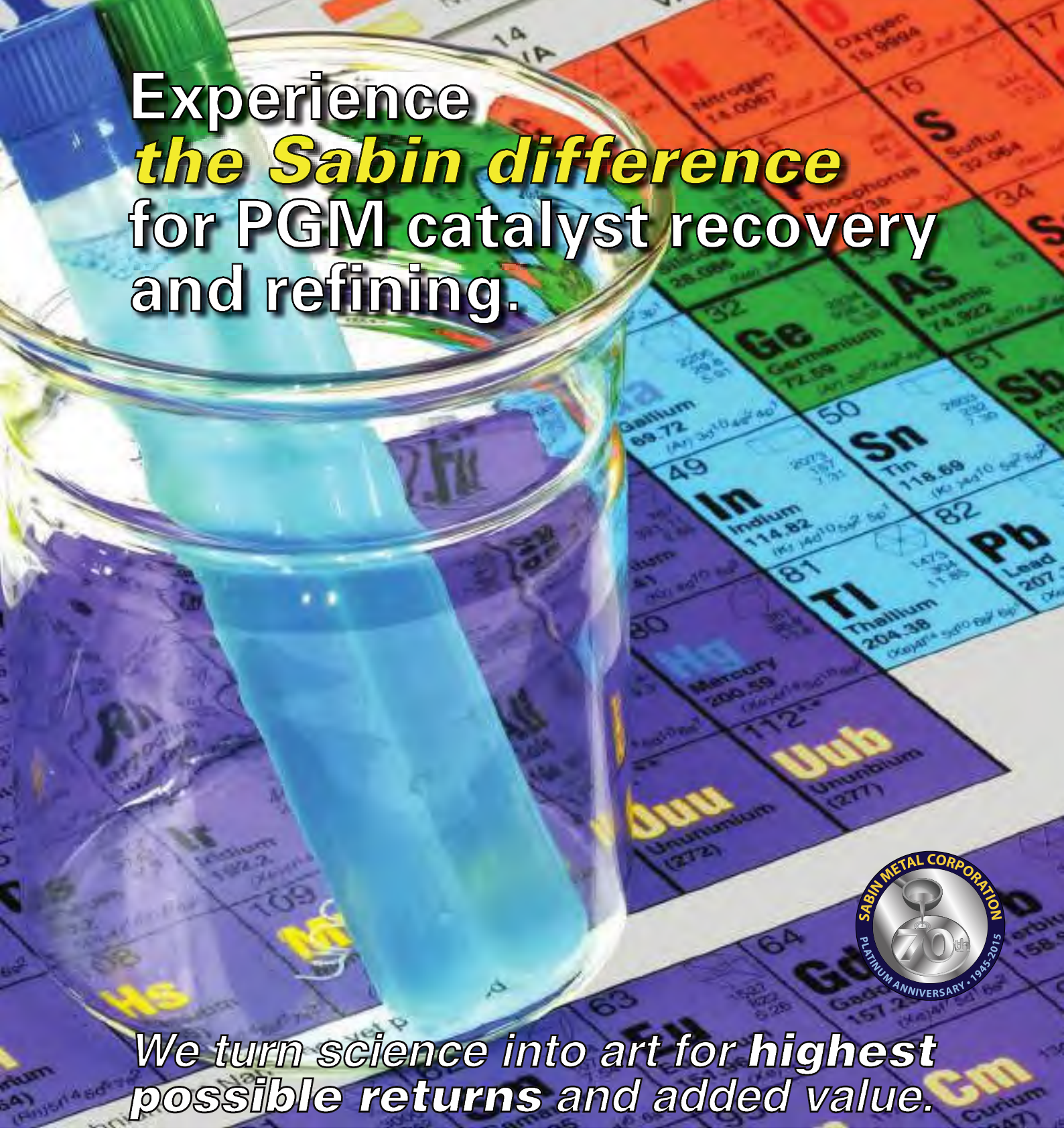
KUWAIT ENERGY PLC has reported that it has started commercial oil production at the Faihaa-2 well in the Block 9 concession of Basra governorate in Southern Iraq.

Production testing at the well started on 23 September at 52/64 inch choke size at an initial rate of 9,583 bopd from the Yamama-A formation. Production has stabilised at 5,600 barrels per day, the company said.

Production at the well has stabilised at 5,600 bpd. (Photo: Kokhanchikov/Shutterstock)

Kuwait Energy CEO Sara Akbar said, "We are proud to announce we have begun production from the Faihaa-2 well in Block 9, Iraq. This accomplishment demonstrates Kuwait Energy's expertise, skills and our ability to execute these projects efficiently and successfully. Our strong partnerships with the Iraqi Ministry of Oil, South Oil Company (SOC) and our partners was critical in achieving this milestone."

Kuwait Energy holds a 60 per cent revenue interest in the Block 9 concession, while Dubai-based Dragon Oil owns 30 per cent and Egyptian General Petroleum Corp holds 10 per cent.



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Global energy demand predicted to peak in 2030

THE WORLD ENERGY Council has predicted that global demand for energy per capita will peak in 2030 and then fall owning to new technology and stricter government policies. This is in stark contrast to historic growth levels, which have seen global demand for energy more than double since 1970.

The findings were revealed in the council's World Energy Scenarios 2016 report produced in collaboration with Accenture Strategy and the Paul Scherrer Institute ahead of the World Energy Congress in Istanbul.

The report predicts that natural gas will continue to increase at a steady rate. (Photo: rCarnerrate/Shutterstock)

The report forecasts that demand per person for energy – including transport fuels, heating and electricity – would begin to fall after 2030. It goes on to highlight that while overall per capita energy demand would begin to fall, demand for electricity would double by 2060, requiring greater infrastructure investment in smart systems that promote energy efficiency.

Subsequently, the report forecasts a fall in the percentage of fossil fuels in the global energy mix. Renewable sources of energy including solar and wind, which currently account for approximately four per cent of power generation, is expected to see "phenomenal growth." The report predicts that by 2060 solar and wind energy will represent between 20 per cent and 39 per cent of power generation, respectively.

The report outlines a range of scenarios for global energy use, predicting a grand transition in global energy use. The range of outcomes predicted in the three scenarios could see fossil fuels provide from 50 to 70 per cent of energy by 2060. Under two of the scenarios, oil production will peak in 2030 at between 94mn bpd and 103mn bpd, although the third scenario would see it peak and plateau at 104 mn/bpd for a decade from 2040.

However, in all three scenarios, the carbon budget is also likely to be broken within the next 30 to 40 years. Oil will continue to play a significant role in the transportation sector, representing more than 60 per cent of the mix in all three scenarios to 2060 and natural gas will continue to increase at a steady rate.

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Challenging times ahead for global fertiliser producers

WITH THE GLOBAL fertiliser sector expected to grow at a relatively flat rate up to 2020, the industry can anticipate a period of change in the medium term, according to speakers at the 7th GPCA Fertilizer Convention in Dubai, hosted by the Gulf Petrochemicals and Chemicals Association (GPCA) in September.

Global fertiliser demand is expected to grow to 200mn tonnes by 2020, expanding by 1.3 per cent year on year, according to forecasts by the International Fertilizer Industry Association (IFA). The GCC, meanwhile, holds a fertiliser portfolio of 37.7mn tonnes today, a capacity that is one-fourth of the region's total petrochemicals production capability, according to the GPCA.

"From less than ideal market conditions, to nutrient losses into the environment, to the misuse of fertilisers… our industry is in a state of change," said Dr. Abdulrahman Jawahery, chairman, IFA and president, GPIC. "From optimisation projects and debottlenecking to shutting down obsolete capacity and postponing expansion plans, the industry is trying to come to terms with flux."

"Today, commercial farmers are looking at the reduction of use of fertilisers, as well as optimised use of this commodity. And we can also expect China to join the mature market club, like Western Europe and North America, where demand will grow but not at high rates," continued Dr. Al Jawahery. "This explains the relatively flat demand worldwide."

However, there are opportunities on the horizon. "Africa can be a major market, and we already see major GCC companies like SABIC taking the lead here. Meanwhile, markets like India operate on a subsidised regime that support nitrogen fertilisers. This can lead to overuse, but is also an opportunity for phosphate fertilisers."

Dr. Abdulrahman Jawahery

"With the maturing of the Chinese market, it is unlikely that this country will be a major destination for GCC-produced fertilisers, though it may continue to import a small amount of specialty fertilisers," said Dr. Abdulwahab Al-Sadoun, secretary general, GPCA. "The key consideration for producers in the Arabian Gulf however, is that Chinese fertiliser manufacturers will build on their dominant position in producing nitrogen and phosphate-based fertilisers, and eventually, take market share in key export countries."

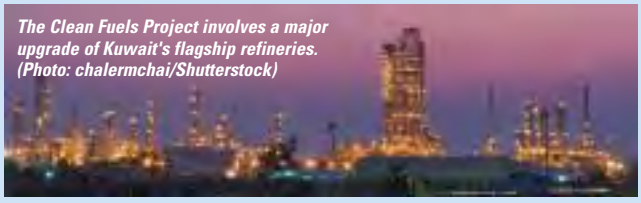
SPIE Oil & Gas Services wins KNPC contract for Clean Fuels Project

SPIE OIL & Gas Services has announced that it has been awarded a five-year contract with Kuwait National Petroleum Company (KNPC) under the Clean Fuels Project (CFP) which is currently under EPC phase of implementation.

The Clean Fuels Project of KNPC is a major upgrade of its flagship refineries to meet the future diversified market requirements for petroleum products both in the domestic and international sectors. The project encompasses increasing the combined refining capacities of its Mina Al Ahmadi (MAA) and Mina Abdullah (MAB) refineries, and enhancing production of environment-friendly value-added products through Bottom of Barrel processing using state-of-the-art technologies. The project also contributes towards linking the two refineries into an integrated refining complex and further enhancing performance towards operational safety, reliability and energy conservation.

SPIE Oil & Gas Services has begun work on the five-year contract with KNPC. The services will involve providing commissioning management and support services at both Mina Al Ahmadi (MAA) and Mina Abdullah (MAB) refineries under CFP Scope of Work. The contract will draw on the expertise of SPIE Oil & Gas Services and work in tandem with the KNPC Operations Team.

"With SATORP, YASREF, PETRO RABIGH and now with the KNPC project in Kuwait, we have become a major player in downstream activities in the Middle East," says Yves Compañy, managing director of SPIE Oil & Gas Services. "We have been working in the field since 2010 and are one of the few companies with the level of expertise needed in the area."


The Clean Fuels Project involves a major upgrade of Kuwait's flagship refineries. (Photo: chalermchai/Shutterstock)

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Healthier market conditions at hand, says Saudi Arabia's energy minister

THE OIL MARKET can expect a "significant improvement in market conditions" which will benefit producers, operators, the supply chain and the financial industry alike, said H.E. Khalid A. Al Falih, Saudi Arabia's minister of energy, industry and mineral resources and chairman of Saudi Aramco, speaking at the Oil and Money conference in London on 19 October.

Market forces are clearly working and supply and demand are rebalancing, said the minister, to the extent that some analysts are now forecasting a supply shortfall. "In fact, between 2015 and 2017 we expect to see more than four million bpd of cumulative incremental oil demand across the world."

The minister highlighted the "positive stabilising influence" which OPEC can exert on the market, adding that the recent agreement in Algiers signalled "real progress", with "productive discussions" underway in the run-up to the OPEC's next official meeting in November. A high level committee has been established to clarify production levels of individual OPEC members in advance of the meeting, he added. He highlighted the "critical" role of non-OPEC production, which accounts for around 60 per cent of total global supply, commenting that the willingness of non-OPEC members to freeze or cut production to promote market stability is encouraging, and noting the current positive atmosphere of collaboration.

H.E. Khalid A. Al-Falih


H.E. Khalid A. Al Falih, Saudi Arabia's minister of energy, industry & mineral resources, addressing the conference (left)

"Based on the combination of improving fundamentals, rebalancing taking hold and the joint actions undertaken by OPEC and non-OPEC producers alike, I fully expect that market conditions will continue to improve," said the minister.

The industry is estimated to need close to US$24 trillion of capital spending on oil and gas upstream and transport over the next quarter century, he noted.

Turning to Saudi Arabia itself, Al Falih highlighted the focus on the localisation of the oil and gas supply chain within the framework of the Vision 2020 programme to diversify the economy and promote private sector development, localisation, capacity building and job creation. The Kingdom continues to make investments in the "three pillars" of oil and gas, chemicals and mining "to be ready for the cyclical upturn". Saudi Aramco is reinforcing its upstream leadership position, doubling gas production and improving the energy mix, he said. The company is on the way to becoming the world's largest refiner, and the Sadara project currently starting up is the world's largest petrochemicals project, with further projects underway in the drive to add value.

The minister also highlighted Saudi Aramco's ambitions to "go global" and the potential benefits arising from the forthcoming IPO, which would demonstrate the company's financial strength to the broader global community and provide the transparency needed to compete in global upstream projects. It is a "win win" for global industry, the markets, the Saudi people and Saudi Aramco employees, he concluded.

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Consolidation and restructuring afoot at ADNOC

Abu Dhabi rings the changes as offshore ADNOC oil units and other subsidiaries are set for consolidation.

THESE ARE CHANGING times for Abu Dhabi's energy sector. One of the Middle East's largest oil producers, with total output of around 3.2mn bpd, it remains a stalwart of world hydrocarbon production. At the same time, it has become a frontrunner in the dash for renewable energy, named a few years ago as the world headquarters for the newly-formed International Renewable Energy Agency.

Although business continues as usual for state-owned Abu Dhabi National Oil Company (ADNOC), it is by no means immune to the broader changes sweeping the energy sector. Indeed, the lengthy renewal of concession agreements with international partners in recent years has perhaps allowed officials to sit back and take stock of how the industry might look a few years from now, especially in an era of prolonged low oil prices.

One of the most notable changes, announced recently, is the consolidation of the emirate's two largest offshore operators, as part of a drive to streamline business and boost cost efficiencies.

Offshore consolidation

Much of Abu Dhabi's oil production comes from offshore fields, and from two key players, the Zakum Development Company (ZADCO) and the Abu Dhabi Marine Operating Company (ADMA-OPCO). Together, these two firms make up the bulk of Abu Dhabi's offshore crude oil production, which is forecast to reach 1.6 mn bpd by 2017 or 2018.

In an October statement, ADNOC said that the consolidation is "aimed at capitalising on synergies to drive operational efficiency and maximise value." It forms a central pillar of a bigger restructuring effort within the OPEC member's main energy firm, again with the dawn of cheap oil.

"The new company resulting from this integration will be more agile, better able to respond to changing market demands, and be well positioned to take advantage of strategic opportunities for future growth," the ADNOC statement added.

Abu Dhabi's offshore production is forecast to reach 1.6mn bpd by 2017 or 2018. (Photo: Kanok Sulaiman/Shutterstock)

> "One of the most notable changes is the consolidation of the emirate's two largest offshore operators."

Most immediately, this means hiking capacity significantly within the next couple of years. Current production from the combined ADMA-OPCO and ZADCO offshore oil fields is around 1.2 mn bpd.

It means working towards a production increase of around 400,000 bpd within two years, by which time the group hopes to have completed the consolidation process. Abu Dhabi is looking to lift its overall production to at least 3.5mn bpd by 2017-18. ZADCO, which operates the huge Upper Zakum field, is especially active, and in the midst of a project to raise output there to some 750,000 bpd. It also operates the Umm Al Dalkh and Satah fields.

Logical step

Of course, Abu Dhabi and the UAE are not the only places to face the challenges posed by an industry shaken up by the collapse of crude prices. The sharp drop in oil prices since 2014 has forced companies the world over to become more stringent with their spending plans amid tough competition and squeezed profit margins.

Typically, lower production costs mean the Gulf states have weathered the storm somewhat better than producers in higher cost areas, such as the North Sea, though all have been affected.

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Three of ADNOC's shipping units are set to be combined. (Photo: Kanok Sulaiman/Shutterstock)

ADNOC's newly-appointed chief executive, Sultan Al Jaber, who is also UAE Minister of State, called the consolidation of ADMA-OPCO with ZADCO a "logical step" in light of the group's recent focus on driving efficiency, performance and profitability.

Sure enough, the merger comes after a leadership reshuffle during the course of 2016, with the appointment of Al Jaber himself earlier this year, followed by another major shake-up in the summer. The new joint offshore entity is to be headed by Yaser al-Mazrouei, the current chief executive of ADMA-OPCO.

International partners

The strategy shift also has repercussions for Abu Dhabi's big international upstream partners. ADNOC holds a 60 per cent share in both ADMA-OPCO and ZADCO, but the remaining equity is held by various heavyweights from around the world. The remaining shares in ADMA-OPCO are owned by BP, Japan Oil Development Company (JODCO), and Total; while in ZADCO, the balance rests with ExxonMobil and JODCO.

To oversee the integration of the two offshore entities, Abu Dhabi has set up a steering committee with all of its joint venture partners.

Al Jaber insists that the existing rights of the partners in the concessions currently operated by ADMA-OPCO and ZADCO "will not be affected" by the consolidation. But, potentially, that could change. He added, "ADNOC will continue to review and consider all options, and pursue partners for concessions expiring in 2018."

ADMA-OPCO's concession with its partners expires in 2018. Its oil and gas production comes from two main fields, Umm Shaif and Lower Zakum.

Fear of change

While international firms will no doubt understand the logic behind the move, it does nothing to guarantee their position long term. Abu Dhabi's lucrative upstream sector has long been watched by other upstream investors, notably from Asia, with many firms keen to get their hands on a slice of the action. Given that much of the country's production is exported eastwards to the Far East, again there is logic here too.

And it is not only investors that might be fearful of the changes. Despite the reassurances, locals might well be wary as well, with thousands of job cuts in the offing, according to reports.

With around 55,000 staff, ADNOC's significance to Abu Dhabi and the UAE cannot be overstated. Redundancies and lay-offs are never easy topics to address, and while officials have kept quiet on the subject, the new strategic goals of efficiency, profitability and performance are often repeated by senior staff.

Onshore transition

Abu Dhabi's onshore concessions have already been through a major transition, which could point the way ahead for its offshore sector as well.

A bunch of major overseas players, including Shell, Exxon Mobil and BP, dropped out of a partnership with ADNOC in January 2014 when their onshore concession expired. They were replaced a year later when Japan's Inpex and GS Energy Corporation of South Korea – plus Total, one of the previous partners – won stakes totalling 18 per cent of a new venture to run the same onshore fields.

> "Abu Dhabi's lucrative upstream sector has long been watched by other upstream investors."

Abu Dhabi Company for Onshore Oil Operations (ADCO) produces around 1.6 mn bpd but is looking to raise this number potentially to 1.8 mn from 2017 onwards. It still leaves 22 per cent of the ADCO venture free to be awarded should Abu Dhabi opt to do so, and thereby maintaining its usual 60 per cent interest.

ADNOC officials have quietly conceded that they are still open to interest in the remaining equity, but appear to be in no rush to put pen to paper.

Non-producing units

ADNOC's non-producing subsidiaries are also facing up to big change. The group plans to consolidate the operations of three of its shipping, marine and services companies into one entity, again to boost efficiency and control costs.

It confirmed in October that the three units – Abu Dhabi National Tanker Co., Petroleum Services Co. and Abu Dhabi Petroleum Ports Operating Co. – will all be combined.

Again, Al Jaber highlighted the same themes behind the strategic move. "By leveraging the experience and assets across the three companies, we aim to deliver an improved and cost-effective service to meet the needs of the ADNOC Group," he said.

The integration of the three units is expected to be completed by the end of 2017, creating a new entity that will operate more than 165 vessels, including liquefied natural gas (LNG) carriers, chemicals and products tankers, containers and other vessels. However, another subsidiary, the National Gas and Shipping Co. (NGSCO), will remain a distinct entity, although ADNOC will look to transfer its 70 per cent stake in this firm to the newly merged shipping company in order to maximise synergies.

Business as usual

And yet, in spite of the upheaval, Abu Dhabi remains a steady and reliable oil and gas producer as it has been for many decades, a reassuring trait in a market so prone to volatility and unpredictability.

ADNOC has played a key role in keeping the ship steady and, even though changes to the make-up of its major upstream-producing ventures are in the air, this is something that is expected to continue.

The consolidation of other units may not have much of a direct impact on consumers or existing investors, but clearly underscores the leadership's intent to see major restructuring reform.

The logic makes sense given the downturn in energy markets and sets ADNOC up as a leaner, fitter vehicle for carrying Abu Dhabi's oil and gas industry into the future. Indeed, it forms only a part of a wider shift taking place, as Abu Dhabi, like other Gulf states, begins to explore alternative sources of energy.

ADNOC's central position at the heart of the emirate's economy remains intact, but perhaps the real changes, as the world turns increasingly to cleaner, non-fossil fuel energy, are still to come. ■


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Promises and pitfalls - Iran oil and gas

Dr Carole Nakhle, director, Crystol Energy and lead author of an in-depth study on the Iran Petroleum Contract, has some advice for companies looking to do business in Iran's oil and gas sector.

Iran is looking to increase its oil production to 4.8mn bpd by 2021. (Photo: iurii/Shutterstock)

THE IRANIAN OIL sector is, once again, occupying centre stage in the global media. The impression generated is of a big bonanza awaiting zealous international oil and gas investors as the country offers a new type of agreement – the Iran Petroleum Contract (IPC) which, we are told, is more investment-friendly than its predecessor, the buyback. Meanwhile, voices from Tehran are calling upon companies to rush to gain a foothold in the country to avoid losing out in this new gold rush.

It would be hard to overstate Iran's oil and gas potential. Iran has world-class assets, including some of the world's largest oil and gas fields. According to the BP Statistical Review (2016), the Islamic Republic sits on the world's largest proven gas reserves (1,200 trillion cubic feet, more than 18 per cent of the global total) and the fourth-largest proven oil reserves (158 billion barrels, more than nine per cent of the total) after Venezuela, Saudi Arabia, and Canada. However, as members of this list like Venezuela demonstrate, the presence of significant reserves below ground is not a prerequisite for successful exploitation. Above-ground factors weigh as much as geological and technical risk.

Iranian ambitions

Based on its "Sixth National Development Plan", which covers the period from March 2016 to March 2021, Iran will need to attract around US$200bn in foreign investment into the country's oil, gas and petrochemical industries. This is not pocket money.

> "Above-ground factors weigh as much as geological and technical risk."

Iran also hopes to further increase its oil production to 4.8mn bpd by 2021, more than a 5mn bpd or a 30 per cent increase in volumes over a five-year period, if condensates are included.

As of today, the country is edging closer towards its pre-sanctions level of 3.8mn bpd, with production expanding gradually. At 3.7mn bpd, Iran is OPEC's third-largest oil producer, after Saudi Arabia and Iraq. When OPEC attempted to reach agreement on capping production in 2016, Iran has held firm and argued it will not consider any production cuts (or "freeze") before reaching its pre-sanctions production level of 3.8mn bpd. This wish seems to have been granted at the organisation's informal meeting in Algeria in September.

But Iran's stated ambitions go beyond achieving pre-sanctions levels. Its vice president, Eshaq Jahangiri, was quoted as

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saying that Iran needs to regain the share of the global oil market which it lost because of international sanctions. In 2015, Iran accounted for four per cent of the world's oil supply, down from five per cent in 2015. Similarly, its share within OPEC fell from 12 per cent in 2011 to nine per cent in 2015, while Saudi Arabia, Iraq and other GCC producers expanded their share. For Iran to restore a five per cent market share in today's global oil market would require it to increase production to more than 4.8mn bpd.

A significant ramp-up of production by any player would obviously put downward pressure on today's already depressed oil market, and it would undermine the effectiveness of OPEC's strategy of setting a floor under prices and gradually reverse their decline.

Contracts

Iran needs capital and modern technology to sustain higher production levels, regardless of what exactly those targets are, and it has pinned its hopes in this regard on its newly revamped oil contract, the IPC. Details of the new contracts are yet to be revealed. However, the general headlines and official statements point toward more lenient terms for investors compared to the previous Buybacks, starting with longer contract duration (25 years compared to seven years) and a fee per barrel which is no longer fixed but linked to profitability instead.

These are major steps in the right direction. However, a few observations are worth keeping in mind.

First, the comparison of the IPC with previous Buybacks is of limited value. Any rational investor will compare what Iran offers today with what is offered elsewhere in the world today, not with what Iran has offered in the past. Oil companies with an international portfolio will allocate their limited resources to countries with the best risk-reward balance. During low oil price periods, these companies can afford to become more selective. Meanwhile,

Dr Carole Nakhle, director, Crystol Energy

> "Iran needs capital and modern technology to sustain higher production levels."

countries intending to attract investment will relax contractual terms, further thereby further intensifying competition. Iran, like everyone else, will have to be internationally competitive.

Second, in oil as in any contract, the devil is in the detail. What has been revealed about the IPC appears appealing, but contracts are negotiable, negotiations can be tough and no contract with a foreign entity has been concluded yet. Iran is also divided on the extent to which to involve international companies. Moderates recognise the contribution these companies can make. But hard-line conservatives have a point: they argue that the sanctions have forced Iran to develop local skills and expertise in the oil and gas industry independently from foreign participation, and that the contribution of international companies will therefore be limited.

It is this polarised perspective that has caused the finalisation of the IPC to be delayed, and that has motivated policy shifts and tougher contract terms. And this polarisation continues to raise concerns because presidential elections are looming, with no guarantee of a re-election of the moderate Hassan Rouhani, who was in favour of energy sector reform.

Finally, there are large potential problems around contract implementation, prominent among them the fear of political intervention. For instance, although Iran has committed to allocate contracts based on competitive bidding processes, individual Iranian officials were quoted with statements to the effect that Chinese companies had been allowed enough investment in Iran and that it was time to offer opportunities to other companies. In principle, competitive bidding should not be based on a company's nationality but on its expertise and capabilities. Next, any foreign investor to operate in Iran's oil and gas sector has to partner with a local company (something not part of the original IPC discussions). Iran has already shortlisted a number of local companies to this effect. In particular as long as US sanctions are still on the table, international companies ought to be cautious about their local partner.

Above ground risks

What Iran has to offer, in terms of field size as well as development and production cost, is confined to a limited number of countries indeed. This does not make it 'easy'. There is no such a thing as 'easy oil' to begin with. Iran is blessed by geology but is technically challenging. Its recovery rates are low, at 20-25 per cent – less than half the average rates of its neighbours (in Saudi Arabia's largest field the recovery rate can be as high as 60 per cent).

Furthermore, above-ground political risks are considerable and uncertainties abound. Not all of them can be catered for by contractual terms. For example, although nuclear-related sanctions have been lifted, 'snap back' provisions allow for their reintroduction in case of Iranian non-compliance. Other US sanctions still apply, which limit access to international banking services.

Assessing accurately how to locate, time and quantify a potential investment in Iran's oil and gas reserves requires knowledge and analytical skills of the highest quality, stretching over a range of disciplines and expertise. It requires careful planning, confidence and strong nerves. The signal to the world's oil investors ought to be: proceed slowly and with extreme caution. ■

Iran is looking to attract US$200bn in foreign investment into its oil, gas and petrochemicals sector from 2016-2021

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Cutting back on costly fuel subsidies

The availability of ample cheap energy in the six Gulf Co-operation Council (GCC) countries has fuelled rapid socio-economic development over the past four decades, but has also led to soaring energy consumption per capita, and wastage. Moin Siddiqi, economist, reports.

The GCC countries boast energy-intensive industries, chiefly petrochemicals, and are net exporters of energy products. (Photo: philipus/Shutterstock)

PROVIDING ENERGY AT well-below international prices to industrial and residential sectors effectively absorbs resources that could otherwise have been invested in public capital stocks or saved for future generations. The International Monetary Fund (IMF) in a special paper, *Energy Price Reforms in the GCC - What Can be Learned From International Experiences?* estimated the implicit cost of subsidised energy prices, in terms of foregone revenue, at around five per cent of the combined GCC's gross domestic product (GDP) in 2015.

As in other hydrocarbon-rich countries, energy products in the GCC region are sold well below global prices, despite weak oil and gas prices over the last two years. Average gasoline and diesel prices in GCC during early October 2016 were 42 and 46 percent, respectively, below pre-tax US prices. Natural gas prices are also generally lower than US prices, which averaged US$2.9 per million British thermal units (Btu) last September. By contrast, prices in Qatar, Saudi Arabia and UAE were just US$0.75 per MMBtu – providing large comparative advantages to the GCC's heavy industries. Excluding the UAE, electricity tariffs also remain low compared with tariffs in the USA – most notably in Kuwait and Bahrain.

Cheap energy feedstock may have deterred the growth of skilled intensive high-tech industries, as well as far-reaching economic diversification in the Gulf. Echoing this view, the IMF paper noted, "This might help to explain why skill intensive sectors, including those that could be engines of economic diversification, have not grown as much as they could have if a policy that favours low domestic energy prices had not been in place."

> "Cheap energy feedstock may have deterred the growth of skilled intensive high-tech industries."

Over time, factor endowments and technology determine a country's output capabilities. Hence, those economies richly endowed with hydrocarbons resources tend to have relatively large export-oriented heavy industries. Not surprisingly, the GCC countries, sitting on almost one-third and quarter of the globe's proven conventional oil and natural gas reserves respectively, boast energy-intensive industries (chiefly petrochemicals), and are net exporters of energy products.

Excessive consumption

Primary energy consumption is influenced by several variables, including income, climate, geography and mostly importantly, fuel subsidies. Thus, heavily subsidised energy feedstock has made the GCC region among the world's biggest consumers – as

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measured in per capita fuel consumption. In 2014, the region consumed 9.2 tonnes of oil equivalent (TOEs) per head, compared to the global average of four TOEs per head. According to the BP database, Qatar (23 tonnes); UAE (12 tonnes); Bahrain (11 tonnes); and Kuwait (10 tonnes), respectively, were ranked amongst the largest energy consumers per head. Comparable figures for the USA, Russia, Germany, France and Japan were 7.5, 6.0, 4.9, 4.8, and 4.5 tonnes per head, respectively, during 2014.

Moreover, the GCC region's energy usage is not only currently high, but has also grown rapidly. For example, energy offtake per person in Qatar, Saudi Arabia and UAE has surged at an annual rate of 2.6, 2.5, and 1.9 per cent, respectively, in the last four decades. The average growth rate for economies with similar income per capita was just one per cent. In fact, advanced economies, notably the USA, Germany and the UK, reported average negative growth, reflecting a steady drop in oil intensity (i.e. the quantity of energy required per unit output or activity), and efficiency improvements in the transport sector.

Concurrently, excess consumption places GCC countries among the world's biggest emitters of carbon dioxide per capita, thereby causing environmental damage. Qatar is No.1 emitter (56 tonnes/head), followed by UAE, Kuwait and Bahrain at 29, 28 and 22 tonnes/head, respectively. In 2014, global average carbon dioxide emissions per capita were around 10 tonnes. Higher emission rates are even more striking since GCC countries (unlike South Africa or China) use negligible coal feedstock in power generation, the most carbon-intensive fossil fuel. Sustained low energy prices have discouraged new investments to improve energy efficiency, as documented by the US think-tank Brookings Institution, in its paper "Low-Carbon Energy Transitions in Qatar and the GCC Region (2014)."

Table1: Hydrocarbons data for the GCC countries, 2015

	Oil Reserves Bn bbl	Oil Output Mn tonnes	Oil Usage Mn tonnes	Natural gas reserves Tcf*	Gas output Bn cu m**	Natural gas consumption Bn cu m**
Bahrain	—	—	—	6.1	15.5	—
Kuwait	101.5	149.1	23.6	63.0	15.0	19.4
Oman	5.3	46.6	—	24.3	34.9	—
Qatar	25.7	79.3	10.9	866.2	181.4	45.2
Saudi Arabia	266.6	568.5	168.1	294.0	106.4	106.4
UAE	97.8	175.5	40.0	215.1	55.8	69.1
GCC Total	**496.9**	**1,019.0**	**242.6**	**1,469.0**	**409.0**	**240.1**
% of Middle East total	61.8	72.1	57.0	52.0	66.2	49.0
% of world total	29.3	23.4	5.6	22.3	11.6	7.0

* Tcf = trillion cubic feet

** Bn cm = billion cubic metres

Source: BP Statistical Review of World Energy, June 2016.

Table 2: Prices for energy products: GCC and the USA

	Gasoline 10 Oct 2016 Litre, US$	Diesel	Natural Gas US$ per Mn Btu* Sep 2016 (avg.)	Electricity US$ per KWh** Jan-July 2016	Per capita electricity usage# 2014
Bahrain	0.42	0.31	2.75	0.04	9.0
Kuwait	0.34	0.31	1.50	0.01	19.0
Oman	0.46	0.47	3.00	0.04	6.5
Qatar	0.37	0.38	0.75	0.05	16.5
Saudi Arabia	0.24	0.12	0.75	0.10	8.0
UAE	0.46	0.48	0.75	0.12	18.0
GCC average	0.38	0.34	1.71	0.06	12.8
GCC maximum	0.46	0.48	3.00	0.12	19.0
USA pre-tax	0.66	0.63	2.90	0.10	

* Mn Btu = million British thermal units

**KWh = Kilowatt-hour

billion Kilowatt-hours per million population

US natural gas price was quoted at US$3.27 mn Btu (10/10/2016)

Sources: GlobalPetrolPrices.com; EIA, International Energy Statistics

Heavy fiscal burden

Fuel subsidies impose a significant cost for the national authorities, i.e. payments made to energy producing companies to compensate for the difference between actual production cost and domestic selling price. In 2015, GCC countries, excluding Saudi Arabia, reported an on-budget fiscal cost from cheap energy at US$16.2bn, of which Kuwait and UAE accounted for US$11.6bn. Budget costs, however, do not include the loss of potential revenue or

75GW of renewable energy projects are in the pipeline in the GCC countries. Photo: Mike Flippo/Shutterstock)

opportunity cost. The estimated opportunity cost of low fuel prices (at US$73bn in 2015) is vastly higher than the budget cost (see Table 3). In terms of GDP the largest costs are estimated for Saudi Arabia and Kuwait, at 7.4 and 7.2 per cent, respectively, and the lowest for UAE (1.1 per cent in 2015). A large difference in ranking is attributed to differences in the energy consumption mix and local prices.

Despite recent adjustments, Gulf energy prices are still cheap compared with developed and emerging regions. Looking ahead, further steps are needed to raise fuel prices in order to reduce over-consumption (hence waste) and costly subsidies that are necessary in the current low oil price environment, whilst improving energy efficiency. Saudi Arabia, Qatar and the UAE have recently created independent bodies to oversee energy efficiency awareness programmes for users, and have established stricter building codes and appliances standards. The International Energy Agency (IEA) stated, "Energy efficient buildings often yield greater year-round comfort levels, which in turn can be a low-cost means to provide health benefits for its occupants. Reducing energy demand will lower pollution levels by cutting unnecessary power generation and reduce urban heat island effects. Public buildings should be energy efficient and use renewable energy where possible, and local authorities should include the purchase of energy efficient products and services in their procurement rules."

Striving for greater efficiency

The GCC countries (led by the UAE) have also started investing in renewable sources of energy, principally solar photovoltaic (PV). The GCC bloc is expected to invest more than US$300bn into some 20 energy projects by 2020, which will generate eight gigawatts (GW) of additional power, according to Doha-based Gulf Organisation for Industrial Consulting (GOIC). Thus far, 75GW of renewable energy projects worth US$200bn are already in the

Table 3: GCC: Opportunity cost from energy products*

	Priced below US benchmark**		
	2013	2014	2015
		US$bn	
Bahrain	2.1	2.5	1.6
Kuwait	12.0	12.7	9.3
Oman	5.2	5.8	2.8
Qatar	8.7	10.6	7.7
Saudi Arabia	66.0	69.9	47.3
UAE	8.3	9.6	3.8
GCC Total	**102.4**	**111.1**	**72.5**

* Energy products include gasoline, diesel, electricity and natural gas

**US pre-tax prices

Sources: IMF, IEA, US EIA and GCC countries' agencies

pipeline, making the region a global power player in the sector.

In sum, energy price reforms affect inflation and economic activity. The IMF paper indicated that the inflationary impact should be small given the relatively low weight of energy products in GCC countries' consumer price index (CPI). On heavy industries, a gradual hike in feedstock prices would raise production costs for aluminum, steel, chemicals, plastics, mining, metals, gas processing and petroleum refining. These export oriented sectors would see depleting profits and the erosion of comparative edge. Thus, they would need to increase the efficiency of their production process to remain competitive and to compensate for higher energy costs. Economy wide, other things being equal, higher fuel prices – as part of long-term structural reforms – could generate productive gains in terms of vastly improved energy efficiency and greater output diversification in the GCC countries. ■

Who will survive the tide of reforms in the GCC?

IN A NEW report, S&P Global Ratings explains why continued low oil prices – which have resulted in a number of rating downgrades in the Gulf Cooperation Council (GCC) – have led governments in the region to hone their focus on addressing fiscal deficits through expenditure reform. Such reforms will likely have both direct implications (via higher taxation and subsidy cuts), and indirect implications (weaker economic growth and demand for goods and services).

