SPECIAL REPORT: OGME TAKES A LOOK AT PIPELINE MANAGEMENT

Oil&Gas MIDDLE EAST

NEWS, DATA AND ANALYSIS FOR THE MID…LS

May 2016 • Vol. 12 • Issue 05

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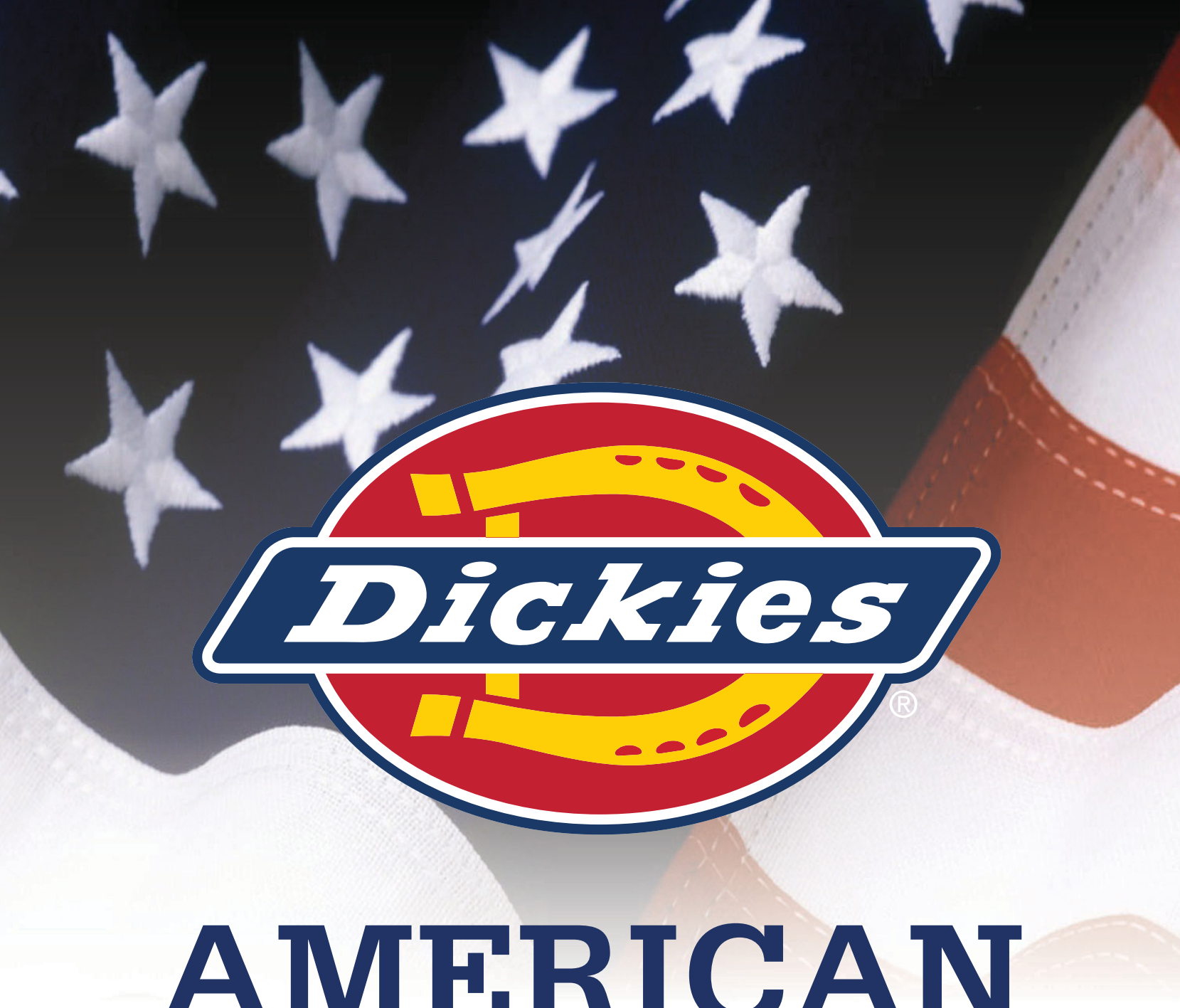
STRENGTH TO STRENGTH

Adham AlKady outlines WorleyParsons' growth trajectory and reveals how its energy services are helping the project and engineering consultancy firm differentiate itself



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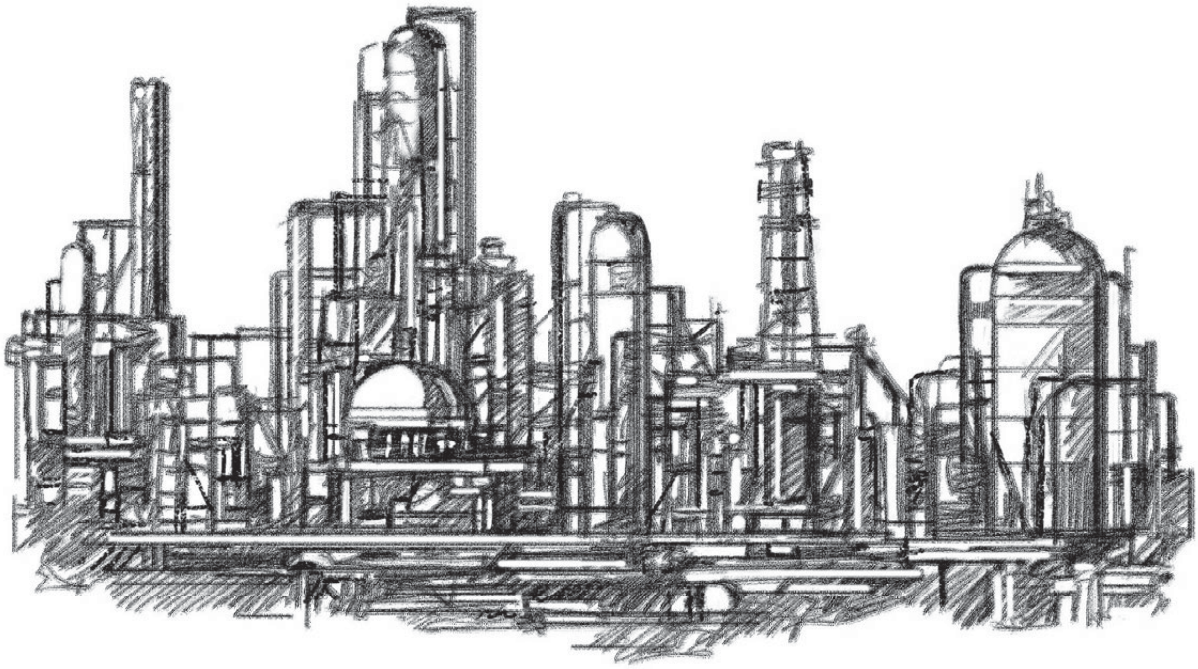

Mesh free epoxy passive fire protection for the hydrocarbon processing industry

Jotun has introduced a next generation epoxy passive fire protection material. Jotachar 1709 mesh free is designed to protect against hydrocarbon fire scenarios for up to 4 hours as defined in the ANSI UL1709 Standard.

Jotun Protects Property
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Optimism will drive the market ahead

With no dearth of projects and with oil prices firmly trading above the $40 mark, the industry has a bright future

THIS ISSUE: OGME launches a new concept called 'Special Report', where we have covered the pipeline management market in-depth.

Hello and welcome to the May issue of *Oil & Gas Middle East* magazine – my last as editor.

I'd like to thank all of the companies and people in the industry that have engaged with the publication during my time at the helm. My aim has always been that this publication talks about and reflects the issues, challenges and opportunities of the people who work in it.

And by engaging with *Oil & Gas Middle East*, all the people who have spoken with me or one of the energy team's members over the last couple of years have helped us achieve that goal.

I hope that you afford my successor the same privilege, and that the publication continues to go from strength to strength.

In the magazine, we have tried to analyse why – despite so much of hopes pinned on it – the OPEC/non-OPEC talks in Doha on April 17 failed.

No doubt, my period in the hot seat has coincided with a challenging time for the industry, not just in the GCC, but around the world. Tough decisions have been made and belts tightened.

But I remain convinced that the future for the industry, especially in the region, is a bright one.

I'm not naïve; I know that margins are being squeezed, and that some businesses have had to take the incredibly tough decision to downsize.

However, while the sector goes through a transformative period, I have seen evidence that it is using this time to make operational improvements across the board, looking into and utilising some genuinely innovative technology and making sure staff have wide ranging skill-sets.

The nature of oil and gas projects in the GCC will always attract the cream of talent from around the world, especially at a time when other areas – North America and the North Sea spring to mind – continue to toil.

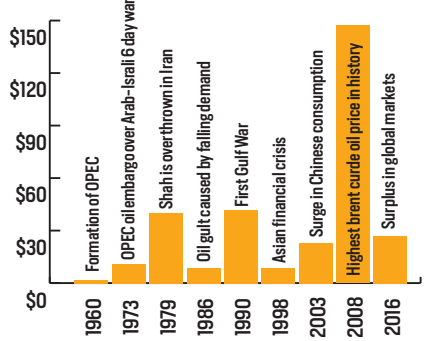
I have also seen first-hand the quality of the young talent coming through, first from some of the world's finest engineering universities, and then through training courses where no expense is spared. Combine all of this with the GCC's in-country value targets, and you have to deduce that the next generation of oil and gas workers in the region will be of a world-class calibre.

Lastly, I have come to see the GCC as a one-off, with the visions of governments, the revenues of National Oil Companies, and the ever-rising demand of the populace for energy, meaning that projects will continue. The show must go on, as they say.

Enjoy the issue.

James Henderson
Editor, Oil & Gas Middle East
james.henderson@itp.com

A timeline of how brent oil prices fallen victim to global events



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Splurging money on digitalisation

Survey finds upstream oil and gas companies are spending heavily on digital technologies to drive value and reduce costs during this downturn

As upstream oil and gas companies scrutinise every dollar invested, they're spending smarter today on digital technologies, seeking to drive value and reduce costs amid low oil and gas prices, a new survey by Accenture and Microsoft Corp reveals. Respondents to the '2016 Upstream Oil and Gas Digital Trends Survey' included international oil companies (IOCs), national oil companies (NOCs), independents and oilfield services firms.

Over the next three to five years, 80% of upstream oil and gas companies plan to spend the same, more, or significantly more (30%, 36%, and 14%, respectively) on digital technologies as they do now, according to the survey, its fifth edition. This continued investment in digital is due to respondents' confidence that digital technologies can continue to help them drive smarter companies.

More than half (53%) of respondents said digital is already adding high to significant value to their businesses and helping them reduce costs. In addition, respondents reported that making faster and better decisions was the greatest benefit digital technologies can deliver (56%) and that one of the biggest barriers to realising value is the lack of a clear strategy or business case, not the technology.

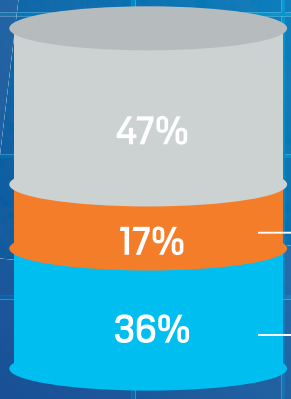
Today's digital investments focus more on mobility, with almost three-fifths of respondents (57%) reporting having invested in mobile, compared to 49% of the respondents in last year's survey. Next is investing in the Internet of Things (IoT) (44%) this year versus 25% in 2015 and the cloud (38%), up 8% from last year. Over the next three to five years, these investments are expected to shift more to big data and analytics (38%), IoT (36%) and mobile (31%).

Sources: Accenture; Microsoft Corp.

Upstream oil and gas companies spend smarter on digital technologies to drive value, reduce costs

The 2016 Upstream Oil and Gas Digital Trends Survey

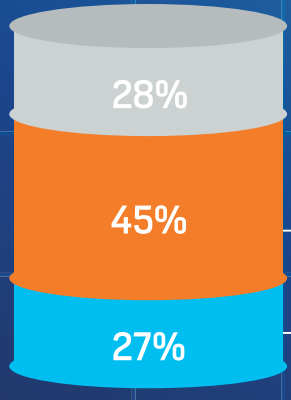
Digital technologies are recognised as adding value to upstream oil and gas companies by helping reduce costs, make faster and better decisions and increase workforce productivity



Over half (53%) of the respondents believe digital technologies have added high (36%) to significant value (17%).

53%

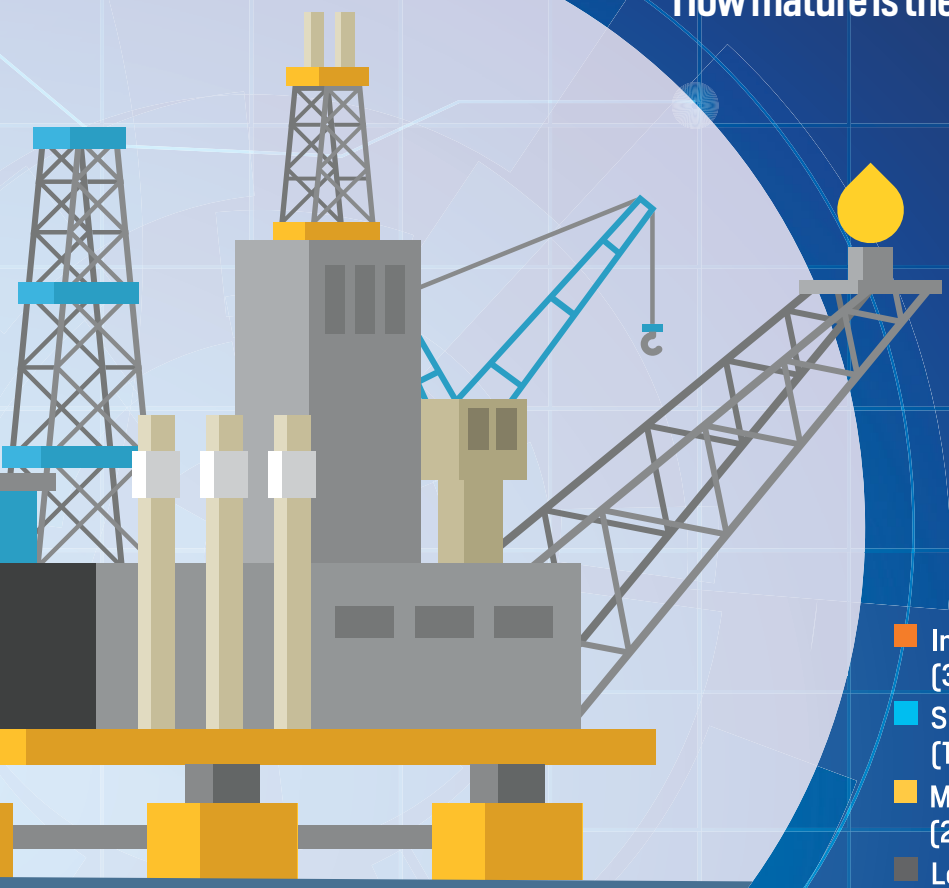
Average or below



72% of respondents believe cost reduction is an important (27%) or the most important (45%) challenge digital can help address.

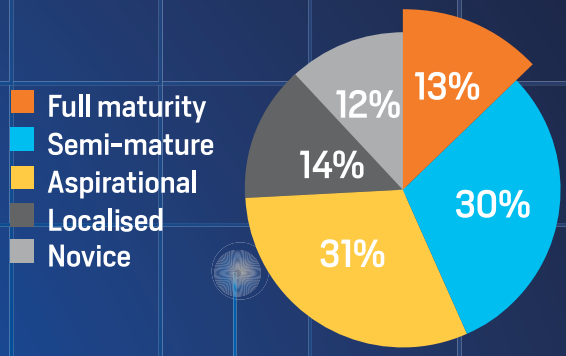
72%

Average or below

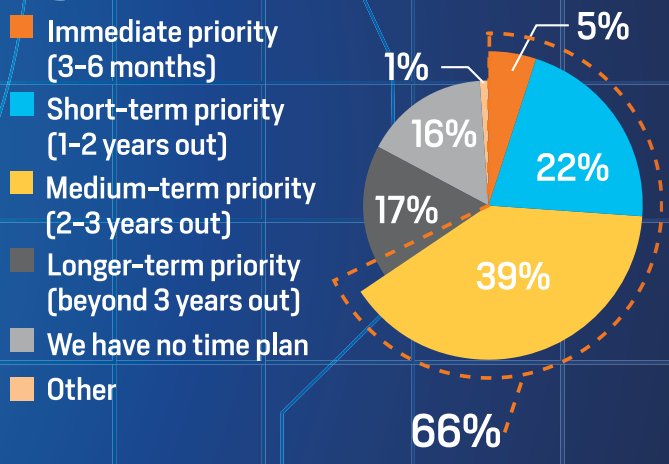


DIGITAL TECHNOLOGIES

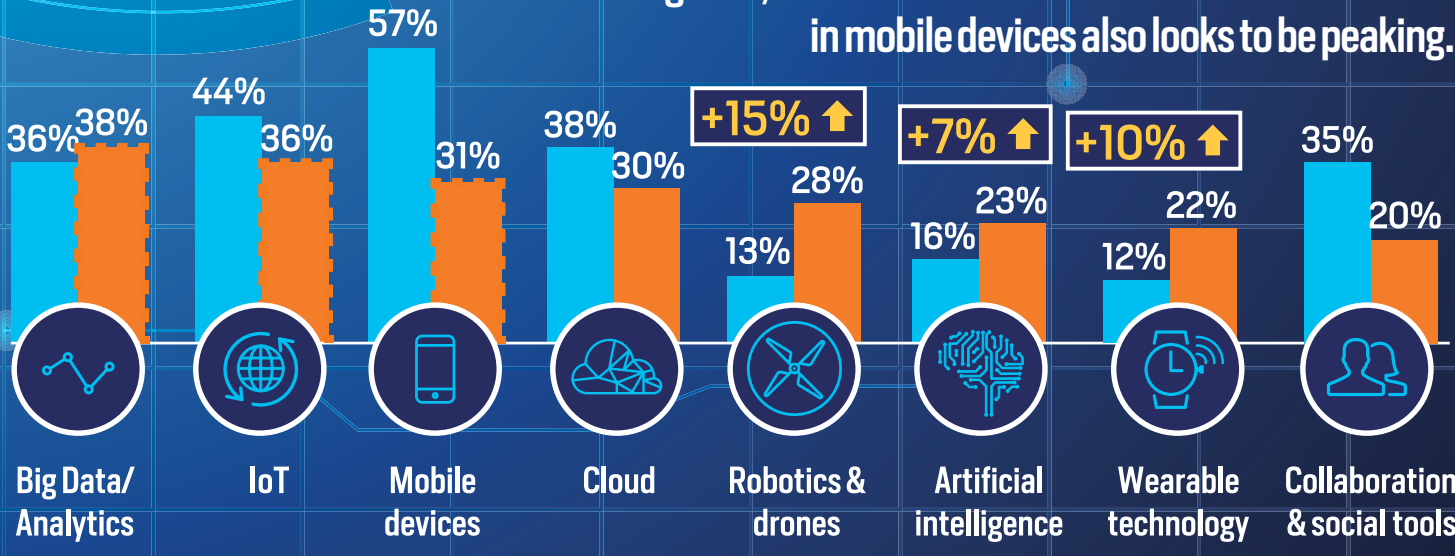
How mature is the use of analytics within your business?



In what timeframe is your company planning on implementing new analytics capabilities?



The fastest growth areas are predicted to be in artificial intelligence, robotics/drones and wearables. Investment in mobile devices also looks to be peaking.



Investing Today | Investing over the next 3-5 years | Top areas of focus over the next 3-5 years | Fastest areas of growth over the next 3-5 years

UPDATE

Coming up:

Saudi Arabia to sell less than 5% of Aramco through IPO

Subsidiaries of the company would also be sold by IPO, as part of a privatisation drive and to bring transparency to the oil giant, Prince Mohammed said

Deputy Crown Prince Mohammed Bin Salman

WHERE WILL ARAMCO BE LISTED?

The listing of Aramco would be on the Saudi stock market. One idea being studied was to set up a fund in the US market which would buy shares in Aramco to help bring liquidity.

Saudi Arabia plans to sell less than 5% of its state oil company Saudi Aramco through an initial public offering (IPO), Deputy Crown Prince Mohammed bin Salman has said.

He said in a television interview he expected Aramco, the world's biggest energy company, to be valued at more than $2tn and that he wanted it to be transformed into a holding company with an elected board.

Subsidiaries of the company would also be sold by IPO, as part of a privatisation drive and to bring more transparency to the oil giant, Prince Mohammed said. "If one per cent of Aramco is offered to the market just one percent it will be the biggest IPO on earth," he said.

"Less than 5 percent from the parent company ... we are trying to separate it and make Aramco a holding company," Prince Mohammed said.

The listing of Aramco would be on the Saudi stock market, he said, adding that one idea being studied was to set up a fund in the US market which would buy shares in Aramco to help bring liquidity.

It is not clear which of Aramco's ventures might be involved in a sale but the range of candidates is wide. Aramco and its subsidiaries own or have an equity interest in more than 5mn bpd of refining capacity.

Earlier in the month, Prince Mohammed, the 30 year old son of Saudi King Salman bin Abdulaziz, also elaborated on his plans of boosting the Public Investment Fund (PIF) - the world's largest sovereign wealth fund for the kingdom's most prized assets - which will eventually control more than $2tn and help wean the kingdom off oil dependency.

"IPOing Aramco and transferring its shares to PIF will technically make investments the source of Saudi government revenue, not oil," the prince said in an interview to *Bloomberg*.

"What is left now is to diversify investments. So within 20 years, we will be an economy or state that doesn't depend mainly on oil," Prince Mohammed said.

QUOTE: "WHAT IS LEFT NOW IS TO DIVERSIFY INVESTMENTS. SO WITHIN 20 YEARS, WE WILL BE AN ECONOMY OR STATE THAT DOESN'T DEPEND MAINLY ON OIL."

UAE raises domestic fuel prices for April by over 10%

Abu Dhabi raises fuel prices for the first time since removing subsidies

FUEL PRICES The UAE Ministry of Energy has for the first time in months raised fuel prices for April 2016.

The move comes the price of Brent crude – the global crude oil benchmark – has been creeping up slightly and trading above $40 a barrel since late March and in April.

The Fuel Price Committee has reduced the price of diesel or gas oil by about 11.4% or 16 fils, from AED1.40/litre in March to AED1.56/litre for April.

The prices for gasoline products were also raised considerably by 15 fils per litre each. Prices for E Plus 91 was hiked by 11.6% from AED1.29 in March to AED1.44 for April, unleaded gasoline 95 by 11% from AED1.36 in March to AED1.51 for April, and unleaded gasoline 98 up by 10.2% from AED1.47 in March to AED1.62 for April.

The UAE in August last year took the landmark decision to lift subsidies on fuel prices, by making them 'market-linked'.

11.4%

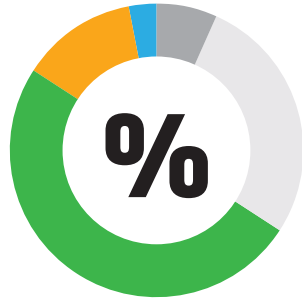
Price of diesel has been raised from AED1.40/litre in March to AED1.56/litre for April

15 FILS

The prices for gasoline products were raised by 15 fils per litre each

SPOT POLLS

WHAT WILL THE AVERAGE PRICE OF BRENT CRUDE BE IN 2016?



$20	7%
$30	28%
$40	51%
$50	13%
$60	3%

Source: *Gulf Intelligence*

Oil workers' strike against pay cuts

Kuwaiti oil workers arriving at the union headquarter in Al-Ahmadi, 35km south of Kuwait city, on April 17, to protest alleged pay cuts and plans to privatise parts of the oil sector. Kuwait proposes to introduce a new and lean payroll scheme for all public employees and wants to include the country's 20,000 oil workers. (Getty Images)

REGION

AROUND THE GCC

Latest developments across the region

1. BAHRAIN

nogaholding, the investment arm of Bahrain's National Oil and Gas Authority (NOGA) has announced it has signed a five year $570mn multi-bank Murabaha facility to support investment into a number of large scale oil and gas projects within the Kingdom of Bahrain. The $570mn sharia-compliant, five year financing is the first foray for nogaholding into the syndicated credit markets.

2. KUWAIT

Kuwait has agreed with Saudi Arabia to resume production at the joint Khafji oilfield, the country's acting Oil Minister said. The Khafji oilfield was shut in October 2014 for environmental reasons. It had been producing 280,000-300,000bpd and is operated by Al-Khafji Joint Operations Co, a joint venture between AGOC, a subsidiary of state oil firm Saudi Aramco, and Kuwait Gulf Oil Co.

3. OMAN

Groundwork for laying a subsea pipeline between Iran and Oman, enabling the Islamic Republic to export gas to the Sultanate, has begun. Having prepared its initial desk study on Iran-Oman gas export sub-sea pipeline project, the Iranian Offshore Engineering and Construction Co. (IOEC) has started to provide the basic engineering documents for the onshore sector of the pipeline.

4. QATAR

Qatargas has said it has recently completed the works for a waste water treatment plant at Qatargas 1. The facility uses an innovation known as Membrane Bio-Reactor (MBR) and has the capacity to treat nearly 1,300 cubic meters of waste water per day. The pilot MBR plant was first tested for six months in 2008, with the full installation start-up expected between 2011 and 2015.

5. SAUDI ARABIA

Local and foreign private sector companies will have products and services contracts worth $124.7bn (SAR468bn) from Saudi Aramco in the next 5 years, Al Riyadh daily reported. Divided into 24 categories, suppliers will have a choice between local and international contracts, of which, products are budgeted at $39.9bn (SAR150bn). Aramco annually needs a range of construction products.

6. UAE

Gas production from Abu Dhabi's Shah field is set to be increased by 50% by 2021, according to the chief executive officer of Al Hosn Gas company, which is developing the project. "We are planning to increase production to 1.5bn cubic feet (bcf) per day within five years from the present production capacity of 1bn cubic feet per day," Saif Ahmad Al Ghafli, Al Hosn Gas CEO has told the media.

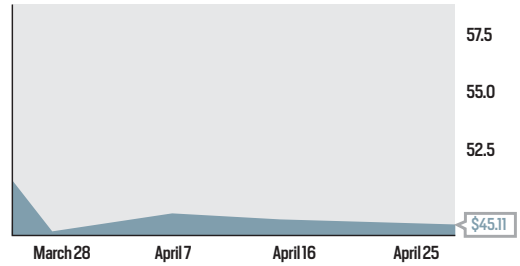
KSA plans largest artificial oil canal

AMBITION Saudi Arabia intends to establish a 1,000 km-long canal linking the Arabian Gulf with the Arabian Sea, passing by the Kingdom to facilitate transport of oil, avoiding the Strait of Hormuz. The latest issue of *Al-Muhandis* magazine, published by the Saudi Council of Engineers, outlines details of the largest artificial canal project.

Esmat Al-Hakeem, an engineer, said the Saudi Electricity Company is currently studying the project, which aims at not only transporting oil but also generating electricity using nuclear power. The vital project was first proposed seven years ago. In the first phase it will be used to produce electricity. Later it will be transformed into the Kingdom's 'second renaissance', *The Saudi Gazette* newspaper reported referring to extracts from *Al-Muhandis* magazine.

DATA SNAPSHOT

BRENT CRUDE OIL PRICE



After dipping to below $40 late in March, Brent prices picked up to trade above that mark in April. *Source: oil-price.net*

Supreme Petroleum Council rejigged

HH Sheikh Khalifa, UAE President, made the decision via an Emiri decree

REARRANGEMENT The Abu Dhabi Supreme Petroleum Council (SPC), a group regarded as the guardians of the nation's oil wealth, has recently been reshuffled, as announced late in March by state media. His Highness Sheikh Khalifa Bin Zayed Al Nahyan, President of the UAE, as the Ruler of Abu Dhabi, made the decision via an Emiri decree.

Under Sheikh Khalifa's chairmanship, the notable new members of the SPC include Sheikh Hazza bin Zayed. The royal family member and new board appointee is vice chairman of Abu Dhabi Executive Council. The appointment of Dr. Sultan Al Jaber was widely expected after he was named last month as the new head of the Abu Dhabi National Oil Company (ADNOC). Suhail Mohamed Al Mazrouei, the UAE Energy Minister, has also been named as a member of the body.

UAE Energy Minister Suhail Mohamed Al Mazrouei

ANY SURPRISES?
The appointment of Dr. Sultan Al Jaber was widely expected after he was named last month as the new head of ADNOC.

IN BRIEF

• **Al Madina Logistics has been awarded a contract** to provide storage and supply management services for Oman Oil Marketing Company known as Oman Oil, *Times of Oman* reported. Under the agreement, the company will provide outsourced storage services for petroleum derivatives and engine oil.

• **Oman's first factory specialising** in the manufacture of cleaning and inspection tools and products for pipelines has opened in Sohar with the support of Petroleum Development Oman. LiN SCAN Oman is a joint venture between UAE–based LiN SCAN International and Shaher United Trading and Contracting Company, a 100% Omani firm.

IN QUOTES

"The GRMD continues to steward new technologies within the gas programme in drilling, stimulation and completion, to enhance production and increase reserves."

Adnan Al-Kannan, manager – GRMD, Saudi Aramco

"Normally you get 4-5% degradation annually, depending on the equipment and its usage. That's what you get when you build a pipeline and don't look at it."

Mohammad A. Al-Sultan

"Iran looks unlikely to agree to any OPEC deal to cut or freeze output, especially as it only returned to global oil markets in January, when international sanctions were lifted."

'Door still open' for oil concession talks: ADNOC

CEO says ADNOC willing to talk on awarding stakes in its 40-year concession

UP FOR GRABS The chief executive of the Abu Dhabi National Oil Company (ADNOC) said in remarks published recently that the door was still open for talks on awarding stakes in its 40-year onshore concession to develop the country's biggest oilfields.