The key points of the report, entitled *Large GREs In The GCC With Important Mandates Are Better Positioned To Withstand Low Oil Prices* are:

- The energy subsidy reform across the GCC to deal with lower commodity prices and fiscal deficits has weakened the operating performance of downstream oil and gas companies to varying degrees, depending on existing contractual feedstock arrangements. Subsidy cuts are also increasing financial pressures on utility companies. SP expect the negative trend to continue over the short term, with larger oil and gas majors and national champions in the energy sector that count on strong government backing maintaining their credit quality, while smaller and midsize private operators are likely to experience the full effect of the weak environment. Exploration and production upstream operators are witnessing the greatest pressures on earnings, followed by downstream players. Relatively low feedstock costs continue to support the latter, even though profitability is squeezed or lower compared with previous years.
- Similarly, fiscal deficits have prompted tax increases for the telecom industries, although the performance of telecommunications operators is broadly stable, and continues to reflect growing subscriber bases and increased broadband penetration.
- The tough operating environment is expected to continue to hurt the real estate sector.
- S&P see some moves toward consolidation of major GREs, aimed at reducing cost and improving efficiency, given the more constrained circumstances of GCC sovereigns.
- Large fiscal deficits and high infrastructure needs could spur financial innovation in infrastructure funding.

Energy subsidy reform in the GCC

ALL OF THE GCC countries have increased energy prices since the oil price slump in mid-2014, although the depth and breadth of the reforms vary significantly from country to country.

Bahrain: The authorities raised the gas price to industrial users by around 10 per cent from April 2015 with phased annual increases of US$0.25 per Mn Btu until the price reaches US$4.0/Mn Btu by April 2021. In January 2016, retail price of gasoline was raised by almost 60 per cent, while price hikes for diesel, kerosene, liquefied propane gas and electricity and water tariffs are being phased in gradually by 2019.

Kuwait: The price of diesel was doubled in January 2015. Kuwait also approved an increase in gasoline prices of around 70 per cent, on average, effective September 2016. A government committee will revise the new gasoline prices quarterly depending on global crude prices. Recently, the Parliament passed a law to reform water and electricity subsidies. The new tariffs will become effective from May 2017.

Oman: In January 2016, Oman raised the price of low-grade gasoline by a third and diesel by 10 per cent, aimed at cutting subsidies for petroleum products, electricity and other goods by over 60 per cent. In January 2015, the industrial price for natural gas was doubled. Water tariffs were increased in March 2016 for government, commercial and industrial users. There is also a proposal to raise electricity tariffs for these users.

Qatar: In October 2015, water and electricity prices were raised and tiered according to consumption. In January 2016, gasoline prices rose by 30 per cent – with a further increase of four per cent last August.

Saudi Arabia: In December 2015, the authorities announced an increase in fuel prices (ranging from 10 to 134 per cent across most major energy and water products for businesses or households. The largest price increases are for ethane (133 per cent); transport diesel (79 per cent); and 67 per cent each for natural gas and low-grade gasoline. Prices of electricity and water were also raised by 60 per cent for higher tiers of residential consumption and by varying amounts for commercial and industrial users.

The UAE: In August 2015, the UAE reformed its fuel pricing policy by adopting a mechanism to adjust monthly gasoline and diesel prices against international prices. Abu Dhabi is developing a comprehensive electricity and water consumption strategy, which resulted in higher tariffs in January 2015 (up 170 and 40 per cent, respectively, for water and electricity). Water and electricity tariffs were increased again by 14-17 per cent in January 2016. The authorities intend to slowly phase out the remaining subsidies on public utilities, whilst protecting lower-tier customers.

Choosing the most appropriate **project strategy**

Colin Chapman (president) and Ekaterina Kalinenko (project manager) of Euro Petroleum Consultants (EPC) discuss the merits of the various implementation options for refining and petrochemicals projects.

PROJECT IMPLEMENTATION STRATEGY is a key element of the investment process. Recently, more and more variations on contract types have emerged, and different combinations of factors and conditions have become optional. Companies are now paying attention to allocation and management of contracts to best suit their particular requirements. Each case is different and requires a full understanding of the project risks for the specific project.

Problems and issues during project implementation are frequently rooted in errors made prior to contract award, as well as in the process of selecting the contractor: incorrect decisions can be very costly and can account for an increase of at least 20 per cent of the initial budget cost, in many cases substantially more.

In many cases where projects do not succeed, it is due to selection of an inappropriate project strategy and changes during implementation. This is why it is important to focus on the choice of project implementation strategy and to focus on Front End Loading [FEL]. Projects with low FEL often fail.

> "Problems during project implementation are requently rooted in errors made prior to contract award."

Key considerations that should be considered and studied in detail for all projects include:

1. Construction and site issues. It is important to select the optimum site location, taking into account access to markets, logistics, climatic conditions and availability of local resources, including local infrastructure and human resources.
2. Procurement issues: once the site is selected the client needs to be aware of the logistics issues, e.g. the maximum size of equipment that can be transported etc. This then sets the basis for future design of the plants. The client can then evaluate any restrictions on the global markets for critical equipment, e.g. large compressors or HP Reactors etc.
3. Engineering issues: basic and detailed design can be completed with knowledge of the above important limitations, and these can be incorporated into the design. This approach will limit major changes in the future development of the project.

The different project implementation options are given in Table 1.

If we compare some of the main contract types in relation to key project elements that are included, we can see a number of structural models that are used for project implementation:

- EPC LSTK (Engineering, Procurement and Construction): The EPC Contractor provides engineering, procurement and construction (using own construction personnel or subcontractors); this type of approach is common in countries where clients have limited resources. This is also preferred by financing organisations where there are clear limits for project costs and schedules. The main advantages of this option are that all responsibilities lie with the main contractor to deliver the project on time and within budget and also to meet all quality requirements. It can also lead to a shorter schedule if managed correctly. One of the main disadvantages is that the client needs to prepare a very detailed ITB for the competitive bidding process. Contractors will also include a substantial contingency to offset the risks associated with LSTK contracts. Contractors will also be looking for cost

Table 1 Options for Contract Strategies

OPTION	CONTRACT TYPE	DESCRIPTION
1	TRADITIONAL (BASE)	Multiple contracts for each stage of project or defined workload with a fixed cost
2	LUMP SUM TURNKEY (EPC)	Fixed amount for engineering, procurement and construction contract price
3	REIMBURSABLE	All services reimbursed at agreed rate. This may include manpower costs plus a fixed percentage markup, or manpower costs plus a fixed fee.
4	TARGET PRICE	Incentivised version of a reimbursable contract
5	EPCM	Different options available, i.e. reimbursable for conceptual and preliminary engineering phases, but fixed price for detail engineering, procurement and construction supervision, construction by separate company
6	PROGRESSIVE LUMP SUM (CONVERTIBLE)	An EPC contract awarded in successive lump sum stages after an initial estimate. The contract price for each successive stage is renegotiated and firmed up.

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saving opportunities, which can also lead to increased Change Order requests.

- Reimbursible: Allows the client to be involved in all stages of the project. However there is no guarantee on final costs and schedule. A strong client team is required to coordinate all issues with the contractor(s).
- EPCM (Engineering, Procurement and Construction Management): Fixed cost for engineering and procurement and construction supervision (uses separate construction contractor). The client can choose preferred construction contractor. The main disadvantage is that there is no single point of responsibility and no guarantee on final cost and schedule.
- E & PS, CM (Engineering, Procurement Services and Construction Management): The EPC contractor provides engineering and assistance with procurement (purchasing as owner's agent) and construction supervision. The client can choose the preferred construction contractor. The client needs a strong project team to follow the project. There is no guarantee on final cost and schedule.

Case study

Let us have a look at a 'typical' refining project. The initial estimated budget for installation of the facility by the owner and contractor was ~ US$350mn, and the planned implementation schedule was around 30 months. The project budget consisted of direct costs defined by cost estimate, fee of service provider(s) and potential cost overruns (contingencies). The final price of the project would depend on those elements and the need for the owner to form a contingency fund (expenses not in the scope of the contractors). The final numbers obviously depend upon the selected contract strategy.

Based upon the results of analysis (see Figure 1) we can see that contingency expenses (risks) contributed the most to the high project cost for the 'traditional' (multi-contract) implementation route. If the construction phase was executed on a fixed cost basis, risks of poor coordination between design contractors, equipment suppliers and construction organisations would be allocated to the project owner, therefore the chances are quite high that the planned schedule goals and project budget requirements would not be achieved.

If all responsibility is integrated within the contractor's area of activity, any additional costs are for the account of the contractor and are excluded from the total project cost on the client's side. This principle applies both to contract options with Cases 2 and 4. Unless the contractor can demonstrate that increased costs are due to changes imposed by the client ("agreed Change Orders"), for such contracts it is very important to control any requested Change Orders to avoid increases in the planned budget.

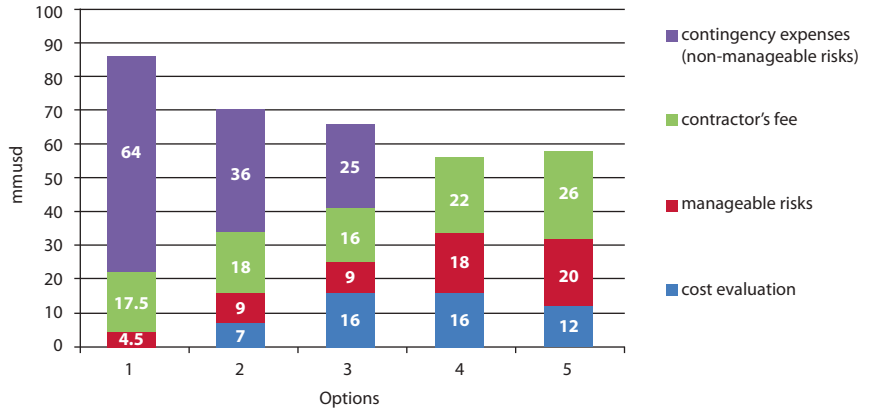

Figure 1: Comparison of delta costs of project strategies for a Deep Conversion project

Figure 1 above suggests that in the option EPCM, which means awarding the contract for managing the project and a number of fixed-sum subcontractor agreements, if organised correctly and the appropriate and experienced contractors are selected, the risks that the EPCM contractor's fee would not be exceeded are reasonable.

If the project is executed according to Case 6, i.e. reimbursable and converted to fixed cost, the structure of the construction phase is quite similar to turnkey. An example of this is to carry out FEED then Open Book Cost Estimate [OBCE] and agree a conversion factor to LSTK. The client has the option to go for competitive bidding for the Project after FEED and OBCE.

> "In current market conditions, these types present more risk for contractors."

Direct costs could vary depending on contract models in regards to work quality, scope and additional works needed, but the increase shall not be seen as a disadvantage of the model if economic feasibility and rationality is proven. The resulting key indicators of cost and implementation period were:

- Traditional contract scheme (Case 1) ~+US$86 mn over planned budget and +18 months to planned schedule;
- LSTK EPC ~ +US$70mn and +13-15 months;
- Reimbursable +US$66mn and +3 months;
- Target price +US$56mn and -3 months
- EPCM +US$58mn and +8-10 months.

The applicability of EPC (M)-models derives from this research and some other evaluations made for the cases when they could be used taking into account specificity of each project. The above analysis of course shows the possible trend, and each project will be different.

When moving from one contract model to another, the final contract / project price changes to various degrees. Using KPIs of construction projects in refining as a basis for comparing several main project execution strategies, we were able to confirm that in the case of consistent application of EPC contracts (and EPCM for more complex and unique projects), this contract form happens to be more efficient and optimal for the project owner. In current market conditions, these types present more risk for contractors, and this is why there are limited number of global E&C contractors capable of delivering successful EPC turnkey projects. Many companies have suffered serious losses due to overruns on budgets and schedules. Nevertheless, going back to a traditional multi-contract scheme is not advised, since in the case of some companies this route has led to multiple increases in project price and other challenges and issues during the implementation project phase.

In conclusion, the choice of contract strategy depends on some key factors which can vary from region to region, and the choice also depends upon the client's past experience and capabilities. It will also be dictated by the institutions that will finance the project, if external financing is required. It is necessary to be able to guarantee schedule, price and quality to manage the risks on behalf of lenders. ■

EPC is a technical oil and gas consultancy with offices in Dubai, London, Moscow, Sofia and Kuala Lumpur. EPC is organising OpEx MENA 2016 in Abu Dhabi on 6 & 7 December 2016. For further details please visit www.opex.biz.

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Better planning for shutdown turnarounds

Nothing can prevent a shutdown turnaround outage (STO) from taking place. But as Andy Bartlett of Petrotechnics explains, there are ways to improve the planning, execution and outcome of mandatory shutdowns, and minimise the threat to operational excellence.

Oman's Sohar Refinery and Polypropylene plant underwent a major STO in early 2016. (Photo: ORPIC)

WITH OIL PRICES remaining at a low level, tight margins have become even tighter, increasing the focus on operational excellence and the drive for an efficient, productive and safe work environment.

However, since operational excellence means many things to many people, it's worth considering the five basic premises on which it is based. These are:

- Achieving a workplace that is free from incidents and injuries;
- Mitigating significant workplace health risks and promoting a healthy and safe workforce;
- Identifying and then mitigating environmental and process safety risks;
- Ensuring that asset integrity and reliability reaches the highest standards;
- Ensuring that natural resources and assets are used efficiently.

Managing hazards and deadlines

As even the briefest glimpse through this list shows, achieving operational excellence is by no means a straightforward task – even during normal operational procedures. But achieving operational excellence during periods of change, when transient or abnormal operations create a greater number of process hazards and high-risk activities, is harder still.

> "This tension between managing risks and delivering to time is a constant challenge of the STO process."

It's not surprising, therefore, that activities such as STO often severely test an organisation's ability to achieve operational excellence – even though such activity is mandated to be repeated on a regular, if not frequent, basis.

A behemoth of planning and a source of seemingly endless paperwork, the STO looms large on any operator's calendar. Looking at the numbers involved shows just why this is: it is not unknown for an STO to involve more than 40,000 separate jobs; the average duration ranges from 20 to 60 days, depending on the type of work that is required, and a 200,000 bpd refinery can see its on-site staff numbers triple or even quadruple – from 500 to 2,000, during a

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turnaround project. This tension between managing risks and delivering to time is a constant challenge of the STO process in particular, and operational efficiency in general.

Sub-optimal outcomes

A recent poll conducted by Oil & Gas IQ into trends in the STO space showed just how much of a challenge it is to deliver a result in an efficient way. A quarter of shutdown professionals gave their shutdowns a ranking of less than five out of ten (in this scale, one is terrible and ten is flawless).

The same poll also showed that the principal source of over-runs for 45 per cent of survey participants was scope creep, while 36 per cent said that insufficient planning was the main threat to efficient project management. Given that most scope creep involves hot work, deviating from the lean scope also tends to increase risk.

Perfect planning

As the Oil & Gas IQ poll demonstrates, delivering an STO that is closer to the 'flawless' end of the scale starts in the eighteen-month planning stage.

STO planning should aim to:

- Simplify the complexity within the turnaround environment;
- Provide risk-based prioritisation for planning and work execution;
- Improve standardised risk awareness and risk assessment practices;
- Ensure policies, roles and safe working practices are embedded and systematised across the turnaround;
- Improve collaboration between functions across the turnaround process;
- Ensure there are contingencies in place to handle the inevitable emergent work, which is often forgotten or overlooked.

Get this right and execution and outcomes will improve.

It is tempting to see planning as the creation of a detailed manual that every member of staff and every contractor can then follow. But the problem here is that, regardless of how detailed the manual is, it is little more than a static to-do list that struggles to support the above desirable outcomes.

It doesn't take into account the multitude of interconnections involved when 40,000 separate and often hazardous tasks have to be scheduled. By definition, it cannot predict all the unexpected outcomes, the unanticipated events, the unplanned delays, and so cannot provide guidance on how best to address the knock-on effects that will ripple out through the schedule.

It also doesn't take into account the simple human desire to avoid sitting down and memorising lengthy documents. In other words, it's not a planning tool that is designed for the dynamic, risky, multi-lingual environment of an STO. However carefully co-ordinated the procedures and policies are, the most dangerous point is when they start to interact with dangerous assets – and ordinarily flawed human beings.

Digital planning models can help everyone from the ground up to see the bigger picture, from managers to front-line engineers. (Photo: Christian Lagerek)

Finally, the 'follow-the-manual' approach to planning makes it harder for operators to adjust to change over time. It is often dependent on information that is stored in various online and offline formats that has to be gathered, updated and validated. Learnings from the previous shutdown process are hard to capture, as are changes to operational circumstances, new equipment and consequent new risks. Even where this information gathering is fully computerised, it can be prone to stasis – reflecting the events of five years ago, not the current facts on the ground.

> "With this type of planning model, everyone from the ground up can see the bigger picture."

The language of risk

The answer to effective planning lies less in a lengthy but unconnected list of tick boxes, and more in dynamic planning tools that support the development of a more manageable – and sharable – set of procedures. By taking into account the interrelated nature of the tasks, hazards and risks involved – and in particular the critical path items – they can detail not just the minutiae of how an individual task should be performed, but enable planners to take a step back and consider how the entire programme of work can be delivered safely.

This is key. The ability to visualise risk before an STO even begins gives operators the foresight to optimise plans both prior to and during the execution phase, by proactively adjusting schedules to reprioritise work as conditions and associated risks change. The result? A dynamic to do list that reduces risk and minimises the possibility of schedule overruns.

These types of tools also help overcome one of the biggest challenges that any multi-disciplinary project planning faces: mediating between the loudest voices. During the 18-month lead-time there will inevitably be representatives of different departments coming together, all of whom feel that their area of maintenance is the priority.

Instead of giving precedence to the most insistent individual, all tasks can be ranked according to a common parameter – in this case, risk. By visualising and optimising total workload, conflicts, and all risks in one place, and showing how activities and conditions combine to impact process safety in real-world conditions, information sharing becomes easier and more relevant.

With this type of planning model, everyone from the ground up can see the bigger picture. Using a common language of risk, front-line engineers understand the causes and consequences of their particular tasks, while managers can make smart decisions about staffing and scheduling to facilitate the project at a risk level that is acceptable.

Digital support isn't going to transform STO procedures overnight. It's not going to replace experienced people in the field. But it can make their jobs easier. It's all about putting the right procedures in place and enabling the right people. Most of all, it's about regarding safety as an inherent enabler of productivity – and not the drag on operations and profits that it often seems. With a positive connection between safety and productivity in place, operational excellence becomes much more achievable. ■


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Sunset skyline of construction cranes amongst office tower skyscrapers in Dubai, the Middle East centre of trade.. (Photo: Lazyllama/Shutterstock)

Handling heavy **equipment**

Ensuring safe placing of heavy equipment is the primary duty of all crane operators working in the oil, gas and petrochemical industries. Bob Adams looks at some of the best sources of assistance

LOCAL ENERGY INDUSTRIES have usually been ahead of building contractors in terms of the safety of their heavy lifting operations. Mobile equipment is more likely to be used in this sector than tower cranes, too. But after a number of recent high-profile accidents (e.g. in Mecca a year ago, a major incident involving a large mobile in bad weather) standards expected in general construction have risen. So the gap is being rapidly closed.

Two major categories of hazard are faced by operators of heavy lifting equipment. The first is collapse of the device or its components themselves due to overloading or poor planning, set-up and control. The second is of the load being dropped. Serious problems can also arise due to contact with overhead power cables, and personnel or other equipment/structures being struck by a moving load.

Whenever a crane is brought on site the responsibility for planning, supervising and carrying out all its operations are borne by the actual user.

All heavy lift operations need to be planned in the light of foreseeable risks so that they can be completed safely by a qualified operator and supervisor working together. This plan needs to cover all identifiable risks and the resources and procedures that will be needed to mitigate them. Various industry standards set out the way that management of all heavy lifts must be carried out within the energy industries; details of local safety specialists such as Euro Gulf and World Crane Services can be found within general lists like Etisalat's current Yellow Pages, and specialised industry directories.

> "All heavy lift operations need to be planned in the light of foreseeable risks so that they can be completed safely by a qualified operator and supervisor working together."

Once the lifting plan is complete all stages of implementation must be carried out with a wide margin of safety; complex movements such as of pressure vessels and tanks will need a written or on-screen check-list procedure that has been made available in understandable (e.g. audio visual) form to all persons involved.

Key elements of this will include site and equipment selection and preparation, signalling arrangements, measures being taken to prevent unauthorised movement of the equipment, and adequate measures to ensure the safety of all personnel present, including those not involved in the actual lift itself.

Once underway the operations must be closely supervised all the time. The supervisor needs to be both qualified and experienced, supplied with full authority to halt the procedure without penalty if danger or unforeseen risks are encountered.

Finally all the equipment used, including wire ropes and replaceable slings, must be properly examined both before and after the operation. Use of a crane hire company is more likely in the case of an oil/gas operation than in general construction where high and heavy lifts are taking place all the time, and this duty is usually accepted by their own personnel. Nevertheless it is the user's responsibility to ensure this is actually done. Written records of all maintenance and inspection operations will certainly be needed by the site's management team; they may be required by local enforcement authorities too, including in challenging offshore environments.

So where can specific advice on large-scale lifting operations be found? In the tower crane sector one of the best free-online sources is the current CECE/FEM* Guideline on *What is a safe tower crane?* This draws on consolidated experience from national schemes overseas such as BGG in Germany and LOLER/PUWER (UK).

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Industrial crane operating and lifting an electric generator. (Photo: BogdanHoda/Shutterstock)

In line with the need for detailed planning this makes a clear distinction between the safety obligations of all crane suppliers (specifications, spare parts availability, user manuals, noise abatement etc) and operating companies, whether they are hirers or site personnel (training, maintenance, erection/dismantling etc). Four different levels of inspection by the latter are defined, starting with day-to-day checks by the person in the cab. Throughout the need to employ only qualified and experienced personnel is emphasised, and ways of locating/retaining these are suggested.

CECE also issues a series of online Manufacturers Recommendations for European Tower Crane Fitters licensing. This is a handy summary/check-list of all the basics that must be covered to ensure stability, most of them just as suitable for mobile operators. It covers correct use of ballast and counterweights, treatment of wire ropes and slings, placement issues, and checking of essential safety devices such as weathervanes.

> “Use of a crane hire company is more likely in the case of an oil/gas operation than in general construction where high and heavy lifts are taking place all the time, and this duty is usually accepted by their own personnel.”

For concise material on fully mobile machines such as truck-mounted, tracked and other types of rough-terrain crane your search might be longer, unless a handy local hire company is willing to help. Heavily involved in port handling operations and in association with the authorities there the Hong Kong Institution of Engineers produces what appears to be a comprehensive Code of Practice for Safe Use of Mobile Cranes but we were unable to inspect this on the screen.

*Committee for European Construction Equipment, Federation of the European Materials Handling Industry, both based in Brussels ■

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Extending the life of assets with **remote monitoring**

Oil Review Middle East's Kestell Duxbury interviews Nadim Borini, MENA regional sales manager, Permasense, to discuss their corrosion detecting sensors.

Oil Review: How do Permasense systems help to detect and prevent corrosion, and how does the technology work?

Nadim Borini: We pride ourselves on being experts in the field of remote monitoring solutions, unique sensor technology. This allows us to collect wall thickness measurements in various parts of the asset chosen by ourselves in coordination with the customers. Our number one key element is that we can determine the life of our customers' assets. This is predominately lost through either erosion or corrosion so irrespective of the mechanism, this is what we detect. Knowing this, we have the knowledge to allow our customers to make decisions on whether to update or change their assets. It also can give customers information in regards to when is most efficient to deliver planned shutdowns to their assets to upgrade components.

> "We pride ourselves on being experts in the field of remote monitoring solutions, unique sensor technology"

We do this through two ways. We use qualitative methods and use frequent measurements. This works through our sensors where we collect wall thickness measurement data through wireless and battery technology and through our unique software, which connects to a gateway that provides our clients with up to date results of our thickness sensors. The technology works in two ways. The first is in the field, which is preventative, we collect the wall thickness data. The other element is the software. These are collected once every 12 hours by default, but customers can change this frequency depending on their assets and on their application. This data is almost instantaneous. It takes a matter of no more than two to three minutes from when the data is collected from the sensor to when it is delivered to the customer. One of our unique selling points is that we deliver the information to our customer right at their desk. They do not need to access the sensors, which makes our products safer for our clients, or wait for physical copies of information. This also gives them the maximum amount of time to make the important asset decisions that could save them a lot of money in efficiency and work costs.

Technician using one of Permasense's instruments

What are the main benefits of Permasense technology?

The main benefit, which is what we focus on, is providing our customers with up to date insights as to how their plans or asset behaves when under load. That is the key message that we promote. Secondly, we have the benefits of ease of installation because our sensors are battery operated and wireless. This means that the unit can be installed and stay there for many years without needing scaffolding to be erected or other inconveniences like that.

The quality and frequency of data that allows you to see the impact of your decisions on the processes and decision making makes Permasense technology a real asset to our clients.

Can you give some examples of its applications in the oil and gas sectors?

Within the oil and gas sectors, we operate in upstream, midstream and downstream

applications respectively. In upstream applications, an example would be that we work with gas extraction platforms where sensors are installed on parts which are often victim to aggressive sand erosion. An example of a downstream application, is when we work with managers whose companies are choosing to make decisions on what they refer to as "crude flexibility" that allows them to buy cheap crudes or expensive crudes. Of course, cheap crude has a higher acidity level which causes higher corrosion than expensive crude. As an incentive, we give our clients the information that they need to make these important decisions and protect their assets and therefore we ask them to look at options which can extend their assets' lives, like adding a neutraliser, which may be a cheaper solution for our customers. We also have some midstream applications.

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

We feel that the Middle East is an untapped region for us. First, we deployed our technology in Northern Iraq and it was followed by our second application in the west coast of Saudi Arabia. We maintain an active dialogue with the major players in region so we can use that frequency of data as we aim to improve profitability for our customers. We are looking towards a very positive 2017.

Nadim Borini of Permasense.

To what extent is the low oil price affecting your business globally, and in the Middle East in particular?

That's a interesting question. Unlike the producers and other companies in the field in the Middle East, we have been largely unaffected by the drop in oil price because of the nature of our operation. We are experiencing more demand for our systems than ever. We try to improve profitability through showing customers how their assets are behaving. If you want to take financial decisions on your asset, when money is short, you need to run more efficiently. In fact, our services may be more in demand as we are there to improve our customers' profitability through better information. So we are not expecting any slow down in demand.

As oil production in the Middle East has been maintained at high levels, we can help maximise our clients' profitability when the oil price has dropped. ■

Modernising control electronics for efficient drilling operations

RIGHILL ELECTRICS PVT. Ltd., Bhopal, India, which specialises in controls and electrics for deep drilling oil rigs, suggest that during trying economic times the highest value add to the drilling process is achieved through modernising of control electronics in order to achieve smooth drilling cycles, effective remote monitoring of power consumption patterns, and fuel saving through power quality improvement interventions.

During their long and effective presence in the upstream field, they have observed that upgrading control systems also ensures that spare supplies and preventive maintenance activities are guaranteed for a long time and carried out effectively.

Righill was established in 1993 by two senior design specialists. While Righill started its operations with a focus on import substitution for Indian public sector companies, the company today designs and manufactures complete SCR and VFD systems for onshore and offshore rigs. Almost all the private drilling contractors in India today rely on Righill for supplying new SCR/VFD systems, refurbishing and retrofitting latest controls in old SCR Systems, MCC houses for work over rigs, a wide range of spares, and troubleshooting/PMS/health checkup services of rig electrics.

Currently, Righill operations span the UAE and Oman. Its customers in this region comprise drilling contractors (national and private), rig builders, and major shipyards.

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Modernising of control electronics can help to add value to the drilling process. (Photo: huyangshu/Shutterstock)

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Reducing costs with simulation software

Using Bentley's SACs software to assess a damaged wellhead platform saved Zakum Development Company (ZADCO) US$2.6mn in restoration costs.

WHEN A 1,600-TON marine vessel hit an operating wellhead platform in the Upper Zakum oilfield, offshore Abu Dhabi, ZADCO, which is developing the field on behalf of ADNOC, had to evaluate and reinstate the structural integrity of the platform before oil production could resume. Each day that production halted represented a loss to the joint venture shareholders.

ZADCO was challenged to assess and repair the platform as quickly as possible so that it could be returned to service and losses could be minimised. This had to be accomplished while mitigating risk, ensuring safe start-up, and avoiding environmental pollution. Moreover, the accident and resulting damage had to be substantiated in such a way that the insurance claim would repay the losses incurred.

Assessing damage with SACS modules

ZADCO opted to carry out a rapid, iterative boat-impact analysis in-house using various SACS modules, including SACS Precede for platform modelling and load application; SACS PSI for pile and soil property modelling; and SACS Collapse for non-linear boat impact analysis and parameter coding, and for result verification.

The non-linear boat impact analysis performed in the SACS Collapse module helped to accurately simulate the post impact behaviour of the platform and the spread of damages, which included buckled deck and jacket braces, a dented and ruptured deck leg, and platform deformation. Vessel speed at the time of impact was estimated by comparing damage measurements. It was determined that the ship impacted the deck leg with a force of 485 metric tons, causing a 6.6 per cent loss in platform strength. ZADCO performed a linear static in-place analysis, which included soil-pile structure interaction, to assess the damage caused by the impact and verify whether the damaged platform's primary members and piles were safe for a one-year storm event. The team also carried out detailed dent mapping, and subsea and topside inspections.

Using SACS for its assessment enabled ZADCO to understand the post-impact behaviour and determine potential threats to the integrity of the platform

Optimising subsea inspections

To estimate the percentage of the platform that suffered degradation due to the impact, progressive collapse analyses were carried out from three critical directions. This involved testing performance of pre-impact, post-impact, and post-repair ultimate strength analyses, and then tabulating the resulting reserve strength ratios. Conducting impact analyses with SACS allowed ZADCO to optimise the scope of the inspections and focus attention on critical subsea nodes (weld joints) that required a more detailed review. The optimised inspection scope and schedule allowed work to be performed within the narrow window dictated by weather conditions. Subsea inspections by divers were reduced from 134 days to 34 days, representing a 75 per cent saving of inspection time and a US$850,000 saving in project costs. The detailed inspection reports, backed by accurate impact analyses, damage assessments, and pushover studies, provided documentation for the required short-term repairs, as well as technical substantiation for the insurance claim that would cover the losses resulting from the accident.

> "Subsea inspections were reduced from 134 days to 34 days, representing a US$850,000 saving."

Inspection and repair savings

The platform was repaired, and structural integrity was restored, so that the wellhead could be certified for operation and reinstated into production in line with Health & Safety Environment (HSE) requirements. The understanding of post-impact behaviour gained from SACS analyses helped to execute the stage-wise release of the platform so that it could become operational earlier than anticipated. Production resumed with the platform reinstated to nearly full pre-impact capacity. By performing the preliminary analyses in-house, optimising the scope of inspections, and outsourcing the detailed engineering for short-term and final repair packages, ZADCO significantly reduced the project delivery time and costs. Only the repairs required to reinstate structural integrity were performed, significantly reducing repair costs. These savings, together with the savings realised on inspection costs, were 70 per cent of the total cost of the project – which was fully recovered as a result of the insurance claim. ZADCO also reached its risk, safety, and environmental goals. Having a defensible estimation of post-impact platform capacity helped to effectively mitigate the risk associated with this project. By identifying and mitigating possible threats to platform integrity, the team improved safety and prevented damage to the facility and the marine environment. The platform life and usability were ultimately enhanced as a result of the fully updated SACS model, which can be easily referenced for future operations and maintenance. ■

Technology that bridges the water

Deepwater subsea operations are challenging and complex but shallow water intertidal zones, where the sea meets the sand, can be particularly demanding. Should a pipeline require repair, time is of the essence and safeguarding against environmental damage is crucial.

by Mike Young,
director at Marsol International

AS A SUBSEA pipeline emerges from the water, its path has inherent risks and this specific location calls for a unique emergency response vessel which is adaptable and durable to work in the ever shifting sands and tides.

In collaboration with Rhino Marine, Marsol International, a Dubai-based global marine solutions provider focused on the offshore oil terminal market and related infrastructure, has introduced Rhino Craft, a multi-purpose workboat tailored to provide easy access to these challenging sites; where strength, power and durability are critical.

Design

Rhino Craft hulls have been designed and developed in co-operation with naval architects and have been tested to create robust and virtually indestructible workboats, for use with outboard motors as well as inboard diesels with stern drives or jet drives. The hulls are fabricated from High Density Polyethylene (HDPE) which is a ductile, high strength plastic with excellent abrasion, UV and chemical resistance and is ideally suited to use in extreme offshore environments.

Rhino Craft have been designed primarily for the offshore oil and gas market where the conditions are rough and craft are exposed to severe impact loadings, ideal for the harsh conditions in intertidal zone areas. The industry has expressed a need for a vessel that can meet their needs and this craft fulfils a number of roles including support vessel for maintenance operations, a robust replacement for small inflatable boats and the ability to assist with firefighting duties.

There are various models within the Rhino Craft range, from the Rhino 600 HD (a basic, cost-effective workboat with a substantial deck space and payload for its size) to the Rhino 1050 (a large HDPE workboat that is ideally suited for use as a general purpose workboat or personnel transfer boat.

Marsol's boat demonstration in Dubai in 2016. (Photo: Marsol)

> "Rhino Craft have been designed primarily for the offshore oil and gas market where the conditions are rough and craft are exposed to severe impact loadings, ideal for the harsh conditions in intertidal zone areas.

The Heavy Duty (HD) range of workboats are equipped with 400mm HDPE pipe sponson collars which have seven sealed compartments, each filled with polystyrene foam, rendering the craft as virtually unsinkable. Additionally, the Extra Heavy Duty (EHD) range also incorporates a customised forepeak structure for engaging in offshore bow-catcher boat landings which protects the vessel from major damage in extreme conditions.

Rhino Craft can also be used as general purpose work boats and are less vulnerable than other small craft in this category, which Marsol International believes could be a game changer for the industry due to the significant advantages.

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Fabrication material

HDPE is a robust and abrasion resistant material which is also extremely ductile. This allows the vessels to be subjected to large impact loading because the ductile material acts like a fender, allowing the impact energy to be dissipated without causing damage to the hull. Another advantage of HDPE is that it is very easily repaired by semi-skilled personnel. HDPE craft are heavier craft than their aluminium or GRP counterparts, but this increased weight offers greater stability which is highly advantageous for most operations.

The rigid HDPE pipe sponsons visible on the Rhino Craft can be confused with RIBH (Rigid Inflatable Hulls). RIBH's have inflatable sponsons which are easily ruptured in offshore operations. Rhino Craft sponsons are extremely robust and are filled with polystyrene foam so that even in the unlikely event they are ruptured, they retain their shape and cannot fill with water.

Marsol sailing out to an offshore oil rig as part of their demonstration in Dubai. (Photo: Marsol)

Buoy repairs during winter south Atlantic storms

Rhino Craft was deployed off the coast of South Africa to assist with the installation of a large unmanned semi-submerged control buoy. The buoy facilitated radio communications between the floating platform in order to open and shut valves to allow gas to flow from the field to the platform.

The semi-submerged buoy, situated in approximately 90 metres water depth in the South Atlantic 100 km south of the African continent, was anchored to a large gravity base. The base lies on the seabed with three vertical tethers which connect to outriggers on the buoy with each tether connected to the outrigger via a 300 Te SWL D shackle. The buoy has a large submerged cylindrical body with a narrower periscope-like cylinder projecting upwards out of the water. Boat access to the buoy is via a bow-catcher boat landing on the side of the periscope cylinder that projects up above the water.

The buoy is continually exposed to the weather, in particular extreme wave induced loadings caused by the swells passing over this climatic region in the Southern Atlantic. Such waves are some of the most severe weather systems experienced by offshore structures and are most severe in the winter months. During a survey performed in winter of 2010 it was identified that one of the 300 Te SWL D shackle pin heads had been sheared off due to the continuous fatigue loading and the tether was in danger of parting with potentially disastrous consequences to the buoy.

In order to carry out remedial works, a chartered vessel was used as a diving support vessel for air and saturation diving operations. The repairs required a series of heavy construction aids including a subsea davit that could be installed on the outrigger, and a retractable temporary tether system incorporating a four metre stroke 200Te hydraulic puller, used to take the load off of the damaged tether to carry out the repair works, as well as various steel deployment buoys.

All of this equipment was deployed over the stern roller of the dive support vessel with appropriate steel flotation devices. Once deployed, the equipment had to be collected and towed into position at the buoy using a suitable offshore work boat which would be sturdy enough to operate in extreme conditions with plenty of impact loading.

> "Rhino Craft was deployed off the coast of South Africa to assist with the installation of a large unmanned semi-submerged control buoy."

To perform this work, a six metre HDPE (High Density Polyethylene) Rhino Craft 600 workboat was deployed. These heavy duty offshore workboats can be exposed to extreme abuse and impact loading and were originally developed in 2003 for use with bow-catcher boat landings in Nigeria. Figure 2a-d shows the equipment that had to be deployed by the outboard driven Rhino 600.

This buoy repair required operations to be performed in rough winter seas, with strong winds and with waves exceeding five metres in height. On completion, the Rhino 600 was still in perfect working condition and the diving supervisor commented that the Rhino 600 had been invaluable in effecting the successful execution of the works and that a normal workboat would not have lasted under those conditions.