Nine Asian and Western companies have bid for stakes in the Abu Dhabi Company for Onshore Oil Operations (ADCO) concession after a deal with Western majors dating back to the 1970s expired in January 2014. South Korea's GS Energy, Japan's Inpex Corp and France's Total have won contracts so far to develop the oilfields, which produce 1.6mn barrels per day (bpd) and have a target of 1.8mn bpd from 2017.

After the former concession expired, state-run ADNOC took 100% of ADCO as political leaders in Abu Dhabi weighed up whether to bring in Asian firms or stick with old partners, industry and diplomatic sources said.

ADNOC holds 60% of ADCO, with Total, Inpex and GS Energy holding 10%, 5% and 3% respectively, leaving 22% remaining for other bidders.

"The door is still open to discuss the participation of other international players in the remaining 22% share in ADCO," Sultan al-Jaber has said.

9 FIRMS

Nine Asian and Western companies have bid for stakes in the Abu Dhabi Company for Onshore Oil Operations (ADCO).

22%

Of the ADCO concession is up for grabs, as the majority 60% is held by ADNOC.

PLAY/PAUSE:

Who's moving up in the oil and gas world this month, and who's falling away?

Two major Omani state oil companies are in talks regarding loan facilities worth a combined $4.35bn. Among those is Petroleum Development Oman (PDO), which is seeking a $2.5bn loan to fund its projects.

Iran is expected to add 500,000 bpd within a year from its existing oilfields after the lifting of sanctions against Tehran in January, but developing new fields would take time, the head of the IEA has said.

Kuwait's crude oil production dropped by almost two thirds on April 18 as thousands of oil workers went on strike. Production fell to 1.1mn barrels a day from its usual 3mn, Kuwait Oil Company (KOC) said.

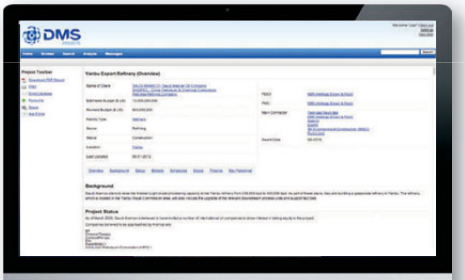
Omani firms are increasingly foraying into the Sultanate's upstream oil and gas E&P business as operators – long regarded as the exclusive preserve of international players, according to a top official.

Over 10,000 major projects tracked

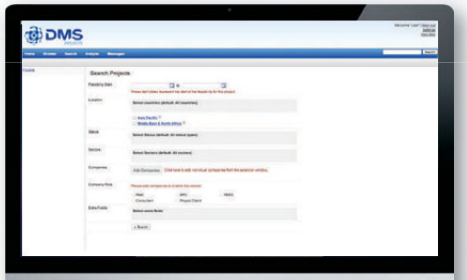
in over 60 countries across 14 major sectors

DMS PROJECTS

The DNA for Success



Project Overview



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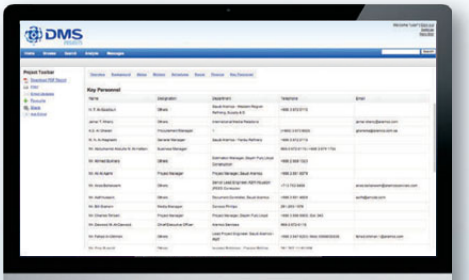
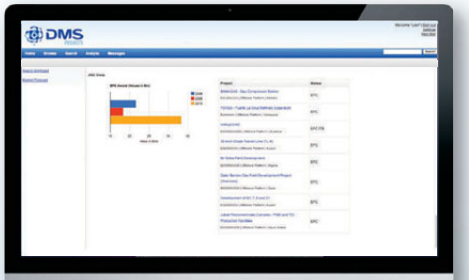
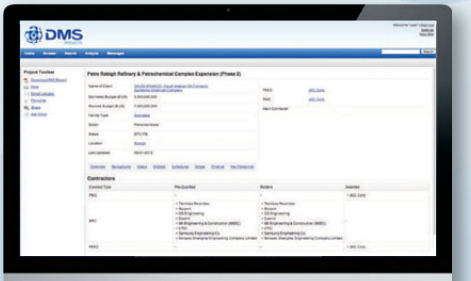


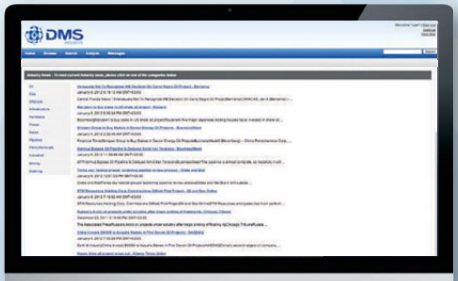
Key Personnel



Market Forecast



Bidders List



Industry News

KEY FEATURES

- Project Scope and Background
- Track Project Schedules
- Key Personnel Details
- Track Entire Project Lifecycle
- Access Linked Projects
- Access Project Locations
- Advanced Search Features
- Favourites, Notes, Reminders
- Track Updates
- Customized Email Alerts
- Statistics, Analysis & Forecasting
- Data Download
- Project Values and Financing
- Global Network of Researchers
- Customized Research Modules
- Business Profile of Colleagues

NEW FEATURES

- Customizable Dashboard
- Messaging/Sharing Projects Amongst Your Members Group
- Stream Current Industry News Through Your Dashboard
- Forecast Models by Feasibility & EPC Award Dates
- Compare Contractor Workloads Against Each Other
- 65 Levels of Key Personnel
- Deeper Project Financing Data

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Saudi Aramco says Jafurah unconventional gas promising

CEO says Aramco it plans to boost gas production for power and chemical industries

WHERE IS ARAMCO LOOKING FOR GAS?

Saudi Aramco has launched its exploration campaign to look for unconventional gas in the northwest area, the Eastern Province and the Empty Quarter.

GAS Saudi Aramco is assessing the unconventional Jafurah gas basin which it says is promising, its CEO recently said, as the world's largest oil exporter plans to boost gas production for power and chemical industries.

Saudi Aramco has launched its exploration campaign to look for unconventional gas in the northwest area, the Eastern Province and the Empty Quarter. Jafurah is in southeast of Ghawar, the world's largest conventional oilfield.

"Our exploration efforts have resulted in finding big volumes of shale gas in the Jafurah Basin close to Ahsa, they are highly promising quantities and economically feasible as they contain a high rate of liquids; activities to evaluate the reserves are ongoing," Amin Nasser told an investment conference in April.

"The recent unconventional gas field in the nearby Jafurah basin is very promising, we are still assessing its potential but it could be a game changer for Al Ahsa in terms of creating more opportunities new engines for growth," Nasser told the forum in Al Ahsa.

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Oil&Gas MIDDLE EAST

$1.45BN

TEXAS-BASED ENERGY XXI LTD. HAS FILED FOR BANKRUPTCY, BECOMING THE LATEST HEAVILY INDEBTED OIL AND GAS COMPANY IN THE US TO COLLAPSE AMID VOLATILE FUEL PRICES. THE COMPANY SOUGHT CHAPTER 11 PROTECTION AFTER STRIKING A TENTATIVE DEAL ON THE TERMS OF A $1.45BN DEBT-FOR-EQUITY SWAP WITH A GROUP OF ITS BONDHOLDERS.

62%

DESPITE AN INSIGNIFICANT RISE THIS YEAR, INVESTMENT IN CANADA'S OIL INDUSTRY IS EXPECTED TO DECLINE 62% FROM ITS 2014 PEAK DUE TO FALLING CRUDE PRICES, WARNS THE CANADIAN ASSOCIATION OF PETROLEUM PRODUCERS (CAPP).

10

MEXICO PLANS TO AUCTION 10 BLOCKS OF DEEPWATER OIL AND GAS RESOURCES IN DECEMBER 2016. THE SALE, WHICH IS PART OF THE COUNTRY'S HISTORIC ENERGY-SECTOR PRIVATISATION, WILL OPEN THE COUNTRY'S DEEPWATER RESERVES TO PRIVATE COMPANIES FOR THE FIRST TIME.

12,000

BRAZIL'S PETROBRAS SAID IN A STATEMENT THAT IT HAS APPROVED A VOLUNTARY LAYOFF PROGRAM TO REDUCE ITS WORKFORCE BY ABOUT 12,000 AND SAVE $9.20BN BY 2020.

€20BN

ITALY'S ENI PLANS TO INVEST ABOUT €20BN ($22.5BN) IN AFRICA OVER THE NEXT FOUR YEARS, MOSTLY IN OIL AND GAS. THE COMPANY'S CEO CLAUDIO DESCALZI HAS SAID, "THAT REPRESENTS ABOUT 60% OF OUR INVESTMENTS."

2.11TCF

ITALIAN OIL AND GAS INDUSTRY CONTRACTOR SAIPEM HAS ANNOUNCED IT HAS ENTERED INTO AN MOU WITH IRANIAN ENERGY FIRM RAVAZI OIL AND GAS DEVELOPMENT, TO DEVELOP THE TOOS GAS FIELD.

$20BN

INDIA COULD INVEST AS MUCH AS $20BN IN IRAN'S ENERGY INDUSTRY IF IT RECEIVES 'FAVOURABLE TERMS', OIL MINISTER DHARMENDRA PRADHAN HAS SAID. INDIA IS LOOKING TO BUILD PETCHEM PLANTS, EXPAND PORTS AND EXPLORE FOR OIL.

$3.8BN

PETROCHINA'S PROFITS TUMBLED TO THE LOWEST SINCE 1999 AS THE COMPANY REPORTED A $3.8BN WRITE-DOWN AMID THE CRASH IN ENERGY PRICES. NET INCOME AT CHINA'S BIGGEST OIL AND GAS PRODUCER DROPPED 67%.

Oman targets $3.5bn ICV by 2020

The amount maybe spend on local content development and 'Omanisation'

ICV Oman's oilfield in-country value (ICV) generation has been targeted at about 32% of the sector's total oil and gas expenditure in the year 2020, which roughly equates to $3.5bn, a report says.

It maybe spend on local content development in the form of 'Omanisation', training, and patronisation of locally sourced goods and services, said the *Oman Daily Observer* report.

ICV is the total spend retained in-country that can benefit business development.

The target does not include commitments envisaged by Oman LNG and Orpic, which are expected to make significant pledges towards local content development, Salim bin Nasser Al Aufy, Undersecretary at Oman's Ministry of Oil and Gas, was quoted as saying.

Al Aufy also warned that oil and gas producers and contractors will be required to demonstrate that their ICV commitments translate into 100% local content development.

WHAT WILL COMPANIES NEED TO PROVE?

Oil and gas producers and contractors in Oman will be required to demonstrate that their ICV commitments translate into 100% local content development.

UPCOMING EVENTS
INDUSTRY CALENDAR

- SPE Training Course: Formation Damage in Produced Water Re-Injection and Waterflooding; May 8
  The Address Dubai Marina
- SPE Formation Damage Control and Mitigation Workshop: Innovation – The Key to Success; May 9–10
  The Address Dubai Marina
- SPE Characterisation and Management of Naturally Fractured Carbonate Reservoirs Workshop
  May 10–12
  Four Seasons Hotel, Manama, Bahrain

Have your say:
contact james.henderson@itp.com

Is oil & gas safety and maintenance at risk?

In the wake of the oil price decline, are the Middle East and North Africa's oil and gas industry's safety and maintenance aspects at risk? Andrew Herring and Andrew George have their say

About the authors:
Andrew Herring (left) is the leader of the energy practice at Marsh for Europe, Middle East and North Africa. Andrew George (right) is the chairman of Marsh Energy & Power.

Historical loss trends reveal a potential correlation between significant falloffs in oil prices and increased energy losses. Energy companies in the Middle East and North Africa (MENA) region must exercise caution when implementing cost-cutting measures, designed to counteract or offset the effects of low oil prices, to ensure history doesn't repeat itself.

Fortunately for the Middle East, the region can produce oil and gas at a significantly lower cost than can be done in other parts of the world; however, there is a concern, from a process safety and loss control point of view, that lower revenues from oil and gas production and falling demand could potentially result in reductions in investment in risk-control measures.

The reduction in maintenance and inspection activity could result in a higher rate of accidents.

Historically, in the upstream market, periods of significant pricing falls have been met by new projects being shelved or cancelled, increase in redundancies and hiring freezes, cuts in infrastructure and maintenance spending and lower investment in health and safety measures and employee training.

Similar reductions occurred between 1980 and 1986 when Brent crude oil price fell from $35 to $15 per barrel, in the late 1990s when the price fell below $10 per barrel, and in 2008 when the price fell from over $100 to $32 per barrel. A period of increased frequency or larger losses has typically followed soon after.

However, further Marsh research reveals that Middle Eastern energy facilities have strengthened their risk-quality position since 2013 thanks to significant investment made on the back of increased revenues from the high oil price in the preceding years.

The paper highlighted a significant increase in the risk quality of Middle Eastern facilities compared to the global population, and demonstrated that in many areas the rate of change for the Middle East region is more than three times faster than for the global population.

All of this, of course, is to be welcomed; however, over the past 20 months, oil prices have fallen by around 70%.

Already, companies in the MENA region have been cancelling projects and making staffing reductions. It is estimated that projects worth up to $380bn have been shelved globally, according to consultancy group Wood Mackenzie.

Meanwhile, a recent survey in the *Chemical Engineer* revealed that the majority of respondents had seen redundancies within their companies.

Additionally, 36% had seen training budgets cut and 45% reported hiring freezes.

While project cancellations and redundancies are easy to quantify due to publicly available information, cuts in maintenance, health and safety measures, and employee training are far more difficult to assess.

With a prolonged period of low oil prices expected, the question now is when oil and gas companies in the MENA region begin spending less on maintenance and health and safety.

With today's new oil price paradigm, it is important to look to the past for lessons on how best to manage cost savings in a measured manner that limits any potential downside. This includes taking decisions based on the conclusions of assessments to ensure that any risks of major losses introduced by changes to safety expenditure are reduced and mitigated effectively. For example, any significant organisational changes as a result of staffing reductions should be subject to an organisational management of change assessment —including a risk assessment — to ensure that any risk introduced as a result of loss of knowledge or expertise due to staffing changes is mitigated.

In such instances, it is also important to ensure that critical inspection and maintenance tasks continue to be delivered on schedule.

Senior managers should receive regular reports of key performance indicators (KPI) regarding maintenance and inspection performance. These should be selected and tracked so that they are indicative of the key tasks required to maintain process safety performance.

Every business decision, especially those involving cutting costs, should be made taking into account the potential risks involved.


O&G companies must maintain spending on safety.

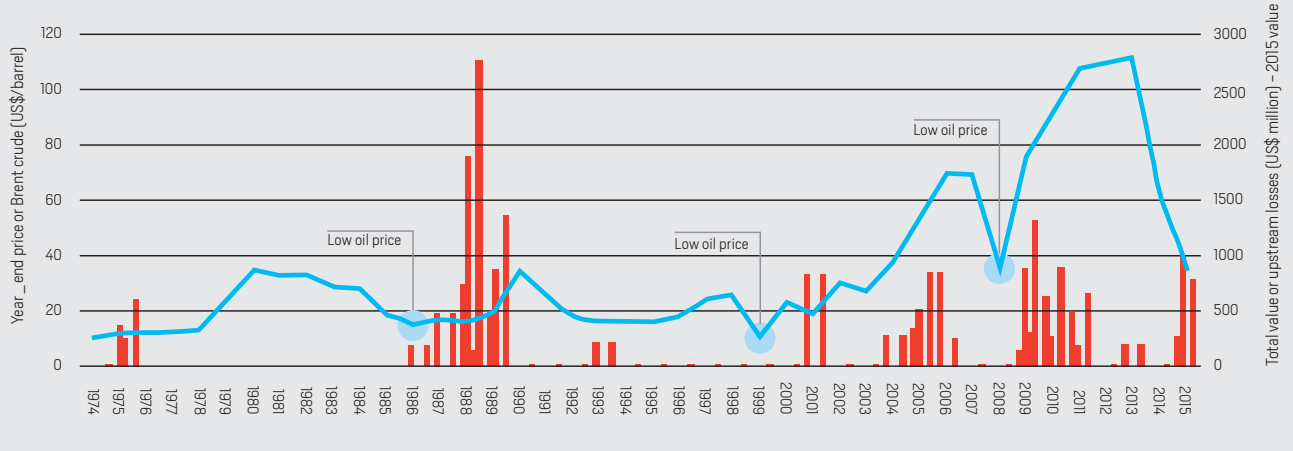
This way, cost-saving initiatives will have long-term value and impact, rather than simply transferring today's savings into tomorrow's major costs.

Many forecasters are predicting that oil prices will remain low for some time to come. It is vital that cost-saving measures implemented by oil companies are considered and measured.

Cuts that extend too deeply into an organisation could have a significant impact on loss records and, ultimately, cost more to rectify than they initially saved. Companies should also be looking to take additional risk off their balance sheets at a time when the cost of insurance capital at historic lows. Clearly, opportunities exist to reduce overall insurance premium costs, purchase insurance in areas that were previously omitted due to cost, and renegotiate coverage terms.

FIGURE 1 CRUDE OIL PRICE VERSUS UPSTREAM LOSSES BY YEAR - 1974-2015

Source: Marsh Research



Have your say:
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Balancing act

Oil and gas companies are faced with the challenge of maximising reserves at a time when project costs are soaring

About the author:
Colin Chapman is the president of Euro Petroleum Consultants.

An archive image.

When oil and gas producing companies faced constraints due to the current market conditions, they turned their focus from dealing with external factors to exploring possible solutions from within - reserves and overall asset management being two areas of special attention.

The quality of reserves has been evolving over time, the recent spotlight has fallen on unconventional resources (including offshore deepwater and shale amongst others) and hard to recover resources that are deposited in smaller oilfields located in more distant regions.

But at the same time complexity and capital project costs are reaching all-time highs, urging companies to assess their portfolios and evaluate projects more thoroughly and review existing facilities to get maximum returns for every dollar invested.

The maturity of the oil and gas fields and installed equipment brings the need to combine technical, commercial and economic aspects together – the need to reduce loss of value and profit through increased production costs. Operating and service companies have been cooperating closely to find ways to increase reliability and confidence levels given higher degree of uncertainty that is inherent to Exploration & Production (E&P) projects and ventures. Sound practices need to be applied by operators to the processes of exploration, drilling and production with technical input from technology and digital solutions providers.

Companies should be realistic when looking at equipment performance, its capabilities, limits and duty, conduct audits or inspection internally or through a contractor to get an independent opinion on actual state of affairs and get professional recommendations on the areas that need improvement and the extent to which efficiency can be improved.

Maintaining mature fields can also involve applying new techniques - called well revitalisation: refracturing – stimulation of well productivity and evaluation of results via advanced diagnosis technologies; so-called 'locate-the-remaining-oil' applied techniques that increase accuracy of additional drilling and efficiency of enhanced oil recovery methods; conditioning the wells and different ways of perforation.

After some important incidents in oil and gas fields, both onshore and offshore, that were the result of insufficient well integrity, companies immediately became more focused on key sectors – safety, environmental and financial issues that could impact the company's reputation and future.

Since 2010, a lot of effort has been put into enhancing safety and risk management for wells.

Firstly, companies identified current practices that needed serious improvement and began to implement safety techniques like HAZOP and complicated risk assessment studies, multi-layered safety systems (LOPA). They needed to ensure that their assets were in conformity with the updated standards that were issued after those major accidents.

Many of them analysed well performance and in some cases found failures in safety that led to performance gaps.

Companies now pay more attention to training of their staff in order to improve competence levels to

cover as many processes in-house as possible and effectively – maintenance, well control, inspections, etc.

Allocating responsibility is up to crew managers that also need to be trained to understand the importance of safety and coordination, the procedures and to transfer the knowledge.

The goal that companies are looking to achieve is to have, not only Health, Safety & Environment (HSE) and maintenance managers, but leaders to motivate and guide employees to minimise the risk of human error.

Certification has become a popular means to monitor progress and evolution – a way to know that staff members completed the whole course and gained minimum needed skills to be involved further in the process.

Other avenues include training centres providing classes and simulation cases. Diligent work on maintaining competitive level of asset

Drilling rigs at night.

(well) integrity should be seen not as a way to increase costs but a way to save equipment from inevitable decay – some companies previously preferred to buy a new equipment rather than spend on capital-intensive assets during their lifecycle.

However, the current tough business environment has encouraged operators to move towards rational investment decisions.

An 'asset-conscious' approach is the new style of life that is being introduced in all processing industries and has already brought significant change to the oil and gas business, and soon will transform and reshape both client and contractor markets.

Oil & Gas and RPME Awards 2016 open for nominations

Oil & Gas and Refining & Petrochemicals Middle East magazines come together to celebrate innovation and success across the full breadth of the upstream and downstream sectors

This year's *Oil & Gas and Refining and Petrochemicals Middle East* awards will build on the success of last year's show, to celebrate innovation and achievement.

The *Oil & Gas and Refining & Petrochemicals Middle East Awards 2016* are now open for nominations.

Building on the phenomenal success of last year's ceremony, the awards will celebrate achievement and ambition in both the upstream and downstream oil and gas sectors.

"It feels brilliant since we were up against industry majors like Saudi Aramco," Jennifer Broom, marketing coordinator of ScanTech Offshore, said of the level of competition of the and the fairness displayed by the judges. UK-based ScanTech Offshore bagged last year's 'Technical Innovation of the Year' award for its pioneering product 'HeaterSentry' well-testing product.

"We actually felt great to have been nominated for the awards in the first place. To get shortlisted was a major achievement, to win it was delightful. We are really happy," Broom said of the ScanTech Offshore team's experience.

In the six years since its inception, the *Oil & Gas and Refining & Petrochemicals Awards* have grown to become the must-attend networking occasion for senior executives in the industry and are now seen as a barometer of success in the industry.

Nominations can be submitted online across a broad range of categories, by visiting: *http://www.arabianoilandgas.com/oil-gas-awards/*

FIRST THREE JUDGES REVEALED

Colin Chapman

Abhay Bhargava

Naser AlDousari

Oil & Gas Middle East and *RPME* are delighted to announce the first three judges to have been confirmed for the 2016 awards ceremony. Colin Chapman, president of Euro Petroleum Consultants, Abhay Bhargava, associate director and regional head– Middle East, Energy & Environment Practice, Frost & Sullivan and Naser AlDousari, director of corporate strategy for MEGlobal have all confirmed their participation in this year's event. "I think if you are having awards at different levels — and again it doesn't have to be the CEO or managing director — then you are recognising those contributions from people right across the spectrum," Chapman, who was also a judge last year, said.

We've streamlined our nomination process this year to make it even easier to nominate your colleagues. All entries must be submitted online and can be made by the nominees themselves, a customer, supplier or partner.
The final deadline for submissions is 21st August 2016, after which, all nominations will be collated and sent to our panel of judges for review.

To nominate, please visit: http://www.arabianoilandgas.com/oil-gas-awards/ and follow these simple steps:

1. Go to the Awards website: www.arabianoilandgas.com/oil-gas-awards/
2. Click 'submit nominations' on the Awards homepage.
3. Click on 'choose categories' and pick the category that you would like to nominate for.
4. Enter nominations details, including the name of the company or person that you are nominating.
5. A sample entry is provided on the website for your reference.
6. Describe in 500 words or less why you think this nomination deserves to win.
7. Attach any supporting files or email larger files to oagawards@itp.com.

2016 MIDDLE EAST Oil&Gas & Refining & Petrochemicals Middle East AWARDS

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And the categories are....

The categories for the sixth annual *Oil & Gas Middle East & Refining & Petrochemicals Middle Awards* have been unveiled

HSE Product/Application of the Year

A new category, this award will recognise the best oil and gas product that has aided oil and gas companies in their efforts to improve health and safety. The winner could be a highly advanced computer programme or a simple winch – what's important is its positive impact on health and safety.

HSE Initiative of the Year

Health, safety & environment is the cornerstone of the oil & gas industry. This award will recognise a specific initiative that has helped to reduce accidents and problems in the workplace. Entries should be supported by data that demonstrates the success of the initiative.

CSR Initiative of the Year

Corporate social responsibility initiatives have become a priority for most companies in the oil & gas industry. This award will recognise a CSR programme that has provided demonstrable and lasting benefits to its targeted beneficiaries.

In-Country Value (ICV) strategy of the Year

Localisation is now at the top of the agenda of the region's NOCs. This award will recognise a successful localisation strategy, how it has been implemented, what benefits it offers the company and the employee and how successful the strategy has been.

Training Initiative/Programme of the Year

Billions of dollars are being invested to train the next generation of oil and gas professionals, as well as enhancing the skills of the existing workforce. This award will go to the training programme or initiative that has made a real difference in the upstream or downstream sector. Entries from both individual companies and training organisations will be accepted.

Operational Excellence Strategy of the Year

With the region's operators looking to squeeze every last drop of profit out of their valuable hydrocarbon reserves, operational excellence is becoming more important than ever. Operational excellence means doing the right thing, each and every time. This award recognises the most innovative and ambitious operational excellence project in the region.

Technical Innovation of the Year

IT and technology are becoming the backbone of the modern upstream operation, from digital oilfields to 3D modelling and pipeline sensors. This project-based award will recognise a project that demonstrates a successful and innovative technical solution to an upstream oil and gas problem.

Enhanced Oil Recovery Project of the Year

Much of the GCC's energy reserves are located in challenging locations, sometimes in rock formations that have developed over millions of years. As a result, companies are increasingly investing in enhanced oil recovery techniques to boost production. This award will go to the most successful and innovative project that has used EOR technology.

EPC Project of the Year

The Middle East is a hotbed for highly experienced, skilled and proficient EPC contracting firms. The work of EPC firms is vital to determining the success of any exploration project. Outstanding EPC work can be the difference between a project coming in on time and on budget – both of which are hugely important on oil and gas projects. This award will go to the most accomplished example of an EPC project in the region over the last 18 months.

Young Oil & Gas Professional of the Year

Concerns about young, emerging talent in the oil and gas industry are not new. However, companies in the region are investing heavily to bring through skilled engineers and executives. The award is open to employees aged 30 and younger, and will go to the candidate whose work has had an overwhelmingly positive impact on his or her company over the past 18 months.

Oil & Gas Woman of the Year

This award will recognise an outstanding female achiever who has a successful track record and has made a telling contribution to the hydrocarbons industry. The GCC boasts a wealth of female talent in oil and gas, with thousands more highly talented engineering graduates helping to make the region a hotspot for industry excellence.

Oil Field Services Company of the Year

Oil field service companies drive the entire upstream sector, providing every conceivable type of service, from hiring out moveable accommodation, to rope access, to seismic exploration and deep water oil exploration. This award will look for the most successful and innovative completed oil field services company in the Middle East region over the last 18 months.
It is open to small, medium and large companies that have showcased interesting solutions or innovations for an upstream partner, or that demonstrate a project that has been completed exactly to specification, on time and on budget.

Downstream Project of the Year

Some of the region's long awaited refining and petrochemical projects are coming on stream by the end of this year, bringing to the fore scores of new products to the GCC. It is projects like these that will help diversify GCC economies, make them more competitive on a global scale and create more jobs for their young and growing populations. Downstream Project of the Year will aim to select the most outstanding, ambitious and game-changing project in the GCC's refining and petrochemical sector.

WorleyParsons' breadth of project capabilities is helping the company stand out in a crowded market, says Adham AlKady, VP Middle East & North Africa, Hydrocarbons, Infrastructure, MM&C

STRENGTH IN DEPTH

WORDS: JAMES HENDERSON

In today's crowded and sometimes challenging oil and gas market, it is more important than ever that companies can differentiate themselves from the competition.

This can be done in a number of ways; honing in on a particular market niche, for example, or providing a specialist service in a specific region.

But WorleyParsons is taking a different approach, and instead is offering its customer base the proposition of working with them across the entire life cycle of a project or projects – from inception to operation.

"We can work across all phases of a project's life, and we have found that many of our customers really do want that service. It is a great strength for the company," says Adham AlKady, VP Middle East & North Africa, Hydrocarbons, Infrastructure, MM&C, who came into the position around a year ago.

The business concentrates on three major sectors: Hydrocarbons, Infrastructure (inc. Power), and Minerals, Metals & Chemicals, while the operations are supported by four central business lines.

The first is 'Major Projects', which focusses on

large complex projects, specialising in full project delivery in the PMC, EPCM and EPC arenas. 'Services' is its local delivery system, and is based on a deep understanding of local markets and customers' expectations combined with the best technical capability locally and globally, to deliver projects across the asset lifecycle.

The third business line is 'Improve', which plays the role of optimising the performance of operating assets and building long-term relationships with customers to support their capital efficiency and effectiveness in brownfield projects.

Not happy standing still, WorleyParsons last year launched its fourth business line 'Advisian' which, AlKady says, bridges the gap between management consulting and technical consulting by providing strategic business-level advisory coupled with deep technical expertise across the entire asset lifecycle.

He elaborates: "It begins at the time when the customer is thinking about a project, so it's at a stage where it's an idea. A customer usually needs somebody to validate an idea from either a commercial or technical point of view, sometimes both. This means we are able to engage with customers even before the concept stage; we look at the feasibility of an idea, from the state of the market, to the effects on the environment, all the way to life of asset viability.

After that, we can carry out a commercial feasibility study, and work with the team at the company that is looking to start the project, and we are able to work right through to the execution. It puts us in a very strong position compared with pure consultancy companies who can carry out feasibility studies but cannot work across the

28,000

WORLEYPARSONS IS A TRUE MULTI-NATIONAL COMPANY, WITH MORE THAN 28,000 PEOPLE WORKING ACROSS 134 OFFICES IN 44 COUNTRIES

The Hawiyah gas development in Saudi Arabia.

A LOOK AT ADHAM ALKADY:
Adham AlKady is the vice president – Hydrocarbons, Infrastructure, MM&C for Middle East & North Africa and holds the global customer relationship manager role for Saudi Aramco. AlKady's experience spans some 30 years, focussed primarily on the energy sector, extending across North America, the Middle East, North Africa and the Asia-Pacific. As founder & CEO of EnMatrix Consultants in the UAE, AlKady has advised executives and boards of NOCs and multinationals alike on a number of strategic topics relating to the oil and gas industry, particularly during times of change.