Rhino Craft's versatility ensures the right craft is used for the job, ensuring safe, efficient, and high quality operations. The Marsol and Rhino Marine synergies are significant and clearly demonstrate the immense value of Rhino Craft in the offshore industry.

The Rhino Craft 750 EHD vessel was recently launched and demonstrated at two successful events in Abu Dhabi and Dubai, which allowed local industry experts and local authority delegates to experience the versatility and suitability of the vessel and the significant benefits Rhino Craft can offer to the offshore oil and gas and coastal protection industries.

The demonstration vessel was configured with a 200hp diesel outboard and performed above expectations whilst demonstrating its ability to work as an additional daughtercraft for an existing fleet or as a standalone general purpose workboat. Further demonstrations were also held at clients' premises to gauge Rhino Craft's suitability for specific operational requirements. ■

Mike Young is the founder of Marsol International, a UAE-based global marine solutions provider focused on the offshore oil terminal market and related infrastructure.

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Improving safety, reducing costs of plug setting operations

Federico Casavantes, vice president of Sales & Marketing for Probe, describes how an advanced electro-mechanical setting tool, first deployed in the North Sea, is setting new standards across the industry.

FOR 20 YEARS, the logistical and safety issues associated with traditional setting devices requiring explosives have driven more and more operators to look for safer alternatives. Hydrostatic pressure-activated tools, while ideal in principle, fall short of the mark due to setting force limitations and susceptibility to well environment conditions.

A new electro-mechanical setting tool addresses the common limitations of both explosive and hydrostatic setting tools. Known as the iSet™, the tool offers distinct advantages. (See Figure 1.) It produces sufficient setting force, even in lower pressure wells. Plus, setting time is equivalent to that of explosive devices. Cyclops Touch touchscreen technology coupled with the iSet's rapid reset feature ensure that operator training is conducted in just 30 minutes, and the tool can be deployed on slickline or electric line. Power to drive the iSet is supplied by commercial "AA" Alkaline batteries when run on slickline or surface power on electric line. Either way, it records critical parameters that provide an overview of the setting cycle, and assurance that the instrument has been successfully set.

The iSet caught the attention of operators in the Middle East when it was formally introduced by Probe at the SPE-KSA 2016 ATS&E. Its impressive track record in Europe and West Africa since its launch in May 2015, coupled with its unique advantages over traditional setting devices, is expected to continue, driving high adoption rates industry-wide. As this article goes to press, the iSet is enroute to the Middle East. Probe anticipates that many more successful operations will have been carried out in the region by December 2017.

Figure 1: The iSet tool provides a much safer, reliable and cost-effective method of setting bridge plugs, packers, gauge hangers and straddles

New benchmark for setting tool safety and cost-savings

Because the iSet is electro-mechanical, it ensures higher levels of safety than ballistically-activated devices. Its innovative design also delivers an equivalent setting force and setting time capabilities that are not possible with hydrostatic pressure-activated tools.

Not only does the elimination of explosive charges make it easier to mobilise equipment quickly, it reduces costs. By dispensing with the need for special permits and pre-scheduled transportation arrangements, fast response mobilisation is a key advantage of the iSet. Deployment on slickline with commercially available alkaline "AA" cell batteries further contributes to greater logistics efficiency, especially for emergency, unscheduled operations.

During the 1990s, there were few alternatives for setting devices with wireline other than explosive-activated setting tools. To address concerns about safety, and the complicated logistics of handling, storing, and transporting the hazardous explosive charges required by such systems, hydrostatic pressure-activated setting tools were developed. Many operators today use hydrostatic setting tools for some operations. However, this alternative is somewhat restricted due to inherent limitations of the technology. Although the tools are safer and easier to transport and handle because explosive charges are not required, the setting force capability is limited by the actual hydrostatic pressure of the well. For shallower setting depths or low pressure gas wells, for example, the tools require the use of auxiliary pressurised nitrogen modules, which introduce their own safety concerns.

> "Because the iSet is electro-mechanical, it ensures higher levels of safety than ballistically-activated devices."

To eliminate the explosives and nitrogen, a solution was offered by the electro-mechanical setting tool. The challenge lay in overcoming safety concerns associated with the deployment of slickline downhole tools in environments exceeding 120°C. Powered memory tools normally require lithium battery packs in these environments. Lithium batteries are classified as "dangerous goods." Global concern for the environment means that transportation, use and disposal of them are highly regulated. The iSet overcomes this by using commercial "AA" alkaline batteries to operate in temperatures to 150°C and pressures to 15,000 psi.

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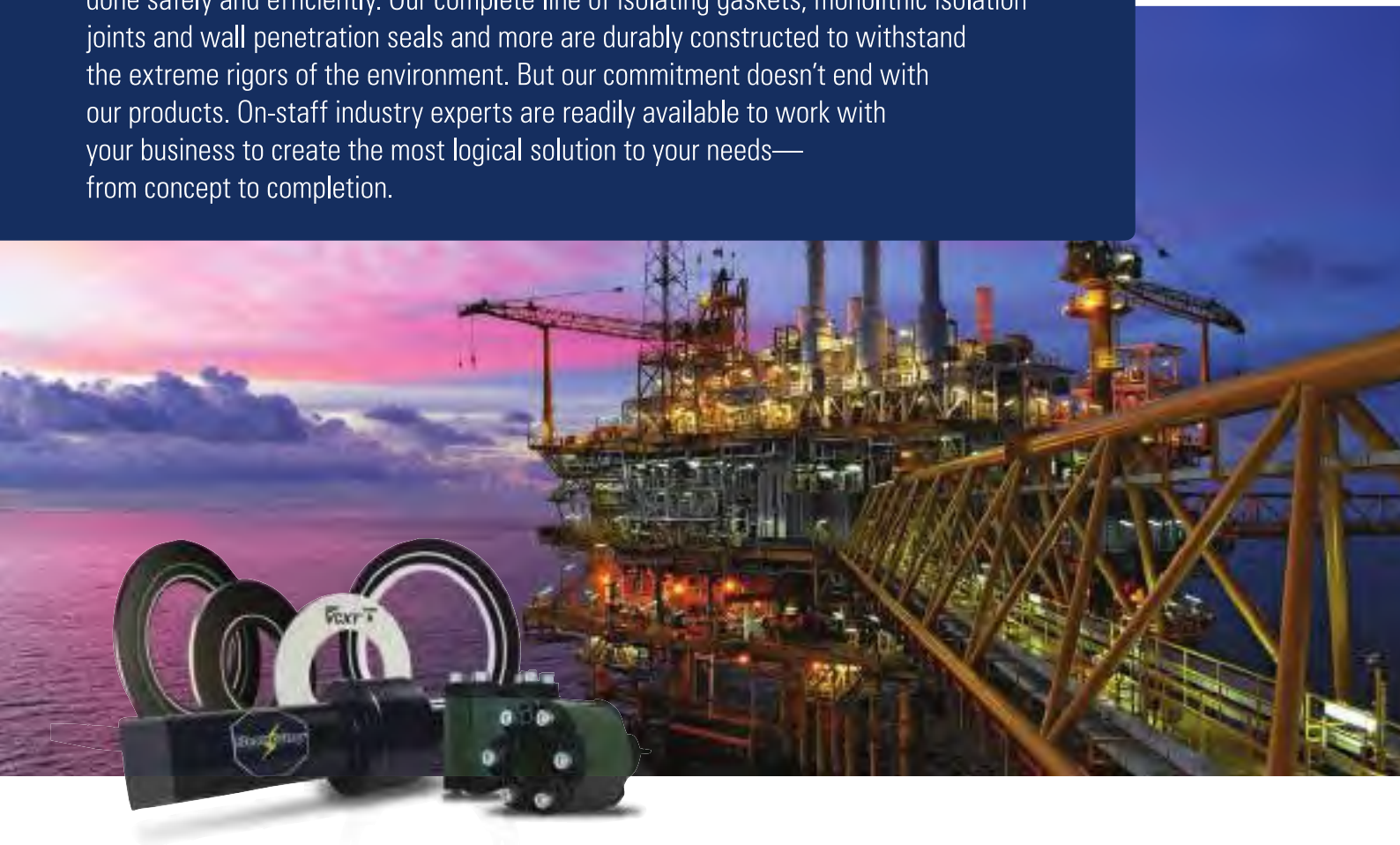

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Cyclops touchscreen technology for extreme well conditions

The iSet electro-mechanical setting tool can be operated in Memory or Surface Read-out mode. In Memory mode, the iSet uses a simple, patent-pending touchscreen interface called the Cyclops Touch (See Figure 2). Although touchscreens are commonplace, it was challenging for the design team to formulate a way to introduce the technology onto the tool – while withstanding extreme well temperatures and pressures so that it could be efficiently programmed and tested at the wellsite.

The interface allows two-way communication so that the user can programme and validate tool settings at the wellsite without using a laptop or dismantling the tool. This is a significant benefit when working in hazardous areas.

The iSet is programmed by the operator through a simple touch sequence at surface prior to running inhole. To validate that the tool is functioning correctly as it is put through diagnostic tests, the operator views an LED clock displayed on the Cyclops Touch. Once the tool has been run into the well, and throughout the setting operation, sensors on the tool monitor and record diagnostic parameters, including pressure, temperature, displacement, setting force, battery voltage, motor current and 3-axis acceleration. After setting the downhole device, the iSet automatically switches off. Special safety features prevent overpressuring events. The tool hydraulics are balanced to well pressure before – and after – setting the device so that is never returned to surface with trapped high pressure. At surface, the Cyclops Touch gives immediate feedback as to whether the operation has been successfully completed: a green light for "all clear," red for "problems." The previously-recorded diagnostic parameters provide a detailed validation of the operation when downloaded at surface. When run in Surface Read-out mode, these same parameters are transmitted to surface via the Electric-line, allowing real-time validation throughout the operation.

Federico Casavantes

Figure 2: Downhole tool setting operations will be performed in the Middle East with the iSet setting tool featuring the Cyclops Touch touchscreen interface (pictured), without using explosives or lithium batteries

> "Compared with traditional setting tools, the iSet offers major operational cost savings."

Another major advantage of the iSet is that it can run up to 50 setting operations before recommended major redressing. All that is required between runs is resetting and programming the tool for the next run. Between runs, the tool is prepared in less than 30 minutes without dismantling any components. Most commercial setting tools – whether explosive, hydrostatic or electro-hydraulic activated – normally require redressing after a few runs at best, and, in some instances, after every run. Redressing these tools also requires a skilled operator due to the complexity of operation, as well as for safety considerations.

Paving the way for Middle East debut

Following field trials in 2014, the iSet gained acceptance from customers in the UK and Norwegian sectors of the North Sea. Since its commercial launch in Q2 2015, more than 50 operations have been run by service companies in the North Sea, Continental Europe and West Africa.

One of the first commercial operations took place in Norway. The iSet was deployed by tractor in memory mode to set two gauge hangers at approximately 19,000 ft. – above and below the perforated intervals – in order to record data with two memory production logging tool strings for an eight-day memory logging operation. Although the well featured a slight 25-degree incline at the point of interest, a tractor was required to drive the tools past the 80-degree section higher up the well. Despite the challenging gas and condensate-producing environment with 16-mol per cent CO_2 content, the operation was successful. The Norwegian operator was extremely pleased with the iSet's performance, particularly the improved safety and efficiencies.

"The drive for cost reduction and increased operational efficiencies has never been higher. Compared with traditional setting tools, the iSet offers major operational cost savings that are achieved by its reliability, modular design and low maintenance schedule," said Neil Duncan, regional manager – MENA & Asia for Probe. "Service companies and their customers find the iSet's flexibility to operate in the field very appealing. They're intrigued by the Cyclops Touch interface, which simplifies operator training and skillset requirements, which directly reduces costs. This novel interface and the elimination of explosives, nitrogen and lithium batteries means that it can be operated safely in hazardous environments. The benefits for the Middle East are clear."

The iSet is available in two sizes, 3.600-in. and 2.165-in O.D., and features 60,000 lbs and 30,000 lbs setting force capabilities over a 10-in. stroke, respectively. They can operate on two power sources. If AA alkaline batteries power the system, it operates in memory mode; if by e-line, it's powered from a panel at surface.

By offering a technologically-advanced solution that makes it possible to set devices without explosives, nitrogen or lithium batteries, safety and efficiencies are dramatically improved, and costs reduced. As operators strive to contain costs while maximising production, the iSet is poised to have a major impact on well intervention and abandonment operations costs in the Middle East and throughout the industry. ■

To learn more about the Probe iSet electro-mechanical setting tool, visit https://www.probe1.com.

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A strain-based approach for pipeline design

Matthew Laing, pipeline engineer, Penspen, discusses the strain-based design of buried horizontal cold formed bends under high temperature loading.

THE DESIGN OF pipelines using a strain-based approach takes advantage of steel's ability to deform plastically without loss of integrity. Originally, the process was deployed offshore to allow for high strains caused during pipe laying. Onshore applications of such designs have been limited to areas where high external loading is expected, such as ground movement. Consequently, there is limited guidance for onshore applications; DNV OS F101 and CSA Z662 partially cover the topic. For a strain-based design to be carried out, a framework must first be established based on the limited code guidance and performance limits available.

Onshore pipelines are commonly designed using allowable stress methods. These provide a simple framework that limits the stress in the pipeline to a fraction of the yield stress, traditionally defined by the specified minimum yield stress (SMYS). At high temperatures, when designed using a stress-based approach, the required wall thickness is governed by the magnitude of the equivalent stress. The rate of increase in wall thickness with an increasing operational temperature is shown in Figure 1; there is a rapid increase in the required wall thickness for high temperatures, where the equivalent stress criterion governs. Note that elastic bending is also considered here. If plastic deformation is allowed to occur, the stress does not need to be limited and the required wall thickness can be significantly reduced, creating a significant cost benefit to the project.

The key question for strain-based design is: what magnitude of strain is considered acceptable? The point of the onset of local buckling is a key performance limit under high thermal loading. An assessment of the strain level when local buckling occurs can be calculated using finite element analysis, and compared DNV-OS-F101 calculations for critical buckling. Local buckling is more likely to occur at points of out-of-straightness in the pipe, such as bends.

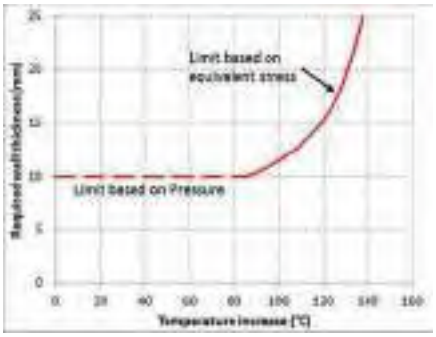

Figure 1

Cold formed bends, high temperature operation and soil response

Cold formed bending is a popular mechanical process of plastically deforming the pipeline to give the required bend angle for the routing of a pipeline. Such bends are formed to specific curve radii, typically between 35 to 40 pipe diameters in the onshore environment. The process involves a series of small incremental bends to create the required angle. The resulting plastic bending strain in the pipeline, b, can be calculated by: b=D/2R, where D is the pipeline diameter and R is the bend radius.

High temperature operation of buried pipelines induces moment loads at bends. A reduction in axial restraint at the bend location allows axial expansion of the pipe in the direction of the bend. The bend then displaces into the surrounding soil, where additional local bending can occur. The bend develops both longitudinal tension and compression loads in addition to ovalisation of the cross-section.

The amount of movement is governed by the frictional restraint of the straight pipe adjacent to the bend and the lateral resistance to movement. The loading response of the soil in each direction can be represented by a simplification of the hyperbolic curve for modelling purposes. This method has been previously validated using full scale testing by the American Society of Civil Engineers.

Influence on bend geometry and design

The movement at bends causes high strains in compression at the inside of the apex, due to the high thermal loads and the extra bending caused as the bend moves into the surrounding soil. If the magnitude of the developed strain is significant, then local buckling at the intrados of the bend could occur. The strain at the bends under operational loading must be calculated and compared to the limit for the onset of local buckling. This can be completed using finite element analysis.

Where geometrically possible, bends are constructed within a single pipe length at the required bend angle and radius, see Figure 2.

Figure 2

When the bend is located in a single pipe length, the extra bending and movement is concentrated in the apex of this single bend and the lateral restraint of the soil may not be high enough to resist lateral movement, leading to strains beyond the limit for the onset of local buckling.

A method of preventing high strains exceeding this limit, and also limiting the displacement of the bend, is to separate the bend between adjacent pipe lengths. This allows the correct routing of the pipeline to be achieved, but reduces the compressive strain at the intrados of the bend

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significantly. A longer movement zone, and two bend apexes, causes the strain concentration to be shared between two points, as well as the greater area of soil resisting lateral movement of the pipe. This reduces the maximum displacement.

Greater lateral restraint develops for longer bends because the soil resists movement over a larger area, providing a higher reaction force and restricting movements. The single peak (Figure 2) causes closure of the bend, leading to high local bending and compressive axial strains in excess of the local buckling limit.

Separation of the bend is a useful method to reduce the strains and displacements to within acceptable levels, but not always suitable if space in the pipeline right of way is limited. Other methods for preventing high strains occurring at bends include:

- Increasing the axial friction using special coating;
- Higher wall thickness in the bend area;
- Increasing the installation temperature;
- Increasing the lateral restraint of the soil around the bend (usually requires importing of materials);
- Increasing the bend radius - although this usually leads to a requirement for more pipe lengths in the bend, for geometrical reasons.

Expansion to an above ground installation

The knowledge of movement of buried horizontal bends can be used beneficially in design for locations where it is desirable to limit the amount of expansion. If the bend is allowed to move, while remaining within acceptable strain limits, then it will prevent axial movement towards nearby features. This can be used at above ground installations (AGIs). It is customary to use a buried horizontal bend, usually of 90° on the approach to an AGI. This limits expansion displacements at the AGI and reduces the development of stresses on the pipework, shown for example in Figure 3.

The buried horizontal bend is often placed adjacent to the transition under-bend, however, it is possible to find an optimum distance (X, Figure 4) between the horizontal bend and the under-bend to minimise the expansion seen at the AGI.

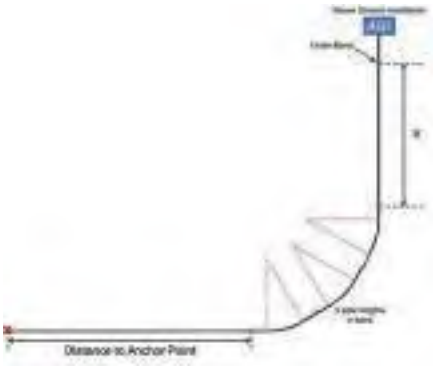

Figure 4

There are two methods of calculating the optimum distance of the buried bend. The first is by establishing the point on the pipe section between the AGI and the buried bend where the onset of axial displacement towards the bend starts to develop. The second method is by finding the point at which the axial force profile starts to develop a separate peak at the side bend. It has been found that finding the optimum distance for the location of the buried bend can reduce the axial displacement at the AGI by up to 50 per cent, leading to potential cost savings on the AGI design.

Figure 3

A single 90° bend, up to 100m from the AGI may not be possible due to routing constraints. However, back-to-back 90° bends can be used in a similar way to reduce the axial expansion at the AGI.

Ratcheting

Another consideration on the design of horizontal bends under high thermal loads is ratcheting behaviour of the bend. Ratcheting is the progressive movement of the bend through the soil during cyclic loading. When a pipeline experiences cyclic operational loads involving temperature change, a check for ratcheting must be carried out.

The development of strain and additional movement can also be assessed using finite element analysis but it is difficult to predict how the soil and pipe will interact during cyclic loading of the pipeline. A good estimate can be made based on the lateral movement of offshore pipelines, although no information has been identified on the behavior of soils under large displacement cyclic loading of fully buried pipelines. The soil is heavily disturbed behind the displacing pipe during the load cycle and this makes it difficult to predict its behaviour during the subsequent unload cycle.

An investigation into the displacement of the bend following the initial load and unload cycle indicates that there is residual displacement of the bend following the unload phase which modifies the subsequent displacement in the next load sequence.

The lateral displacement of the bend may continue to increase with continued load cycling. Strain ratcheting can occur due to the progressive movement of the bend, which can possibly develop beyond the performance limit after numerous operational cycles.

Conclusions

Strain-based design can be applied to onshore high temperature pipelines, allowing plastic deformation of the pipe material. This can lead to considerable financial savings for the pipeline construction compared to traditional stress-based approaches.

High thermal loading leads to expansion at points of lower axial restraint such as bends. During strain-based design it must be ensured that the movement and strain developed at these bends do not exceed defined performance limits, and that significant movement due to ratcheting does not occur during cyclic operation.

The lateral movement of buried horizontal bends can be used to reduce axial displacement towards above ground installations or other pipeline features. Finding the optimum position of the bend can reduce the displacement loading by up to 50 per cent. ■

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Surface coating technologies cut time, save money

As Benjamin Franklin once said, "time is money." Hardly anywhere is this more applicable than in the oil and gas industry.

WITH INCREASED INTEREST in unconventional operations, such as lateral and directional drilling, along with exploration and production in extreme environments like deep and ultra-deepwater, the industry faces new challenges, thus necessitating new technologies and coatings to make tools withstand difficult conditions. Operators are always on the lookout for tools to improve the rate of penetration (ROP), therefore minimising the number of days spent on wells and lowering overall authority for expenditure (AFE).

Driven by these needs, surface technology companies are supporting this industry and are designing new and improved applications to overcome the extreme conditions found in the field. Specifically for drilling operations and downstream pipeline construction, there are a number of coating technologies that are dramatically extending the life of drilling products, which ultimately reduces downtime. A couple of these are now widely used in the oil and gas industry: thermal spray (specifically high velocity oxy-fuel coating spraying (HVOF)), and welded overlays. To select the most beneficial technology for any given application, it is vital that project managers understand the differences between them, as well as the in-service environmental conditions and tribological factors, including friction, lubrication and wear.

Minimising non-productive time (NPT)

When setting out on a new drilling project, oil and gas project managers have one clear goal in mind - complete the project without interruption. Any unscheduled downtime will result in losses amounting anywhere from tens to hundreds of thousands of dollars, and unfortunately, equipment damage and failure are regularly the cause of such incidents.

Surface coating minimises equipment damage and related NPT. By applying the appropriate coatings to key parts, such as mud rotors, drill mandrels, stabilisers and valves, operators improve equipment performance and realise improved durability over traditional manufacturing processes, such as manual metal arc (MMA) welding and hard chrome plating (HCP). By reducing the likelihood of breakdown, and therefore the need for an equipment changeover, project managers can be confident that their drilling crews continue working without equipment-related delays.

Tricone bits are protected by using abrasion-resistant and slurry erosion resistant carbide materials PTA and laser cladding bled materials or oxy-acetylene hard face welding products

Abrasion and corrosion-resistant carbide materials extend the lifetime of drill collars and stabilisers

Operators rely on original equipment manufacturers (OEM) to supply durable equipment that will withstand the variety of stresses placed on tools. Because thermal spray results in a mechanical bond between the coating and substrate, this application offers the equipment OEMs the optimal corrosion protection for parts that have no impact exposure, such as bearings and pump seal faces, valve parts and shafts. Thermal spray produces a very thin overlay, making product finishing easier and faster compared to welding parts.

Additionally, the mechanical bond that is formed during this coating process withstands the extreme conditions found in some wellbores. For example, mud rotors treated with a thermal spray coating often have a service-life ten times longer than those treated with HCP. Unlike welded coatings, thermal spray can be used to apply oxide ceramic coatings which withstand high mechanical strength (300 to 630 MPa), are resistant to corrosion and wear, and have excellent gliding properties. An example of this for oil and gas would be riser tensioners on offshore platforms. The porosity levels of thermal sprays have now been lowered to less than one per cent, in many cases less than 0.5 per cent, making them close to fully dense.

Welding applications

For equipment used in high-pressure and/or high-temperature (HP/HT) environments, welding is often the preferred method. In contrast to thermal spray's mechanical bond, welding melts both the material being applied and the surface of the substrate, forming a durable metallurgical bond. This is necessary for tools exposed to extreme conditions that cause heavy wear and tear. In particular, HP/HT environments often

found in deep-water operations require Laser Cladding to produce a fully dense coating, without which the equipment can quickly become damaged and require downtime for repair.

Within welding itself there are variations, namely metal inert gas (MIG) welding, plasma transferred arc (PTA) welding and Laser Cladding. MIG is a common welding process for indoor environments (though rarely used outdoors or in other areas of air volatility) due to the speed and ease with which it can be adapted to robotic automation. However PTA deposits are tougher and more corrosion resistant, making them more suitable to harsh underwater environments. Laser Cladding is commonly used to improve mechanical properties or increase corrosion resistance, repair worn out parts, and fabricate metal matrix composites. Both Laser Cladding and PTA are the most 'popular' of the methods, and both easily outstrip the performance of MIG welding. In addition, Laser Cladding has gained further use as a complementary coating technology to thermal spray.

Drill collars can be protected with surface coatings

Each of these effective surface solutions has benefits, but which method a manufacturer uses must be wholly dependent on three key factors:

1. The type of material being coated
2. Operating conditions like high stress, impact or sliding wear, and corrosive media
3. Geology.

In the oilfield, the lithology of the formation being drilled can vary greatly. That is why it is important to select a supplier with a broad portfolio of coating materials and technologies to ensure the selection of the most beneficial one for the project.

An example is Oerlikon Metco's Coatings Solutions Center (CSC), a global resource that advises manufacturers on any of the above solutions – and more – to make sure they have the correct technology for use in their specific situation.

(See www.oerlikon.com/metco). Additionally, manufacturers need experts on hand to discuss the project's needs as well as infiltration processing to increase the operator's return on capital employed (ROCE). Time may be money, but partnerships can bring profitability. ■

Oerlikon Metco will be showcasing its solutions at ADIPEC on Stand 11170.

A closer look at communications costs

A wide range of communications choices is available to offshore rigs and vessels. (Photo: Gail Johnson/Shutterstock)

Connectivity choices offshore are greater than ever. Fibre, satellite, microwave and even 4G mobile could be available on rigs, platforms and vessels. But, as Vaughan O'Grady learns, the oil price decline has meant companies want value for money too.

IF YOU'RE WORKING on an offshore platform right now it's quite likely you'll be able to videoconference with head office, download films and Skype your family – an incredible advance on the capabilities of even a decade ago.

A lot of this connectivity will be delivered by fibre optic links on an undersea cable. Wayne Nielsen, managing director of WFN Strategies, which designs and implements submarine fibre cable systems for commercial, governmental and oil and gas companies throughout the world, says, "You can put the cable out as far as you need. It's not a technical issue; it's whether the cost of putting a fibre cable in is worth it to the user."

The same goes for depth too. If you can afford it, it's available. "There are rigs in the Gulf of Mexico that are in 1,000-1,200 metres of water, hooked up to fibre."

But if you're cost-conscious the cable doesn't need to be bespoke. "In the Gulf of Mexico we helped BP put in a 1,200 km system," says Nielsen. "And off that 1,200-km trunk cable are a number of what we call branching units." These are shared, for a fee, with other oil companies needing fibre connectivity.

Times have certainly changed – in more ways than one. Ian Theophilus is programme manager – Global WAN Programme, with Prosource.it, a managed IT services provider for the corporate enterprise market. He points out that the collapse in oil prices has meant that companies scrutinise communications costs more carefully than ever.

Which is what he helps them to do. "I'm reviewing telecommunications and wide area network provision within enterprise companies to identify whether there's a more efficient, more cost-effective way to deliver telecommunication / network services to meet the requirements of the operator," he says.

If you have a platform offshore that needs to communicate with an onshore office, the starting point is fibre, if it's available and affordable, because, says Theophilus, "fibre optic networks provide the most efficient low-latency communications that you can implement." He adds, "Backup communications could fall to any number of alternative technologies, from redundant fibre to microwave radio, dependent on location and availability."

Even 4G/LTE connectivity is now becoming more readily available offshore, provided that the subsurface fibre is in place as the backhaul connectivity. Where fibre optic or 4G are available, there is also the opportunity to deploy satellite communications for backup purposes, providing resilience via an alternative technology. "The type of satellite communication chosen to provide services needs careful thought in these circumstances," says Theophilus. For example, the use of a Ka-band satellite system in a severe storm area (rain fade is a potential threat to Ka) might not be appropriate for primary communications but may be the most cost-effective for back-up or crew welfare services – calls to family and friends, say.

Where no alternative communications mediums are available then the deployment of a resilient satellite system (using C-band or Ku band, for example) may be the only option, but whether you choose fibre or satellite there will always be financial issues to consider. "Do you lease a system so you spread that cost?" asks Theophilus. "Or do you pay it upfront and then spread the rental of the bandwidth over the opex budget?

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There is no correct or incorrect answer to this but it should be reviewed when investing in telecommunications systems."

But helping its customers save money isn't the only consideration for Prosource.it. "We always take safety into account first. A few considerations when deploying a system should be: how many people do we have on the installation? Do we need resilient systems to provide remote management? What type of applications are running over the bandwidth from a safety and operational perspective? Do we need robust systems that support the use of ESDs (emergency shutdowns)?" Safety will also affect the decision about what equipment should be used at a remote facility: hazardous areas on a rig or platform will need to ensure that all transmitting equipment to be used in these areas is correctly rated to industry standard.

"What we'll then do," he continues, "is identify the bandwidth utilisation of the particular plant or facility to ensure that any system deployed is fit for purpose from both operational and safety perspectives. This also gives us the opportunity to provide the most cost-effective solution that provides the necessary safety and operational requirements".

Reducing the cost of ownership can also involve investigating the current contractual agreements. "For example, this may be achieved by renegotiating contract terms or by reducing the bandwidth following utilisation evaluation, therefore reducing cost."

With fibre connectivity, more than any other approach, come major safety and efficiency bonuses. As Nielsen explains, "When you make the step to fibre, it opens up videoconferencing. It opens up taking people off the platform and having them sit in an office back onshore where it's a lot cheaper," and, of course, safer.

Fibre connectivity is falling in price, though not at the same speed as oil revenue. However, says Nielsen, it's still good value because "the actual throughputs we can do with fibre today versus 15 years ago are magnitudes higher."

As for satellite, Theophilus says, "I review the current contract terms and work with satellite suppliers to identify ways in which costs to the client can be reduced. Providers are open to adopting alternative contractual agreements that help save the operators cost without impacting operational efficiency."

Susan Bull, senior consultant with specialised satellite communications consultancy Comsys, notes that satellite capacity for offshore and ocean coverage is more expensive than for land coverage. "Nevertheless we've seen a lot of changes in capacity pricing and that will affect offshore as well as onshore," she says. She adds, "If the rigs are relatively close to shore, they will probably be covered by the spillover from land. They will take advantage of that as well."

Do oil and gas companies have leverage over satellite bandwidth pricing? There's no clear answer to this. Some consumer offerings – notably satellite data – have not enjoyed big take-up outside North America, a factor that could benefit enterprise users. And obviously with the oil price so low there has been less production activity and less demand, so that operators like RigNet and Harris CapRock have had to review pricing.

Bull suggests that when the oil price recovers oil and gas companies may well be a little more cautious about buying into satellite. "Will [satellite communications] prices recover to the same degree as before? That's highly questionable."

The consumer revolution led by Ka-band services may also filter through to some less weather-affected oil and gas operations. Continuing Ka-band launches – such as that of the globe-covering Viasat III – will offer more and cheaper Ka-band capacity, conceivably bringing today's 300-1,000 dollars per megabit down to as little as 50-100 dollars. Bull says, "Viasat III is built as consumer service [but] if the price differential was ten times I think a lot of companies would be prompted to take this."

Satellite will retain a healthy share of the oil and gas market for some years to come. Some vessels can connect into a sub sea fibre ring. "But vessels such as cruise liners, or cargo vessels and anything that would be classed as mobile are not going to be able leverage this technology," says Theophilus. Essentially, fixed installations dominate the oil and gas fibre market.

Luckily, satellite equipment costs are declining, although the arrival of multi-frequency antenna systems and phased array electronic steerable antennas may be seen as a useful – if expensive – investment in the coming months and years.

Nevertheless satellite, where fibre is available, is unlikely to be first choice, due to latency – signal delay – issues with high earth orbit systems, although the arrival of middle and low earth orbit systems, such as global satellite service provider O3B, means latency can be significantly lower because the signal is not travelling as far.

And today's upgrade technology can improve the performance of fibre without requiring cable replacement. Nielsen, says: "We've had systems out there over the last six years that have been upgraded two, three and four times – up to the latest technology. The economic life of a system is getting pushed out." That could mean 30 years – or longer.

It's ironic then that, as Nielsen says, "Oil and gas companies' use of bandwidth is a small percentage of what could be available to them. There are magnitudes more bandwidth on an existing cable that they already have available to them if they need it."

Bull agrees, but suggests that adoptions of applications such as automation, video surveillance and monitoring will eventually take up some of the excess bandwidth, underlining the continuing – and growing – importance of telecommunications to operational efficiency, even though any investment will continue to be carefully scrutinised. ■

Satellite will retain a healthy share of the oil and gas market for some years to come. (Photo: Johan Swanepoel/Shutterstock)

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Near infrared spectra prediction of hydrocarbons

Intertek describes how its chemometric modelling software can help refiners to optimise production.

WITH THE CONTINUED increase in the use of opportunity oils, there has never been a greater need for the fullest understanding of the quality of every crude delivery. However, although it is imperative to maintain assay data, carrying out full suites of laboratory tests on every crude delivery would be a costly and impractical exercise. Conversely, sub-optimal operation through varying crude quality will result in erosion of margins. So what is the solution?

Intertek possesses a suite of software (Interpret) used for a variety of applications throughout the hydrocarbon supply chain. This software has been successfully applied online, at-line and in the laboratory for many applications. Interpret is composed of several modules, each one designed to meet different industrial challenges.

The Interpret module InBlend is a chemometric modelling software based on near infrared (NIR) spectra and currently used in applications ranging from pipeline modelling, through refineries (feedstock quality monitoring and blend optimisation) to fuels blending (gasoline, jet, diesel etc.). The NIR spectrum is used to predict crude oil composition from a tuned chemometric model.

Obtaining composition by NIR prediction is a very quick method, typically an InBlend prediction takes a few minutes and predicts many properties including, but not limited to, API gravity, sulphur, total acid number (TAN), pour point, true boiling point (TBP) curve and TBP fraction properties such as specific gravity and molecular weight.

Intertek also possesses a database of global crudes containing circa.1,200 crude oils with NIR spectra and associated TBP, API, sulphur, pour point and TAN. When used in conjunction with InBlend for crude modelling applications, the database allows customers to enter into projects with a working chemometric model, which can then be tuned to specific applications.

Case study

In this case study InBlend is applied in a large refinery for quality monitoring. The application included setting up the model to predict the properties of crude deliveries and benchmarking this against expected crude quality.

SampleID	API	Sulphur	565°C+
Sample_01 – 05/09/11	32.8	0.9	7.6
Sample_02 – 06/11/11	33.8	0.8	6.0
Sample_03 – 19/01/12	37.9	0.3	11.6
Sample_04 – 23/02/12	33.0	0.8	6.2

Table 1: Four samples of type XX with their API, sulphur and the cut 565°C+ from TBP

As well as predicting the properties of a crude oil sample purely from a NIR spectrum, this case study also highlights the advantages that the technology can give refiners. It achieves this by analysing the variation of a given crude type in this case with the sanitised name "XX". The case study focuses on four samples of XX delivered to a refinery in chronological order over a period of eight months.

Table 1 shows the crudes being scrutinised in this case study. The normal measured values are API gravity and wt% sulphur. Table 1

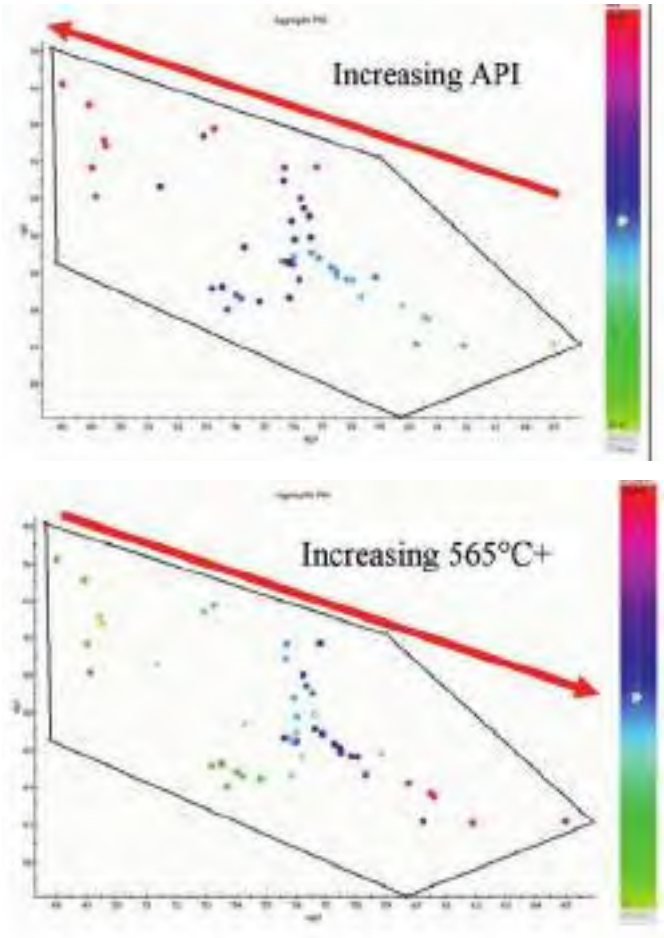

Figure 1: Aggregate plots of all example crudes showing API aggregate (top) and 565°C+ aggregate (bottom)

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thus shows the API, sulphur and also the 565°C+ values for the four samples.