Prior to joining WorleyParsons, AlKady worked in international management and business settings for organisations including Schlumberger and Baker Hughes, where he held roles in regional general management, business development, technical & operations management, advisory and consultancy.

AlKady holds a Bachelor of Science (B Sc) degree in Petroleum Engineering from Cairo University and an MBA from Richard Ivey School of Business at the University of Western Ontario, Canada.

"LOOKING AT IT FROM THE ASSET'S LIFECYCLE AND WITH OUR EXPERTISE, WE CAN ALSO ASSESS ASSET BUSINESS PERFORMANCE IN THE CONTEXT OF THE TECHNICAL CHALLENGES."

It is the organisation's local presence combined with its technical global expertise that AlKady says gives WorleyParsons an edge over others.

project as they don't have the technical expertise. They can't move a project forward."

He continues, "Looking at it from the other end of an asset's lifecycle and with our operations expertise, we can also assess asset business performance in the context of the technical challenges and work with our clients to deliver sustainable performance improvements beyond just cutting costs, looking to extend asset life."

It is the organisation's local presence combined with its technical global expertise that AlKady says gives WorleyParsons an edge over others. Indeed, the company is a true multinational, with more than 28,000 people working across 44 countries with 134 offices giving it geographical diversity and sector diversification and FY2015 revenues of $7.28bn. Here in the Middle East & North Africa region, it has over 3,000 engineers and professionals looking after its key locations Saudi Arabia, Bahrain, the UAE & Qatar, Oman, Iraq and Egypt. In some of these locations, such as Saudi Arabia, WorleyParsons has had a presence of over 40 years.

"There have been some areas in the Middle East that have slowed, but there are others that have grown. As a multi-national, we are able to mobilise resources from places where activity may be slowing to areas where business is picking up. As an example, while sour gas activity has slowed somewhat in other locations it remains strong here, such are the demands for gas in the GCC. We are able to mobilise our expertise and bring them to the geographical areas where they are needed," he explains.

Sour gas and sulphur management and expertise will only continue to get more critical in the GCC, where demand continues its seemingly never-ending ascent. The process of treating sour gas adds to the costs, says AlKady, but the need means that reserves can no longer lie untapped in the ground.

"Another example is enhanced oil recovery (EOR). We are very active across the region, and see ourselves as pioneers in this area, simply because we work very closely with our customers. We want to continue to improve in this area despite being considered a leading player. Our experience in the different methods within EOR provides our customers with optimal solutions and advanced technologies that promise to open up fields around the world to the possibility of advanced, highly economic EOR schemes. We're looking at deploying our best technology to wherever it is needed across the world. It is critical to maintain efforts and our EOR capability is a big part of that effort working alongside NOCs.

If you look at the unconventional area, we have expertise in America and Canada, and what we'd like to do is bring more of that expertise to this area of the world. We are currently in discussions with NOCs in the region."

So far, so good, but the spectre of low oil prices is one that must be addressed by any company working in the energy industry. Speaking about the drop in oil prices and its effects on WorleyParsons' operations in the engineering, procurement and construction sector, AlKady is pragmatic, looking at the period as a chance to ensure the business is working as effectively as possible.

1,000+

WORLEYPARSONS IS INVOLVED IN OVER 1,000 GAS PROCESSING PROJECTS, WITH SOUR GAS HANDLING BEING A MAJOR STRENGTH OF THE COMPANY.

The Shaybah oilfield development in Saudi Arabia.

"Sometimes when you are a player in a market, you have to do what the market dictates. Everyone has gone back to the drawing board in one way or another, and we ourselves have looked at ways we can reduce our costs, and pass that on to the customer. On some occasions, we've worked with our customers to do this.

"We are conscious of market trends, and sometimes you have to evaluate where you can 'sharpen your pencil', see where you can be more efficient, and improve process and systems. But I think that's the same in boom periods; companies constantly have to look at improving and progressing.

We work in an industry where you don't get the chance to start again, so we have to make sure we are producing our very best on every project we do. That is the same in a boom period or a downturn," says AlKady.

"At the heart of WorleyParsons is the concept of 'delivering what we promise'. So when we discuss projects with customers, they can be confident that we will deliver. It has to be a cultural belief, you can't just adopt a corporate approach in a week, a month or even a year. It took us years of experience to get to the position we are in today."

As part of the effort to drive forward and be at the forefront of the sector's technological advancements, WorleyParsons has been fast to develop and roll-out its Digital Enterprise offering (part of Advisian).

"It's something we've already worked on with one of the region's major national oil companies that attracted a great deal of attention at last year's ADIPEC event. We demonstrated how our capability to gather digital services coupled with new technology was able to support this NOC's demand for the digital asset," says AlKady.

He continues: "Customers see a lot of value in the digital enterprise field. You can analyse, modify and troubleshoot huge structures on a screen. The ability to look at certain networks within a structure is hugely valuable, and I think customers see that.

Some of the marine structures in the region are 50 years old, requiring overhauls or maintenance. Over the years, changes will have been made but this historical information isn't always easy to access. Today, when we work on projects, digital technology is used and so it allows us to build a 3D 'as-built' model of the asset for the customer, which can be more easily kept up to date afterwards allowing modifications or maintenance to

WorleyParsons' stand at ADIPEC 2015 in Abu Dhabi.

be simply tracked going forward."

"It's becoming critical for customers to have this technology, rather than just using paper copies that might be lying around in different locations, it makes life so much easier and their future will be more cost effective and efficient."

In addition to its work in the hydrocarbons sector, the company's energy portfolio extends into areas such as renewables, nuclear and thermal power stations. "This sector's diversification has served us well in other areas, with WorleyParsons having been involved in ten of the world's largest renewables projects," AlKady says.

Away from the day-to-day realities and challenges of steering the business, AlKady brings up the importance of WorleyParsons' commitment to in-country value (sometimes referred to as nationalisation schemes) on a number of occasions, and seems genuinely passionate about the company's efforts to develop the region's next generation of top-tier engineers.

"We believe that developing regional talent is not a luxury but a social responsibility. We've developed national talent in Oman and Saudi Arabia for the main operators in these countries, as well as for other markets such as Kazakhstan where nationalisation is also a strategic priority. We have done this by taking fresh graduates and developing them to become very successful engineers. We have developed a programme that runs across a number of years, which takes in all areas of the job. We create graduate development programmes that include not just technical training, but allow them to develop managerial and leadership skills. We empower them to manage their own career path. We're uniquely placed to offer project delivery application training – on the job training combined with study, experience on-site – it is really sophisticated."

"WE'VE DEVELOPED NATIONAL TALENT IN OMAN AND SAUDI ARABIA FOR THE MAIN OPERATORS IN THESE COUNTRIES, AS WELL AS FOR OTHER MARKETS SUCH AS KAZAKHSTAN."

To this end, WorleyParsons is establishing a campus of the WorleyParsons Academy in the region, and it will be only its second in the world (the other being in Houston), located in Khobar, Saudi Arabia.

"There is a need for it in this part of the world; we want to take the best graduates from the universities and develop them over a period of time. It is critical that they have the experience and ability to manage teams, assets, third parties, and so on. We want to give them that capability to manage and deliver," says AlKady.

"It is difficult for universities to send us engineers with a full knowledge of what they are expected to do in real life, and on the job. So I think we are bridging that gap by bringing them into our company, and helping them develop. We have many engineers that have been through the programme and have been successful."

AlKady seems like a man with a spring in his step, invigorated by what is still a new role, and hungry to make his mark.

"I am excited by the brain power the company has. I look at the engineers, the capabilities and technology, and it makes me feel empowered. I feel very confident about the future of WorleyParsons in the region. We're here for the long-term and we'll continue to adopt and use new technologies that the region needs, while delivering top-notch service in terms of schedule and cost to help support our customers. I'm hugely optimistic."

Oil & Gas MIDDLE EAST

PIPELINE SPECIAL REPORT

Oil & Gas Middle East **takes a look at the pipeline maintenance and management segment and how crucial it is to the energy industry's operations**

+ PRODUCTS

PIPELINE EQUIPMENT YOU NEED

COMMENT

EDITOR'S LETTER

Indrajit Sen is the Reporter for *Oil & Gas Middle East*. He can be reached on: indrajit.sen@itp.com

A pipeline for the projects

OGME sheds light on how crucial pipeline management is to regional energy operations

Despite the region making significant advancements in its logistics and transportation capabilities, the pipeline still remains the main source of transporting oil and gas in both its crude and liquefied forms – and will continue to remain so in the foreseeable future. Bearing in mind this crucial fact that pipelines are key to the subsistence and operations of the Middle East's energy industry, it is imperative that companies here strive to achieve effective pipeline maintenance and management.

And that is the subject of *Oil & Gas Middle East*'s first ever 'Special Report' – a new publishing approach that focuses each month on a particular topic that lies at the very heart of this industry. Let me explain why we chose to launch this concept with pipeline management as a theme.

Take a moment to reflect on how heavily the upstream sector in the Middle East (and beyond) depends on pipelines for the functioning of its mega projects and the success of even bigger and more ambitious ones it intends to start in the months and years to come.

Probably the biggest example that comes to mind is the Dolphin Energy project – a joint venture between Abu Dhabi's Mubadala, Occidental Petroleum and Total. The tri-nation pipeline – a portion of which is subsea – sources natural gas from Qatar's North Field, which then gets processed before reaching the UAE and Oman. The pipeline project transports about 2bn cubic feet of gas per day and meets 30% of the UAE's energy needs. Imagine a scenario where any section of this pipeline is left unattended and without maintenance; scary isn't it?

Consider the case of the $300mn-worth pipeline that Bahrain is planning to build to replace the existing (read 'ageing') one that imports crude oil from neighbouring Saudi Arabia's Ras Tanura oilfield. Although the new pipeline will have a far more carrying capacity – 350,000bpd as opposed to the current 230,000bpd flow – one of the main reasons cited by operator Bapco is the 'high maintenance costs' of the old pipeline. Just another example of why pipeline maintenance is so pivotal in this low-oil-price era.

In our Special Report, we offer you a case study of how the pipeline maintenance market in Europe has grown over the years, a trend akin to the Middle East, followed by our Knowledge Partner – Weir Oil & Gas – talking about cutting-edge pipeline technology.

There is a pipeline for all your projects, so take care of it.

Global MRO market on the move

Global consultancy firm AT Kearney presents a case study of the European maintenance, repair and operations (MRO) services market. The European external MRO market is expected to grow by 2% a year – to about $82bn – over the next three years. With more service providers coming to the scene, what does this mean for manufacturers?

A recent study of MRO service concepts in Europe by AT Kearney finds that the 2008 financial crisis spurred a trend toward MRO outsourcing as companies sought to cut costs. The global energy consultancy's study shows that the trend continues and is both supply- and demand-driven. On the supply side, large MRO service providers are focusing on meeting customers' needs by providing quality services at affordable prices. On the demand side, pressure on manufacturers to reduce costs has increased the attractiveness of — and lowered the barriers to — advanced concepts in integrated MRO services.

MRO service providers: Managing complexity

MRO service providers offer a wide range of services — from pure parts delivery and execution of services to comprehensive planning and coordination. These latter services are performed by integrated MRO providers that often take on additional responsibilities such as coordinating multiple parts and services categories and assuming responsibility for equipment performance.

↑ **MRO service providers offer a wide range of services—from pure parts delivery and execution of services to comprehensive planning and coordination.**

Providers of such highly integrated MRO services take on responsibility for manufacturers' inventory, existing management and operations

personnel, and implement IT solutions and management systems to monitor the flow of MRO products and services.

In addition, full-service contracts often include meeting agreed-to equipment availability and agreed-to total cost reductions in processes and purchased parts. Essentially, integrated MRO service providers must master the complexity of their clients' overall service and parts requirements.

European MRO outsourcing growth

Overall, MRO volumes consist of two elements: internal, generated by in-house MRO employees; and external, purchased from MRO providers. In 2009, total MRO volume in Europe was approximately $119bn, or about 5% of the gross value-added of manufacturing industries.

Till 2014, the European MRO outsourcing market in terms of volume registered an annual growth of approximately 0.5% to about $122bn. This is lower than the growth of the manufacturing industries, which was 1.4% per annum till 2014. The lower growth for MRO in the 2009-14 period was driven by the expected 2.6% annual decline throughout the year due to the scale effects and efficiency improvements in internal MRO services. Outsourced MRO services grew by 2.1% annually to $82bn by 2014.

In assessing the degree of outsourcing maturity and the level of integration of MRO services across countries, AT Kearney found clear geographic differences. The highest levels of maturity and integration were seen in the United Kingdom, Scandinavia, Germany and the Netherlands. Southern and Eastern European countries, such as Spain, Italy and the Czech Republic are not as mature or integrated.

This is partly because production plants in Eastern and Southern Europe rely more on local workers and smaller companies to provide MRO services. Thus many large MRO service providers have not established service hubs in these regions because the demand does not justify the investment.

↑ **Overall, MRO volumes consist of two elements: Internal, generated by in-house MRO employees, and external, purchased from MRO providers.**

TECH-DRIVEN INNOVATION AND AUTOMATION

In an interview with *Oil & Gas Middle East*, Vikas Handa, managing director of Weir Oil & Gas, talks about how cost-effective technology is key to proper pipeline maintenance and management, the rise of digital and automation techniques, and how his company is working to provide pipeline integrity to customers

WORDS BY INDRAJIT SEN | PHOTOGRAPHY BY AASIYA JAGADEESH

In your opinion, how important is it to have efficient and cost-effective pipeline management?
Having a cost-effective and high-efficiency pipeline management system is vital not only for the company that is owning or managing the pipeline, in order to assure the production level and the opex/capex budget optimisation, but as well as for the Health, Safety and Environment (HSE) aspect. Pipelines, most of the time in our business, mean transportation of gas, oil, condensates, steam, etc., where it is paramount to avoid spills, contamination and all associated risks.

↑ Vikas Handa, managing director, Weir Oil & Gas.

What are the features and benefits of the pipeline maintenance and management technology that your company specialises in?
Having extensive experience of being an OEM (original equipment manufacturer) for rotating equipment and valves, which usually are installed along pipelines, we have fully-fledged maintenance management technology and engineering that can assure availability and

> AUTOMATION AND DIGITALISATION PLAY A HUGE ROLE NOWADAYS IN PIPELINE MANAGEMENT, HELPING AND ENHANCING THE EFFORTS TO KEEP OPERATIONS SMOOTH. IT ALSO HELPS REDUCE COSTS GIVEN THE LENGTH OF PIPELINES TODAY.

↑ Weir Oil & Gas' new $20mn factory in Jebel Ali, Dubai.

reliability of the pipeline (optimising the maintenance cycle, applying 'best timing for maintenance intervention' with proper predictive maintenance approach, suggesting upgrades and re-rating of static and rotating equipment).

We are also able to reduce maintenance costs by applying our latest technology in spare parts management and assure pipeline integrity using our specialists for pipeline cleaning, in-line inspections (ILI) and Magnetic Flux Leakage (MFL), and smart pigging. We also manage an emergency response team in order to intervene in minimum timing in case of any issues.

With our system we can secure the key factors of the pipeline such as:

- Flow assurance and continuous operation
- Required throughput obtained with the least capital expenditure and the lowest operating costs
- Removing debris and/or foreign objects from the pipeline
- Removing deposits, liquid or solid, that might otherwise restrict flow
- Removing deposits, liquid, solid and/or bacterium that might otherwise support corrosion growth

How does pipeline maintenance and management help in assessing the environmental impact of an asset throughout its life cycle and the risks posed by ageing pipelines?

Pipeline management is paramount to minimise environmental impact and assure that ageing of pipeline will not jeopardise the ambient conditions.

There are good quality technologies available through Weir's integrity management (ILI, MFL, mapping) to identify risks in time in order to have ad-hoc repair and rehabilitation services while production is still going on.

How big a role does digitalisation/ automation play in pipeline management and achieving asset integrity?

Automation and digitalisation play a huge role nowadays in pipeline management, helping and enhancing the efforts to keep smooth operation and predict failures. It also helps reduce costs given the length of pipelines today.

Is digitalisation the only way forward to manage or maintain pipelines? Are there other methods and technologies too for pipeline management?

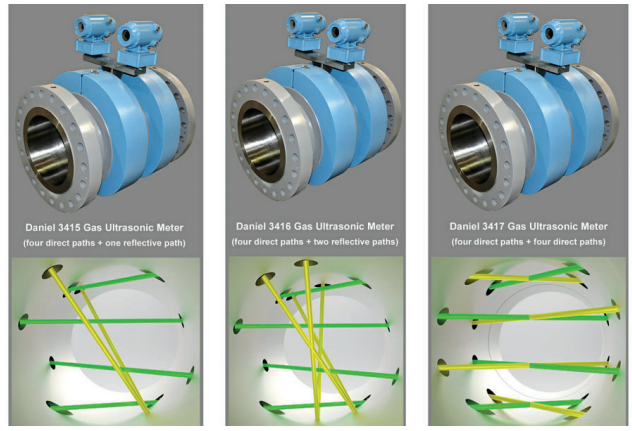
With the current technologies available for cleaning, inspecting, maintaining and repairing a pipeline, as well as applying remote control and diagnostic checks on the equipment along the line, we can optimise the operations, minimise the human error factor and be ready to intervene with the proper team and tools, when needed.

PRODUCT FOCUS

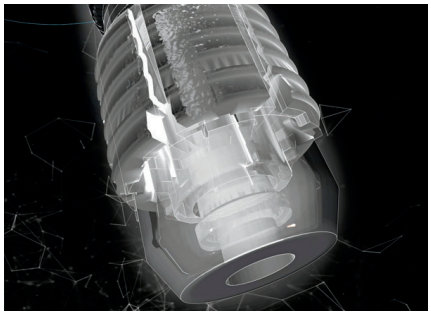
***Oil and Gas Middle East* reviews the latest gadgets, equipment, machinery and technical innovations making an impact in the GCC energy market. The following is a compilation of products that your business needs for effective pipeline management**

WANT TO FEATURE YOUR PRODUCT HERE? Email: indrajit.sen@itp.com

ULTRASONIC FLOWMETERS

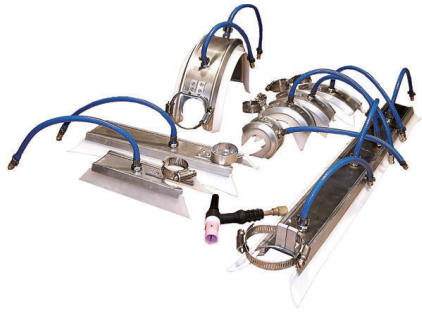


Emerson Process Management has launched a new Daniel gas ultrasonic flowmeter platform by providing two meters and transmitters in a single body to help gas operators and pipelines improve efficiency. The new 3415 (four-path + one-path) and 3416 (four-path + two-path) gas ultrasonic flow meters combine a four-path fiscal meter with an additional check meter, while the new 3417 (four-path + four-path) meter provides two fiscal meters for full redundancy and equal accuracy within one meter body.



SPECTRE FRAC PLUG

Baker Hughes claims its Spectre frac plug is the first in the industry to completely disintegrate downhole after fracturing. The plug eliminates coiled tubing (CT) interventions, accelerates completion times and leaves behind an unobstructed production inside diameter (ID) for maximum flow area and easy future access. As with a traditional frac plug, the Spectre plug enables flexible stage placement and disintegrates fully at predictable rates when exposed to wellbore fluids.



BRIGHT, OXIDE FREE WELDS

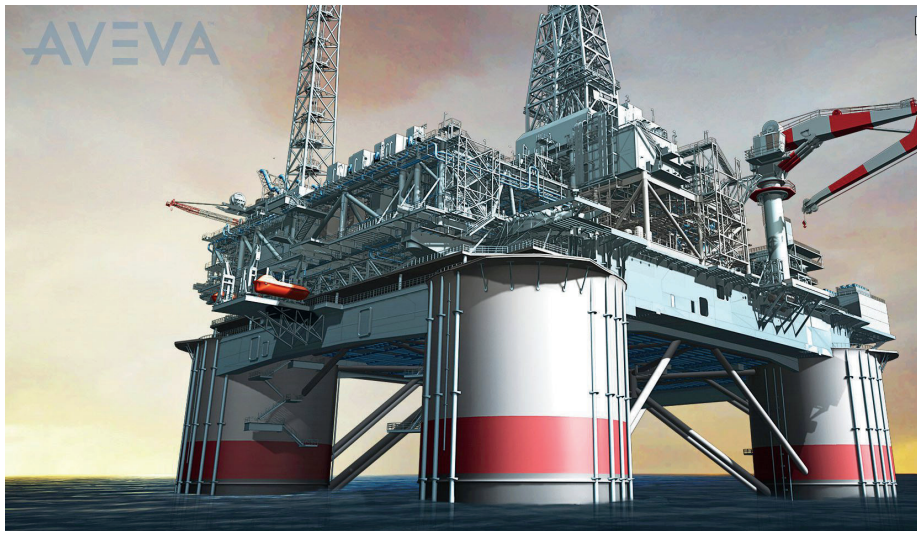
Manufactured by Huntingdon Fusion Techniques (HFT), Trailing Shields are suitable for any diameter of tube, pipe, tank or vessel starting from 1 inch in size. These lightweight devices simply attach to all standard manual or automatic TIG/GTAW and Plasma/PAW welding torches. For manual welding, the welder finds that with this lightweight and low cost tool there is no difficulty in dragging it along the surface being welded. One further benefit is that it carries the welding torch at 90º to the weld.

MACHINERY HEALTH MONITOR

Emerson Process Management's CSI 6500 Machinery Health Monitor now has an IEC 61508:2010, Safety Integration Level (SIL) certification, Level 1, making it suitable for use in delivering reliable protection monitoring in such environments as steam and gas turbines in power plants, critical refinery assets, nuclear industry critical assets, and other safety-critical applications. The CSI 6500 provides insight into the health of critical assets with both protection and prediction in a single chassis.

SOFTWARE FOR ENGINEERING SUPPORT

AVEVA Engage's features can be navigated on an ultra-high definition whole-model view



WHAT IS IT?

Aveva Engage is a collaborative decision-support software designed for capital projects and operating assets.

WHAT DOES IT DO?

Aveva Engage combines powerful whole-model visualisation with immediate contextually-filtered access.

WHERE CAN I FIND IT?

To buy this product contact a local distributor or visit http://www.aveva.com/ for more information.

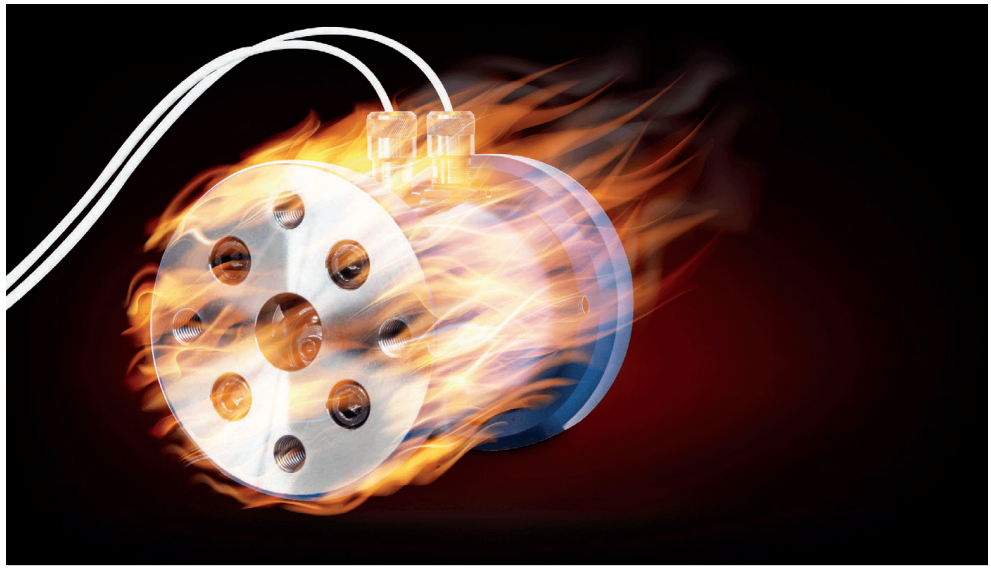
Aveva recently launched 'Aveva Engage', a collaborative decision-support solution for capital projects and operating assets. It combines the power of instant access to a digital asset's full contextually-integrated information with a simple and entirely intuitive touch-driven interface.

The special feature can be visualised and navigated in a striking ultra-high definition (UHD) whole-model view. Part of AVEVA's 'Future of Decision Support' programme, AVEVA Engage is bringing a new dimension to decision support for better, faster decisions across the lifecycle.

Entirely touch driven, and capable of running on the largest-format touch screens, AVEVA Engage combines powerful whole-model visualisation with immediate contextually-filtered access to validated, relevant documents and information.

HIGH TEMPERATURE SENSORS

Kral launches OMP series flowmeters, with high-temperature sensors



Austria-based Kral has recently launched its new range of flowmeters, that are used for lubricating liquids and are fitted with high temperature sensors. The flowmeters are customised for fuel consumption measurement application, and includes features such as including booster module and burners/boilers. Sensors limit the maximum operating temperature while the flow volume and direction of flow are registered by means of spindle rotation. In addition to the available standard model for temperatures of up to 125ºC, the economically priced OMP series is now also available with high temperature sensors for up to 200ºC. For applications requiring up to 250ºC, the OMG series provides solutions. KRAL Volumeter delivers precision of ±0.1% of the measuring value.

REASONS TO BUY:

- Customised for fuel consumption measurement application including booster module and burner/boiler.
- Flow range from 0.3 to 525 l/min.
- Standard model for temperatures of up to 125ºC available.
- Maximum operating temperature model for 200ºC available. For applications requiring up to 250ºC, the OMG series is recommended.
- Maximum design pressure 40 bar.
- Accuracy of ± 0.1%.
- PNP output.
- Standard with hybrid bearings. Robust and long life.

AnTech Ltd has launched three new products within its Wellhead Outlet (WHO) range

AnTech has launched three outlets further to its Type-C Wellhead Outlet, namely Types CB, CC and CD.

Each adaptation has been designed to suit various working environments including pressure, ranging from 5,000 - 15,000psi, temperatures from -60ºC to +160ºC, and various voltages.

Wellhead Outlets Type CB and CC are focussed on lower cost applications where a high level of specification is required. Both units comply with standards and are tested.

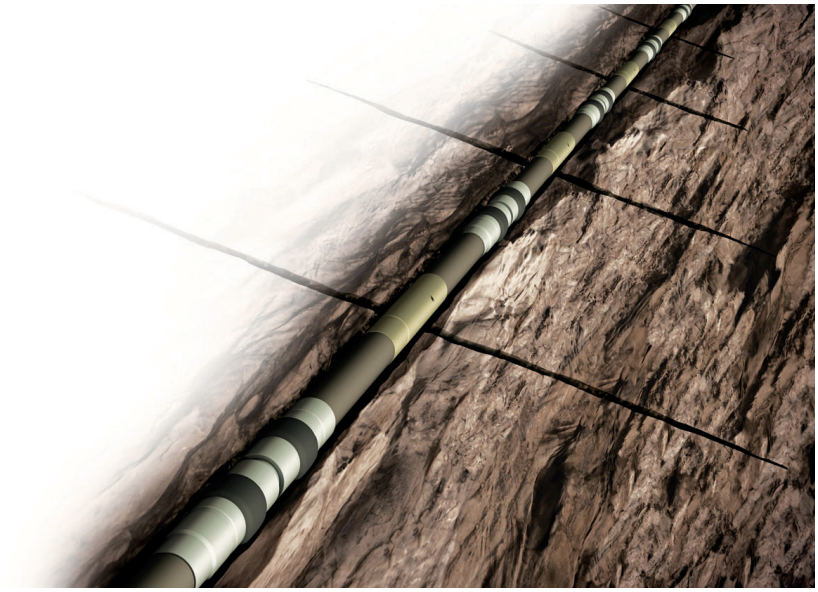
The Type-CD wellhead outlet has been designed accredited with the Type 1, Division 1 certification allowing it to safely operate in some of the world's most stringent well-site environments.

WHERE CAN I BUY IT?

For more information visit: www.antech.co.uk.

THREE REASONS TO BUY

Packers Plus' limited entry QuickFRAC systems help with higher capital efficiency and offer a multi-stage treatment



1 MULTI-STAGE TREATMENT

The QuickFRAC multi-stage system uses a single treatment and ball pumped from surface to stimulate multiple stages, resulting in faster completion times and reduced fluid usage. With this limited entry technique, fluid can be evenly distributed into each treatment zone and up to 60 stages can be stimulated with only 15 treatment operations from surface.

2 TRIED AND TESTED

An operator working in Turkey chose to use matrix acidifying to stimulate the Middle Sinan Dolomite formation of the Selmo oil field, after determining that certain areas in the field would benefit from a horizontal drilling programme. Of the four pilot wells that were deployed, two were completed with a 5-stage Packers Plus QuickFRAC system.

3 COMPATIBLE

The QuickFRAC system is compatible with other Packers Plus tools and systems and can be custom designed based on operator requirements. It is applicable for both open hole or cemented liner completions, where RockSEAL H2 packers or cement are used for annular stage isolation. Compatibility is important as not many offer such features.

COMMISSIONING AND CONFIGURATION

Emerson Process Management's line of Rosemount 8800 Vortex flowmeters now offers HART Protocol Revision 7, which allows for easier identification in the field, commissioning, and configuration. The Locate Device feature of HART 7 displays a visible code on the device's LCD screen which allows for quick field identification. Once connected to the device, or while viewing from the control room, Long Tag allows for a detailed device name to be viewed or loaded into the flowmeter. Long Tag support increases the character limit from the current eight character tag to 32 characters, allowing the user to create more accurate descriptions necessary to track down each unique device.

THROUGHOUT THE LIFECYCLE

SACHIN TERE, BUSINESS DEVELOPMENT MANAGER, FLOW SOLUTIONS – EMERSON PROCESS MANAGEMENT

Pipeline management often poses a challenge to the industry's stakeholders and Emerson Process Management is helping them deal with issues such cost overruns, besides assisting companies from the planning and design stages to achieving optimisation

How does your company help clients in pipeline management?