As stated in the introduction a full assay is not carried out on every crude delivery, and as can be seen from the value of 565°C+ in Table 1, this can vary between batches for the same crude. API and sulphur analysis therefore does not always provide sufficient information to properly evaluate the value of each crude cargo. In Table 1 samples_01, _02, and _04 form a group with similar properties; however, sample_03 is different. The API of sample_03 would suggest a lighter crude but the 565°C+ cut is double the other members of this group. If this pattern were repeated then 25 per cent of the crude cargos being processed would have twice as much residue as expected.

The Aggregate plot

InBlend utilises specially tuned plots (known as aggregates) which show the spectral variation within a crude type. Figure 1 shows an aggregate plot of a group of crudes from the same geographical location within the global crudes database. The trend in the aggregate plot is that API gravity is lower in the lower right of the box and increases as the crudes get lighter to the upper left of the box. This can be seen also in the 565°C+ property aggregate where the heavier crudes with the higher 565°C+ are in the lower right of the box and lighter crudes with less 565°C+ are in the upper right of the box. The points are colour coded, and the higher the value of the property the darker the colour.

Crude type XX analysis

The aggregate plot in Figure 2 shows how sample_03 is identified by the spectra as being different from the other three samples. The crude is shown as a red point.

The API of this crude is 37.9 (Table 1) and thus indicates that it is the lightest of the four crudes in question. Looking at the sulphur content it can be seen it is 0.3 that is the lowest sulphur content of the four, once again suggesting this would be the lightest and most valuable of these four crudes.

Due to this obvious outlier, further investigation of this crude was carried out. Shown in Figure 3 is the laboratory TBP curve of the four crudes. It can be clearly seen that sample_03 is different to the other three samples and that the TBP curves of the other three samples are very similar.

As stated before InBlend can predict the properties of a crude sample purely from a NIR spectrum. Shown in Figure 4 the predicted TBP for the four samples can be seen.

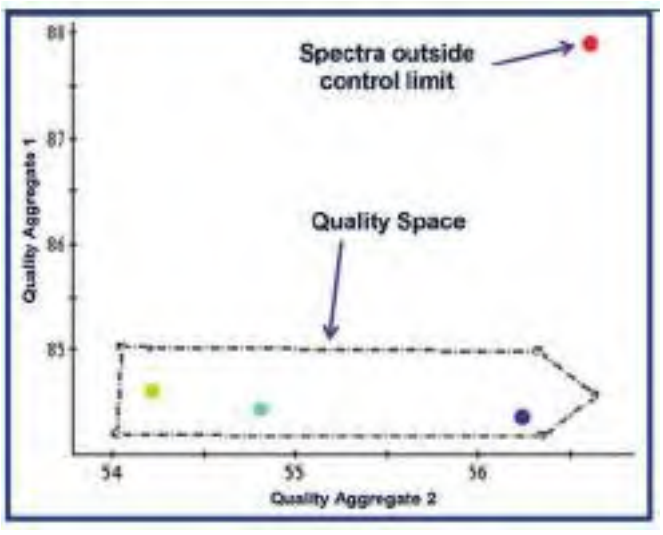

Figure 2: Aggregate plot of crude type XX showing cluster and difference

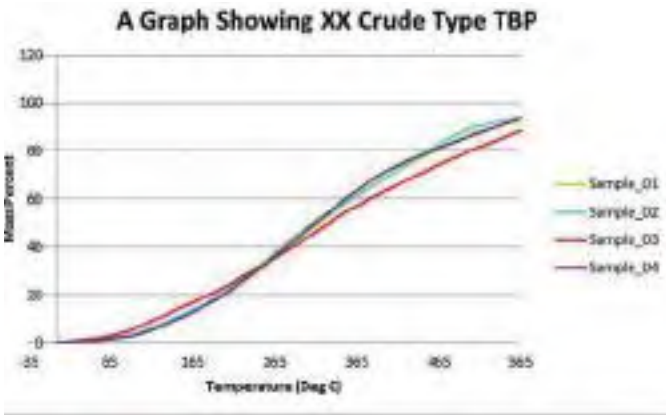

Figure 3: TBP curves for all four crude samples

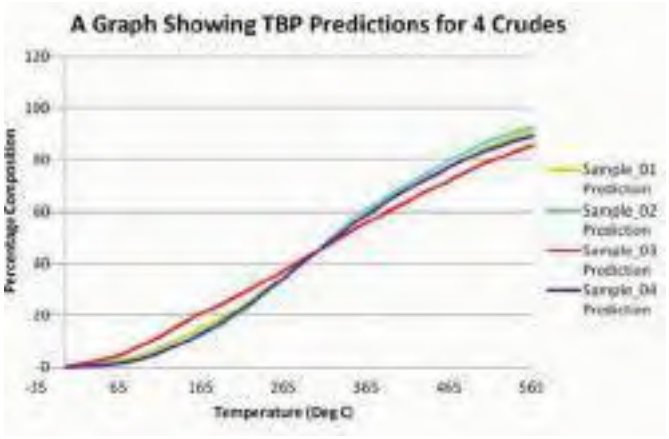

Figure 4: TBP curves from InBlend prediction

The distillation curves show clearly that sample_03 is heavier than the other three samples, having more 565°C+ residue. Looking at the predicted values it can be seen they follow the same trend as the actual values. It is also important to note that the outlying crude has been predicted to be different to the other crudes in the same family. This prediction has been made based purely on the NIR spectra and thus the technology ignores the other crudes of the same family for sample_03 because spectrally they are further away. The technology thus uses other spectra that are close to sample_03 and predicts the spectra.

Conclusion

This case study clearly demonstrates that whole crude property measurements are not a conclusive method of characterising a crude type to give a refinery the real value of a crude import. In this case the crude sample_03 has a higher API suggesting a lighter crude oil; however, looking at the aggregate plot shows that it is different and the InBlend prediction calculates that whilst the light ends are greater, the 565°C+ cut is higher compared to the rest of its crude type.

Furthermore, netback calculations were performed of the above crude and it was found that the refiner was losing more than US$1/barrel on every barrel of this crude processed, due to the difference in crude oil quality. Due to the analysis undertaken, the refiner was able to re-optimise his blend to the actual TBP and ensure consistency in quality provided to the trader. ■

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Reducing costs with MAOK coatings

A.V. Tokarev, CEO of MAOK LLC, describes the characteristics and benefits of the company's coatings offerings.

A.V. Tokarev, CEO, MAOK LLC

AT THE PRESENT time when the world economy is in turmoil and oil prices are down, oil companies are revising their budgets to reduce costs in areas such as R&D, greenfield development and human resources, including skilled personnel. Our company has developed technologies and materials that allow oil and gas companies to reduce expenditures for the purchase and operation of well casing and oil well tubing. Moreover, the use of such materials does not damage the environment.

Following are the characteristics of our various coatings, which have passed all the relevant tests in Russia.

MAOK-PLAUN® coating

Self-lubricating and chemically resistant, this is designed for dry makeup of well casing and oil well tubing. It is applied on couplings with any thread type (triangular thread, BTS thread, premium class thread) and guarantees gas and liquid leak tightness of a connection as well as multiplicity of its makeup (for well casing – over three times, for oil well tubing – over 50 times). The coating is resistant to all types of alkalies and acids, to UV and seawater. As the MAOK-PLAUN® coating provides not only liquid but also gas leak tightness of a thread connection, it is possible to replace casing having more complicated and expensive construction of couplings' thread by pipes with couplings that have a simpler thread construction and are therefore cheaper. So, in 2014 OGP PJSC "ANK Bashneft" started to use only casing for production strings with OTTM thread ("Russian BUTTRESS", GOST 632-80) and MAOK-PLAUN® coating, instead of pipes with "BUTTRESS" couplings with standard lubricant.

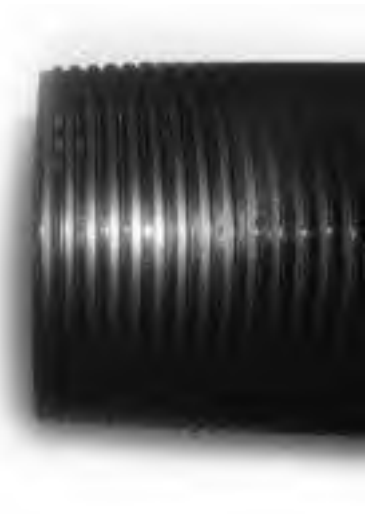
> "BUTTRESS" connection and MAOK-PLAUN"® coating can allow companies to reduce costs for the purchase of pipes by over 20 per cent"

What did they gain by such a replacement?

1. Reduced costs for pipes purchasing of 8.5–9.0 per cent.
2. Elimination of cases of leakage of casing columns during construction works. Before 2014 the company fixed four to six cases of leakage per year.

BTS box with MAOK-PLAUN® coating

OWT box with MAOK-PLAUN® coating



Pin-end with MAOK-N® coating

Tubular part before and after with MAOK-GT® coating

Replacement of casing columns with premium thread connections and standard lubricant by columns with "BUTTRESS" connection and MAOK-PLAUN® coating can allow companies to reduce costs for the purchase of pipes by over 20 per cent (according to data of "RN-Purneftegas" LLC, affiliate of PJSC "Rosneft").

Use of MAOK-PLAUN® coating on the threaded part of couplings of oil well tubing allows an increase in the number of makeup and breakouts up to 50 times, as well as reducing expenses for maintenance repair by more than 30 per cent.

Replacement during repairing works of couplings of oil well tubing made of chromium steel with steel couplings with MAOK-PLAUN® coating for making up with chromium oil well tubing, will achieve several targets:

1. To reduce costs by a factor of three by the purchase of steel couplings instead of chromium couplings.
2. No EMF in a connection, that is the connection is nonconductive.
3. The thread nipple of chromium pipe is not subject to deformation, even at makeup torques exceeding the nominal torque by two times, due to the high plastic properties of MAOK-PLAUN® that extend the lifetime of a pipe without re-cutting of the nipple's thread.

The MAOK-PLAUN® coating can be restored.

In general for all types of threaded connections of well casing and oil well tubing with the MAOK-PLAUN® coating, is that a breakout torque of a connection does not exceed a makeup torque.

By applying together the MAOK-PLAUN® coating on a coupling and the MAOK-N® coating on a nipple's thread, a decrease of makeup torque and also a breakout torque reaches 10–15 per cent.

MAOK-N® coating

This is applied onto a threaded part of pipe's nipple and guarantees resistance to corrosion during storage and transportation of pipes for a year. It is easy to apply using a brush or spray bottle. The coating is subject to recovery, does not require special equipment, and can be applied in field conditions.

MAOK-GT® coating

This is designed for the protection of inner and outer walls of oil well tubing from corrosion, H_2S and CO effect; it allows the speed of paraffin precipitation on walls to be reduced. It is applied both on new and used pipes that have soaked oil spots in the pipe metal. The coating's adhesion in places of oil spots makes up less than one point; the coating absorbs these oil spots from the pipe metal.

Such an effect allows the lifetime of oil well tubing to increase by more than three to four times and the extention of the pipe maintenance repair run, thus increasing oil output from a well site.

The coating is applied by vacuum method and is subject to recovery.

The operation temperature ranges from –70°C to +120°C and can go up to +150°C in a short time.

MAOK-U® coating

This is designed two achieve two targets:

1. To exclude possibility of bite and tear of drill pipe joints due to the fact that it does not allow a makeup torque to exceed a breakout torque. Costs for repair and change of drill pipes are reduced by more than two times.
2. To exclude sticking and seizing of any threaded connection during long-term operation. And in 10 years the threaded connection will be unscrewed by a simple wrench, as a hard film of the coating does not allow corrosion making interpenetration in mating parts. The coating is self-lubricating and does not require additional grease. It is resistant to seawater, alkalies and acids effect. It is recommended to be applied in connections and joints used under water, and also in seawater. The coating is easily applied from a spray bottle, and quickly dries in 10–60 seconds. The application temperature is from –300°C to +350°C, operation temperature from –100°C to +250°C.

It allows costs for replacement and purchase of fixing hardware to be reduced, and does not damage the environment.

All the above mentioned characteristics and properties of coatings have Conclusion reports.

To find out more about MAOK – which holds all the required statements and certificates – visit www.maok.spb.ru or contact office@maok.spb.ru.

ADIPEC 2016
Date: 7-10 November
Venue: Abu Dhabi National Exhibition Centre (ADNEC)

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7-10 November 2016

Strategies for the new energy landscape

World energy leaders, government officials, decision makers, and more than 100,000 oil and gas trade professionals from 125 countries are gearing up for ADIPEC 2016.

HELD UNDER THE patronage of the President of the United Arab Emirates, HH Sheikh Khalifa Bin Zayed Al Nahyan, and hosted by the Abu Dhabi National Oil Company (ADNOC), the Abu Dhabi International Conference & Exhibition (ADIPEC) will connect decision makers with technical experts, innovators, and thought leaders, serving as a catalyst for new ideas, policies, and technologies that drive energy sector progress.

Movers and shakers in energy will address the challenges and opportunities facing the petroleum sector, including the vital need to drive operational efficiency in a rapidly changing energy landscape.

"As the energy sector witnesses a transformation, businesses must adapt their strategies not only to survive today's challenges, but also to create a resilient foundation for what tomorrow brings," said Ali Khalifa Al Shamsi, CEO of Al Yasat Petroleum Operations Company and ADIPEC 2016 chairman. "As the global meeting place for oil and gas professionals, ADIPEC offers stakeholders access to real on-the-ground intelligence and information on the latest industry developments."

ADIPEC will host more than 2,000 exhibiting companies, 8,500 delegates, 700 speakers, and 25 international pavilions, including major oil producing countries, such as the USA, Saudi Arabia, China, and Russia, as well as emerging markets, such as Indonesia, Malaysia, and Spain.

ADIPEC 2016 is set to host more than 100,000 visitors from 125 countries

Prestigious programme

The ADIPEC Conference Programme, organised in collaboration with the Society of Petroleum Engineers (SPE), will commence with a prestigious opening ceremony, including keynote presentations by H.E. Dr. Sultan Ahmed Al Jaber, UAE Minister of State and CEO of the ADNOC Group of Companies, and Rex W. Tillerson, chairman and CEO of Exxon Mobil Corporation.

Three Global Business Leader sessions will invite CEOs of the world's oil giants to the stage to shed light on critical industry topics, including a world outlook for the oil industry, the developing role of gas and LNG, and effective leadership strategies.

Confirmed speakers include Patrick Pouyanné, chairman and CEO of Total; Bob Dudley, CEO of BP; Vicki A. Hollub, president and CEO of Occidental Petroleum Corporation, and Alexander Medvedev, deputy chairman of the management committee at Gazprom.

The programme will also feature two Global Ministerial Dialogues, with insights from H.E. Suhail Mohamed Al Mazrouei, UAE Minister of Energy, H.E. Sheikh Mohammed Bin Khalifa Al Khalifa, Oil and Gas Affairs Minister for the Kingdom of Bahrain, and H.E. Tarek El Molla, Minister of Petroleum and Mineral Resources for the Arab Republic of Egypt. The agenda also includes eight panel sessions, three breakfast sessions, and three luncheon sessions, and 106 technical sessions.

Headlining this year's exclusive VIP Programme is H.E. Mohammed Barkindo, OPEC secretary general, who will provide insights on the world outlook for oil.

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"ADIPEC has a worldwide reputation for providing essential thought leadership on the industry's most significant present and future challenges," said Christopher Hudson, President – dmg events, Global Energy.

Following its successful launch in 2015, the dedicated Offshore, Marine, and Heavy Equipment Zone returns to ADIPEC and is set to attract more than 100 exhibiting companies in support of ongoing global and regional investments in offshore production. Situated on a purpose-build quayside exhibition and conference theatre, the dedicated zone will feature a display of everything from rigs, vessels, and subsea drilling equipment, to pipelines, and tools for reservoir production and mapping.

Meanwhile, eight Offshore & Marine conference sessions will look at industry-specific topics ranging from developing offshore oil and gas fields to new technologies and enhancing safety.

Addressing the need for energy security

Demonstrating its commitment to meeting emerging industry requirements, ADIPEC 2016 will launch the inaugural edition of the 'Security in Energy' exhibition and conference. Supported by the UAE Telecommunications Regulatory Authority (TRA) and the Critical Infrastructure and Coastal Protection Authority (CICPA), the programme will provide valuable insights on the growing need for worldwide industry security across the energy landscape.

> "Movers and shakers in energy will address the challenges and opportunities facing the petroleum sector."

The conference agenda will feature four keynote presentations by H.E. Hamad Obaid Mansoori, director general of the TRA, General Sir Richard Shirreff, former NATO deputy supreme Allied commander for Europe, H.E. Jamal Mohamed Al Hosani, director general of the UAE National Emergency Crisis and Disaster Management Authority (NCEMA), and Abdulrahman Essa Al Muagle, chief information security officer for the National Cyber Security Programme at Saudi Aramco.

Also returning to ADIPEC 2016 will be the ADIPEC Awards, which celebrate innovation, best practice, and excellence in energy for people, companies, projects and initiatives in the oil and gas industry regionally and internationally. Winners will be announced during a prestigious gala on ADIPEC's opening night.

Challenging the perception that the oil and gas industry is a male-dominated environment, the official ADIPEC Women in Energy series will give attendees the opportunity of meeting with peers and discussing the future role of women in the energy arena, with a full day gathering on Wednesday, 9 November.

Young ADIPEC, the hugely successful programme designed to engage the younger generation in the oil and gas industry, is back for its third year and expanding its reach with the launch of the first Young ADIPEC Forum. The programme will also feature interactive 'edutainment' sessions to help students learn more about the energy sector and develop key skills. ■

Expanding and diversifying **for success**

Surendranath Dhanekula, managing director of Sharjah-based Trans Asia Pipeline Services, discusses the company's activities and ambitions in the Middle East and the wider region.

How do you view prospects for your business in the Middle East and the wider region at the moment?

We started as a small business providing services only to onshore pipelines. Over the years our experience, track record and success with some of the complex engineering projects helped us to get a foothold in the offshore segment of pipelines, where time had always remained of the essence for project execution. With an experienced team of more than 100 field persons and our custom designed equipment, in a very short time we were able to break through offshore hurdles, and today we are a reputable company having successfully executed projects for global oil and gas majors as well as national oil companies in Asia. EPC contractors who operate in this region treat us as their partners in project execution, and we are associated with them from the bidding stage.

We see good scope and market growth in the coming five years in the Middle East, particularly in Kuwait and Saudi Arabia. Kuwait is set to double its production in the coming years, and a good number of projects have already been awarded or are at the tendering stage. In Saudi Arabia, the plans are to increase efficiencies and a number of projects are ongoing. Our local presence in these countries will help to drive our growth. In 2016, we also ventured into Qatar, and I foresee that there will be a demand for our services here in the next two to three years. We have also secured our maiden contract in West Africa. We already have some experience in East Africa, and this new contract proves the trust our customers have in us. I personally feel that Africa offers vast opportunities for small but specialised services companies like us, and at present we are looking at it as our next growth driver.

> "We have been focusing more on our process division to drive the overall growth of the company."

How is the low oil price affecting your business?

With low oil prices there is a very serious downward trend and throughout the region, greenfield projects are drying up. With very few jobs available for bidding, there has been immense pressure on pricing for the last couple of years. The reduced oil prices are here to stay for some time now and very quick turnaround is not looking feasible. Hence over the last year we have been focusing more on our process division to drive the overall growth of the company. We have made serious investments from 2012 onwards in this division with which at present we are able to get brownfield jobs and work on routine maintenance jobs for petrochemicals and allied industries.However, having said this, like everyone in the industry we are also feeling pressure of this downward trend, and "operational efficiency" is a buzzword here. We are streamlining some processes and have outsourced a few other. We are investing in IT services to reduce costs and inventories as well as improve our efficiencies.In addition, we are also looking for some diversifications away from the cyclical oil and gas industry and are working on a few internal projects. Although as of now there is no set timeline for these new ventures, we hope to see these coming in 2017.

Surendranath Dhanekula, managing director of Trans Asia Pipeline Services

Are there any current projects you are working on which you would like to highlight?

We have just finished a prestigious project for a national oil company in the Middle East, involving five pipelines. I am pleased to report


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Trans Asia Pipeline Services competency building

that we were able to meet the requirements of a very demanding client and a very tight schedule and delivered this in a safe and professional manner. This was our first project under the supervision of the national
oil company. We are currently working on quite a few jobs in the UAE and Saudi. We have also just commenced work on our maiden Qatar project. This job is for a Qatari oil and gas company and
we are working as a sub-contractor with the main EPC. There are a number of subsea pipeline sections and the project is to be completed in Q1 2017.

We have also diversified and are working on a project in India where we are supporting the main EPC contractor with construction of coffer dam, sheet piling and pipeline beach pull activities. This is one of the major wins for us in 2016, and the project is currently being executed through our Indian sister concern. In the past we worked with this particular customer on a vast number of pipeline projects; however this is the first project of its kind where we are supporting them with construction activities. We were able to win this project despite our relative lack of experience in construction activities. It is certainly a milestone in Trans Asia's history and underscores the trust our customers have in us.There is a mix of onshore and offshore as well as pipeline and process related services, and despite the downward trend in the industry we have a healthy order book.

How are you looking to develop your business going forward?

We are adding a few new and niche services in our portfolio. This year we have formed a joint venture with a UK-based company and we will be providing hot tapping services in the region soon. We are also working on a couple of internal projects and investing in R&D, and soon we will be able to provide integrated pipeline services all across from pigging to inspections and testing, maintenance of existing pipelines, pipeline repairs etc.

We are also exploring new markets. We established our presence in the Far East with offices at Singapore in 2010 and we are now looking west. We plan to have a local presence in Africa and Eastern Europe. We also have experience working in Latin America. In Q1 2016 we have successfully completed a project in Argentina, and we are watching that region very keenly.

> "I am pleased that we were able to meet the requirements of a demanding client and a tight schedule and delivered this in a safe and professional manner.

In general, I certainly wish to see Trans Asia as a global brand (and not just Asian), employing a truly global and diversified workforce which is efficient and professional. I look forward to being recognised for engineering solutions, efficiencies and innovative edge.

What do you think is the secret of your company's success?

"Experience Excellence" has not been just a motto for us but has been our overall work philosophy. Trans Asia today reflects an "Excellent and Experienced" team and product offerings. Commitment, reliability, work safety, responsibility and confidence are our core values and what we stand by. Today we are a global and dependable entity.

Our promise to our clients is to offer the best team of experienced and dedicated service professionals, world class equipment and customised solutions as per client needs, to reduce overall project schedule and hence money. We have grown at a phenomenal rate, however we are also giving prime importance and commitments to safety and QHSE. A very high emphasis on quality, safety, health and environment management is not just a policy but a way of life at Trans Asia. With the highest QHSE standards we optimise value creation for our customers that promotes safety and care for mother nature. ■

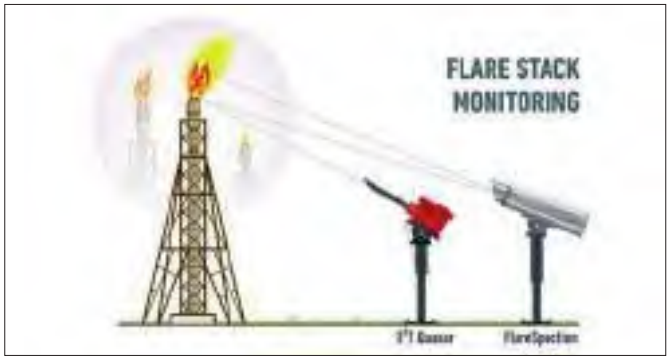
Stand: CN25

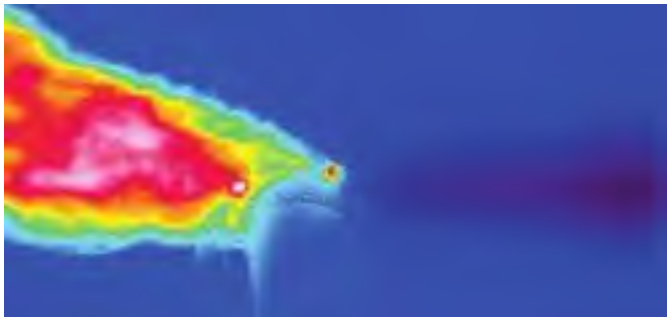
Infrared imaging technologies to improve flare monitoring

FLARING SYSTEMS ARE common in many industries to burn gases before they enter the atmosphere. The safe operation of a flaring system requires the continuous monitoring of pilot flames and flared gases to ensure that vented gases are ignited.

Flare tips in close proximity cause interference from adjacent flare tip interposing flames. The new LumaSense FlareSpection system is designed to provide the clearest flare image and pilot flame monitoring for applications with multiple flare tips in close proximity. With the LumaSense-designed software, trusted pyrometers, and an imaging camera, both pilots and flaring can be monitored effectively, regardless of weather conditions.

FlareSpection camera system in rugged stainless steel enclosure





The flare monitoring thermal imaging system enables users to confirm flare operation remotely and automatically, detecting differences in heat signatures of the flare stack. Designed with special spectral ranges, calibrations, and optics, this system is able to focus clearly through moisture, heavy rain, and fog at even great distances.

In addition, the system includes the capability to log performance for audits, record video for reviewing of historical events, and set up alerts for measurements that may fall outside of user's preset limits. The software also easily connects to the plant DCS via protocols such as Modbus, OPC enabling closed loop integration.

The new system will be presented exclusively during ADIPEC show at stand 13270 in Hall 13.

Contact: LumaSense Technologies, www.lumasenseinc.com, info@lumasenseinc.com.

Stand: 13270

Interserve Engineering & Construction

INTERSERVE ENGINEERING AND CONSTRUCTION (IEC) consists of three companies: Adyard, Madina Group and TOCO, all of which are either subsidiaries or joint ventures of Interserve Plc. Interserve Plc is a global corporation with a strong presence across the UK, Middle East, and internationally; employing over 85,000 people and offering design, consultation, construction, facility management, equipment services and PFI in government and private sectors alike.

Working together with local partners IEC are able to operate their businesses, each delivering award-winning infrastructure and vital support services. With a large and growing Middle Eastern base, Interserve Engineering and Construction have a strong and successful track record within the United Arab Emirates (UAE), Qatar, Oman and the Kingdom of Saudi Arabia (KSA).

Interserve's Engineering and Construction companies work alongside major oil and gas customers, supporting the sector with essential specialist solutions. Their four main business streams: EPC Projects, Fabrication and Construction, Facilities Management: Operations, Maintenance Shutdowns & Turnarounds and Support Services, means that IEC are able to support their energy clients from the very source to the end user.

Adyard, one of the three IEC businesses, based in Abu Dhabi and Fujairah, is one of the region's leading service providers to the oil and gas sector. Adyard operates a number of fabrication yards across the Emirates with significant quayside and load out facilities. Their services include rig repairs, fabrication and technical services, EPC projects and maintenance services.

Another IEC business, **Madina Group,** consists of four companies offering a variety of services and expertise within the state of Qatar. Madina, Qatar International Safety Centre, Qatar Inspection Services and Severn Glocon, Qatar are able to offer their clients a 'one stop shop' approach to all services related to engineering, construction, maintenance and safety

training. Operating since 1997, Madina Group's core focus is "Operational Excellence", via the provision of delivering high quality services to the oil and gas and construction industries without harm to the people or environment.

TOCO, the final part of the IEC group, is a well-established oil and gas service provider in the Sultanate of Oman, which started their operations back in 1965 at the time of commercial oil discovery by building the very first energy infrastructure of the Sultanate. TOCO proudly built the first flowline, the first pipeline, the first tank farm, the first production station, the first overhead power line and performed the first rig move in Oman – all in the late sixties.

Stand: 6210

EMPOWERED PERFORMANCE in manufacturing ball valves and pneumatic actuators

OMAL S.p.A. IS an Italian company specialising in manufacturing valves and actuators. It was established in 1981 for the manufacture of high performance scotch yoke pneumatic actuators, and it rapidly extended production to valves to satisfy requests by clients who needed the complete package (valves plus actuators), building on the long background in the valve market of its founder.

Drawing on its continuous R&D and 35 years' experience in valve automation, OMAL makes ball valves, rubber-lined butterfly valves, pneumatic and electric actuators, pneumatic angle-seat and axial valves.

Omal S.P.A products will be at ADIPEC

OMAL serve more than 90 countries worldwide and many different sectors: chemical and pharma industry, food and beverage, water treatment, oil and gas, petrochemical, GPL, CNG, paint and ink plants, cement factories, power plants, pulp and paper, steel industry, ship-building and marine industries, and many others.

For oil and gas especially, OMAL proposes its line of THOR-series and SUPREME-series (floating and trunnion-mounted ball valves) equipped with its own HD-series (heavy duty pneumatic actuators).

The outstanding asset of OMAL is that it can manufacture in-house both valves and actuators without depending on another supplier: this means perfect matching between valve and its actuator (more efficiency), total control on quality and on deliveries, competitiveness and extended know-how to provide a custom-made automated package.

In addition, thanks to a lean and integrated manufacturing system and a state-of-the-start machining capability, OMAL can meet urgent requirements for valves necessary for maintenance shut-down or supply compete packages to projects by EPC contractors which demand highly-qualified technical support and flexible production.

The philosophy of the company is summarised by our corporate pay-off "EMPOWERED PERFORMANCE" which drives OMAL personnel to create added-value to any operations delivered to customers: it is not only making valves but also supplying the right solutions package to any customer.

Production is MADE IN ITALY and any product is engineered, manufactured, assembled, inspected and tested in our two modern facilities where visitors are welcome to find out more about OMAL'S "EMPOWERED WORLD". Please visit at www.omal.it or write to sales@omal.it for further information.

Stand: 2150

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ADIPEC reveals shortlist for ADIPEC Awards

ADIPEC HAS ANNOUNCED the 31 shortlisted entries for the 2016 edition of the ADIPEC Awards.

The distinguished and internationally coveted accolades celebrate achievement in energy, and recognise the leading companies, individuals, initiatives, projects, and technologies that have demonstrated excellence across eight categories that are essential to industry development.

Abdul Munim Saif Al Kindy, director of Exploration, Development and Production at ADNOC, and ADIPEC 2016 Awards Chairman, said, "Today's new energy landscape and dynamic business climate makes knowledge dissemination fundamental to progress in the petroleum industry.

"Technology and innovation play a central role in this drive towards operational excellence, and an organisation's future ultimately depends upon its ability to deploy effective strategies and solutions that address today's complex business challenges," Al Kindy added.

Nominees were shortlisted after a meticulous assessment by the Regional Select Jury, composed of experts from across the oil and gas industry. Winners and runners-up will be announced at the ADIPEC Awards Gala Dinner, hosted by the Abu Dhabi National Oil Company (ADNOC), at The Ritz-Carlton Abu Dhabi, on Monday, 7 November 2016.


The ADIPEC Awards Committee

"The ADIPEC Awards not only offer companies and individuals, who have demonstrated success, an opportunity to be recognised, but also gives those looking to enhance their operations access to proven examples of industry best practice," said Jean-Philippe Cossé, vice president – Energy at dmg events.

Forming the cornerstone of the four-day exhibition and conference, the shortlisted entries per category and subcategory for the ADIPEC 2016 Awards are as follows:


2015 ADIPEC Award winners

Category 1 – Best Oil & Gas Innovation or Technology
Upstream
Saudi Aramco
Schlumberger
Tatweer Petroleum

Downstream
Abu Dhabi Gas Industries Limited (GASCO), Excelerate Energy
GASCO
Qatar Petrochemical Company (QAPCO)

Category 2 – Best Oil & Gas HSE Project or Initiative
Al Hosn Gas
Saudi Aramco
TWMA, ESNAAD

Category 3 – Best Oil & Gas CSR Project
BP Iraq N.V.
Petroleum Development Oman (PDO) (twice)

Category 4 – Oil & Gas Woman of the Year
Abu Dhabi Polymers Company Ltd. (Borouge)
Kuwait Oil Company (KOC) (twice)

Category 5 – Best Oilfield Services Company
Regional
Galfar Engineering & Contracting WLL Emirates
MEGARME
Trizac Abu Dhabi, Oilfield Supplies and Services

International
Almansoori Specialized Engineering
NAPESCO
Schlumberger

Category 6 – Young ADIPEC Engineer
Mohammed Geer, Saudi Aramco
Mohannad Abdelaziz, Saudi Aramco
Malek Al-Chalabi, Shell EP International

Category 7 – Best Dissertation of the Year
Dr Ali S. Al-Menhali, Imperial College London
Amr M. Obeidat, State University of New York at Binghamton
Khalid R. Alnoaimi, Stanford University

Category 8 – Best Practice Award
Kuwait Oil Company (twice)
Petroleum Development Oman (twice)

Extensive handling equipment range features explosion protection as standard

THE J D Neuhaus extensive range of handling equipment, including hoists and cranes, are all engineered for extremes, providing safe operation in dust laden atmospheres or other explosion-hazardous areas such as the chemical manufacture and processing environments. All the JDN products, which include both compressed air and hydraulically operated units, are explosion protected as standard.

This ensures that all JDN products are safe for continuous and long-term operation in potentially explosive chemical atmospheres as well as the more insidiously dangerous conditions where high levels of airborne dust exist.

The easy to use Profi TI hoist range is the workhorse of the industrial and commercial world, and the operating air supply can be set at 4 or 6 bar pressure, with a standard load lift height of three metres being provided throughout. Other optional lift height requirements can also be specified and accommodated as required.

The Profi TI range of air operated hoists includes a total of 19 models providing lift capacities from 250kg up to an impressive 100 tonnes. Their compressed air power supply is also utilised for control functions. It does not initiate sparks, so providing an unbeatable advantage when hoists are operating in potentially explosive atmospheres. Even greater safety can be achieved by the prevention of sparks generated by static discharges or metal to metal friction contacts.

Standard versions of JDN hoists and crane systems (which utilise Profi TI hoists for lift operations) have the explosion protection / classifications and markings EX II 2 GD IIA T4 / II 3 GD IIB T4.

Increased spark protection can be achieved to achieve a rating of EX II 2 GD IIB T4 and EX II 2 GD IIC T4 rating.

A J D Neuhaus air operated Profi 1 TI with a one tonne lift capacity, suitable for operation in typical hot and dust laden atmospheric conditions

All Profi TI hoists are all 100 per cent duty rated with unlimited duty cycles, so minimising any downtime conditions. Their compact modern design eliminates any protruding control hoses or similar external parts susceptible to damage, emphasising the suitability of the Profi range for even horizontal pulling. These standard hoists are also insensitive to atmospheric dust or humidity and can withstand working temperatures ranging from 20°C to +70°C. Their patented, low maintenance vane motor brake systems ensure fail-safe starting and positive braking, while also being low maintenance as well as providing lube-free operation. Various pendant controls can be fitted for sensitive, single speed, multi-function or remote control operation.

Hydraulically operated versions of the JDN Profi range can also be made available, together with hoists specifically designated for operation within unique working conditions. These include hoists available with compressed air or hydraulic operation, which are suitable for underwater work.

Overhead monorail air hoists having air or hydraulic drives can also be supplied, while Further ultra low headroom versions are also available for lifting operations up to 100 tonnes, including specialised products available for BOP handling up to 200 tonnes. Hoists for specialised lifting in cryogenic conditions down to temperatures of -45°C are also now available. Full crane

A hydraulic JDN crane system in an offshore location

systems together with self assembly crane kits can be provided for onshore/offshore operations with optional compressed air/hydraulic drives.

All JDN products are covered by a worldwide service for annual checks, inspection and repair together with complete overhaul and installation facilities.

Further information is available by emailing info@jdngroup.com. www.jdngroup.com.

Stand: 13452

AkzoNobel to manufacture new passive fire protection product in Saudi Arabia

IN A SIGNIFICANT move that highlights AkzoNobel's commitment to localised manufacturing, the world leader in performance coatings technology and innovation will manufacture its new passive fire protection product in Saudi Arabia.

The all-new Chartek® epoxy passive fire protection (PFP) product is aimed at onshore oil, gas and chemical projects, and can enhance coated steel throughput by 50 per cent daily.

An ideal fit to the region's oil and gas sector, Chartek 2218 helps achieve significant cost savings through its simplified installation and unique rapid cure properties.

Even at low temperatures, faster application and improved production rates can be achieved, which contribute to reduced overall costs compared to other epoxy passive fire protection alternatives.

Andrea Meconcelli, director of Performance Coatings, AkzoNobel Middle East said, "This new innovation allows for an increase on steel throughput of up to 300 per cent per day compared to cementitious PFP and 50 per cent compared to any other epoxy PFP; that translates into huge savings for our customers."

"At a time where cost savings are paramount in the oil and gas industry, Chartek 2218 addresses many areas where our customers look for savings," added Gary Chapman, Fire Protection Segment manager. "Delivering a durable PFP coating for site or shop application, alongside the ability to achieve faster project completion at minimal overall cost was our goal when developing Chartek 2218."