Emerson helps its clients in every stage of the pipeline lifecycle. We support them from the earliest stages of planning and design by providing tools and support to design, simulate, and optimise pipelines and pipeline networks. These include handling both simple and complex topographies and conducting upset/surge analysis as well as predictive analysis to optimise throughput. Moreover, we provide our customers with tools to handle pipeline scheduling and nominations and visualise and control the daily workflow that maintains flow assurance.

Leakages, theft and intrusions in the pipelines are the top threats that our clients are facing today. And we work with them in addressing these challenges by implementing a wide array of automation solutions, from robust field devices that measure temperature, pressure, flow and other variables, to safety devices that detect leakages, to redundant and secure intelligent control systems that allow for remote monitoring, detect false alarms and continuous surveillance.

Given the market volatility and rising expenses, pipeline owners are pressured to optimise the performance of their facilities and operational costs. Emerson helps them reduce power consumption and energy costs in pipelines by selecting the right combination of pumps and optimising the use of drag reducing agents (DRA). We also support the training of our clients' operations personnel and equip them with tools and skills necessary to be ready for actions in various 'what-if' situations.

↑ Sachin Tere, business development manager, Flow Solutions - Emerson Process Management

In other words, our pipeline solutions respond to the challenges of all stakeholders involved in pipeline operations, from point-application users to operations managers and to management executives.

Could you talk about a specific product/service by your company that helps in pipeline maintenance?

Pipeline integrity is one of the key areas where we support both operators and pipeline maintenance contractors. We are seeing a lot of customers adopting our Roxar non-intrusive corrosion sensors for corrosion monitoring.

Corrosion is often at its worst at the bottom section of the pipeline, because this is the location where water is most likely to be present. When you use traditional corrosion probes, you are required to dig big pits under the pipeline so you can have space for access fittings and space for operating retrieval tools. This is costly and time-consuming.

Now, with non-intrusive monitoring, the sensors are installed directly on the pipe, so operators get direct measurements at the pipewall. These give more reliable results, as well as reduce the safety risks of personnel, especially in the Middle East where there are many sour production environments.

In cases where intrusive corrosion detection sensors are installed, these sensors need to be removed online under pressure for maintenance. Emerson has a unique hydraulic retriever tool that enables technicians to remotely remove and re-install the sensors — a great advantage in ensuring good HSSE performance.

Which clients do you work with in the pipeline maintenance sector and what is the scope of work with them?

Emerson has significant involvement in the major pipeline network connecting the refineries and terminals of Abu Dhabi, and the pipeline backbone of Malaysia's gas

We can say that we have significant involvement in the major pipeline network connecting the refineries and terminals of the Emirate of Abu Dhabi, and the pipeline backbone of Malaysia's gas supply infrastructure. We also have an existing and expanding installed base on pipelines in Africa, Saudi Arabia, and other GCC countries.

How long has your company been providing pipeline management services? How do you intend to grow your business in this sector?

Emerson celebrated its 125th anniversary last year, and our automation technologies and services, primarily serving the oil and gas sector, have always involved pipelines and pipeline networks. We provide advanced field devices to measure product movement and monitor pipeline assets, control and safety systems to manage operations, and final control devices including control valves, isolation valves, and regulators. These come with full lifecycle support, from consultancy to project management to services and training.

With our Energy Solutions International (ESI) business, we strengthen the above solutions with an integrated suite of operational management applications for pipeline modelling, leak detection and scheduling as well as other commercial applications for transactional accounting and inventory management.

We intend to grow our business much faster by providing unique end-to-end solutions to pipeline operators. We see growing opportunities year over year due to rapid urbanisation, which drives energy consumption in the form of gas and refined products as well as increased logistics to ensure energy security and supply.

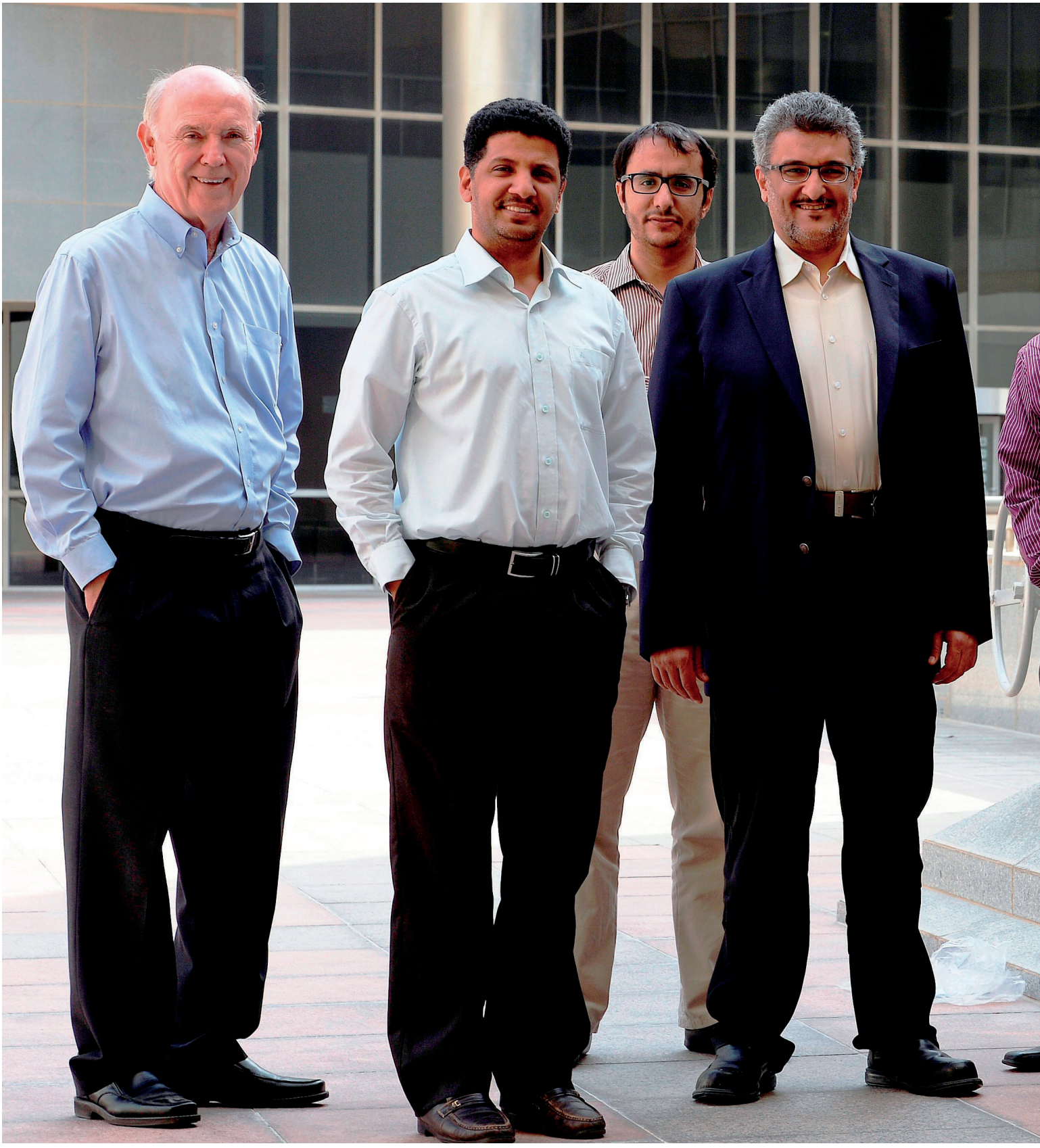
We believe that the current climate of cutting down on CAPEX projects will eventually go away as demand and supply equalise. Africa is one bright spot where we are focussing on new projects as we maintain our steady growth in the GCC.

How advanced do you think the Middle East is in terms of pipeline management? Is there scope for improvement?

The Middle East has always been open to embracing new technologies and practices, and we are seeing a lot of interest in applications that improve process monitoring, reliability, HSSE, and energy optimisation.

For example, many of our clients are replacing outdated technologies like traditional valve positioners with smart positioners, which are capable of partial stroke test (PST) in ESD (Emergency Shutdown) valves. PST allows operators to test valve performance without disrupting the process and causing slow-downs. In the area of corrosion monitoring, there is an increasing demand to replace mechanical corrosion sensors with hydraulic fitting systems to increase personnel safety during retrieval operations.

It's important to note that it's not just about implementing the latest or the most advanced technologies. We are working with customers on changing the way they go about their businesses; like fine tuning their project execution methods to save time and capital expenditure, introducing the industry's best practices and updates on standards, and improving their organisational workflows to foster collaboration for better decision-making.



WHY IS SEISMIC TECHNOLOGY NECESSARY?

Some of the region's oil fields have been producing oil and gas for half a decade. With 'easy oil' running out, companies are investing to ensure they are drilling in the right spots.

SEISMIC TECHNOLOGY

Aramco accelerating KSA gas growth

Saudi Aramco is helping to increase the Kingdom's gas resources, utilising new technology and innovations. James Henderson speaks to some of the organisation's key players

WORDS: JAMES HENDERSON

The history of Saudi Arabia's gas programme goes back almost 40 years, and is enriched with achievements and growth. In 1975, the Kingdom initiated the Master Gas System (MGS) that quickly became operational with the commissioning of three major gas plants to process only the associated gas (AG) that is recovered with oil production. In 1984, two non-associated gas (NAG) plants were introduced into the MGS. In 2001 and 2003, two more new 'grass-root' gas plants for the southern area fields were put fully on-stream to process only NAG followed by gas plant expansion along with a Natural Gas Liquid (NGL) recovery plant.

Furthermore, a sixth gas plant was put on-stream in 2010 to process only AG, and later in 2012 facilities were expanded to process the first offshore NAG and following that the seventh gas plant was

added in 2015 to process additional NAG from new offshore gas fields. The future of the gas programme is bright with the addition of more fields and gas plants to significantly increase the amount of produced raw gas in the upcoming years.

The Gas Reservoir Management Department (GRMD) is responsible for the company's NAG programme with hundreds of wells that produce billions of cubic feet of raw gas daily with hundreds of thousands of barrels per day (MB/D) of condensate. With over 120 professionals focused on developing the Kingdom's NAG reserves, GRMD has thrived under the building blocks of attracting a talented and qualified national and international workforce, establishing a healthy and creative working environment, and empowering staff to make critical decisions to handle the challenges and workload required to meet the Kingdom's future gas needs.

A large percentage of the development budget over the next decade is dedicated solely to the conventional gas programme to meet the increasing energy demand. By identifying a robust gas development programme, new technologies and the necessary staffing levels, the department is well positioned to meet these goals and objectives.

"GRMD is committed to the Energy to Kingdom initiative of the Accelerated Transformation Programme (ATP) for the gas programme's role in identifying new gas resources and increasing reserves and gas supply," said Adnan Al-Kannan, Manager of the Gas Reservoir Management Department (GRMD).

"The department continues to steward new technologies within the gas programme, in drilling, stimulation, and completion, to enhance production and increase reserves. Many new technologies, such as seismic imaging to identify 'sweet spots', long extended reach horizontal wells to improve reservoir contact, multi-stage fracture stimulation to enhance production from relatively tighter formations, underbalanced coiled tubing drilling to tap into productive layers, and evaluating the feasibility of using low-pressure systems to significantly decrease field abandonment pressures, and increase production and ultimate gas recovery.

"These are being utilised to produce gas that otherwise would not be recovered using conventional methods. These endeavours and continuous testing and application of novel technologies have increased success rate and significantly enriched Saudi Aramco's gas programme."

Meeting the technical talent requirement plays a major role in the expansion of the non-associated

The people behind Aramco's mega successful Gas Reservoir Management Programme. ↓

"THE DEPARTMENT CONTINUES TO STEWARD NEW TECHNOLOGIES WITHIN THE GAS PROGRAMME, IN DRILLING, STIMULATION, AND COMPLETION, TO ENHANCE PRODUCTION AND INCREASE RESERVES."
ADNAN AL-KANNAN, MANAGER OF ARAMCO'S GRMD.

gas programme in new frontiers. GRMD has been one of the key proponents in attracting multidisciplinary talents from both national and international pool of specialists.

GRMD positioned itself to meet challenges by hiring the most talented work force possible and acquiring high-end petroleum engineering technology, software, and equipment.

"Expanding the life of existing fields through the introduction of innovative evaluation techniques and new technology applications is one of the focal areas of the department. GRMD closely collaborates with geoscientists, drilling, facility and production engineers, as well as completion, stimulation, and production specialists to ensure that overall well and field development criteria are followed and met.

Aramco provides on-the-ground training for its young oil and gas professionals. ↓

"Ours is 'Drill to Production' approach – there has to be optimisation in every step along the journey to make endeavor successful," said Zillur Rahim, senior petroleum engineering consultant & hydraulic fracturing team leader, GRMD.

Mike Hass, petroleum engineer consultant at GRMD, added: "Reservoir management engineers are key enablers in planning and optimising field development, maximising property value, evaluating production performance, ensuring reservoir health indices, and are responsible to supply and sustain the NAG production for the Kingdom.

"All GRMD engineers are specialised in general reservoir engineering as well as many other specialised petroleum engineering disciplines such as well completion and stimulation, rock and fluid properties, pressure transient testing, reservoir simulation, and production forecasting."

The qualified young professionals are routinely trained in Saudi Aramco's state-of-the-art Upstream Professional Development Centre (UPDC) and are also closely mentored by the senior GRMD staff to transfer the proper knowledge and training to meet the future challenges in producing oil and gas from highly complex reservoirs.

GRMD routinely conducts knowledge sharing events, mentoring initiatives, workshops, short courses, and hands on training for the engineers and technologists.

"The management is very keen and deeply involved in broadening employee knowledge base. On top of the in-house development plans, we frequently send out our engineers overseas for high education and training purposes; they add value when they return with knowledge and industry exposure," says Al-Kanaan.

Development through technology

The delineation and deepening initiatives to tap conventional and tight gas resources in and around existing fields have resulted in the discovery of new reservoirs and adding reserves by extending the field limits.

Deepening selected wells to new horizons is a cost-effective method to assess new formations in existing fields and expand reserves portfolio. This strategy along with new discoveries and use of novel technology increased the non-associated gas reserves by 70% in the past decade.

The current yearly addition through the continuation of such strategies is to replace production and

STAYING ABREAST OF TECHNOLOGY

Gas Reservoir Management Department (GRMD) is a major proponent of technical programmes, workshops, seminars, and technology forums. The department professionals routinely participate in numerous Society of Petroleum Engineers (SPE) programmes and events. Over the past decade, GRMD team published and presented more than 150 technical papers in national and international conferences, participated as programme organisers, technical chairpersons, keynote speakers, paper reviewers, and panelists. This has enabled great deal of knowledge-sharing and discussions with the oil and gas industry and has brought the department into industry limelight and established it as a leader in the arena of field development and technology application. GRMD is always part of the Saudi Aramco corporate arrangement at technical conferences and delivers presentations on gas development aspect for the Kingdom sharing experiences, challenges, solutions, and field examples.

↑ The department professionals routinely participate in numerous SPE programmes and events.

→ Over the past decade, GRMD team has published and presented more than 150 technical papers.

increase reserves cost effectively to help meet the Kingdom's increasing energy requirement.