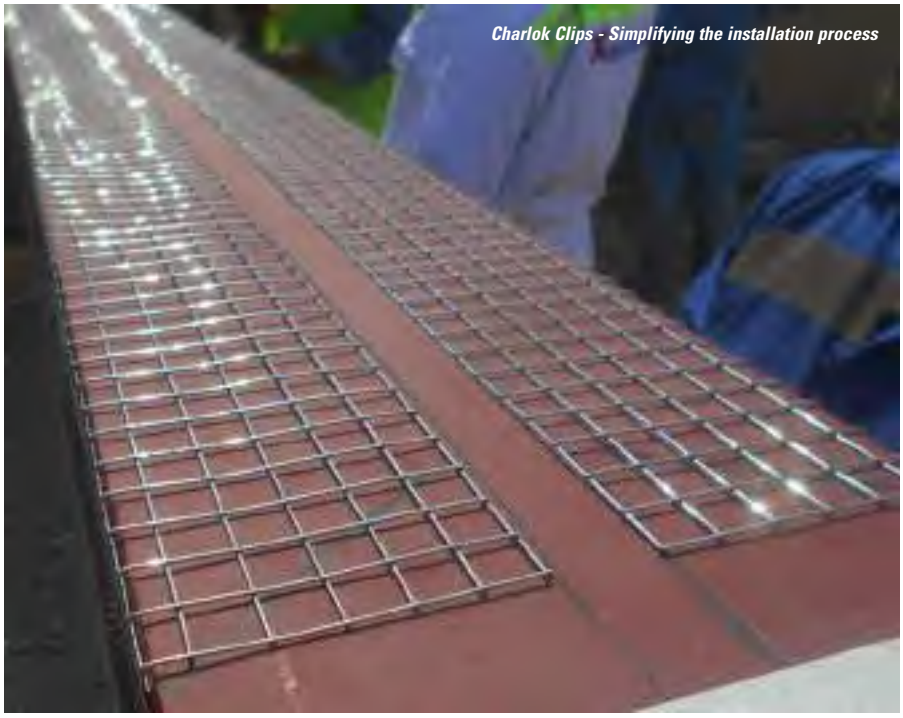
A simplified installation process with the introduction of a new reinforcement solution in Charlok clips, alongside Chartek 2218's unique rapid cure speed, enables faster application and improved production rates. The new product also provides protection from the effects of jet fire for up to two hours and pool fire for up to four hours.

> "Chartek 2218 helps achieve significant cost savings through its simplified installation and unique rapid cure properties"

Gary Brown, director of Operations, said that Chartek 2218 will be manufactured at the Dammam plant of AkzoNobel. "Our Dammam plant has UL classification in place to support the manufacturing of Chartek 2218 in the region. This will enable us to reduce supply lead times. The successful localisation of this technology strengthens our supply chain capability and customer focus and is another landmark in our ambition to bring AkzoNobel's global technology to the Middle East region."

Since its first introduction in the 1970s, Chartek serves as the first choice for passive fire protection within the oil and gas industry. This demonstrates AkzoNobel's heritage and track-record in safety.

Chartek is now the world's most complete range of epoxy intumescent used by all of the world's oil majors. It has been proven in-service in regions as diverse as the North Sea, the Arctic and the tropics.



Charlok Clips - Simplifying the installation process

Localised manufacturing

The localised manufacturing of Chartek is a significant step in AkzoNobel's presence in the region and its commitment to the Saudi Vision 2030, announced by the Kingdom to promote localised innovation, manufacturing and economic diversification.

By being closer to the customers, and through its localised manufacturing, AkzoNobel is also energising the local supply chain. Such localisation initiatives define AkzoNobel's operations in the MENA region.

AkzoNobel creates everyday essentials to make people's lives more liveable and inspiring. As a leading global paints and coatings company and a major producer of specialty chemicals, it supplies essential ingredients, essential protection and essential colour to industries and consumers worldwide.

Backed by a pioneering heritage, AkzoNobel innovative products and sustainable technologies are designed to meet the growing demands of our fast-changing planet, while making life easier.

Headquartered in Amsterdam, the Netherlands, AkzoNobel has approximately 45,000 people in around 80 countries, and its portfolio includes well-known brands such as Dulux, Sikkens, International, Interpon and Eka.

Consistently ranked as a leader in sustainability, AkzoNobel is dedicated to energising cities and communities while creating a protected, colourful world where life is improved.

This is underpinned by AkzoNobel's 'Human Cities' initiative, which is led by sustainability as a key pillar. Human Cities is derived from the company's commitment to support urban environments to cope with the common set of challenges such as demands from a fast-growing population for energy and water, and concerns about climate change.

AkzoNobel can play a major role in this as over 60 per cent of its products are used in buildings, infrastructure and transport. Through its Human Cities manifesto, AkzoNobel aims to create more 'human' urban environments by making cities come alive, enabling people to make more of an emotional connection with where they live.

Stand: 2350

DNV GL "RENEW" notation for ageing jack up rigs – ready to take off

THE DOWNTURN IN OIL prices and reduced revenues of oil companies resulted in very low charter rates for rigs and increased competition due to oversupply. The phasing out of old jack ups would reduce the strain on supply. However some rig owners are spending millions of dollars to maintain their units with particular focus on safety in operations. These major refurbishments are imperative to extend the life of aged jack ups, which shows the commitment from the top management of rig owners. The prospect of getting a contract for well-maintained ageing jack ups has increased with DNV GL's new class notation "RENEW".

The rule for RENEW notation for ageing self-elevating units has been developed based on customer feedback and DNV GL internal discussions to adequately address the challenges with old units, and to develop systematic guidelines for the industry to maintain the required safety level. Classification service as per today lacks follow up of life time extension / system upgrades of offshore units. Owners making a considerable investment in the upgrade of their units have a challenge in demonstrating the result to oil companies who charter the units.

Bijali Nair, regional offshore manager for Southeast Europe, Middle East and India, DNV GL. (Photo: DNV GL)

When these units that underwent major refurbishments go for a competitive tender with units of similar age, they are not obtaining an advantage. "RENEW" notation will differentiate these units from units that have not been well maintained.

The class notation "RENEW" is split into two parts, Structure and Systems. The units complying with structural requirement of the rules will be assigned RENEW (Year, STRUCTURE) and with System requirement RENEW (Year, SYSTEM), where "Year" is the year when notation is assigned. The new notation will be placed after the main class notation and a new class certificate will be issued to reflect the changes. The notation defines a baseline to which upgrade projects should comply. This new class notation will be supporting an owner in making clear the result of their upgrade investments.

For jack ups older than 15 years of age, some oil companies require the legs, spud-cans and jack-houses (leg-to-hull interface) to be reassessed with respect to fatigue and ultimate strength in the elevated survival condition, taking into account the current condition of the unit.

The rule requirement for the RENEW notation partly meets the requirements of asset Integrity assurance programmes of some oil companies and drilling contractors. This means that the unit with RENEW notation will assure the operators/contractors that their requirement of asset integrity which is beyond normal class requirements have been already assessed and approved by the class.

To take advantage of new notation, some drilling contractors in the Middle East region have requested RENEW class notation for their units. The approval of the documents on these units is given by the DNV GL Jack Up Service Centre and notation will be assigned if it is found to be in compliance with the rules. RENEW notation will clearly give the benefit of the refurbishment work rig owners have carried out on their jack ups.

Stand: 9150

Time for the 'new oil order'

The phrase has been coined by some analysts to refer to the current, transformative era of global competition in the oil and gas industry to refer to the challenge in this new unpredictable era: to optimise and connect upstream, midstream and downstream operations.

THE OIL AND gas industry has entered a landmark era of global competition rife with fluctuations, as the global oil and gas landscape continues to shift, leaving much uncertainty for economic projections.

In 2014, American crude and natural gas-liquids production rose to an annual average of 11.7mn bpd, exceeding Saudi Arabia's output (11.6mn bpd). In 2014 it was predicted this trend would continue, but less than a year later, the market saw rapid constriction as oil prices plunged. Today, energy markets continue to experience instability. Despite the downward price pressure triggered by the current supply, producers from Brazil to Bahrain have plenty of reason to keep pumping. The world's appetite for energy is expected to increase 37 percent by 2040, according to the IEA.

European dependence on gas imports is expected to continue to fuel LNG markets. More significantly, improving living standards in growing economies like India and China will increase the need for more output. The implications of this new oil order extend far beyond the latest fluctuations in the global cost of a barrel. On a global scale, we face major challenges such as growing complexity of operations, increasing regulatory pressures, growing skills gap and heightened security risks.

Oil and gas is arguably the world's most asset-intensive industry, and every additional wellhead, pump and compressor raises a company's operational risk. (Photo: curraheeshutter/Shutterstock)

Thony Brito, regional sales manager, Rockwell Automation Middle East

Oil and gas is arguably the world's most asset-intensive industry, and every additional wellhead, pump and compressor raises a company's operational risk. Upstream production is increasingly fragmented because new reserves often lie in far-flung locations. This, coupled with the unprecedented surge in supply, has put new pressures on the midstream market, increasing the need for more and safer pipelines, and other types of petroleum transport and storage. Finally, refineries are facing unprecedented process changes as they adapt to distilling fuels and other products from more and different feed stocks. These dynamics – combined with tightening environmental regulations globally and a shrinking pool of skilled, in-house expertise – are forcing oil and gas companies to find new ways to enhance recovery, optimise processes, increase efficiencies and contain costs.

Thony Brito, regional sales manager of Rockwell Automation, Middle East believes that the opportunities for improving existing plants in the data-driven age are extensive. He says, "The tools at the disposal of the most forward looking companies include, for example, process surveillance technologies, data analysis engines and applications, and workflow optimisation techniques. And that's just the beginning – new controls, drives, and safety enabled technologies play a part, while remote management of assets becomes a reality. Importantly, all of these tools can be comprehensively connected at enterprise-level collaboration platforms."

> "The world's appetite for energy is expected to increase 37 percent by 2040, according to the IEA

Rockwell's oil and gas sales director for North America, Rick Di Danieli agrees. "A connected production environment improves energy usage, equipment reliability and longevity, and provides expanded capacity from existing assets. At the same time, automating maintenance through the use of connected assets can increase efficiency and minimise the risk of catastrophic failures and process disruptions, while maximising equipment reliability."

The answer to tackling the current challenges lies in harnessing the collective power of people, technology and processes using a unified network architecture. Integrated control and information solutions enable oil and gas customers to build a connected infrastructure across the enterprise that meets the requirements of the automation layer and information layer, while providing complete connectivity and integration of data. ■

Rockwell will be showcasing its ConnectedProduction solutions at ADIPEC, on Stand 1230, Hall 1

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A trailblazer for women in **oil and gas**

Intisaar Kindy, director of exploration at Petroleum Developement Oman (PDO) and president of its women's network Hawa, shares her insights.

PDO female employees celebrating International Women's Day

What role do you think innovation plays in tackling current exploration challenges?

It is very important, particularly in the current climate. It will be critical for the longer-term robustness of the industry around the globe. As the saying goes, "necessity is the mother of invention". At PDO, we have around 50-70 new technologies being explored at any time, from solar EOR to surfactants and polymers, the fundamental aim being to produce more hydrocarbons in a safer, more efficient and responsible way. For exploration, the focus is on innovation technologies that can bring our finding costs down. We use innovation to target low unit technical costs and risks, mitigating high-risk prospects which is especially important where expensive projects are concerned. It allows us to deepen our understanding of places at the evaluation stage, before money is spent on developing the resources. Seismic acquisition and imaging technologies have played a pivotal role in our exploration performance in recent years. Last year, we acquired more than 9,000 sq km of new generation 3D seismic.

What are the key enablers for innovation?

At the top of the list is the corporate environment, which needs to be open and inclusive, with a clear strategy and intent on where the company wants to be. The company needs to be open to new ideas, and incubate an innovative environment, encouraging experimentation and thinking outside the box.

Also important is to nurture a collaborative environment with contractors; you need that for innovation and out-of-the box thinking to flourish. It is often the contractors who come up with better ways of doing things.

> "For exploration, the focus is on innovation technologies that can bring our funding costs down."

You also need technically competent staff. At times of crisis, when experienced staff are let go, innovation suffers. PDO is trying to maintain a balance between attracting top talent and retaining capable and experienced staff.

A no-blame culture is another important factor, where people are not afraid to take risks and can learn from their mistakes.


Intisaar Kindy, director of exploration at Petroleum Development Oman (PDO)

What measures can be adopted to promote further participation of women in the oil and gas industry, and to help them attain leadership positions? How is PDO performing in this regard?

PDO is a shining star in this respect, leading the way not only in Oman but in the wider region; over a quarter of our Managing Director's Committee is female (four out of 15 members) and more than 12 per cent of our PDO workforce female, with over 960 on staff. Encouragingly, we have 470 Omani women working in our technical functions, including petroleum engineering, well engineering and exploration, a number which has more than doubled in the past years (from 238 in 2011).

I think we need to move on from talk of 'empowering women' to addressing practical concerns and fostering a nurturing environment where women find themselves with an equal chance to compete and develop to their full potential, and where they feel comfortable coming to work in the morning. However, most importantly, the value of women in the workplace is starting to be seen.

We are doing very well in attracting women. As president of the PDO's women's network Hawa (which means Eve in Arabic), I am focusing on making little changes to address the concerns of women in the workforce, and looking at where tweaks can result in a better pool. It is a two-way process – women need to speak up, as without their input we can't change policy, but sometimes they are reluctant to do so! So I am working on developing soft skills to encourage women to speak up, and creating workshops where women can express themselves safely and freely.

I'm also working on changing policy and bringing the issues of women home to men. Flexible working patterns and the ability to work from home for example could make a difference, but are not yet common practice because of lack of infrastructure and lack of trust. But we are getting there, sand grain by sand grain! My passion is to create a company that is fully aware of what women value to succeed in the work place.

We have achieved some notable successes; a couple of years ago we introduced a two-year trial programme to get 20 female engineers into the field. We spent six months researching what measures would be needed to be put in place to facilitate this, with input from the women involved. They came up with achievable, affordable requirements such as secure accommodation. The project was so successful that the women who took part didn't want to come back to the office! So when you drill down into the real solutions for success in the workplace, it often comes down to simple, affordable, achievable measures.

> "When you drill down into the real solutions for success in the workplace, it often comes down to simple, affordable, achievable measures."

What do you think is the secret of your success - how have you managed to get where you are today?

I think what I do have is perseverance. You can knock me down, but I will get up again. That's especially valuable in a male-dominated environment! You have to be able to say "I messed up." There have been a lot of downs, but it is the ups that shine. I have reached the peak of my career; my passion now is to make a difference with our female employees. I want to dedicate the remainder of my career to lifting up these women and convincing them of the importance of perseverance, drawing on my personal journey.

What advice would you give to young people coming into the industry at this challenging time?

Not to despair, especially in the current challenging environment. The only constant thing is change, there will always be change, and it's all about weathering the storm. After the storm, a clearer picture will emerge, the dust will settle. Stay the course, and the industry will emerge stronger in whatever shape or form. I have been through many of these cycles. The world will always need energy, and energy in whatever form, whether it be oil and gas or renewables, will always require talent. Love what you do and enter the industry with a mindset of opportunity; this is the time when talent is needed and when there is an openness to innovation, technology and new ideas. Be visible, say it as it is, put yourself forward, demonstrate your talent. The door is open! ■

Intisaar Kindy will be speaking at the Women in Energy conference at ADIPEC on 9 November.

High-quality fittings for safe systems

THE INDUSTRIAL VALVES specialist AS-Schneider will demonstrate its valves and manifolds at ADIPEC.

These include the VariAS-Blocks for primary shut-off in the chemical and oil and gas industries. They are designed to replace conventional, multiple-valve installations and are closely coupled to the process piping flange, for connecting process to instruments. The VariAS-Blocks are now available with a metal seated ball valve design. This not only allows reliable pressure measurements, but also protects people and the environment from dangerous and harmful process media.

AS-Schneider also has a number of different valves and manifolds with Fire Safe Approval. The valves offer a safe and reliable shut-off in case of fire. The valves tested continued to work under extreme test conditions. Reliable fire protection is often indispensable for industrial valves. After all they contribute to the safety in such sensitive applications as oil and gas installations or in the chemical and petrochemical industry.

The Double Block & Bleed Pipeline Ball Valves of the Taurus Series were specially developed for use in the oil and gas industry

The Taurus product range will also be on display. These Double Block & Bleed Pipeline Ball Valves developed specifically for the oil and gas industry, use sophisticated technology that have a modern design and are particularly well suited as a primary shut-off for oil and gas pipelines, says the company.

In addition, AS-Schneider is showing an efficient solution for pressure, flow and level measurements with the close-coupled installations (D Series Hook-ups). The D Series consists of a combination of valves, manifolds, screws, gaskets, flush rings, and other special components. The Close-coupled Installations have many advantages: short assembly and test times, reduction of maintenance costs and measurement errors. Gauges are installed as closely as possible to the process line to prevent interference such as vibrations and the clogging and of long impulse lines.

For especially high pressures, AS-Schneider supplies high pressure needle valves which are certified up to 15,000 psi. These are available in both Block, Block & Bleed as well as Double Block & Bleed Design and offer a reliable shut-off even at high pressures, says the company.

The VariAS-Blocks now available with a metal seated ball valve design

AS-Schneider provides a wide range of valves

Stand: 8852

Steel and Pipe Solutions

for the Oil & Gas industry

Our strong network of specialized companies offers customized solutions all along the entire oil and gas value chain. Given the high industry standards of voestalpine, we provide high quality goods, even in small quantities. Our field of competence also includes joint developments together with our partners. If you are looking for an independent, stable and reliable partner, the voestalpine companies Böhler Specialty Metals, Böhler Edelstahl, voestalpine Böhler Welding, voestalpine Grobblech and voestalpine Tubulars welcome you at: **ADIPEC, Nov. 7–10 2016, hall 13, stand nr. 13250** – visit us.

www.voestalpine.com/oilandgas

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ONE STEP AHEAD.

The need for a co-ordinated **approach to security**

ADIPEC is responding to the growing need for virtual and physical asset protection with the launch of its inaugural ' Security in Energy' Exhibition & Conference.

H.E. Hamad Obaid Al Mansoori, director general, UAE Telecommunications Regulatory Authority

ORGANISATIONS IN THE oil and gas industry must adapt to an increasingly interconnected energy landscape by taking a streamlined and coordinated approach to security, urge UAE and international experts.

The promise of emerging technology brings with it a growing concern for data and infrastructure protection within the industry, which has proven to be a persistent challenge that needs to be immediately addressed in the region and across the world, say industry leaders.

The Middle East's burgeoning security market is forecast to be worth US$34bn by 2020, with more than 50 per cent being spent on government, energy and critical infrastructure alone, according to a recent Frost & Sullivan report. Meanwhile, figures from MarketsandMarkets show that the

overall critical infrastructure protection market in the Middle East will be worth US$13.07bn by 2018.

In support of regional and global efforts to protect the industry from threats posed by compromised information technology and today's rapidly changing global environment, ADIPEC 2016 will be launching its inaugural edition of 'Security in Energy'.

The programme, which is supported by the UAE Telecommunications Regulatory Authority (TRA) and the Critical Infrastructure and Coastal Protection Authority (CICPA), will feature a dedicated exhibition and conference, providing valuable insights on the growing need for worldwide industry security across the energy landscape.

"Global advances in technology have allowed us to connect with others in a way we never have before. In the energy sector, it has propelled stakeholder collaboration and the sharing of knowledge and information, enabling real-time interaction between experts, professionals, and those working in the field," said H.E. Hamad Obaid Al Mansoori, director general of the UAE Telecommunications Regulatory Authority (TRA).

"However, with greater interconnectivity come greater challenges within information security, making it crucial that we are always one step ahead when it comes to protecting sensitive data. This means organisations need to develop a consolidated, multi-layered strategy for safeguarding critical industry information. The inaugural 'Security in Energy' exhibition and conference at ADIPEC will address those very concerns, inviting the best and brightest minds under one roof to discuss how the industry can shield itself from the very real threats posed by information technology," H.E. Al Mansoori added.

> "The critical infrastructure protection market in the Middle East will be worth US$13.07bn by 2018."

Set to be the annual meeting platform for key regional and international stakeholders engaged in ensuring the safety of the industry, 'Security in Energy' will address both the physical and virtual threats to critical infrastructure.

The conference agenda includes a keynote presentation by British army officer and former NATO Deputy Supreme Allied Commander for Europe, General Sir Richard Shirreff. Conference speakers will also include senior-level representation from industry leading companies, to include the TRA, Saudi Aramco, and the National Emergency and Crisis and Disasters Management Authority (NCEMA)

Cyber threats and attacks against the oil and gas industry in different parts of the world are becoming increasingly complex and sophisticated, targeting both IT and OT infrastructures. Industry experts are calling for continuous improvements to cybersecurity safeguards and protocols in oil and gas facilities in order to protect valuable company information and key operational equipment, as well as to maintain operations in a safe and secure manner.

Recent figures from Cybersecurity Ventures show that spending on protection against cyber attacks is forecast to be a market worth US$13.43bn by 2019 in the Middle East and Africa region alone. Meanwhile, US-based ABIresearch forecasts global cybersecurity spending on oil and gas critical infrastructure to reach US$1.87 bn by 2018.

"In 2016, there is an urgency for nations to adopt national integrated cyber/physical security frameworks to pre-empt the growing external threats that are now constantly exploring vulnerabilities in energy facilities across the supply chain," said Dr Sally Leivesley, managing director of UK-based risk management firm Newrisk Limited. ■

voestalpine to present its range at ADIPEC

VISIT HALL 13, stand number 250 at ADIPEC to learn more about oil and gas products and services provided by voestalpine.

Take a virtual reality tour through manufacturing locations – from Abu Dhabi to Austria, UK and other countries within a few seconds. Get an overview about all oil and gas products and services by using our brand new app. Or get informed about the latest news and developments of companies with on-site representatives.

Böhler Welding informs you about its number one seamless cored wire, engineered by the leading welding consumables developers.

Böhler Special Steel presents its range of premium bar, sheet, plate and forgings in duplex, super duplex and nickel alloys and also introduces its latest addition to the product portfolio; seamless tubes, pipes and hollow bar in stainless steel, duplex and super duplex grades. Highest performance, even at the world's deepest levels.

Seamless steel pipe manufacturer voestalpine Tubulars presents its premium thread connections VAGT® (gas tight), VAsuperior® (gas tight and designed to meet ISO 13679, CAL IV) and VAroughneck® (suitable for rotated strings). This year's highlight will be DryTec® - the lubricant-free solution for Premium Connections.

toughcore®, the new trademark of voestalpine Grobblech, stands for heavy plates with finest microstructure even to the core and thus extremely high toughness, made in a completely new, patented process. This provides unique combinations of properties with respect to thickness, strength and excellent toughness and best weldability, which cannot be produced on any other production route, says the company.

Tubes and pipes are among the products presented by voestalpine. (Photo: lonely/Shutterstock)

Approximately 48,500 employees in 500 group companies and locations in over 50 countries on five continents are continuously working to drive developments forward in various segments (e.g. energy, mobility, aviation), with pleasure in taking on new challenges and love for detail.

Visit www.voestalpine.com/oilandgas for information about all products / solutions for the oil and gas industry or www.voestalpine.com for information about the group.

Stand: 13250

Shaksy International to showcase hazardous area electrical equipment

SHAKSY INTERNATIONAL IS one of the largest stockists/distributors in the Middle East and India region for all types of hazardous area electrical equipment catering to the oil and gas industry. The company has two warehousing facilities in the UAE (JAFZA & Garhoud) and also has two branch offices in Oman and India.

Shaksy International is an ISO 9001-2008 certified company and has established an enviable reputation in the region by providing quality products, prompt services, on-time delivery, continuous improvement in services and full-fledged customer satisfaction, it says.

Shaksy is the manufacturer's representative/distributor/stockist for below brands which it will be displaying at this year's ADIPEC show:

a) Nexans Amercable: Specialised Rig Type P Gexol cables for offshore and onshore applications

b) Nexans Amercable Systems: Top drive service loops for various top drives of NOV, TESCO, Canrig, Le-Tourneau, BOMCO

c) Nexans Kukdong: Navy, shipboard and offshore topside dedicated cables

d) Nexans shiplink cables: Shipbuilding and offshore cables

e) Amphenol connectors: Specialised multi pin connectors - Starline connectors ideal for all type of industrial/aerospace applications and Starline Ex Series certified for use in hazardous environment.

f) Emerson Appleton Group (Appleton, ATX, SOLA/O-Z Gedney) - Electrical products for commercial, industrial, hazardous and adverse environment as per North American and European standards of NEC, CEC, IEC & ATEX (suitable for Class 1 Division 1 & 2, Zone 1 & Zone 2 environments)

Shaksy provides hazardous area electrical equipment for the oil industry. (Photo: jaochainoi/Shutterstock)

Shaksy International will be your one stop destination for all your hazardous area electrical and instrumentation requirements. Please visit www.shakint.ae for more details.

Stand: 8470

Leading in cleaning solutions for the oil and gas industry

KÄRCHER MIDDLE EAST continues its regional leadership in high-performance professional cleaning solutions for the oil and gas industry with its WOMA Eco Master MK3 compact water jetting powerpack.

The ultra high pressure water jet unit comes in the form of a mobile trailer powered by a diesel engine with up to 192 KW (260 HP) capacity. It comes fitted with a WOMATIC 4 automatic equipment condition monitoring system to ensure high operational safety, minimal wear and tear, and economical fuel consumption.

The WOMA Eco Master MK3's versatility sets it apart from its peers. It can easily remove stubborn concrete, lacquer and multilayered coating and can even cut and separate various materials at pressures from 2500 bar. It also has connections that can accommodate an assortment of electro-pneumatic water tools.

A base frame made from light-weight steel profiles makes the WOMA Eco Master MK3 conveniently maneuverable, increasing its mobility.

The unit is eco-friendly, preventing possible leakages from operational liquids via an attached safety trough. Moreover, its noise protection hood made from aluminium enables low noise operation at levels of less than 85 dB(A).

The WOMA Eco Master MK3 is available in three versions at operational pressures of 2500, 2800 and 3000 bar. Standard equipment includes a high-pressure gun up to 3000 bar, 30m electric cable, 20m high-pressure hose DN8 up to 3010 bar, and a round jet nozzle. The unit is approved as a trailer of up to 80 km/h.

With its balance of performance, convenience, safety, economy and sustainability – all hallmarks of the world-famous Kärcher brand – the WOMA Eco Master MK3 is a must-have workhorse for any oil and gas job using water as a tool.

Stand: 13470

The WOMA Eco Master MK3

Fourth year at ADIPEC for Raccortubi Middle East

RACCORTUBI MIDDLE EAST, a Raccortubi Group subsidiary and stockist/supplier of piping materials in stainless steel and special alloys, set out on both its ADIPEC and Middle East journeys in 2013.

Despite having always supplied its products to the major stockists in the Middle East, Raccortubi established its Dubai counterpart to better support its customers, offering them greater efficiency and cost-effectiveness in the form of a local stock in the region.

Raccortubi Middle East stock of pipes, fittings and flanges

The Raccortubi Middle East warehouse is located in Jebel Ali Free Zone (Dubai), from which it offers pipes, tubes, fittings and flanges in stainless steel, duplex, superduplex, 6Mo and nickel alloys. It fulfils complete project package requests as well as ex-stock necessities for maintenance and urgent requirements. Fully-tested and certified products in accordance with stringent market requirements are available off-the-shelf, and are approved by a significant number of end users.

Thanks to the company's positioning within Raccortubi Group, Raccortubi Middle East is able to benefit from the synergies present within the organisational setup. It has a global distribution network together with integrated butt weld fittings' production up to 56" upon which it can call. Besides consistent stock replenishment offered by internal Group manufacturing facilities, it guarantees customers high-quality, cost-effective, flexible solutions to short timescales.

Stand: 1250

New strategies needed to stay **ahead of the curve**

The evolution of the global energy mix will shape future oil and gas investments, say UAE energy leaders, ahead of ADIPEC.

OIL AND GAS companies must demonstrate agility in their approach to business and adapt to a rapidly evolving supply mix by staying ahead of the curve when it comes to industry technology and innovation, urge UAE experts.

Speaking ahead of his participation in the upcoming Abu Dhabi International Petroleum Exhibition & Conference (ADIPEC 2016) in November, Ali Al-Janabi, Shell Abu Dhabi VP and chairman, said that while fossil fuels will continue to lead the global energy mix, a changing energy landscape makes it imperative that the oil and gas community adopts effective transitional strategies both on and off the field.

"There is no doubt that fossil fuels will continue to be a dominant source of energy over the next two decades, however we will definitely continue to see considerable changes in the energy mix," said Al-Janabi.

"As the oil and gas community looks for ways to reduce CO_2 emissions, high carbon emitting sources, such as coal, may see a sharp decline, while other, cleaner sources of energy, such as natural gas, will play an increasingly important role."

"This evolving energy landscape will shape where investments are being made going forward. As a knowledge-sharing platform that brings the world's leading experts under one roof, ADIPEC will enable stakeholders within the petroleum industry to identify opportunities in line with this global shift towards more sustainable energy resources," Al-Janabi added.

Ali Al-Janabi, VP and chairman, Shell Abu Dhabi

The Total stand at ADIPEC

> "Keeping the costs of such projects at bay will be vital to the future competitive positon of both oil and gas."

Hatem Nuseibeh, president, Total E&P UAE

The Shell stand at ADIPEC

According to the 2015 World Energy Outlook, natural gas is expected to be the fastest growing fossil fuel, with a 50 per cent increase in consumption by 2040. The Middle East and China will be the main centres of gas demand growth, both becoming larger consumers than the European Union.

The report also indicates that one-fifth of the projected rise in global demand consists of gas transported over long distances via very capital-intensive pipeline or LNG projects.

Keeping the costs of such projects at bay will be vital to the future competitive positioning of both oil and gas, say experts.

"At Total we are committed to better energy, and this means deploying sustainable strategies – from producing oil at low cost to exploring new applications of natural gas – as part of our ongoing efforts to meet the world's growing energy needs while preserving the environment and minimising our carbon footprint," said Hatem Nuseibeh, president of Total E&P UAE, group representative in the UAE, and co-chair of one of the key panel sessions at ADIPEC 2016.

"ADIPEC enables stakeholders to stay abreast of the latest industry developments and best practice by bringing all major international and national players in the oil and gas business under one roof to meet and share their ideas and vision for the future of energy." ■


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BOLTRIGHT PRO – Hi-Force's answer to joint integrity

HI-FORCE, THE UK'S leading manufacturer of hydraulic tools, is totally committed to manufacturing products of the highest quality, fully supported by the best technical support and after sales service available. In support of its extensive range of hydraulic bolt tightening tools, Hi-Force has recently launched BOLTRIGHT PRO an innovative, bolted joint integrity software programme, designed to assist engineers, with the provision of accurate bolt load calculations, based on key input data, related to each specific bolted joint. Primarily designed for use in the oil and gas industry, where the safe movement of hydrocarbons, in a leak free environment, is absolutely critical, BOLTRIGHT PRO can also assist in many other industries, where bolted joints are present.

The user enters all available data about the joint i.e. flange size, material and rating, gasket type, bolt size and material grade, lubricant type and operating temperature. BOLTRIGHT PRO will then analyse this data and produce a comprehensive calculation of the required torque or tension to be applied to all of the flange joint bolts, to achieve a leak-free joint. Additionally, BOLTRIGHT PRO will produce a bolt tightening procedure, which will include the correct Hi-Force tool selection, correct sequence of applying the loads onto the respective flange joint bolts and the applicable hydraulic pump pressure settings for each stage of the tightening process.

The new software is designed to assist engineers with the provision of accurate load calculations

The methodology of the BOLTRIGHT PRO software calculations is fully traceable to industry standards, ensuring that the latest best practice procedures are followed at all times. As part of the software joint integrity review process, BOLTRIGHT PRO will also display all of the relevant combined stresses, within the joint, once the bolt tightening is completed. The flexibility of the BOLTRIGHT PRO software enables the user to change any of the input data, in order that optimum integrity can be achieved within each and every joint. For multiple joint applications BOLTRIGHT PRO is also able to compile and store a Flange Joint Register, which can be utilised to control the issue and return of specific work packs, to the bolting crews.

BOLTRIGHT PRO is available for download across all operating systems, under an annual license agreement. To find out more visit www.hi-force.com or contact us for a free seven day trial of the software.

Stand: 140

Bahrain to highlight cross-border collaboration at ADIPEC

WITH OIL PRODUCERS worldwide facing a challenging market, maintaining the value of the GCC's natural resources will be high on the agenda when industry leaders from Bahrain meet their counterparts from across the region at ADIPEC.

With global oversupply and a constrained economic outlook in several key markets impacting on prices, collaboration, innovation and efficiency are priorities for oil producing economies. A highly successful programme that sees Bapco provide storage, refining and transport infrastructure for Saudi Aramco shows how closer integration can benefit the region, allowing the Saudi partner to maximise output by using Bahrain's existing capital investment.

"Petroleum industries will continue to drive economic growth in this region, and cooperation is essential for deriving the greatest benefit from our natural wealth," said Ebrahim A. Talib, Bapco's deputy chief executive for Refining and Marketing. "Our region is setting an excellent example in maximising the value of our strategic hydrocarbon resource.


Ebrahim A Talib, deputy chief executive for Refining & Marketing, Bapco

"ADIPEC has become an essential forum for achieving better outcomes, bringing together leaders and experts in our industry, sharing knowledge and best practices, as well as providing an event where suppliers, purchasers and technology providers, can connect and demonstrate their latest innovations and services that can enhance our industry," added Talib, who will also represent Bahrain's national oil company at ADIPEC.

Long-term resilience has emerged as a critical issue for decision makers, and investors, in the petroleum industry. According to the OPEC World Energy Trends Report 2015, the oil industry has faced a challenging year, with a cooling economic outlook in non-OECD markets, particularly China, where rapid increases in demand appear to be maturing. However, forecasts show continued growth in the global economy, and oil is predicted to remain the world's most significant energy source.

GCC suppliers can expect to benefit from this growth as the balance between supply and demand in the oil market stabilises. The development of high-cost petroleum resources in other regions, such as shale oil, is likely to be remain more subdued as investors question their long-term viability.


Bapco is providing storage, refining and transport infrastructure for Saudi Aramco. (Photo: Bapco)

"The regional NOCs have the most stable and the most cost-effective oil fields in the world, and recent market trends have reinforced their value," Talib said. "The Gulf has extensive, proven reserves, supported by existing infrastructure. We will continue to be the leading region for upstream and downstream hydrocarbon supply chain, and forums such as these help to further improve our cost effectiveness and efficiency. This region is the world leader and we must ensure that we continue to stay ahead of the game and continue to develop and innovate."

New appointment at Leistritz

ON APRIL 1, 2016, Peter Stiffel joined Leistritz Pumpen GmbH as managing director Sales.

"We are glad that we could win Peter Stiffel for Leistritz. With his extensive experience in the fields of sales and customer service he is the right man to replace me in the management," says Heinz-Dieter Roß, who is laying down this post with Leistritz for personal reasons.

Peter Stiffel, managing director sales, Leistritz Pumpen GmbH

"Together we will ensure a smooth transition in the upcoming months. I look forward to meeting the Leistritz team and the world of screw pumps," says Peter Stiffel, who worked for a big German pump manufacturer before joining Leistritz.

For more than 90 years, Nuremberg-based Leistritz Pumpen GmbH has developed, constructed and sold screw pumps for a wide variety of industries, including the oil and gas industry, the petrochemical industry, the chemical industry, the energy/power systems industry and the shipbuilding/marine industry.

Leistritz customers benefit from well-developed technical expertise and strict quality management. The company has branches in the USA (Leistritz Advanced Technologies Corp.), China (Leistritz Machinery (Taicang) Co. Ltd.), India (Leistritz India Pvt. Ltd.) and Singapore (Leistritz SEA Pte Ltd).

Leistritz pumps are built to recognised quality standards (ISO 9001 certified) and in compliance with internationally recognised standards. Leistritz engineers design and construct complete turnkey pumping packages, including pumps, motors, base plates, piping, valving, instrumentation, and monitoring and control panels needed for optimum reliability, performance and economy.

Stand: 13212

Flexitallic to unveil new offshore sealing innovation at ADIPEC

FLEXITALLIC, THE GLOBAL leader in static sealing solutions, will unveil its latest technology innovation for the offshore industry at the Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC) 2016.

The new gasket filler material, which will tackle the problem of flange face corrosion on bolted joints in seawater and hydrocarbon applications, will be the centrepiece of Flexitallic's stand in Hall 12 (12160).

It will take its place alongside a range of market-driven, sealing innovations produced by Flexitallic. This includes Change™, the most significant development in gasket technology since the invention of the spiral wound gasket by Flexitallic more than 100 years ago, the company says.

Change™, which was introduced by Flexitallic in direct response to customers' long-term heat exchanger sealing problems, is a highly-resilient metal-wound gasket. It is designed to deliver the most dynamic seal ever with a track record of performing 60 per cent longer than other gaskets designed for the same application.

Change™ will be displayed at ADIPEC with Flexitallic's highly-innovative gasket material, Thermiculite®, which was developed for use in critical services applications, from cryogenics to temperatures in excess of 1,000 degrees Celsius. The Thermiculite® material is a critical component in eliminating graphite oxidation which limits seal life and seal tightness.

Flexitallic will also highlight its growing presence in the Middle East market at ADIPEC, most notably the expansion of its manufacturing capabilities in the region.

Its UAE-based company, Flexitallic LLC, recently completed a US$4 million investment in a new multi-purpose facility from where it produces a range of sealing solutions for sectors including petrochemical, chemical, oil and gas, automotive, power, marine, desalination and EPC contractors.

Benoit Labre

The completion of the facility at the Al Hamra Industrial Area in Ras Al Khaimah has enabled the company to build upon the market position it has achieved since entering the region seven years ago.

Benoit Labre, managing director of Flexitallic LLC, said, "ADIPEC is the ideal location to unveil our latest sealing innovation, which, I am sure, will attract a lot of interest from the offshore industry. Flexitallic has a real pedigree for meeting industry requirement through its understanding of the challenges faced by variety of sectors and ability to continually solve issues with effective and robust technologies.

"Visitors to our stand at ADIPEC will see how our latest development perfectly complements our existing technologies and will address the challenge of seawater corrosion in offshore applications."

Stand: 12160

Latest pressure relief solutions to be demonstrated at ADIPEC

RUPTURE DISCS AND Buckling Pin Relief Valves (BPRVs) are the two major primary relief devices used to protect a wide range of applications from potentially serious over pressurisation. According to ASME VIII Division I, either may be used as a primary pressure relief device, so dependent on the application, process conditions or customer preference, one solution may be selected over the other. With increased customer expectations on the performance of a pressure relief solution in relation to quality, efficiency, maintenance and the environment, it is not surprising that manufacturers have made significant technological advancements to these devices.

Elfab Limited has led the industry with technically advanced pressure relief products for the past 80 years. Over the past 12 months since Elfab exhibited at ADIPEC in 2015, significant developments have been made in terms of new product developments, expanding Elfab's pressure management range offering both BPRVs and rupture discs, enabling Elfab to better service its global customer base. Elfab understands there is a place for both BPRVs and rupture discs in the market, dependent on a particular design brief or application. However, it is apparent that while technology has advanced significantly over recent years, the benefits of such advances have not been fully adopted by industry. During ADIPEC 2016, Elfab will be emphasising the latest developments to pressure relief solutions and demonstrating how these can help make considerable process improvements for its customers.

An example of Elfab's pressure relief products

Common concerns

Concerns over fatigue, corrosion, installation, notification of function and maintenance costs are all common concerns noted in the industry. Elfab will demonstrate how both BPRVs and rupture discs have developed to overcome such concerns with the latest designs.

For example, customers worry that both solutions may fatigue over time. Firstly, Elfab's buckling pins will not fatigue as they are not subject to process conditions and only buckle at set point. Traditional, forward-acting rupture discs were more susceptible to this problem, however, the latest reverse-acting solutions outperform the original designs. Many reverse-acting discs have been tested to over one million life cycles and Elfab's Opti-Gard™ range benefit from an industry leading tolerance of three per cent, meaning there is little risk of fatigue in even the harshest of operating conditions.

Corrosion can also be a real concern. For buckling pins, the pressure relieving part – the pin – is external to the process conditions, meaning that it will never be in contact with the process media, ensuring low repurchase costs and confidence that the product will not be affected by this problem. Alternatively, rupture discs can be manufactured from a wide range of highly non-corrosive materials and all discs are fail-safe.

Notification of function

Burst detection systems are crucial in order to receive a notification that the product has functioned. For the BPRV, it is visually apparent once the pin has activated. In terms of detection, Elfab are the first manufacturer to introduce the industry's first WirelessHART™ burst detection system. Maintenance tools can also be provided, such as Elfab's Test-Tel device to ensure a visible indication of rupture disc state without removing the disc from its holder. In terms of installation, Elfab offers disc aligment tags, installation locks and RFID detection for correct holder installation.

An example of Elfab's Opti-Gard™ range

As both rupture discs and buckling pin relief valves offer benefits that were not commonly understood, there is still the challenge of selecting the appropriate device for an application. Whether this is a rupture disc or BPRV, Elfab offers the most cost-effective and best performance solution, working with its customers to understand the application in detail. During ADIPEC 2016, Elfab will be on hand at stand 8321 to discuss further.

Potential clients are encouraged to get in touch as soon as possible to set up a meeting with one of our technical experts at the premier oil and gas event – exhibition@elfab.com or alternatively, see the website for further information by visiting www.elfab.com.

Stand: 8321

SPE Annual Technical Conference & Exhibition
Date: 26-28 Sep 2016
Venue: Dubai World Trade Centre, Dubai, UAE

Moving towards a leaner, fitter **oil and gas future**

The 2016 edition made its debut in the Middle East with over 7,500 professionals attending the three-day event.

SPE'S ANNUAL TECHNICAL Conference and Exhibition (ATCE) came to a close in Dubai on 28 September, having seen industry professionals from 91 countries attend the event at the Dubai World Trade Centre.

The event took place under the patronage of the Vice-President and Prime Minister of the UAE and Ruler of Dubai, HH Sheikh Mohammed bin Rashid Al Maktoum, and drew senior speakers from operators, service providers, advisory and research firms and academia.

Reduction and shrinkage were not the only watchwords, however. "The industry also needs to continue to invest and diversify," according to Nizar Mohammed Al-Adsani, deputy chairman and CEO of Kuwait Petroleum Corporation (KPC).

"For NOCs, there is also a responsibility to sustain and expand production," according to Omar Suwaina Al Suwaidi, director of gas management directorate at ADNOC.

Under the theme "E&P 2.0 – Transforming and Shaping the Future" the event – hosted by ADNOC – featured two plenary sessions, six panel sessions, six regional interest special sessions, a comprehensive technical programme and busy exhibition.

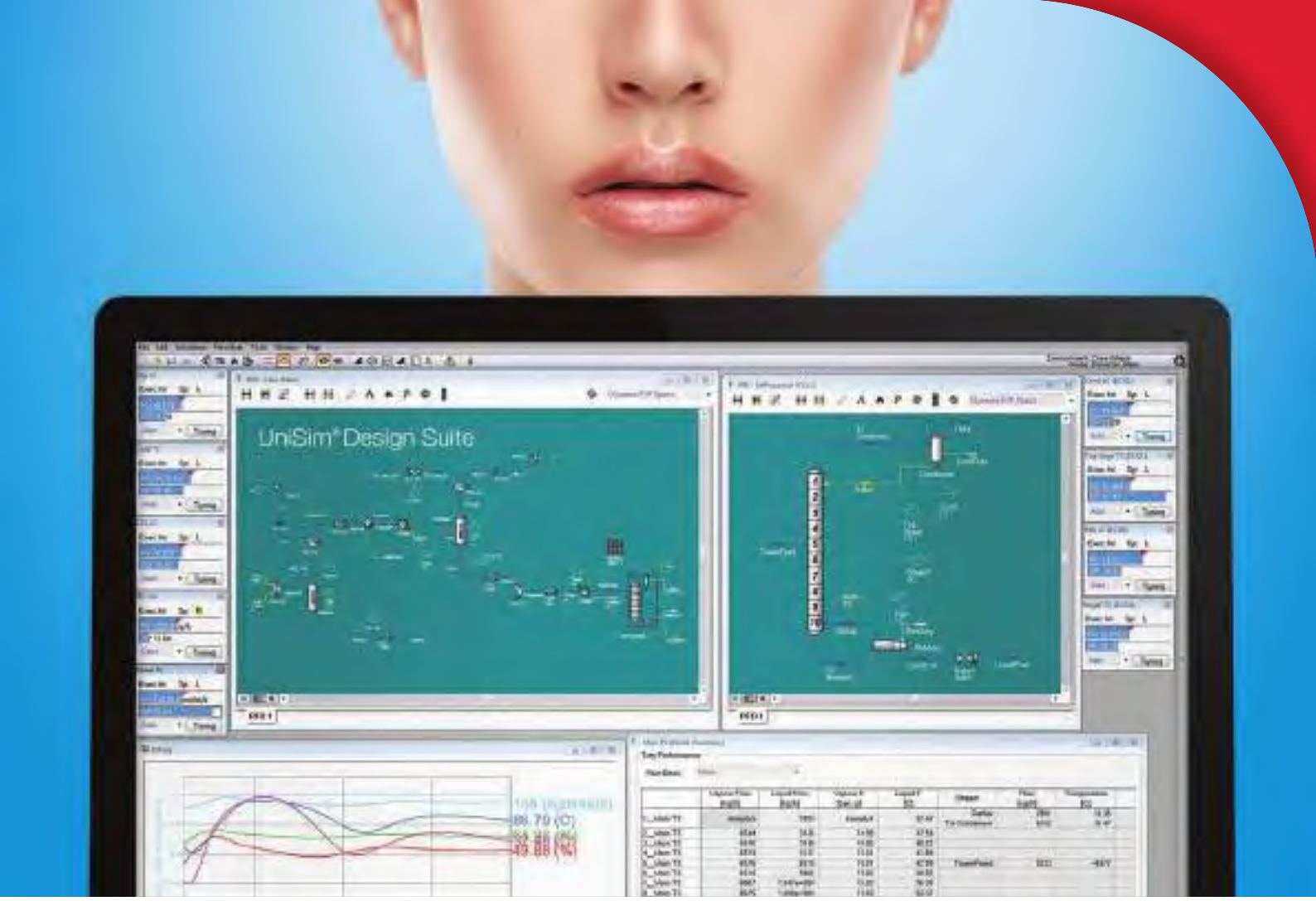
Outgoing 2016 SPE president Nathan Meehan presented SPE's latest achievements and upcoming initiatives.

The 2017 SPE president is Janeen Judah. Looking ahead to her year in office, Judah said, "I am excited to begin my tenure as SPE president and for the opportunity to give back to such a great society. In the upcoming year, I will focus on our members because they are the strength of the society. We will remain true to the core reason I believe that people get involved in SPE – the personal relationships that we offer. During my term, you will see an emphasis on training and education, particularly in developing countries. There is a significant push from governments for operators to cultivate local staff, and SPE can be part ofthe solution. "And, of course, I will reach out to women, because they look to me as an example for their own career aspirations. I also want to champion environmental stewardship and environmental protection through responsible operations. The issue is doing things right as you operate and setting up your operation with the knowledge that someday you will reach the end of field life. Sustainability also means considering the full life cycle of our operations. It's going to be a terrific year, and I look forward to serving such a wonderful organisation as SPE".

Amin H. Nasser, president and chief executive officer of Saudi Aramco, delivered the opening keynote address at the SPE Annual Technical Conference and Exhibition (ATCE) in Dubai.

Saudi Aramco and Shell supported the event as principal sponsors, alongside Kuwait Petroleum Corporation (KPC) as diamond sponsor and OiLSERV and Industrialization & Energy Services Company (TAQA) as platinum sponsors.

Next year's ATCE will take place in San Antonio, Texas from 9-11 October 2017. ■



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GE Oil & Gas aligns strategy with that of Middle East

AT THE ANNUAL SPE ATCE held in Dubai on 26-28 September, GE Oil & Gas announced the signing of a multi-million-dollar contract with Petroleum Development Oman (PDO) for the provision of progressive cavity pump (PCP) equipment and related services commencing in Q3 2016.

This is aligned with PDO's 'In Country Value' initiative and marks the first contract awarded by PDO to GE, for providing PCP equipment and services.

PDO's 'In Country Value' strategy aims at promoting localised sourcing, developing Local Community Contractors (LCCs) and strengthening Omani talent development through training programmes. GE Oil & Gas will sub-contract services to LCCs that will also be trained on the various aspects of PCP services.

A PDO spokesperson said: "The award of the integrated PCP contract to GE for the Nimr fields synergises and aligns with the integrated RRP contract for the Nimr fields previously awarded to GE. 'In Country Value' was an important feature of the negotiations and this contract is further evidence of our commitment to secure long-term sustainable economic benefits for the Sultanate."

Rami Qasem, president & CEO, GE Oil & Gas for Middle East, North Africa and Turkey.

Rami Qasem, president & CEO, GE Oil & Gas for Middle East, North Africa and Turkey, said: "The contract builds on our long-term partnership with PDO and underlines our commitment to investing in Oman and supporting PDO to achieve its long-term goals. The provision of advanced equipment and services will help in meeting and exceeding the average run-life of the PCP equipment, a critical component in PDO's production operations."

Speaking exclusively with *Oil Review Middle East*, Qasem also discussed similar plans about Saudi Arabia.

Oil Review Middle East: Can you tell us about GE's activities in Saudi Arabia and what is GE Oil & Gas doing to promote localisation in the country?

Rami Qasem (RQ): GE Oil & Gas is one of the first companies to be aligning its overall strategy with Saudi Vision 2030. We were given the opportunity from early days to work with all the stakeholders, be it Saudi Aramco, Ministry of Industry, Ministry of Health, and others where we were able to put a solid plan together that will enable GE to fulfil the Kingdom's vision. We are actively promoting localisation here - talent development or technology transfers.

How is GE Oil & Gas helping the Kingdom develop into a digital hub?

RQ: With regards to oil and gas, Saudi Aramco is ensuring that it has access to more efficient and reliable operations for better production capacity. Even when we look at Saudi Electric Company (SEC), its aim is to make sure it can have power delivered in the most remote regions without any hindrance and be able to manage its peak load in the summer. We believe that helping the Kingdom develop the industrial cloud is one of the things that will enable the country to have a strong foundation for the next generation.

In terms of process technology for oil and gas, how do you see the demand growing in the Middle East region? And where do you think the trend will go from here?

RQ: What is happening in the industry today is challenging but it is also healthy competition. One of the things that this market dynamic brings in terms of technology is to make sure that everyone focuses on having more reliable, more efficient systems, thereby growing leaner – not only from an organisational perspective but also from a decision-making one. So I believe the region, based on what we have seen over the last two years and what we believe the next two years are going to bring, is going to continue investing but more towards having efficient operations from their existing assets while they are looking into enhancing production as well.

GE Oil & Gas will also continue investment in better technology to make sure we partner with national oil companies (NOCs) to fulfil their domestic strategies.

Another aspect of growth in the region is localisation. Everyone wants to make sure that they have the right services locally, the right manufacturing capabilities and assets - something that can help have more sustainable partnership and growth for many years to come.

What new technologies is GE bringing to the region?

RQ: At the show we are demonstrating something we call the Field Vantage™. This technology is common in the healthcare and aerospace sectors. We are implementing this technology in the wells. Some of these capabilities that GE Oil & Gas employs today in Oman, Kuwait and Saudi Arabia have enabled E&P producers achieve improvement in oil production.

How has SPE ATCE 2016 in Dubai been for GE Oil & Gas?

RQ: An international event like this in the Middle East region is good to begin with. We were very pleased to see the level of engagement from the NOCs and from our colleagues in the industry. It is a very focused event. We are on a learning curve and so far this looks like a good start. ■

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Halliburton launches next-generation acoustic analysis service at SPE ATCE

HALLIBURTON INTRODUCED ITS Acoustic Conformance Xaminer® service (ACX), a technology to help operators identify and pinpoint costly wellbore leaks by analysing sound waves that describe flow patterns in the formation and casing, at SPE's Annual Technical Conference and Exhibition in Dubai.

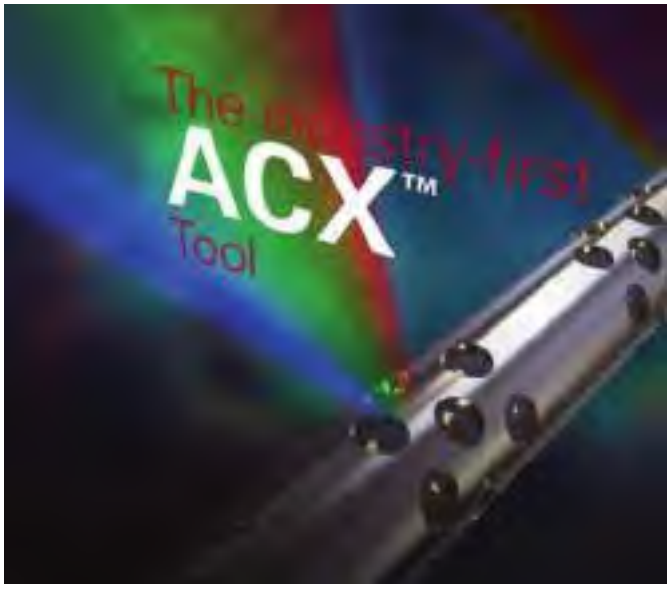
The service employs an array of hydrophones that measure sound in and around the wellbore. Based on the measurements and analysis, this service has the ability to determine which annulus or completions system is leaking in real-time. Unlike other ultrasonic detection technologies, the ACX service stores high-definition data internally, which can be downloaded at surface and sent to the Halliburton formation and reservoir solutions (FRS) group for advanced processing.

The array triangulates on the sound/flow source in or around the wellbore. The array analysis helps eliminate false picks off of frequency and magnitude shows that have more to do with the well structure than the leak source. The radial locator has proven invaluable in some wells that have been logged by identifying which annulus or component of a completions system is leaking.

This data allows engineers to develop 2D flow illustrations to further characterise the leak, reducing uncertainties.

The ACX service saves time by providing a continuous mode to quickly identify areas with possible leaks in the wellbore. It can also take stationary measurements to refine areas where leaks are identified by monitoring activity. In some cases, this enables more precise flow rate and phase estimations at leak locations.

"We designed the ACX service to be part of a full suite of diagnostic services and to be combined with production logging and cement evaluation instruments," said David Topping, vice-president of wireline and perforating.



Halliburton's acoustic analysis tool uses hydrophone array technology to locate and describe communication paths and flow areas—vertically and radially in the wellbore area in real-time. (Photo: Halliburton)

"By providing operators with greater insight and improved capabilities, we help facilitate greater returns from their reservoirs."

The ACX service can be utilised in a variety of environments, including mature fields and unconventionals.

GlassPoint Solar showcases solar-powered oil production at SPE ATCE

GLASSPOINT SOLAR SHOWCASED its proven solar steam generating technology at the SPE ATCE in Dubai in September 2016. GlassPoint's solar energy solution helps reduce operating costs and carbon emissions from energy intensive oilfield operations.

The solar technology has been specifically developed to meet the growing economic and environmental challenges associated with heavy oil production.

Giving details of its innovative energy solution, GlassPoint's director of project development Marwan Chaar said, "Today, the production of oil resources is incredibly complex. A lot of energy is consumed in the extraction of heavy crude. Typically, for every five barrels of heavy oil, the energy equivalent to one barrel is consumed in the production process. The leading method of producing heavy oil is steam flooding, a technique that injects steam into a reservoir to heat the oil and reduce viscosity, making it easier to pump to the surface. GlassPoint's solution uses the power of the sun to generate steam, replacing vast amounts of natural gas traditionally burned in the process."

"GlassPoint has developed an energy efficient, economical way of supplying steam to the oil industry. We are helping operators cut their costs and energy consumption significantly, which are vital considerations with today's low oil prices," Chaar added.

Marwan Chaar explains the technology to a visitor at SPE ATCE. (Photo: GlassPoint Solar)

Hussain Shehab, Kuwait country chair, GlassPoint stated, "Solar grants oil operators with the flexibility to reduce their reliance on conventional steam generation sources. GlassPoint's solar steam generators can cut an oilfield's natural gas consumption by up to 80 per cent and significantly reduce carbon emissions. The gas saved can then be directed to the export market, used for power generation, or to develop new industries."

Following a successful pilot in Oman with Petroleum Development Oman (PDO), GlassPoint was awarded a commercial-scale project, called Miraah, in July 2015. Currently under construction, Miraah will be one of the world's largest solar plants in the world. This landmark project will deliver over one gigawatt of peak thermal energy, generating 6,000 tonnes of steam per day. The steam will be used in PDO's thermal enhanced oil recovery (EOR) operations to extract heavy and viscous oil at the Amal oilfield in southern Oman.

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What's in store at StocExpo Middle East Africa

The two-day exhibition and conference will showcase over 100 major international and local suppliers.

STOCEXPO MIDDLE EAST Africa takes place at the Dubai World Trade Centre on 26 & 27 April 2017. The show was recently rebranded in line with the globally recognised StocExpo portfolio, to reflect the event's rapid expansion and its prime role as the place where tank terminal operators, oil companies, traders and regulators in the Middle East and African regions can gather, network, learn and do business.

The Middle East and African storage sector is experiencing an almost unparalleled growth and has already established itself as one of the most important regions in the world for the oil and gas industry. The two-day exhibition and conference will showcase more than 100 major international and local suppliers, displaying new storage equipment, innovative technology and launching new products to the market. Exhibitors include Emerson Automation Solutions, Emco Wheaton, Loadtec Engineered Systems, Mascoat, CTS, Verwater Shanfari International LLC, Protego and Kanon Loading Equipment to name just a few. These span the entire supply chain, from tank design, construction and maintenance, through to innovations in metering and measuring, pumps and valves, automation and loading equipment and inspection and certification services.

A stand demonstration at last year's event

Exhibitors at a recent event

> "The Middle East and Africa storage sector is experiencing almost unparalleled growth."

The two-day conference runs alongside the exhibition every year, hosting an expert line up of leading industry speakers, providing greater understanding of market dynamics, new ideas, inspiration and growth plans for your business. The 2016 show saw Eng. Ahmed Mohamed Alkaabi, assistant undersecretary for the UAE Ministry of Energy open the show and provide the conference's opening address. It also featured experts from Gulf Petrochem, Fujairah Oil Terminal, Oiltanking Odfjell Terminals Oman, VOTOB and Saudi Aramco, who talked about the current challenges, opportunities for growth and detailed analysis from the past year in the tank storage industry and anticipated the year to come.

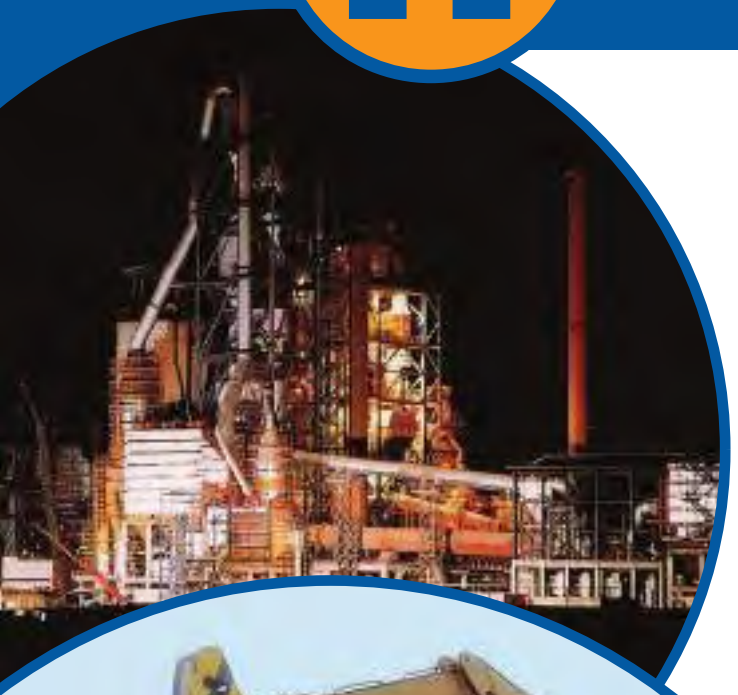
This year, topics include growth and expansion opportunities across the Middle East, innovating terminals successfully, safety and sustainably, oil market stability and the effect on downstream business, challenges for fuel storage and distribution in Africa, Fujairah's role as a trading hub, trade flows and storage market outlook, and regulation compliance. This is just a taster of what there is to come on the conference agenda, the full programme will be announced later this year.

Networking is always an essential element of StocExpo Middle East Africa, and face-to-face meetings continue to be the most effective way to do business.

Placed at the heart of the show floor is the Networking Lounge where visitors can meet with clients or take a break from their business day. The official exhibition networking drinks take place on Wednesday 26 April in the Networking Lounge from 5pm. ■

To register your interest in attending the show as a visitor, delegate or exhibitor, visit the event website: www.stocexpomiddleeastafrica.com

RELIABILITY IN OIL WELL CEMENTS



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Showcasing state-of-the-art technology

The Exhibition of the 12th SABIC Technical Conference (formerly known as the SABIC Technical Meeting) will bring together companies and professionals from across the GCC and the world to showcase their innovative technologies and solutions.

THE EXHIBITION OF STC-12 takes place from 6-9 November in Jubail Industrial City, Saudi Arabia, the Kingdom's industrial heartland, in conjunction with the SABIC Technical Conference. The exhibition provides a collaborative technology and innovation platform which, over the years, has become a prominent event representing a unique opportunity for engineers, project owners, operators, scientists, researchers, chemists and technical experts from SABIC and other industrial companies operating within and in collaboration with the Jubail Industrial City, to network and build on cumulative experience.

The event is being held under the patronage of HRH Prince Saud bin Nayef Al Saud, the ruler of the Eastern Province of Saudi Arabia, home to the majority of the Kingdom's oil, gas and mineral wealth. The opening ceremony will take place on the evening of 6 November in the presence of HRH Prince Saud and other dignitaries.

With over 12,000 industry experts expected to attend, the exhibition takes place in a 30,000 sq m purpose-built exhibition space, with more than 450 exhibitors from up to 40 countries already registered and only 10 per cent of exhibition space remaining. The largest technical exhibition in Saudi Arabia, it will provide a prime opportunity to meet face-to-face with decision-makers from SABIC, Sipchem, Sasref, Sadara Chemical Company, Sahara Petrochemicals Company, Tasnee, Saudi universities and many more companies who are looking to shortlist future suppliers and stay up to date on the latest technologies available in the market.

The exhibition focuses on core industrial sectors in the Kingdom of Saudi Arabia, highlighting diverse solutions from sectors including petroleum and mineral resources; chemicals; transportation and shipping; agriculture and water; communications and electronics; education and training; environment and renewables; health and safety; power and water; infrastructure and development; operations and maintenance; and ICT.

Industrial diversification is at the heart of Saudi Arabia's Vision 2030 plan. (Photo: Gimas/Shutterstock)

The 2016 event takes place against the backdrop of the launch earlier this year of Saudi Arabia's Vision 2030, its long-term plan to diversify the economy and boost local manufacture, and the associated objective of creating a world-leading downstream sector with a focus on promoting advanced technologies and innovation. Abdulrahman Al-Fageeh, SABIC's executive vice-president for Polymers, speaking at a recent conference, highlighted SABIC's role in stimulating innovation and creating jobs by helping lead the way in the development of Saudi Arabia's downstream, commenting, "The petrochemical industry can serve as the cornerstone for industrial diversification into new market segments and industries, in accord with Saudi Arabia's recently announced Vision 2030 plan."

> "The largest technical exhibition in Saudi Arabia, it will provide a prime opportunity to meet face-to-face with decision-makers."

According to the exhibition organisers, the event has generated a huge amount of interest, in particular from China, in the wake of Saudi Arabia's recent visit headed by Deputy Crown Prince Mohammed bin Salman, which has resulted in the raft of joint development proposals, including a potential joint venture between SABIC and a Chinese company to build a coal-to-chemicals complex. Strengthening economic relations with China and other key markets is seen as central to the Kingdom's Vision 2030 aim of becoming a global economic power, adding a further global dimension to the event. ■

Exhibition space is selling out fast. For further information see the website at www.exhibitionofstc12.com, email partnership@iqpc.ae, tel: +971 4 360 2800.

Kanoo Oil & Gas acquires Technical Contracting Company (TCC)

YUSUF BIN AHMED Kanoo is one of the largest independent family owned multinational companies in the Middle East, with an extensive portfolio of complementary business units and strategic partnerships across a range of industry sectors. Established in 1890 as a family trading and shipping business, the company has now evolved into a diversified conglomerate with a dedicated workforce of over 4,000 employees.

Kanoo Oil & Gas, one of the major operating divisions of the company, is the leading provider of products and services to the oil, gas and petrochemical industries in the Kingdom for more than five decades. Kanoo Oil & Gas in its pursuit to move more towards local value addition and thus providing value added services to the customers, has acquired 100 per cent shares of Technical Contracting Company (TCC), a Jubail based limited liability company, specialised in mechanical, electrical, instrumentation, industrial coating, contracting and maintenance services in the Kingdom of Saudi Arabia for the last three decades. TCC is an approved vendor with ARAMCO, SABIC, SEC, SWCC, Maaden, Royal Commission and other major clients in the Kingdom of Saudi Arabia.

TCC skills showcase both implementation and operation, overseeing development to fit specific client needs. TCC's management, engineers and manpower have proven functional and technical expertise combined with hands-on experience, ensuring that its clients receive the most effective and professional service.

According to Khalid Kanoo, deputy chairman of Kanoo Group, the acquisition of TCC is a strategic decision for seamless integration of its business activities with its Oil and Gas Division to provide value added services to all its potential customers and improve overall efficiency of the prevailing business in the Kingdom of Saudi Arabia.

Kanoo Oil & Gas is a leading provider of products and services to the oil, gas and petrochemicals industries in the Kingdom

Ali Kanoo, country manager of the Kanoo Group, added that integration of the two companies will offer clients the same high level of service provided by Kanoo to all its existing customers.

Yusuf Bin Ahmed Kanoo Company Ltd is exhibiting at Stand 212-219 at the Exhibition of the SABIC Technical Conference

SABIC introduces new range of synthetic rubber products

SABIC INTRODUCED ITS new range of synthetic rubber products, being manufactured for the first time in Saudi Arabia, at the K-Show Europe Exhibition in Dusseldorf, Germany, October 2016.

Commenting on the pioneering Saudi-made synthetic rubber products, Abdulrahman Al-Fageeh, SABIC executive vice president, Polymers, said, "We are very proud to be pioneering producers of synthetic rubbers in the Middle East to support conversion industries for tires, automotive, building and construction. With our ideal location, we should be able to reach strategic global markets, particularly Europe, further developing customer intimacy."

Sami Mohammed Al-Osaimi, vice president, Elastomers, PVC, PS, PET, PMMA and POM, said, "Europe is a strategic market for SABIC's new rubber products that will be used mainly for automotive applications, such as tires, gaskets, hoses, and weather seals."

Leading the way in cabling in the Middle East

Mohammad Gharaibeh, area sales manager – EPC, Middle East Specialized Cables (MESC), discusses the company's activities in the Middle East.

What is the focus of development and the key projects in oil and gas sector that MESC Cables is planning at the moment in the GCC region?

The trend of projects in the GCC is shifting from upstream projects into downstream project areas. These are mainly refineries, processing facilities, and facilities supporting production. Recently we have seen evolving requirements for special cables and designs that provide further enhancements to health and safety in such facilities. Typically these cables have more specific requirements, and special designs to meet both improved technical performance, as well as enhanced safety factors for protection of personnel and systems at these facilities. Alternatives to traditional instrumentation cables are being introduced, and we are seeing increasing demand for them with both onshore and offshore facilities.

Being the region's leading special cables manufacturer, we are always working closely with our clients to ensure they receive solutions and alternatives that meet their aspirations and needs. This is frequently achieved through close liaison with system integrators who are providing the end solutions and systems concepts to the clients.

What are the specialised products for the oil and gas sector? How are you aligning your growth strategy in times of lowered oil prices?

For this sector, typically cables are required with special characteristics that differ depending on the location and purpose of the facility. The characteristics can be features such as hydrocarbon resistance, being gas tight, alkaline resistance, or special adaptations suitable for offshore facilities and operations.

As the price of oil has dropped, this has put price pressure on end users, contractors and suppliers. Accordingly, we are working to continuously provide enhanced designs and alternatives with a view to providing the best value product for the end client. Design improvement is a continuous process in MESC to ensure we are meeting our clients' aspirations and requirements in terms of quality, performance and life time cost. Sometimes this has been achieved through providing a slightly higher specification cable that provides better value in the long run. The lowest cost is frequently not the best value. MESC has also been developing products to serve other special sectors such as data transmission, renewable energy, and transportation.

Can you talk about the trends that are leading to the growth of the cables sector in the energy industry?

Energy demand is related to growth, development, and economic. The growth of the energy sector is therefore directly tied to the energy policies of individual countries. In the GCC there are policies of growth in sectors such as alternative energy solutions and renewable energy. MESC is developing suitable products and solutions to serve these industry sectors.

Middle East Specialized Cables at work. (Photo: MESC)

MESC is supplying and serving the energy industry through the full cycle of production, generation and distribution via the utilities and system integrators or providers. This allows MESC to provide solutions from the oil well to the refinery, and from the power station to the light switch.

What are your expansion plans beyond Saudi Arabia and the UAE in terms of production facilities?

MESC has been improving its existing manufacturing facilities in Saudi Arabia and the UAE. Production capacity in both factories continues to be expanded, and both units are achieving higher output levels than the same time last year. As a result, at this time, there are no plans to expand production beyond Saudi Arabia or the UAE. However, MESC is continually reviewing opportunities, so if a suitable one presented itself it would be considered. The last 12 months have seen MESC supply increasing quantities of product outside the GCC into Asia, the UK, Europe, and Africa. If the business case was right, MESC would consider a facility in these areas. ■

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Innovative solutions for today's toughest environments

INTERNATIONAL CABLE MANUFACTURER Tratos has been making specialist cables for power, control, signalling and fibre-optics, and developing composite types for 50 years. It is one of the fastest-growing and most technically innovative manufacturers in the industry, with a successful track record for providing off-the-shelf and bespoke-designed upstream, downstream and subsea cables, says the company.

The company, which celebrates its 50th anniversary this year, is an established name in oil and gas - delivering offshore umbilical cables (in partnership with Brazilian manufacturer MFX) as well as highly specialised submarine cables for a large variety of onshore and offshore operations.

Half a century of research and development and the foresight it brings provides additional advantages when taking on the challenging environments of the oil and gas industry. In an industry that demands exceptional durability and consistent performance from all equipment, approval to relevant standards is vital. Cabling permanently open to the elements or installed alongside heavy duty, industrial equipment that could cause damage, has to work hard to retain its integrity.

Tratos ensures that all its offshore cables are tested extensively in laboratory trials and real-life installations to safeguard exceptional reliability. Tratos' cables meet a wide range of standards, including UK standard BS6883, IEC 60092-353, Norwegian standard NEK 606, Eni Italian standard as well as American and European standards.

Tratos Oil & Gas JBA® is a special cable range designed and manufactured for this market. The JBA family of cables is mud resistant, fire resistant to extreme temperatures and capable of withstanding extreme conditions including water and impact. The cable range is Lloyd's approved.

A constant within Tratos is its focus on the creation of new products with improved performance. The company devotes considerable human and financial resources to the research and development of optimum performance cable products. Its researchers continually monitor cables under stress: the effects of fire and any toxic substances released during combustion. Because of the risk it presents, fire is a subject always under consideration in corporate strategies and in Tratos' Research and Development laboratories. New cables, with special structures and compounds and all the elements necessary to abide by international regulations are regularly reviewed to find any margin for improvement, says the company.

Tratos Cavi celebrates its 50th anniversary this year

Products often require different performance levels according to the countries to which they are exported. This demands high levels of engagement and the analysis of economic parameters for the final product to be competitive as well as high quality in different markets. Tratos' own internal research activity is wide-ranging, thanks to company investment in the latest high-tech instrumentation.

Bosch Rexroth provides the perfect solution for efficient oil production

ONE OF THE leading specialists in drive and control technology Bosch Rexroth's Rexroth R7 offers solutions to enhance the efficiency and reliability of oilwells with hydraulic drives for downhole pumps.

The pump drive R7 is built up of a hydraulic cylinder mounted directly on the well head tubing and a hydraulic power unit (HPU).

After the oil price slump in the Middle East region, the adoption of new technologies has become even more important in order to boost output and tackle global competitiveness. There is a higher demand for those equipment that can provide clean, efficient and cost-effective solutions at the backdrop of this.

The Rexroth R7 compact module design aids in easy installation and quick commissioning on site.

Many oilfields across the region, and globe, still use downhole pumps with mechanical pump jacks. The drawbacks are obvious in this case - they require an enormous amount of energy, thereby exposing the production wells components to maximum mechanical stress. The Rexroth R7 facilitates lower construction heights and allow for the individual adaptation of downhole pump cycle times and stroke lengths to the oil inflow. This makes oil extraction quicker, more energy-and cost-efficient than traditional mechanical systems.

The compact module design aids in easy installation and quick commissioning on site; cycle times can be individual adjusted for increased productivity, which means the maximum lifting speed is not limited by the maximum lowering speed; the pump strokes and speed can be freely and easily adjusted to the oil level and consistency; the cycle has long shelf-life and better reliability. Clients can access direct output and monitor operation data (dynamogram) and the production well site can be directly controlled via the machine control console or via remote data transmission.

It is proven that Rexroth solution is successfully ahead of its competitors when it comes to productivity and efficiency in the oil and gas industry. The Rexroth R7 has been installed by several customers: Wintershall (Germany), Morical & PDVSA (Venezuela), Petronorte & Hocol (Columbia), Shengli Oilfield (China). In addition to having been installed in Indonesia, Argentina and Ecuador.

Technical specifications include:

- Maximum operating pressure: 350bar
- Electric drive power: up to 50kW
- Stroke lengths: up to six metres (standard)
- Lifting force: up to 20 tonnes
- Sucker rod length: up to 4,000 metres

Advantage of Rexroth R7:

- Energy recovering via fly wheel
- Less overwork, because of longer life of sucker rods.

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Electronic pressure gauges for areas subject to explosion hazards

KELLER AG FÜR Druckmesstechnik has introduced no less than five intrinsically safe electronic pressure gauges for use in areas subject to gas explosion risks. The type approvals are compliant with the ATEX Explosion Protection Directive regarding explosive gases. The electronic design of these devices is trimmed to minimise energy consumption, so it is also possible to replace the batteries inside areas with explosion risks. The simplest version, model ECO 1 Ei, offers high resolution and reproducibility for both measuring ranges (-1 - 30 bar and 0 - 300 bar), together with accuracy (typical) of 0.5 per cent FS and an integrated min/max memory. The application range as per the ATEX directive is defined by identification markings Ex ia IIC T5 or T6. Keller's type LEO 1 Ei and LEO 2 Ei electronic pressure gauges feature microprocessor-assisted compensation to ensure an extremely narrow total error band (including temperature errors) of only <0.2 per cent FS over the entire range of operating temperatures from 0 - 50 °C. The zero point can be selected freely within the four measuring ranges between -1 - 3 bar and 0 - 700 bar. An automatic switch-off function guarantees energy efficiency. Both models feature sampling rates of 2 Hz and integrated min/max memories. The special feature of the LEO 1 Ei is its additional

The new Digitalmanometer (Photo: Keller)

memory for peak values. In peak mode (as it is known), even extremely short-lived peak values for system pressure are registered with a sampling rate of 5'000 Hz. These values are often critical for the lifetimes of hydraulic plants. For both these pressure gauges, the application range as per the ATEX directive is defined by identification markings Ex ia IIC T5 or T6. Another version of the "Leo" type electronic pressure gauge, the LEO Record Ei, is equipped with an integrated data memory to record pressure and temperature progressions in the measuring medium. Outside of areas with explosion risks, the data can be transmitted via an RS485 interface to a PC, for evaluation with the Logger 4.X software (available free of charge). The LEO Record Ei can register pressures of up to 1000 bar with a total error band of ±0.1 per cent FS. With a capacitive sensor, this type is also available for very low measuring ranges starting from 30 mbar (±0.2 per cent FS). The application range as per the ATEX directive is defined by identification marking Ex ia IIC T4. Featuring accuracy of up to 0.01% FS, the LEX 1 Ei electronic pressure gauge is a genuine reference and precision measuring instrument that has been specifically equipped with a 5-digit display for calibration and testing purposes. Pressure measurement ranges of between -1 bar and 1000 bar are available. The LEX 1 Ei also offers a min/max memory and a digital interface to generate PC protocols. The application range as per the ATEX directive is defined by identification marking Ex ia IIC T6. Features that are shared by all Keller digital pressure gauges include simple parameterisation and operation with only two buttons. The pressure display can be shown in various physical units that can be selected freely.

From valves to pistons and everything in between

THE SEALCORE NETWORK is looking to expand its product sales in the Middle East.

The Sealcore Network is the result of the union of some entrepreneurial Italian companies active for many years in the production of customised articles and technical components for various industrial sectors. The companies falling under the Sealcore Network are active in industries such as aerospace, wind, mining, primary metals, pulp and paper, naval and marine, food, automation, petrochemicals, pharmaceuticals, hydraulic, dynamic sealing and general industry.

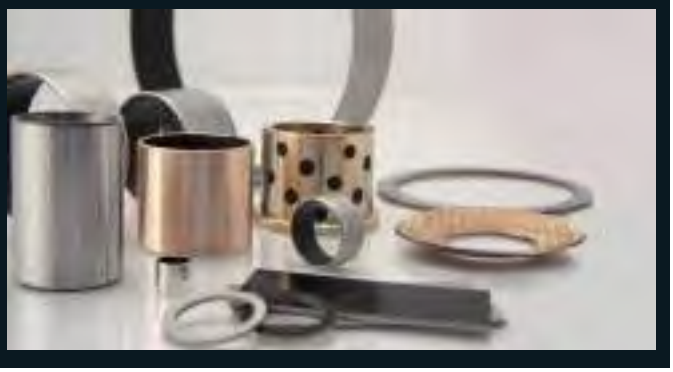
Sealcore products operate in several applications and encompass a variety of equipment, from valves to compressors, pumps, electrical gearboxes and general industry machines, with specific applications related to pistons, cylinders, machine tools, motors, connectors, actuators and more.

The Network serves distribution and the aftermarket business, as well as OEM customers and end-users, engineering solutions to the applications.

The 12 companies that fall under the network comprise a total of 582 employees and reported US$118mn in sales last year. More than US$16.7mn is planned to be invested in the year 2015-2016 in addition to the US33mn already invested between 2012 and 2014, in order to strengthen, expand and modernise the existing production facilities, all located in Italy, and extend the presence of the Network abroad through new offices and warehouses.

The lean management and a focus on customer service, in addition to the quality made in Italy guaranteed, are the strength of the Sealcore Network, according to the firm, which has been structured on the basis of seven main activities, where three are particularly dedicated to the O&G related business: ORINGONE: Large diameter and Endless O-Rings produced with an innovative step-molding method (www.oringone.com); FLUORTEN: PTFE and HPP – High Performance Polymers. Stock shapes and customised engineering components (www.fluorten.com); SLIB ITALY: Bearings and bushings for valves and other applications for the hydraulic, power supply and metal industry (www.slibitaly.com).

Some examples of Sealcore products



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A double-acting pump for oil and gas

PARKER AUTOCLAVE ENGINEERS, part of Parker Hannifin, has released an innovative new air driven liquid pump, the AHL118.

A high volume, double-ended, double acting high pressure pump, the AHL118 is designed for use in oil and gas, chemical, industrial and research applications. The pump operates to a pressure range of 23,000 psi and at 25.5 litres per minute. The AHL118 is designed to be extremely robust, featuring a carbon-based prioritised coating to the plunger, which is three times harder than Stellite. This extends the lifespan of the seals and reducing downtime, repairs and servicing, delivering major savings to the customer.

All AHL118's hydraulic parts are manufactured from stainless steel. (Photo: Parker)

All AHL118's hydraulic parts are manufactured from stainless steel, making them very durable with extended mean time between maintenance (MTBM) and increasing safety. All AHL118's pump hardware is manufactured from stainless steel, which is anodized to the bottom and top caps for superior corrosion resistance.

Faster confirmation of pipeline safety

A SIMPLE VIBRATION test can help oil and gas companies prevent pipeline spills in a way that is faster and cheaper than conventional methods, a UBC study shows.

The study, conducted at UBC's Okanagan campus, found pipeline imperfections could be identified by 'tapping' the side of a pipe and then measuring the resulting vibrations, known as modal analysis, against the vibrations predicted by computer models.

"After developing the mathematical platform and entering it into a computer, we can predict what the level of vibration should be if the pipeline that is being tapped is free of imperfections," says Hadi Mohammadi, assistant professor of engineering. "When I conducted the tap test on actual pipeline material and looked at the resulting patterns of vibrations, weak points could quickly be identified.

"This method of attaching small machines to pipelines that are above ground and having them tap and measure vibrations offer a faster and cheaper way to find cracks or patches of internal rust than the conventional method of using imaging techniques."

Mohammadi began employing his 'tap test' theory on pipeline material after testing its validity on human bones. The 'tap test' was equally useful in identifying areas of deficient bone density, which could be used to help identify conditions such as osteoporosis.

Caterpillar launches latest gas engine with water cooled manifolds

CATERPILLAR OIL & GAS has announced an open order board for the Cat G3516J gas engine. Rated at 1029 bkW (1380 bhp) 1400 rpm, the updated engine features water cooled exhaust manifolds which significantly lower surface temperatures without sacrificing on horsepower or emissions.

"The G3516J is built on the proven reliability and durability of the G3500 engine platform," said Bill Mermoud, market development consultant with Caterpillar Oil & Gas. "This year we are celebrating the 35th anniversary of our 3500 engine line and the excellent customer value this product line has delivered." The Cat 3500 engine platform is a key part of Caterpillar's line of gas compression engines and their power, performance, durability, versatility and sustainability.

The engine has the ability to burn a wide spectrum of gaseous fuels. (Photo: Caterpillar)

The engine has the ability to burn a wide spectrum of gaseous fuels and the robust diesel design prolongs life and lowers owning and operating costs. "The Ultra Lean Burn Technology (ULB) of the G3516J uses an advanced control system, an optimal turbo match, and a sophisticated combustion recipe to provide excellent air and fuel control. This allows for the lowest possible engine-out emissions, the highest fuel efficiency and improved altitude capability." states Mermoud.

New Emerson multiphase flow meter released

EMERSON AUTOMATION SOLUTIONS has introduced the Roxar MPFM 2600 M multiphase flow meter. The Roxar MPFM 2600 M is a flexible and easily manageable wellhead measurement solution based on a field-proven technology platform. The meter meets the needs of many challenging applications and can be a cost-effective solution for more constrained budgets. The meter is ideal for customers with direct and continuous wellhead multiphase flow monitoring needs.

The Roxar MPFM 2600 M is part of the scalable Roxar multiphase product family and provides flexibility as fields mature and conditions change. The compact meter can be easily retrofitted in the field, delivers straightforward installation and commissioning, and has been specifically designed to meet operators' capital expenditure and varying field requirements.

Third generation Roxar MPFM 2600 M improves measurement and reliability. (Photo: Emerson)

"The MPFM 2600 M is designed to help operators manage costs and increase efficiency while enhancing production and making smaller fields more viable," said Patrick Babka, vice president and general manager of Roxar, Emerson Automation Solutions. "It is also ideal for applications requiring one multiphase meter per well, allowing operators to track multiphase flow from all of their individual wells accurately and cost-effectively."

The MPFM 2600 M can identify and measure non-symmetrical flow in varying flow regimes, providing improved measurement uncertainty monitoring and reliability. The meter includes the advanced signal processing, field electronics and electrode geometry innovations of the third generation MPFM 2600.

Different modules can be placed into a variety of configurations and software modules are available to help with challenging applications including flow back measurements, well testing and allocation metering.

Ice Qube announces new range of air conditioners

ICE QUBE, INC. has introduced its new range of ordinary and hazardous locations Class 1 Division 2 Groups A, B, C, & D air conditioners, the Evolution Series.

The Evolution Series standard features include full UL certification on all options, a compact foot print which makes this unit the perfect fit for smaller cabinets, three position condenser air flow with the option to direct hot discharge air in different directions.

All the class 1 division 2 units come with a standard pressurisation fitting. The Evolution Series class 1 division 2 models do not require purging as a protection method, but has included it anyway. For general purpose models, the pressurisation fitting is a good option when enclosure purging is necessary in ordinary locations. A powder coat finish is usually made standard on durable 16 gauge welded steel construction, along with making 304 or 316 stainless steel available.

The Evolution Series standard features include a standard digital controller with programmable temperatures and alarms. The controller can be installed on either the front or the rear of the unit, inside or outside of the enclosure. The Evolution Series can be used with or without purge system, uses environmentally friendly refrigerant, with efficient, quiet, and long-lasting rotary compressor. All the air conditioners in the series use a flush mounted 10 micron electrostatic filter, that allows it to be easily removable, cleanable, and reusable.

The company is an ISO 9001:2008 certified manufacturer of innovative cooling systems. (Photo: Ice Qube)

Extreme ambient operating temperature ranges are -40 degrees celsius to 60 degrees celsius.

To increase flexibility, the Evolution Series features an internal configurable control panel where the AC power input is situated, and depending on the options chosen, this panel could also include a digital controller, an ethernet port, and an alarm output.

The Evolution Series is a good fit for both ordinary and hazardous location areas. Industries and applications include – automation control panels, electrical control panels, distributed antenna system cabinets, kiosk and digital signage, cellular transmission cabinets, telecom, water treatment facilities, chemical, petrochemical, oil refineries, and onshore/offshore drilling operations.

New exploration valuation platform

THE POWERFUL EV2 decision support platform launched by CGG Robertson and Woold Mackenzie enables oil and gas clients to determine the value of undrilled exploration acreage in the world's most prospective basins, representing an industry first in terms of coupling a flexible valuation tool with a rigorous and detailed geological knowledge base in an intuitive environment.

EV2 differentiates volume and value potential at basin, play, and block scales and combines this analysis with unique functionality, such as the ability to change underlying subsurface modeling assumptions. Users can incorporate proprietary knowledge from seismic, geologic data and in-house expertise to calibrate yet-to-find reserve assumptions, subsurface risk maps, and oil price assumptions. Custom scenarios allow quick comparison of farm-ins, license rounds, and new deal opportunities for new ventures teams, petroleum economists, and financial analysts.

The platform now covers 100 priority basins around the world in areas with leading exploration potential, upcoming license rounds, and high-profile prospects to help clients secure the best value return on their investment. A further 80 basins will be released between now and March 2017, resulting in a comprehensive global data set. EV2 allows users to value corporate acreage portfolios in an objective, comparable, and consistent manner.consistent manner, helping to fill a critical gap in the market.

HOERBIGER releases first eVCP

HOERBIGER HAS ANNOUNCED the release of a world first electric, stepless variable clearance pocket (eVCP). For example, a capacity increase of 1 mmscf/day can earn an additional US$3.5mn over the course of five years (assuming a natural gas price of US$2.00/mscf). The new innovation allows fine adjustments to compressor capacity and load by signalling eVCP to increase or decrease the volume pocket. Operators can now run compressor drives near maximum torque which also maximises the compressor's throughput.

"With eVCP, our customers are able to automatically adjust to field conditions to optimise engine load and compressor throughput," said John Metcalf, senior VP of sales and engineering at HOERBIGER Corporation of America.

The innovation that makes the eVCP possible is its ability to overcome the gas pressure to move the pocket piston. To make electric actuation possible, motor torque is converted to linear force using a gear box and lead (power) screw.

The HOERBIGER R&D Team developed a unique hybrid nut using a polymer sliding surface inside a steel casing. The polymer provides low friction and high durability in the face of repeated blows from the compressed gas. The steel casing prevents the polymer from extruding.

The unique screw mechanism is oil-free, and the polymer component of the hybrid nut operates with enough friction to make the system self-locking. The drive motor only operates while changing the volume of the clearance pocket. HOERBIGER's eVCP systems have been undergoing field trials since April 2015. The eVCP effectively automates the variable-volume clearance pocket.

Optimising asset management

One Virtual Source provides a software framework to integrate existing data sources and third-party software systems into repeatable, best-practice workflows.

A PRODUCING FIELD is a very complex asset to manage, and demanding in terms of the breadth of expertise required to exploit it: G&G, reservoir, drilling, completions, production, facilities and equipment, pipelines, finance, and so on. Each group has its own basket of favourite tools, databases, and key metrics to evaluate which often do not support cross-group workflows. The volume, diversity, frequency and complexity of data generated over the life of that asset are stumbling blocks for the industry. During the current period of oversupply and low price, which results in lower budget, loss of expertise and more difficult performance goals, the relevance of this issue grows.

Whether it is an up cycle (more drilling, untrained people) or a down cycle (loss of expertise, focus on operational efficiency), managing the collection, analysis and storage of production data is a great challenge for the industry. Technology has amplified this data issue in the last 15-20 years, and companies are even more focused now on efficient practices. There is the need to search for solutions that match the technological changes and are robust enough to support engineering processes while being practical and cost-efficient.

Automated workflow system

Over a decade ago, One Virtual Source (OVS) launched a software platform aiming to tackle such an endeavour. The main concept behind the OVS platform is simple (Figure 1).

- Connect the framework to the existing data sources without moving the data. To the user, it should not matter whether it is one data warehouse or 20+ niche data sources. The focus should be on the data needed to support a best practice.
- Integrate the existing analysis tools needed to support data interpretation and expected analysis processes. This list might include products supporting GIS, well models, simulators, calculation engines and so on.

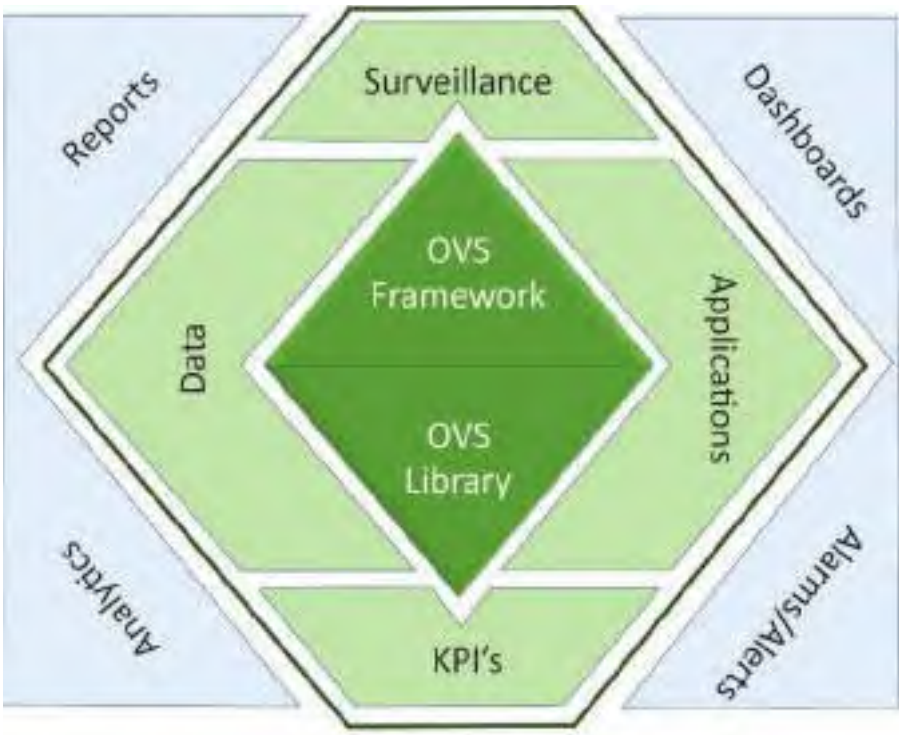

Figure 1: The Framework enables data and third party application integration and once configured allows significant workflows to be automated.

- Implement surveillance-by-exception rules to automatically analyse the data using the framework routines or the third-party tools, and generate notices, alerts, or alarms when an expected result diverges from plan, or there is a change in operation.

> "Managing the collection, analysis and storage of production data is a great challenge for the industry."

- Leverage pre-configured, OVS workflows, including adjustments related to field/process specifics, to automate asset management and/or analytics requirements: water flooding diagnosis and surveillance, artificial lift surveillance and optimisation, virtual metering, water handling, marginal well analysis, compression optimisation, cyclic steam, well and asset financials, and dozens more across the asset management cycle (see Figure 2).
- Extract reports, maps, plots, plans, analytics and outputs without pushing the engineer to other applications like Excel or PowerPoint unnecessarily.
- Configure the system in such a way that these processes can be replicated to

Figure 2: Screenshots of the different processes of the OVS automated workflow system.

other assets where similar workflows are required, regardless of the data sources or third-party tools.

The processes might be more data driven or heavily reliant on complex modelling tools. Either way, the system is configured for each asset to ensure field problems are being solved.

Benefits of automation

Engineers and operators who have used this system have reported that it has helped to improve production in a meaningful way, even reducing a three-man week effort into minutes. As these individual improvements are stacked up across the tasks required to manage an asset, the impact can be fairly remarkable. Even in focused, relatively short projects (a few months), operators have achieved results including:

- 5–30 per cent production gains across 4,500 gas wells by optimising plungers.
- 160,000 man hours saved in one, onshore business unit through automation efforts in drilling reporting, reservoir and production.
- Four per cent production improvement on 400,000 bbl/day field through automated gas lift optimisation.
- Doubling the number of wells that can be reviewed on a weekly basis with the same headcount.

When operators are provided the promise of digital oilfield at a low cost, in short time frames, they are more than capable of targeting the workflows required to generate value at the field or corporate level. Excel becomes a secondary support tool, not the primary analytics engine and data management platform. Consequently, projects come quickly and efficiently, and production improvements follow. As a byproduct, when the data is integrated, data quality and missing data are rapidly exposed, and broad analytics become a straight forward activity. The reporting can be captured at a very detailed level for engineering analysis or at a more regional level for executive summaries.

> “This system has helped to improve production in a meaningful way, even reducing a three-man week effort into minutes.”

Asset management automation will continue to expand quickly in the future, either as small, focused projects designed to capture quick wins, or, as larger initiatives across broad sections of the upstream energy business. Although the typical end user is tied to the operators, technology and service providers will help to accelerate the uptake as the practice tends to enable technologies (SCADA Systems, wireless sensors, multi-phase flow meters, compressor simulators, flow assurance systems) in a rather seamless fashion. This is a practical way of accelerating broad technology adoption because it makes new technology more easily adopted and applied by the operators.

OVS is already working with companies like Emerson, and joint OVS / Emerson projects are being developed across the Middle East. These aim to enable the production and reservoir teams to seamlessly incorporate the data and diagnostics from Emerson’s field measurements into their workflows without having to find and load that information into the typical suite of evaluation tools.

With systems in place in over 20 countries, a library of workflows that continues to grow across the upstream and more recently into the midstream, asset management automation delivers a cost-effective impact. A community of developers is emerging within the operators, technology providers, and service organisations to deliver specific best practices as workflows. As this community grows, so will production improvements and cost savings. ■

Project Databank

Compiled by Data Media Systems

OIL, GAS AND PETROCHEMICAL PROJECTS - UAE

ADCO - Bab Far North CO2 Injection Pilot Project	Abu Dhabi	Oilfield Development	305,000,000	Construction
ADCO - Mender Field Development	Abu Dhabi	Oilfield Development	350,000,000	Construction
ADCO - North East Bab (NEB) - (Al Dabbiya) ASR	Abu Dhabi	Oil Production	2,500,000,000	EPC ITB
ADCO - North East Bab (NEB) - Phase 3 (Al Dabbiya)	Abu Dhabi	Oil Production	2,500,000,000	Construction
ADCO - North East Bab (NEB) - Phase 3 (Rumaitha-Shanayel)	Abu Dhabi	Oil Production	2,500,000,000	Construction
ADCO - Rumaitha North CO2 Injection Project	Abu Dhabi	Oilfield Development	200,000,000	Construction
ADCO - South East Asset- Sahil Field Development - Phase 2	Abu Dhabi	Oilfeld Development	175,000,000	Construction
ADCO- Bab Integrated Facilities Project- Expansion	Abu Dhabi	Oilfield Development	3,000,000,000	Feasibility Study
ADCO- Bu Hasa Shuaiba South- Gas Lift Network	Abu Dhabi	Gas Network	800,000,000	Construction
ADCO- Buhasa- Wellhead Automation	Abu Dhabi	Oilfield Development	100,000,000	FEED
ADCO- Fujairah MOT - Hydraulic Pressure Recovery System Turbine	Fujairah	Oilfield Development	800,000,000	FEED
ADCO- South East Asset- Tie-in Project	Abu Dhabi	Oilfield Development	650,000,000	Construction
ADGAS - Das Island Flaring & Emission Reduction	Abu Dhabi	Gas Production	100,000,000	Construction
ADGAS- Integrated Facilities Project (IGD-S) Expansion (Phase 4)	Abu Dhabi	Gas Field Development	1,057,000,000	EPC ITB
ADGAS- Integrated Gas Development (IGD) - Expansion (Overview)	Abu Dhabi	Gas Field Development	1,057,000,000	EPC ITB
ADGAS- Integrated Gas Development (IGD) - Expansion (Phase 1)	Abu Dhabi	Gas Field Development	1,057,000,000	Construction
ADMA OPCO - Nasr Full Field Development - Phase 2 (Package 2 - Platforms)	Abu Dhabi	Oilfield Development	200,000,000	Engineering & Procurement
ADMA OPCO - Nasr Full Field Development - Phase 2 (Package 3)	Abu Dhabi	Oil Field Development	200,000,000	Construction
ADMA OPCO - Umm Shaif Super Complex- Additional Gas Supply & Flexibility Assurance	Abu Dhabi	Gas Production	494,000,000	Construction
ADMA OPCO- Nasr Full Field Development - Phase 2 (Package 1 - Wellheads and Pipeline)	Abu Dhabi	Oilfield Development	900,000,000	Construction
ADMA OPCO- Nitrogen Plant Upgrade	Abu Dhabi	Nitrogen	55,000,000	Design
ADMA-OPCO - 100 MBD DAS Facilities Upgrade Project	Abu Dhabi	Oilfield Development	48,000,000	Construction
ADMA-OPCO - Nasr Full Field Development - (Overview)	Abu Dhabi	Oil Field Development	1,700,000,000	Construction
ADMA-OPCO - SARB Offshore Oil Field Development - (Overview)	Abu Dhabi	Oil Processing Facility	2,000,000,000	Construction
ADMA-OPCO - SARB Offshore Oil Field Development - Package 2	Abu Dhabi	Oil & Gas Field	500,000,000	Construction
ADMA-OPCO - SARB Offshore Oil Field Development - Package 3	Abu Dhabi	Gas Pipeline	600,000,000	Construction
ADMA-OPCO - SARB Offshore Oil Field Development - Package 4	Abu Dhabi	Gas Processing	500,000,000	Construction
ADMA-OPCO - Umm Al Lulu Field Development - (Overview)	Abu Dhabi	Oilfield Development	2,500,000,000	Construction
ADMA-OPCO - Umm Al Lulu Field Development - Package 1	Abu Dhabi	Oilfield Development	800,000,000	Construction
ADMA-OPCO - Umm Al Lulu Field Development - Package 2	Abu Dhabi	Oilfield Development	200,000,000	Construction
ADMA-OPCO - Umm Shaif Infield Pipelines Replacement	Abu Dhabi	Oilfield Development	500,000,000	EPC ITB
ADMA-OPCO- Bu Haseer Field	Abu Dhabi	Pipeline	200,000,000	Engineering & Procurement
ADMA-OPCO- Lower Zakum - Oil Lines Replacement (Phase 1)	Abu Dhabi	Pipeline	950,000,000	Construction
ADNOC & EMARAT - Fujairah Terminal Expansion Phase 3	Fujairah	Oil Storage Tanks	40,000,000	Feasibility Study
ADNOC - LNG Import Terminal	Abu Dhabi	LNG Storage Tanks	1,000,000,000	Feasibility Study
ADNOC- Ghasha Field	Abu Dhabi	Oil & Gas Field	1,000,000,000	FEED ITB
ADOC - Hail Offshore Oilfield	Abu Dhabi	Oilfield Development	500,000,000	Engineering & Procurement
ADOC - Mubaraz Field Expansion	Abu Dhabi	Oilfield Development	500,000,000	FEED
ADPC & Al Gharbia Pipe Company - KIZAD- Pipeline Factory	Abu Dhabi	Oilfield Development	300,000,000	Construction
Al Hosn Gas - Dalma Field	Abu Dhabi	Oilfield Development	800,000,000	Feasibility Study
Al Hosn Gas- Shah Field- Expansion	Abu Dhabi	Gas Network		Feasibility Study
Borouge- Borouge 3 - Ethylene Plant Expansion	Abu Dhabi	Ethylene	800,000,000	Engineering & Procurement
BPGIC - Fujairah Oil Terminal (Phase 1 & 2)	Fujairah	Oil Storage Tanks	200,000,000	Construction
Dana Gas - Zora Gas Field	Sharjah	Gas Exploration	100,000,000	Construction
DPE - Al Jalila Field (Phase 2 - Offshore platform B and pipelines)	Dubai	Oilfield	100,000,000	Construction
Ecomar- Fujairah - Petroleum Regeneration and Processing Facility	Fujairah	Refinery	70,000,000	Engineering & Procurement
Emirates LNG - Fujairah LNG	Fujairah	Liquefied Natural Gas (LNG)	3,000,000,000	Feasibility Study
ENOC & Horizon Terminals - Jebel Ali Refinery Capacity Expansion	Dubai	Refinery	850,000,000	Construction

Project	City	Facility	Budget ($ US)	Status
ENOC- Al Maktoum Airport- Jet Fuel Pipeline Expansion	Dubai	Jet Fuel Pipeline	250,000,000	FEED
ENOC-Fujairah Refinery	Fujairah	Refinery		Design
Fujairah Port - Port Facilities Expansion	Fujairah	Oil Storage Tanks	100,000,000	Construction
GASCO - Abu Dhabi Sales Gas Network- Compression Station	Abu Dhabi	Gas Pipeline	900,000,000	Feasibility Study
GASCO - Black Powder Management	Abu Dhabi	Gas Pipeline	44,000,000	Construction
GASCO - Habshan to Ruwais - 16 inch Condensate Replacement Pipeline	Abu Dhabi	Gas Pipeline	90,000,000	Construction
GASCO - Habshan-Maqta-Taweelah Gas Pipeline	Abu Dhabi	Gas 500,000,000	Construction	
GASCO - Integrated Gas Development (IGD) - Expansion (Onshore Pipeline)	Abu Dhabi	Gas Production	12,000,000,000	Construction
GASCO - Taweelah - Gas Compressor Station	Abu Dhabi	Gas Processing	70,000,000	Engineering & Procurement
GASCO - Yas - Mina Zayed Gas Pipeline	Abu Dhabi	Gas Processing	45,000,000	Construction
GASCO - Gas Turbine Replacement (Phase 1 - Asab & Buhasa)	Abu Dhabi	Gas Processing	130,000,000	FEED
GASCO- Habshan 5 - New Compression Train	Abu Dhabi	Gas Processing	800,000,000	EPC ITB
GASCO- Integrated Gas Development - Expansion (42 Inch Pipeline)	Abu Dhabi	Oilfield Development	450,000,000	Construction
Gulf Petrochem - Fujairah - Bitumen Refinery	Fujairah	Bitumen	300,000,000	Design
Gulf Petrochem - Oil Storage Terminal Facility at Fujairah - Phase 2	Fujairah	Oil Storage Tanks	300,000,000	EPC ITB
IPIC & Mubadala- Fujairah Refinery (EPC 1 & 2)	Fujairah	Refinery	3,500,000,000	EPC ITB
MASDAR - Carbon Dioxide Capture and Storage - Phase I (Mussafah Steel Rolling Mill)	Abu Dhabi	Carbon Dioxide	280,000,000	Construction
MASDAR - Carbon Dioxide Capture and Storage - Phase 2 (Pipeline Network)	Abu Dhabi	Carbon Dioxide	300,000,000	Design
MASDAR - Carbon Dioxide Capture and Storage - Phase I (Overview)	Abu Dhabi	Carbon Dioxide	2,500,000,000	Construction
MASDAR - Carbon Dioxide Capture and Storage - Phase I (Pipeline Network)	Abu Dhabi	Carbon Dioxide	280,000,000	Construction
Petrixo Oil & Gas - Fujairah Bio-Fuel Refinery	Fujairah	Biofuel Refinery	1,300,000,000	FEED
Primestar Energy - Prime Tank Terminal & Jetty Pipeline	Fujairah	Oil Storage Tanks	165,000,000	Construction
Saif Al Khaili & KIZAD - Emirates Chemical Plant	Abu Dhabi	Caustic Soda	80,000,000	Engineering & Procurement
Sharafco - Hamriyah Free Zone - Storage Terminal	Sharjah	Oil Storage Tanks	100,000,000	EPC ITB
Star Energy Group- JAFZA Expansion 7A	Dubai	Oil Storage Tanks	200,000,000	Construction
Takreer - Abu Dhabi International Airport Expansion - Aviation Fuel Depot	Abu Dhabi	Oil Storage Tanks	100,000,000	Construction
Takreer- Carbon Black Plant	Abu Dhabi	Polymers	200,000,000	Construction
Takreer- Hamriya Jetty and Pipeline Network Project - Marine Works 2	Sharjah	Oil Storage Tanks	250,000,000	Construction
Takreer- IRP - Phase 3	Abu Dhabi	Refinery	200,000,000	FEED
Takreer- Processing Offshore Crude Project	Abu Dhabi	Refinery	10,000,000,000	EPC ITB
Takreer- Ruwais Refinery East - Construction of Additional Outfall	Abu Dhabi	Refinery	350,000,000	EPC ITB
Takreer- Ruwais Refinery East- SRU Replacement	Abu Dhabi	Refinery	100,000,000	EPC ITB
Takreer- Ruwais- LPG Recovery	Abu Dhabi	Refinery	40,000,000	FEED
Takreer- Waste Heat Recovery	Abu Dhabi	Refinery	150,000,000	FEED
Takreer-Ruwais East Refinery- Air Emission Measurement System	Abu Dhabi	Refinery	40,000,000	FEED ITB
Union Chlorine - ICAD Chlorine Alkali Plant	Abu Dhabi	Chlor Alkali	70,000,000	Construction
VOPAK HORIZON - Fujairah Oil Terminal Expansion (Phase 7)	Fujairah	Gas Storage Tanks	200,000,000	Engineering & Procurement
VTTI - Fujairah Terminal	Fujairah	Oil Storage Tanks	120,000,000	Construction
ZADCO - Umm Al Dalkh ESP Installation - Package 2 (Phases 3, 4 and 5)	Abu Dhabi	Sub Sea Cable	650,000,000	Construction
ZADCO - Umm Al Dalkh Full Field Development (Overview)	Abu Dhabi	Oilfield Development	650,000,000	Construction
ZADCO - Upper Zakum Full Field Development - 750 Project (Overview)	Abu Dhabi	Oilfield Development	15,600,000,000	Construction
ZADCO - Upper Zakum Full Field Development - 750 Project - Surface Facilities - EPC 1	Abu Dhabi	Oilfield Development	1,300,000,000	Construction
ZADCO - Upper Zakum Full Field Development - 750 Project - Surface Facilities - EPC 2	Abu Dhabi	Oil Production	4,200,000,000	Construction
ZADCO - Zirku 7th Crude Oil Storage Tanks	Abu Dhabi	Oil Storage Tanks	300,000,000	Construction
ZADCO - Zirku Facilities Capacity Enhancement	Abu Dhabi	Oilfield Development	400,000,000	EPC ITB
ZADCO- 750 West Region- Capacity Expansion & Sulphate Reduction Plant- EPC 3	Abu Dhabi	Oil & Gas Field	300,000,000	EPC ITB

Project Databank

Compiled by Data Media Systems

Project Focus

Compiled by Data Media Systems

Project Summary

Project Name	ADCO SOUTH EAST ASSET-TIE-IN PROJECT (A,B, C & D)
Name of Client	ADCO - Abu Dhabi Company for Onshore Oil Operations
Estimated Budget ($ US)	650,000,000
Facility Type	Oilfield Development
Status	Construction
Location	Abu Dhabi
End Date	Q1-2011
End Date	Q1-2018

Project Status

Date	Status
Oct 2016	Tendering for the EPC for package C&D is still in process. The bidders include: • Al-Asab General Contracting Company • China Petroleum Engineering & Construction Corporation • Galfar Engineering & Contracting • Robtstone • Alsa Engineering & Construction • Descon • Matrix Construction
Jun 2016	Water injection package is at RFQ stage currently for the subcontract issued by Al Asab.
Oct 2015	Descon Engineering has won an estimated US$170 million EPC contract for package B.
Oct 2015	Al Asab General Contracting has been appointed for the EPC contract worth $175 million for package A.

Contractors

Contract Type	Pre-Qualified	Bidders	Awarded
PMC	-		• CH2M Hill
EPC	• Descon • Target Engineering & Construction • CPECC - China Petroleum Engineering & Construction Company • Al Asab Contracting Establishment • ALSA Engineering • Galfar Engineering & Contracting SAOG	• Descon • Target Engineering & Construction • CPECC - China Petroleum Engineering & Construction Company • Al Asab Contracting Establishment • ALSA Engineering • Galfar Engineering & Contracting SAOG	• Descon • Al Asab Contracting Establishment

Project Scope

The project scope of work consists of the following:

- Provision of links of pipelines from well manifold
- Flowlines
- 7/8 manifolds
- Associated facilities

The works are split into 4 packages A,B,C,D

Package A includes:

- Construction of facilities at 54 wells
- Locations include Asab field and four wells at the Sahil field

Package B includes:

- Facilities installation
- Supply and installation of tie-ins at 60 wells
- Locations include Shah, Mender and Qusahwira fields

Package C includes:

- Asab and Sahil fields, including facilities at 30 wells on the Asab field

Package D includes:

- 40 tie-ins at wells on the Shah, Qusahwira and Mender fields

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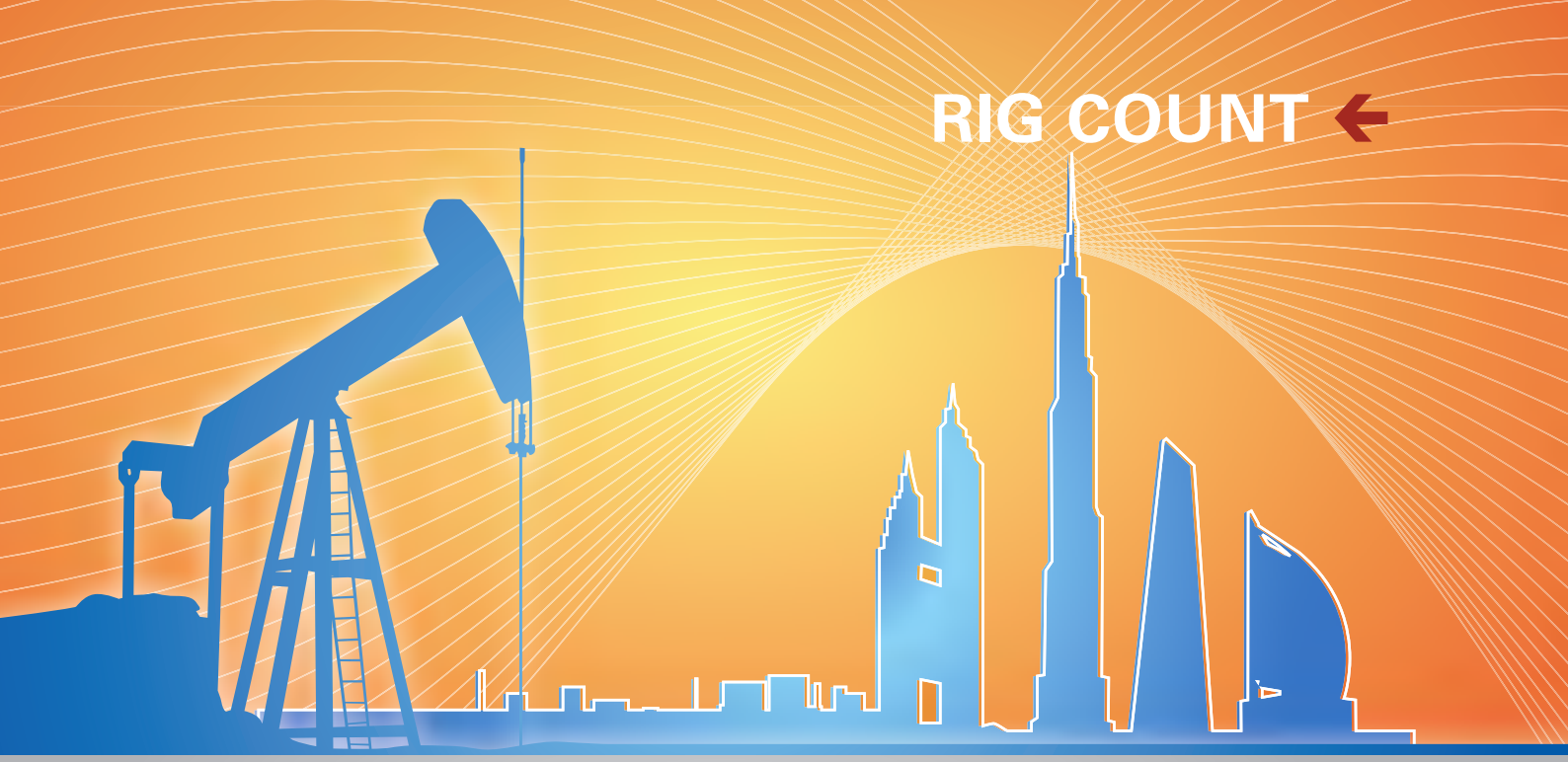

Middle East & North Africa

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	27	22	49	0	28	21	49	25	11	36
DUBAI	1	3	4	2	0	2	2	0	2	2
IRAQ	40	0	40	1	38	0	38	61	0	61
JORDAN	0	0	0	0	0	0	0	0	0	0
KUWAIT	48	0	48	1	47	0	47	45	0	45
OMAN	64	0	64	-1	65	0	65	57	0	57
PAKISTAN	21	0	21	0	21	0	21	19	0	19
QATAR	5	4	9	4	3	2	5	2	7	9
SAUDI ARABIA	109	15	124	0	107	17	124	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	0	0	0	0	0	0	0	3	0	3
TOTAL	315	44	359	8	309	42	351	309	38	347
North Africa										
ALGERIA	53	0	53	-3	56	0	56	49	0	49
EGYPT	20	6	26	-1	19	8	27	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	73	7	80	-4	75	9	84	102	9	111

Source: Baker Hughes

مبيعات الغاز. وقد ضخت أرامكو السعودية استثمارات ضخمة في غاز الصخر الزيتي خلال السنوات الأخيرة. وسيتوجه جزءٌ كبيرٌ من هذا الغاز لقطاع الطاقة الكهربائية، ليصل إلى محطات توليد الكهرباء التي تعمل بالغاز بقدرة ١٣ جيجا وات خلال السنوات المقبلة.

الحافز لدمج الصناعات التحويلية

عملت المملكة العربية السعودية على زيادة قدرة التكرير لديها بدرجة كبيرة خلال السنوات الأخيرة. وأهم حافز لذلك هو استبدال المنتجات البترولية المستوردة عالية التكلفة. وهي تراعي أيضا ضخ الاستثمارات في عمليات التكرير كخطوة رئيسية لإنشاء قيمة مضافة بتحويل النفط الخام إلى منتجات مُكررة، وإنشاء رابط بين التنقيب والإنتاج من ناحية، وصناعة البتروكيماويات من ناحية أخرى. وهذا بدوره يوفر فرص التنوع ودمج الصناعات التحويلية لتكوين سلسلة القيمة الكاملة بما يشمل تطوير الصناعات الجديدة. وتسعى المملكة، بجهود حثيثة، لدعم صناعات البتروكيماويات من أجل تنويع مجموعة المواد الأولية، والاستغناء التدريجي عن الإيثان، مع التوجه نحو المنتجات المُكررة؛ مثل النفتا والبوتان والبروبان.

كما أن استخدام المنتجات المُكررة يُعبِّد الطريق لإنتاج المزيد من منتجات البتروكيماويات الأكثر تطورا، والمطلوبة لتعزيز سلسلة القيمة وتوفير فرص العمل. وتمضي المملكة قدما في إنشاء مُجمع جازان للتكرير بطاقة ٠,٤ مليون برميل يوميا، والذي سيرفع قدرة المملكة على التكرير من ٢,٩١ مليون برميل يوميا في ٢٠١٥ إلى ٣,٣ مليون برميل يوميا مع نهاية ٢٠١٨، وذلك على الرغم من إمكانية تأجيله.

متطلبات المحتوى المحلي

مع مواصلة الإسراع نحو دمج الصناعات التحويلية، من المتوقع أن يقوى الحافز لزيادة الحصول على السلع والخدمات ـ محليا ـ في قطاع الطاقة، ويهدف ذلك لتشجيع شركات الخدمات على تصنيع المزيد من المعدات والأجهزة في المملكة، مما يؤدي بدوره إلى تنويع الاقتصاد بإتاحة مجال واسع لخدمات النفط الكائنة في المملكة، وتوفير المزيد من فرص العمل. وقد أطلقت أرامكو السعودية برنامج القيمة الإجمالية المضافة بالمملكة (IKTVA) بهدف مضاعفة نسبة السلع المرتبطة بالطاقة محلية الصنع إلى ٧٠ في المائة بحلول ٢٠٢١. كما تخطط أيضا لرفع نسبة صادرات سلع الطاقة المُصنَّعة في المملكة إلى ٣٠ في المائة خلال الفترة نفسها. ومن بين أهداف برنامج التحول الوطني، زيادة نسبة المحتوى المحلي، ضمن النفقات الإجمالية للقطاعين العام والخاص، من ٣٦ في المائة إلى ٥٠ في المائة بحلول ٢٠٢٠. ويمثل ذلك تحولا كبيرا عن السياسة الحالية التي لا تحدد المحتوى المحلي كمطلب رسمي إلى سياسة أخرى، حيث يكون تطوير المحتوى المحلي مطلوبا عبر سلسلة التوريد المحلية والدولية لشركة أرامكو السعودية. وبينما تمثل العديد من الموضوعات، التي جرت مناقشتها أعلاه، استمرارا لأهداف السياسة الحالية، وربما الإسراع في تنفيذها، فقد أحدثت خطط العروض العامة الجزئية لأرامكو السعودية حراكا كبيرا. ولم يتم الإعلان عن جدول زمني محدد، بينما ذُكرت الفترة بين عامي ٢٠١٧-٢٠١٨ كهدف منشود. ومن الممكن أن يكون الاكتتاب العام الأولي الأكبر محفوفا بالتحديات. فعلى سبيل المثال، ربما يتطلب الأمر إدراج اكتتاب في بورصة أجنبية حسب حجم الاكتتاب العام الأولي، ذلك لأن البورصة السعودية صغيرة الحجم لا يسعها استيعاب مثل هذه القيمة الكبيرة. وربما تفرض عمليات الاكتتاب الأجنبية على شركة أرامكو عددا من الالتزامات، مثل الامتثال لمعايير محاسبة الاحتياطيات. كما ترفع عمليات الاكتتاب خارج المملكة من احتمالات رفع قضايا عبثية ضد المملكة. وهي أيضا تطرح تساؤلات رئيسية عما إذا كان ذلك سيؤدي إلى حدوث نقلة كبيرة في إدارة قطاع النفط. فعلى سبيل المثال، سوف يؤدي أي تحويل لحصص أرامكو السعودية إلى صندوق الاستثمارات العامة، إلى إجراء تغييرات على هيكل النظام الإداري، وعملية اتخاذ القرارات، والجهات الرئيسية المسؤولة عن إستراتيجية الاستثمار، علاوة على التوجه المستقبلي للشركة. لا شك أن هناك حاجة مُلحة لإجراء الإصلاحات الهيكلية المحددة في رؤية ٢٠٣٠ لتحويل الاقتصاد إلى مسار أكثر استدامة. وحتى لو تم تطبيق جزء صغير منها، فسيبدو الاقتصاد السعودي مختلفا للغاية في ٢٠٣٠ عما هو عليه الآن. والسؤال الذي يطرح نفسه الآن هو ما إذا كان لهذه التغييرات تأثيرٌ كبيرٌ على سياسة النفط وتطور قطاع الطاقة. وعلى الرغم من التوقعات بمحدودية هذه التغييرات، يظل قطاع الطاقة السعودي (وبخاصة قطاع النفط والغاز) عاملا رئيسيا لجعل عملية التحول نحو الاقتصاد المأمول، والمفعم بالنشاط والحيوية، تتم بسلاسة، وأنه سوف يظل لاعبا رئيسيا في مستقبل الدولة. فضلاً عن ذلك، من غير المحتمل أن يتغير التوجه العام لسياسة النفط السعودية خلال الأعوام المقبلة، كما أكد برنامج التحول الوطني. ويمكن القول: إن بإمكان قطاع الطاقة السعودي الاستفادة من سياسة أكثر تكاملاً للطاقة، تراعي التحديات التي تواجه المملكة في هذا الصدد بشكل شامل. غير أن قطاع الطاقة السعودي لن يكون بمنأى عن التغيرات التي تطرأ على مكونات الاقتصاد الأخرى. ويدل على ذلك عملية إعادة هيكلة وزارة الطاقة مؤخرا، والزيادة الأخيرة في أسعار الطاقة، والتأكيد على سياسة المحتوى المحلي، وخطط طرح أسهم أرامكو السعودية للاكتتاب العام الجزئي. إن إعادة هيكلة وتنظيم هذا القطاع الحيوي، والتعجيل بتنفيذ بعض السياسات، من شأنها تحقيق بعض المزايا والمكاسب المتعلقة بالكفاءة، غير أنها تثير ـ في الوقت نفسه ـ بعض الشكوك والمخاطر التي يجب أن تخضع للتقييم والإدارة بعناية حتى لا ينتهي الأمر بواضعي السياسات إلى تكبد خسائر فادحة.

بسام فتوح هو مدير معهد أكسفورد لدراسات الطاقة. وأمريتا سين هي شريك مؤسس ومحلل رئيسي لشؤون النفط في شركة Energy Aspects. هذه نسخة ورقية موجزة حول «رؤية المملكة العربية السعودية ٢٠٣٠، وسياسة النفط وتطوير قطاع الطاقة» المنشورة بواسطة معهد أكسفورد لدراسات الطاقة. للاطلاع على النسخة الكاملة، تفضل بزيارة

https://www.oxfordenergy.org/publications/saudi-arabias-vision-/2030-oil-policy-evolution-energy-sector

التحويلية وضم البتروكيماويات إلى معامل التكرير، وزيادة نسبة الغاز عند مزج مصادر الطاقة، واستغلال مصادر الطاقة المتجددة في قطاع الطاقة الكهربائية. هذاعلاوة على تحسين كفاءة الطاقة المستهلكة وزيادة أسعار الطاقة المنزلية مؤخرا. وعلى صعيد سياسة النفط، تظل السياسة الحالية على حالها، والتي تعتمد على الأسعار لإعادة إحداث التوازن في السوق في غياب اتفاقية جماعية لتقليل الإنتاج.

الدور المحوري لقطاع النفط وعوائد النفط

لايزال الاقتصاد السعودي والاستقرار السياسي للمملكة يُعوِّل كثيرا على الإنفاق الحكومي المدعوم بعوائد النفط. وقد شدد الفالح، في مقابلة أُجريت معه مؤخرا، على الدور المحوري لعوائد النفط في تعزيز القطاعات الاقتصادية الأخرى في المملكة. وتعاني المملكة كثيرا من جراء انخفاض أسعار النفط، على الرغم من حجم احتياطياتها المالية. وتعكف حاليا على السحب من أصولها الاحتياطية الأجنبية، وزيادة الاقتراض، واستكشاف الطرق لزيادة الضرائب المفروضة، وتقليل الإنفاق الحكومي، وخفض الدعم الحكومي للطاقة، وتخفيض الإنفاق على المشاريع الكبرى. ولا شك أن هذه التعديلات تعمل على إرهاق الاقتصاد. فقد أظهرت بيانات حديثة أن الاقتصاد شهد أبطأ معدل نمو في ثلاث سنوات خلال الربع الأول من هذا العام، وفوجئ المستهلكون بارتفاع أسعار الطاقة وزيادة التضخم.

السياسة النفطية

إن استبدال وزير النفط، علي النعيمي، يُعتبر تغييرا للأشخاص وليس السياسات. فسياسة الإنتاج الحالية قائمة على مبدأ أساسي، وهو عدم انفراد المملكة بالتحرُّك لإعادة التوازن للسوق. ففي غياب اتفاقية جماعية بين الدول المنتجة، توجهت المملكة نحو إستراتيجية حصة السوق. وزيادة قدرة التكرير بالمملكة تعني أنها لا تنافس فقط في مجال النفط الخام، وإنما أيضا في أسواق المنتجات. لكن الماضي يشير إلى مرونة سياسة النفط الخاصة بالمملكة، وإمكانية تغيرها وفقا للتغيرات التي تطرأ على سلوك الدول المنتجة الأخرى و/أو التغيرات التي تشهدها أحوال السوق.

هناك اعتقادات في «النظام العالمي الجديد للنفط» بعدم وجود ما يدفع المملكة لاستبقاء سياستها الرسمية، التي بمقتضاها تحافظ على طاقتها الإنتاجية الاحتياطية، وأن هذا الدور سيشغله منتجو نفط الصخر الزيتي الأمريكي. غير أنه ربما يكون لدى المملكة حافزٌ قويٌ لأداء دور وقائي بدرجة أكبر عند ارتفاع الأسعار. ومن بين الدروس المستفادة لصُناع السياسة في المملكة من آخر دورة، هو أن بيئة أسعار النفط المرتفعة من شأنها تعجيل الاستجابة للعرض والطلب، وخاصةً مع تصاعد الشواغل البيئية. ومن مصلحة المملكة الحيلولة دون ارتفاع الأسعار إلى مستويات عالية، وكبح جماح أسعار النفط. ولتحقيق ذلك، يتعين على المملكة الاحتفاظ بطاقة إنتاجية احتياطية صحية، وتطوير آليات السوق للتأثير على أسعار النفط عند صعودها. وحتى الآن لا توجد مؤشرات على أن المملكة تخلَّت عن سياسة

أرامكو السعودية استثمارات ضخمة وتطور مستمر

المحافظة على الطاقة الإنتاجية الاحتياطية، والتي لا تزال تمثل إحدى دعائم استقرار سوق النفط.

توقعات بتزايد التركيز على الغاز

من بين جوانب مواصلة تنفيذ هذه السياسة، استهلاك المزيد من الغاز الطبيعي محليا بدلاً من أنواع الوقود السائل. ومن بين غايات السياسة الرئيسية التي تتبعها الحكومة، زيادة حصة الغاز الطبيعي لأكثر من نصف حجم الطلب الكلي الرئيسي على الطاقة، وذلك لإشباع الحاجة المتزايدة لمصانع البتروكيماويات الجديدة، ولتقليل احتراق النفط الخام في قطاع الطاقة من أجل توفير كميات إضافية من النفط للتصدير. وسيظل التركيز الأساسي منصبا على الإنتاج المحلي. وقد بدأت أرامكو السعودية إنتاج الغاز من حقل الحصبة البحري بمعدل ١,٣ مليار قدم مكعب يوميا، إلى جانب حقل العربية البحري الذي ينتج ١,٢ مليار قدم مكعب يوميا، ليوفرا معا ٢,٥ مليار قدم مكعب يوميا من الغاز الخام لمعمل الغاز في واسط. وبالإضافة إلى مشروع مدين، الذي ينتج ٧٥ مليون قدم مكعب يوميا في البحر الأحمر، مع توسعة حقلين كائنين، ستوفر هذه المشاريع ٥ مليارات قدم مكعب يوميا من إنتاج الغاز الخام لإنتاج ما يقرب من ٣,٢ مليار قدم مكعب يوميا من

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وحدة تكسير اللقيم المختلط في مجمع «صدارة»

تهدف الإستراتيجية الجديدة والطموح للمملكة العربية السعودية، والمعروفة برؤية ٢٠٣٠، بشكل رئيسي، إلى بناء اقتصاد أكثر تنوعا وأقل اعتمادا على عوائد النفط. وقد تم إبراز عدد من العناصر الأساسية المخصصة لتحقيق ذلك، مثل دعم المشاريع الصغيرة والمتوسطة، وخصخصة الخدمات الحكومية، وتحسين جودة التعليم. ومن بين العناصر الرئيسية الأخرى، مضاعفة القدرات الاستثمارية للدولة. ويشمل ذلك إعادة هيكلة صندوق الاستثمارات العامة، ونقل ملكية شركة أرامكو السعودية إلى صندوق الاستثمارات العامة بهدف إنشاء أكبر صندوق ثروة سيادية في العالم.

فالمملكة العربية السعودي تسعى، عبر هذه المبادرات وغيرها، إلى إحراز بعض الأهداف الطموح، والتي من بينها نقل الاقتصاد من المرتبة التاسعة عشرة ليصبح بين أقوى ١٥ اقتصادا في العالم، وزيادة مساهمة القطاع الخاص من ٤٠ في المائة إلى ٦٥ في المائة من إجمالي الناتج المحلي، وأيضا زيادة حصة الصادرات غير النفطية في إجمالي الناتج المحلي غير النفطي من ١٦ في المائة إلى ٥٠ في المائة، وزيادة العوائد الحكومية غير النفطية من ١٦٣ مليار ريال سعودي إلى تريليون ريال سعودي، وتنمية أصول صندوق الاستثمارات العامة من ٦٠٠ مليار ريال سعودي إلى أكثر من ٧ تريليونات ريال سعودي. هذا فضلاً عن زيادة الاستثمارات الأجنبية المباشرة من ٣,٨ في المائة من إجمالي الناتج المحلي إلى ٥,٧ في المائة.

برنامج التحول الوطني، الذي تم اعتماده في مطلع يونيو/حزيران، يوفر المزيد من المعلومات حول الآثار المترتبة على رؤية ٢٠٣٠ بالنسبة لقطاع الطاقة.

وبينما تعتبر هذه الرؤى العريضة جديدة إلى حد ما، هناك شعورٌ بالتفاؤل حيال تطبيق الخطة بحلول هذا التوقيت، وإن كان بشكل جزئي على الأقل.

فلا عجب ان استحوذت رؤية ٢٠٣٠ على اهتمام أسواق الطاقة. وقد فسَّر بعض المحللين استبدال وزير النفط علي النعيمي بالسيد خالد الفالح، وإنشاء وزارة الطاقة والصناعة والثروة المعدنية المُوسَّعة، إلى جانب وضع الخطط لإدراج حصة أقلية في أرامكو السعودية، بوصفها إشارات واضحة على حدوث نقلة هائلة في السياسة المتعلقة بالطاقة.

وبينما تعد الإعلانات الحالية والتغييرات التنظيمية مهمة للغاية، والأهداف الكلية لرؤية ٢٠٣٠ طموح بدرجة كبيرة، فمن المرجح أن يكون التأثير على السياسة الخاصة بالنفط وقطاع الطاقة ملحوظا بدرجة أكبر من التوقعات الحالية. ذلك لأن قطاع الطاقة السعودي قد شهد بالفعل تحولات جذرية خلال السنوات القليلة الماضية. فقد أطلقت المملكة مبادرات لتوفير المزيد من القيمة المضافة عبر الاستثمار في أصول الصناعات

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تحديد ما إذا كانت صناعة النفط والغاز قد فقدت مواهبها بشكل دائم. غير أنه عندما تتعافى أسعار النفط، ربما يبرز النقص في المواهب على المدى البعيد وبوضوح أكبر. وإذا لم يكن بوسع الشركات سد عجز المناصب اللازمة، فسوف تتعرض أعمالُها لمخاطر جمَّة.

لقد أصبحت مشاريع النفط والغاز أكبر وأكثر تعقيدا واستهلاكا للموارد عن ذي قبل. وهذا يتطلب قاعدة موظفين ضخمة ودولية قابلة للتطوير، وتحفل بالمهارات والخبرات المناسبة لدعم المشاريع من مراحلها الأولى حتى استكمالها. وإذا لم يتوفر الموظفون الأكفاء، تتأجل هذه المشاريع، مما قد يُكبد الشركات ملايين الدولارات.

تغيير الديناميكيات

يمكن أن تأتي نقطة التحول هذه أسرع مما هو متوقع. وخلال مقابلة أخيرة، أكّد وزير النفط السعودي، خالد الفالح، الذي تسلّم مهام منصبه مؤخرا، على التزام المملكة بتطوير اقتصادها القائم على النفط، وشدد على توقعاته المؤكدة بنمو سوق النفط خلال العقدين التاليين.

أندرو ريان، نائب رئيس شركة إيرسويفت في الشرق الأوسط ووسط آسيا

ربما تتعرض المؤسسات لضغوط بصدد اتخاذ إجراء وقائي لتخفيف مخاطر هروب الخبرات الحيوية. إذ يجب إعطاء الأولوية للاحتفاظ بأفضل الكفاءات، فهذا أمرٌ جوهريٌ لضمان وجود الموارد المناسبة في كل مؤسسة لتدريب الجيل التالي من أصحاب المهارات، وضمان نقل الخبرات. وقد حان الوقت أيضا، بالنسبة لبعض الشركات، لإعادة تقييم إدارة القوى العاملة المرنة. فقد باتت الصناعة تُعوِّل كثيرا على القوى العاملة المرنة لسد العجز سريعا حال حدوثه. غير أن المزايا المصاحبة لذلك ترتبط بتكلفة ثبت أنها غير مستدامة. ففي البداية يؤدي عدم الاستقرار، والمخاطر المرتبطة بالعقود المحتملة والمرنة، إلى طلب المتعاقدين أجورا أعلى. وبينما ينخفض عامل الخطورة في هذه الصناعة التي استنفدت مواردها، فإن الأجور تبقى على حالها.

التفكير الذكي

لهذا لابد للمرونة أن تتسم بالمزيد من الذكاء، وأن تتم على نطاق عالمي وليس على سلسلة من العمليات المحلية. فقبل التوظيف، يتعين على المؤسسات تطوير المرونة لتحديد مواطن المهارات الأساسية في الشركات، ومن ثَمّ تطوير آليات توفيرها عندما تظهر الحاجة الماسة إليها. وقد أصبحت خدمات التعبئة، التي تدعم انتقال الموظفين الرئيسيين من موقع أساسي لآخر بطريقة سريعة ومتوافقة وسلسة، تُشكل جزءاً من الحل. ولكن لا يمكن إنكار حقيقة أن ارتفاع الأسعار مجددا سيتطلب تعيين موظفين جديدين. إن النموذج التقليدي لإدارة مئات من المُوردين على أساس مخصص يفتقر إلى الشفافية وفاعلية التكلفة. غير أن الصناعة تشهد تزايدا في الطلب على الخدمات التي تقدمها مصادر خارجية. وبعدما ثبتت جدواها في توفير التكاليف وتقديم الكفاءات، فإنها تساعد في تبسيط جميع أنشطة التوظيف ومنع الازدواجية وتوفير مستوى أعلى من التحكم في الميزانية.

تكنولوجيا المعلومات

ربما سيتجلى التغيير الأكبر في ممارسات التوظيف في استخدام تكنولوجيا المعلومات المتطورة كحل لمشكلتي المرونة وقابلية التنقل. فمن بين أكبر التحديات المرتبطة بالقوى العاملة ذات الأعمار المتوسطة، هو الإحجام المتزايد عن الاستعداد للتنقل حول العالم في أي لحظة. ويمكن أن يعالج التحوُّل الرقمي، الذي شهدته عمليات التنقيب والإنتاج، هذه المشكلة عبر تمكين أصحاب المهارات من المشاركة من دون السفر، وتوفير الإرشادات والتوجيهات من مواقع متعددة، إلى جانب تحسين القيمة التي يمكن الحصول عليها من الاحتفاظ بالموظفين ذوي الخبرات.

وهذا لا يرفع فقط من كفاءة مشاركة المعلومات، ولكن من شأنه أيضا تأخير المرحلة التي يغادر عندها أصحاب الخبرات المؤسسة، وذلك عبر تقليل التأثير السلبي الذي تتركه حياة العمل على الحياة الشخصية.

أيا كانت السبل التي تختارها الشركات لحل مشكلة الاحتفاظ بالموظفين والتعيين، يجب على جميع المؤسسات، التي تحظى بالموارد الملائمة، تطوير الجيل التالي من الموظفين المهرة. وإذا لم تتم عملية نقل المعلومات على الصعيد الداخلي، فإن هذه المؤسسات ستواجه منافسة وجودية للحصول على أصحاب الكفاءات ذوي الخبرات العريضة.

إني أسمع دقَّات القنبلة الموقوتة...

أكثر من ٢٩٠ ألف مستخدم فقدوا وظائفهم في قطاع النفط والغاز منذ مارس/آذار ٢٠١٥

نزع فتيل قنبلة المواهب الموقوتة

في هذا المقال، يؤكد أندرو ريان، نائب رئيس شركة إيرسويفت في الشرق الأوسط ووسط آسيا، على أهمية امتلاك جميع المؤسسات للموارد الملائمة التي تهدف لتطوير الجيل التالي من الخبراء المهرة والمتخصصين في مجال الغاز.

صناعة النفط والغاز تشهد حاليا ما يُطلق عليه المتفائلون فجوة ديموغرافية، وما يصفه المتشائمون بأنه قنبلة مواهب موقوتة. فحتى قبل التوجه نحو خفض استخدام الموارد بسبب انهيار الأسعار، تركت مجموعة من الخبراء القدامى هذا القطاع دون أن يلوح في الأفق أي بديل لهم . بالطبع تصاعدت وتيرة هروب الخبرات خلال السنوات القليلة الماضية إما بفعل خفض التكاليف، أولأسباب متعلقة بالكفاءة لمواجهة انخفاض أسعار النفط. وحسب تقديرات إيرسويفت، فإنه منذ مارس/آذار ٢٠١٥ فقد ٢٩٠ ألف شخص في العالم وظيفته، بينما شهدت عروض التقاعد المبكر إقبالا كبيرا من العديد من الموظفين. ولا تزال وسائل تقليل الموارد الأولية المؤقتة البديلة تتم على نطاق أوسع في المؤسسات التي أوشكت أن تخلو من بعض من أمهر الموظفين، وبالتالي أعلاهم أجرا. لقد شهدنا في إيرسويفت أمثلة عن المؤسسات في الشرق الأوسط وغيرها من المشاركين عبر سلسلة القيمة، التي تُرحِّل الخبرات التي تتجاوز عشر سنوات في مشاريع معينة.

نقل المواهب وآثاره على المدى البعيد

يمكن لبعض الأفراد نقل مواهبهم إلى قطاعات أخرى توفر استقرارا أفضل من صناعة النفط والغاز. فالمهارات الهندسية والخاصة بإدارة المشاريع تتحول إلى قطاعات أخرى ذات صلة بالمشاريع، مثل التعدين، والطاقة النووية والمتجددة، والصناعات التحويلية، والكيماويات، إلى جانب البنية التحتية. ومن المبكر للغاية

مفكرة رجال الاعمال

نوفمبر/تشرين الثاني

9 . 6 اجتماع سابك الفني الجبيل الصناعية

10 . 7 مؤتمر ومعرض أبوظبي الدولي للبترول. أديبك 2016 أبوظبي

24 . 20 مؤتمر ومعرض الكيمياء في الصناعة. كيمندكس البحرين

ديسمبر/كانون الأول

7 . 5 معرض كردستان العراق للنفط والغاز لندن

7 . 5 مؤتمر ومعرض حُسن التشغيل في النفط والغاز والبتروكيماويات. OpEx MENA أبوظبي

إنتاج النفط الليبي ينتعش مجددا

زيادة إنتاج النفط الليبي

رفعت شركة الخليج العربي للنفط الليبية إنتاجها ليصل إلى ٢٩٠ ألف برميل يوميا، حسبما ذكر رئيس الشركة، وذلك للمساعدة على زيادة الإنتاج الوطني لما يتراوح بين ٤٥٠ ألفا و٤٩٠ ألف برميل يوميا. وشركة الخليج العربي للنفط هي شركة تابعة للمؤسسة الوطنية للنفط التي تعمل في شرق ليبيا، وقد رفعت مستوى إنتاجها من ١٥٠ ألف برميل يوميا تقريبا منذ أن سيطر القائد العسكري خليفة حفتر على بعض المنشآت النفطية الرئيسية بالدولة الشهر الماضي. وعقب الاستيلاء على هذه المنشآت فتحت المؤسسة الوطنية للنفط الموانئ التي كانت محاصرة.

وقال محمد شتوان، رئيس شركة الخليج العربي للنفط، في تصريحاته لوكالة رويترز: «إن إنتاج الشركة يمكن أن يصل إلى ٣٠٠ ألف برميل يوميا في حالة عدم وجود مشاكل فنية». وأضاف إبراهيم العوامي، مدير عام إدارة القياس بالمؤسسة الوطنية للنفط، بأنه من المتوقع زيادة الإنتاج إلى ٥٠٠ ألف برميل يوميا تقريبا بنهاية أكتوبر/تشرين الأول.

وقد أدت الصراعات والاحتجاجات والنزاعات السياسية إلى انخفاض إنتاج النفط الليبي إلى مستويات متدنية للغاية. فقد كانت الدولة العضو في منظمة أوبك تنتج ما يقرب من ١،٦ مليون برميل يوميا قبل ثورة ٢٠١١ التي أطاحت بالرئيس مُعمر القذافي، الذي امتد حكمه إلى ٤٢ عاماً.

وقد أعرب مصطفى صنع الله، رئيس المؤسسة الوطنية للنفط، عن أمله في أن يكون افتتاح الموانئ نقطة تحول جيدة. غير أن هناك بعض خطوط الأنابيب الرئيسية التي لاتزال محاصرة في الغرب الليبي.

الوطنية الإيرانية للنفط بصدد توقيع عقود جديدة

تعتزم الشركة الوطنية الإيرانية للنفط (NIOC) توقيع أول عقود النفط والغاز الجديدة (عقد البترول الإيراني) مع شركة محلية. ويرفع هذا التوقيع تطلعات كبرى شركات النفط الدولية لإبرام المزيد من العقود بعد طول انتظار بصيغتها الجديدة. ووفقا لتصريحات علي كاردور، المدير التنفيذي للشركة، فإن عقد البترول الإيراني يمثل حجر الزاوية لخطة الدولة الرامية لرفع إنتاج النفط الخام إلى مستويات ما قبل العقوبات والبالغة أربعة ملايين برميل يوميا.

وقد تأجل إطلاق عقد البترول الجديد مرارا بسبب مقاومة خصوم الرئيس حسن روحاني أية صفقات من شأنها إنهاء نظام إعادة الشراء، والذي يمنع الشركات الأجنبية من امتلاك حصص بالشركات الإيرانية. ونقلت وكالة فارس للأنباء عن كاردور قوله:«سوف توقع الشركة الوطنية الإيرانية للنفط عقدا مع شركة ستاد اجرايي فرمان امام، بموجب عقود البترول الإيراني الجديدة لتطوير المرحلة الثانية من حقل (ياران)، وعقودا لاستخراج النفط المُعزز والمُحسن بحقل كوبال النفطي». وقالت وكالة تسنيم الإخبارية الإيرانية إن العقد الجديد بقيمة ٢،٥ مليار دولار.

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أدنوك تدمج أكبر وحدتين بحريتين لديها

أدنوك تعلن دمج أكبر وحدتين بحريتين

أعلنت شركة بترول أبوظبي الوطنية «أدنوك» عن دمج أكبر وحدتي عمليات بحرية لها، وذلك خلال مساعيها لتوحيد الإدارة والعمليات، وإرساء ثقافة تنظيم المشاريع خلال المدة الطويلة المتوقعة لانخفاض أسعار النفط. علما بأن شركة تطوير حقل زاكوم (زادكو) وشركة أبوظبي العاملة في المناطق البحرية (أدما العاملة) المدمجتين، تنتجان معا نسبة كبيرة من نفط الحقول البحرية في أبوظبي، والذي من المتوقع أن يصل إلى ١,٧ مليون برميل يوميا في مرحلة ما العام القادم (٢٠١٧). ويبلغ إجمالي إنتاج أبوظبي، وفقا لشركة «أدنوك»، ما يقرب من ٣,١ مليون برميل يوميا. وقد صرّح سلطان الجابر، وزير الدولة والرئيس التنفيذي لمجموعة شركات أدنوك، قائلا: «إن الدمج بين أدما العاملة وزادكو هو خطوة منطقية في إطار تركيز أدنوك حاليا على تعزيز الكفاءة، وتحسين الأداء، وزيادة الربح».

وذكر الجابر أن من شأن الدمج «تعزيز الأداء التشغيلي وتحقيق العديد من المزايا الإستراتيجية، التي تدعم النمو المستقبلي وتعزز التكامل التكنولوجي. وسوف يسهم ذلك أيضا في توحيد خبراتنا في مجال الحقول البحرية، كما سيساعد على تسهيل العمليات الإدارية واتخاذ القرارات، ومنح فريق الإدارة رؤية أشمل وأعمق للعمليات».

أرامكـــو الســـعوديـــة تدخل في شـــراكـــة مع شـــركـــات تـــركيـــة

وقّعت - مؤخرا - أرامكو السعودية عددا من مذكرات التفاهم مع ١٨ شركة صناعية تركية، لتضيف بذلك عددا من الشركاء المحتملين الجدد لمجموعة مشاريعها الرأسمالية المستقبلية، من أجل تعزيز التنوع وتحسين البنية التحتية لدعم رؤية المملكة العربية السعودية ٢٠٣٠. ومن شأن مذكرات التفاهم تعزيز التعاون التجاري والاقتصادي بين الجانبين السعودي والتركي، والذي شهد نموًا مطردا خلال العقد الماضي، وتجلى من خلال زيادة حجم التجارة والاستثمارات الثنائية بين أبرز اقتصادين في المنطقة. وتضم الاتفاقيات إمكانية تطوير العلاقات التجارية بين البلدين. وقد حضر حفل توقيع الاتفاقيات خالد الفالح، وزير الطاقة والصناعة والثروة المعدنية، وبراءات ألبيرق، وزير الطاقة والموارد الطبيعية التركي، وأمين الناصر، الرئيس التنفيذي لشركة أرامكو السعودية، ولفيفٌ من رؤساء الشركات الأتراك. وقال الناصر: «سوف تساعد مذكرات التفاهم في تطوير فرص الشراكة التجارية بين البلدين. ونتطلع للعمل مع الشركات التركية في مشاريع مستقبلية. هذه الجهود تواصل تأكيدها على التزام أرامكو السعودية بتحقيق رؤية المملكة العربية السعودية ٢٠٣٠». وأضاف الناصر: «ونظرا لأن الرؤية تركز بشكل خاص على التوطين، سنضاعف نسبة السلع والخدمات المرتبطة بالطاقة محلية الصنع إلى ٧٠ في المائة بحلول ٢٠٢١. إنها فرصة رائعة للشركات التركية التي سوف يتسنى لها، على وجه الخصوص، جلب خبراتها، والاستثمار في مستقبل المملكة». يجدر بالذكر أن الشركات التركية تلعب دوراً بارزاً في عدد من الأنشطة التجارية، من بينها توليد الطاقة وإنشاء وإدارة المطارات والبترول والطرق. وتحظى بعض الشركات بسجل حافل بالاستثمارات الناجحة في المشاريع السعودية، مثل مشروع تطوير حقل منيفة، ومشاريع صرف مياه العواصف بجدة ومطار المدينة، ومنظومة مشروع نقل المياه إلى الرياض، وشبكة سكك حديد الجبيل والمنشآت السكنية بمدينة ينبع الصناعية.

الاتفاقيات ستعمل على ترويج التنوع الاقتصادي وتعزيز البنية التحتية

المحتويات

القسم العربي

ملخص محتويات القسم الإنجليزي:

تقارير خاصة: أدنوك، أديبيك.

استطلاعات: التكرير والبتروكيماويات، المعدات الثقيلة.

تقنيات: منع التآكل، التكنولوجية البحرية، الوقاية من الحريق.

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