An example of a new technology application is underbalance coiled tubing drilling rigless that is a 'game changer' for the gas programme that has increased the total productivity of low rate gas producers by over billions of cubic feet of raw gas per day.

The rigless unit utilises slim drilling assemblies to place multi laterals within the reservoir while flowing the well and transferring the produced gas to the nearest processing facility throughout the drilling operation — eliminating flaring and protecting the environment.

This strategy also helps assessing reservoir quality through production rate, thereby maximising net pay interval. Over the past five years, many low rate gas wells were re-drilled with this application that delivered higher gas rates, reduced drilling time, and lowered unit development cost compared to conventional drilling.

Meeting Domestic Energy Requirement with Gas

The Peak Seasonal Production (PSP) Strategic Plan is to meet domestic power requirements by supplying additional gas during peak demand periods — to reduce burning crude oil — which has worked successfully by targeting prolific reservoirs, implementing best reservoir management practices.

It also optimises gas production priorities and spare plant capacity to minimise the volumes of supplemental crude oil burned for energy. Since starting the PSP programme in 2010, there has been more than 80% reduction in the volumes of supplemental crude oil burned amounting to millions of barrels of oil saved for export.

The goal is to fully offset the supplemental crude oil burning in the Eastern region in the coming years by capitalising on full continuous production from the new gas field developments, other new planned gas plants and increments, and fully utilising the dedicated PSP.

"Saudi Aramco has been exploring, developing and producing hydrocarbons from onshore fields for over 80 years, but it was not until 2011 when the first offshore non-associated gas field was put on production," said Al-Kanaan.

"Saudi Aramco developed the first offshore gas field — located in one of the busiest oil tanker shipping areas in the world — in record time, only within five years after its discovery in 2006, from exploration to production.

Optimal drilling and completion strategy helped in fast-tracking the project. Subsequent to this first development, other giant offshore gas fields were discovered and developed. Due to the prolific

"ARAMCO HAS BEEN PRODUCING HYDROCARBONS FROM ONSHORE FIELDS FOR OVER 80 YEARS, BUT IT WAS NOT UNTIL 2011 WHEN THE FIRST OFFSHORE NON-ASSOCIATED GAS FIELD WAS PUT ON PRODUCTION."
ADNAN AL-KANNAN, MANAGER – GRMD, SAUDI ARAMCO.

nature of these fields, big bore, high pressure completions were used to ensure gas rates up to 300 MMSCFD per well.

The production is used for domestic consumption to meet the Kingdom's energy needs for the foreseeable future, resulting in a significant reduction of crude oil burning that would otherwise be required to generate energy."

Hydraulic Fracturing Industry Leader

"Multi-stage fracturing (MSF) in horizontal wells has been a major and significant improvement for Saudi Aramco's gas programme, especially compared to dual lateral and vertical stimulated well completion methods," revealed Rahim.

"The strategy includes drilling a well in the minimum in-situ stress direction, complete with an open-hole assembly comprised of injection ports and zonal isolation packers, and fracturing the well in stages."

The induced fractures grow transverse to the wellbore, thereby staying independent and separated from one another and contributing to large reservoir/fracture contact area.
Some wells are also completed using conventional cemented liner assembly with cluster perforations and treated the same way.

GRMD initiated several environmental-friendly optimisation strategies, particularly in the use of clean stimulation fluids, to enhance the MSF technology that were tested successfully, thereby increasing well potential and sustainability.
Saudi Arabia today is internationally recognised in the field of hydraulic fracturing, contributing to its technical enhancement, and deriving immense benefits from its application.

The significant improvement of gas production and transforming low producing areas to commercially viable assets with the use of MSF has made this technology become very popular to the overall gas field development strategy.

Rahim is very optimistic with regards to the major impact MSF has brought in enhancing Saudi gas production and tapping tight gas. "Production has increased significantly since MSF campaign started – MSF compensates drilling additional wells thereby reducing overall development cost," adds Rahim.

While speaking on technology improvement, he said, "since its inception, the MSF has made substantial progress in improving and optimising the conventional practices in both stimulation treat-

↑ Seismic survey technology in action.

ments and completion assemblies with the testing and use of high-strength proppant, retarded acids, emulsified systems, low polymer non-damaging fluids, visco-elastic fluids, advanced open-hole multistage completion assemblies, cased plug and perforation stimulation procedures with cluster perforations, and innovative sequential pumping operations to attain high fracture conductivity. While the open-hole completion is isolated in segments by mechanical or swellable packers, the plug and perforation operations are conducted through perforations in cased-hole, cemented completions with the use of mechanical plugs for intra-interval isolation. Current technology involve in evaluating self-degradable balls, ball-seats, and plugs to avoid post-frac well intervention and achieve higher efficiency in conducting fracturing operations.

"In parallel to advancing fracturing pumping operations and completion assemblies, GRMD is also working on a number of other improvements," Haas adds.

"Among them is the real-time geo-mechanics that predicts formation pressure and possible well caving or hole breakdown events while drilling in the minimum in-situ stress direction so that those challenges can be mitigated, use of low gel loading and optimal chemical concentration to reduce formation damage yet providing adequate fluid viscosity in fracturing operations, and maintaining a clean and conductive fracture to sustain long-term well production rate. These enhancements help creating and propagating uniform fractures that are transverse to the wellbore, independent and highly conductive, fast and efficient post-treatment cleanup, and ensure large reservoir/fracture contact area, thereby increase retained proppant permeability and gas production.

Use of improved chemical systems for a subsequent cleanup on few already fractured wells that were showing low productivity revived them at a higher sustained rate."

Simulation modeling is routinely performed to compute the number of optimal transverse fractures needed to achieve desired well production rate and the dimensions, properties, and spacing of these induced fractures.

The stress shadow effects are included during modeling that ensures realistic fracture growth and dimensions. Rigorous modeling with the best available data has enabled the engineers to design and select the optimal completion and stimulation practices, optimise well placement and spacing, and attain higher well productivity.

This model also multi-well simulation modeling is used to understand production impact from offset wells and predict candidate well rate.

"The use of high strength proppant to counter in-situ stress that would otherwise crush the proppant in deep, high pressure and high temperature wells has proven to sustain fracture conductivity overcoming gel damage, fines migration, embedment, and proppant degradation with time," Rahim said, adding, "In essence, MSF technology and its application has made a great impact on overall gas program transforming low rate gas wells high producers and commercial thereby making gas field development economically attractive."

80 YEARS

SAUDI ARAMCO HAS BEEN PRODUCING AND DEVELOPING CONVENTIONAL OIL AND GAS RESOURCES FOR EIGHT DECADES.

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STEPPING UP TO THE CHALLENGE

From the sour fields of the UAE, to conflict-torn Libya and hostile Iran, German chemicals major BASF's subsidiary Wintershall is eyeing high-risk projects for high returns

For a European E&P company, Wintershall's history in Abu Dhabi is fairly recent. The company entered into an agreement with ADNOC in 2012 to become the main operator in the technical appraisal for the ultra-sour Shuwaihat gas field. Since then, it has spudded one well, studied numerous reservoir samples and is yet to drill a second well offshore, all of which to just determine the feasibility of a production project.

"We are in this for the long run," Martin Bachmann, head of Exploration & Production for Europe and the Middle East at Wintershall, tells me at an informal media 'get-together' the night before Wintershall's annual press conference in Kassel, Germany.

"I am looking for a 35-40 year relationship [with ADNOC]. Whether it takes three or four years at the beginning, it doesn't really make a difference," Bachmann says. Typical German patience, I thought. But then again patience is exactly what Wintershall needs now more than ever as more and more unconventional and capital intensive projects are taking a back seat - if not being scrapped altogether. And historically, ADNOC can be quite protective of its fields. Almost two years after the bidding process began, it is yet to decide who of the nine IOCs should be awarded the remaining shares in its 40-year onshore concession.

Martin Bachmann, head of Exploration & Production for Europe and the Middle East at Wintershall. ↓

But Wintershall has an ace up its sleeve. Having spent years working on some of Germany's most challenging fields, it might be the only drilling company in the region that knows how to unlock Shuwaihat's difficult reserves.

"One of the reasons why we brought the field of EOR to ADNOC and to Abu Dhabi is because we'd been working on EOR for a long time. BASF is our mother company, the biggest chemical company in the world. Of course we have all the research capabilities, all the labs, everything that BASF does - at our disposal," Bachmann said.

Shuwaihat field is known for its high concentration of sulphur and challenging geology, meaning enhanced oil recovery will be required to develop its reserves.

As an expert in the field of Enhanced Oil Recovery (EOR) and Improved Oil Recovery (IOR), Wintershall is well positioned to provide ADNOC with the technical know-how on EOR, while its access to special chemicals through its parent company BASF will prove essential in

↑ Wintershall's Martin Bachmann with Qatar's Energy Minister Mohammed Saleh Al Sada.

↑ Wintershall is actively involved in Qatar's oil and gas sector.

selecting or developing a tailor-made product that tackles the geological challenges at stake.

"We looked at the whole portfolio of BASF and said okay if we take this rock which of the chemicals actually works under the given temperature, pressure, salinity, etc. On the one hand we are looking at the fields in Abu Dhabi, on the other hand here in Germany at BASF we are looking at which chemicals will be the right chemicals for the special conditions there," said Bachmann.

"One of the challenges that we have in the Middle East and I think this is why nobody is doing [EOR] yet on a big scale is that the reservoir rocks are mainly carbonates, it's not sand; often there is [high content of] sulphur in the reservoir and the temperature is quite high. These three things make it quite challenging to find the right chemicals and I think that's the first challenge we have."

"The second challenge is — and we know that from [our experience in] Germany — how you apply it in the field. What sounds simple — I take the chemical, inject it in the reservoir and produce oil — is much more complex is practice so that you actually achieve the desired results in the end. But once we have selected a pilot that would be the next step."

Wintershall is hoping to secure a 35 to 40-year contract to develop the field, with Bachmann saying a production agreement could be struck as early as next year.

"The contract that we have allows us to go into developing and operating the field so that's been discussed already. Whether it is going to be done in a big development in the region that we will have to see. I think we've made a good first step to demonstrate that we can drill complicated oil and gas wells. I think the next step is to come up with a field development plan and create a concept for developing the field."

Further to Shuwaihat, Wintershall is hoping to get involved in other EOR projects in Abu Dhabi, which last year announced plans to increase the recovery rate of its oilfields from 50% currently to 70%.

The German E&P company is also eyeing opportunities in Iran, where it recently signed an MoU for collaboration on energy and infrastructure projects. "Iran is opening up at the moment. Clearly we are looking at it like everybody else because the types of things we offer they need in Iran," said Bachmann.

"They have a lot of the big oilfields which need to increase recovery. I don't think they are quite at the stage where they would need EOR, first thing is conventional IOR, water injection, gas injection I think that's one. EOR will eventually be one of the things. There are also new fields to develop."

On the question of whether Wintershall is looking at any specific projects, Bachmann reveals: "They have published a list of fields which we are looking at but we have very little data this is a question of getting data first and looking at what needs to be done.

Bachmann appears to have done his homework as the majority of Iran's assets require complex recovery methods and heavy use of technology to come on stream.

→ Further to Shuwaihat, Wintershall is hoping to get involved in other EOR projects in Abu Dhabi.

The German E&P company has been in conflict-torn Libya since the times of Moammar Gaddafi . ↓

Although less numerous, gas fields are the biggest projects on offer currently in Iran. Out of the potential for 28bn barrels of oil equivalent (boe), gas represents 17bn boe, almost all of which are greenfield developments. In fact, 19 of the 20 gas assets are greenfield compared to 19 of the 29 crude oil projects. With gas comprising some two thirds of Wintershall's portfolio, the company has significant capabilities to develop Iran's gas fields.

In addition to greenfield projects, many of Iran's hydrocarbons are trapped in challenging formations that demand investment in infrastructure and technology.

However, much uncertainty continues to surround the terms and conditions on which foreign companies would operate, leading them to adopt a rather cautious approach.

"We are basically very careful, we are going into it step-by-step. It is easier for European companies to do business [with Iran] than American companies; some sanctions which apply to American companies don't apply to others," Bachmann says.

"You can see that most European companies are looking and talking and that's what we are doing - trying to find out what the opportunities are, what's the environment, learn about the oil industry there. That's what we are doing but in a very careful and in a very measured way," he says.

To go into Iran, like every commercial entity, Wintershall would want to see the economic incentives and so far, though an improvement to the old buy-back contracts, the new Iran Petroleum Contract doesn't offer awfully much. Foreign E&P companies would not be entitled to a production share in a field, but rather receive a floating remuneration fee linked to oil prices, similarly to a PSC.

On the plus side, there will be opportuni-

> "WE ARE VERY CAREFUL. IT IS EASIER FOR EUROPEAN COMPANIES TO DO BUSINESS [WITH IRAN] THAN US COMPANIES; SOME SANCTIONS WHICH APPLY TO AMERICAN COMPANIES DON'T APPLY TO OTHERS."
> MARTIN BACHMANN, HEAD OF EXPLORATION & PRODUCTION FOR EUROPE AND THE MIDDLE EAST, WINTERSHALL

→ Wintershall has equipped its installations in Libya with remote access devices and communication facilities.

→ Last year, Wintershall produced 30,000–35,000 bpd for a total of 125 days.

↘ Wintershall's installations and fields haven't been targeted by militias and are ready to start production any time the ports are safe to use.

ties for 20 to 25-year long term contracts, setting up joint ventures with Iranian companies, and sharing risk. Priority or riskier projects will have higher returns, while exploration terms have also been made more attractive.

Furthermore, the new terms are more competitive with no ceiling for cost recovery and a floating remuneration fee per boe based on oil price, exposing investors to upside oil price risk.

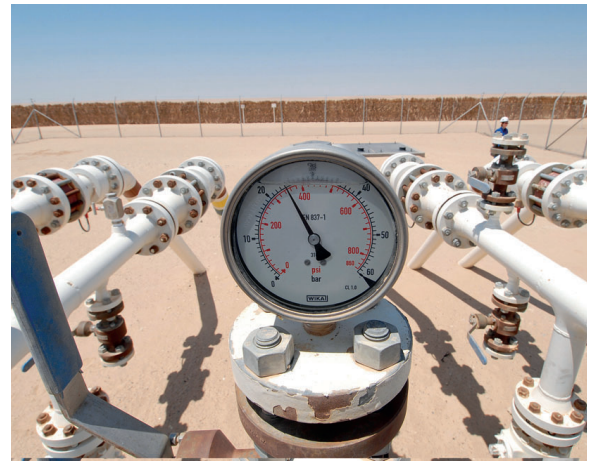
"The ambitions they have are quite clear but they still haven't fully published the Iran Petroleum Contract. There you see there is still a debate going on inside the country on how to do it and I think we need to give the country some time to have this debate and decide what it wants to do," said Bachmann.

"The old contracts were not economic and that's the first thing we will be looking at - does this actually provide an economic framework for the development of oilfields and for operations because we will only invest in a country that provides economic [incentives] and that makes sense to us from a business point of view," he added.

But Wintershall isn't unfamiliar with operating on high risk ground. The German E&P company has been in conflict-torn Libya since the times of Moammar Gaddafi and remains one of the very few European firms in the country after the political and social unrest began.

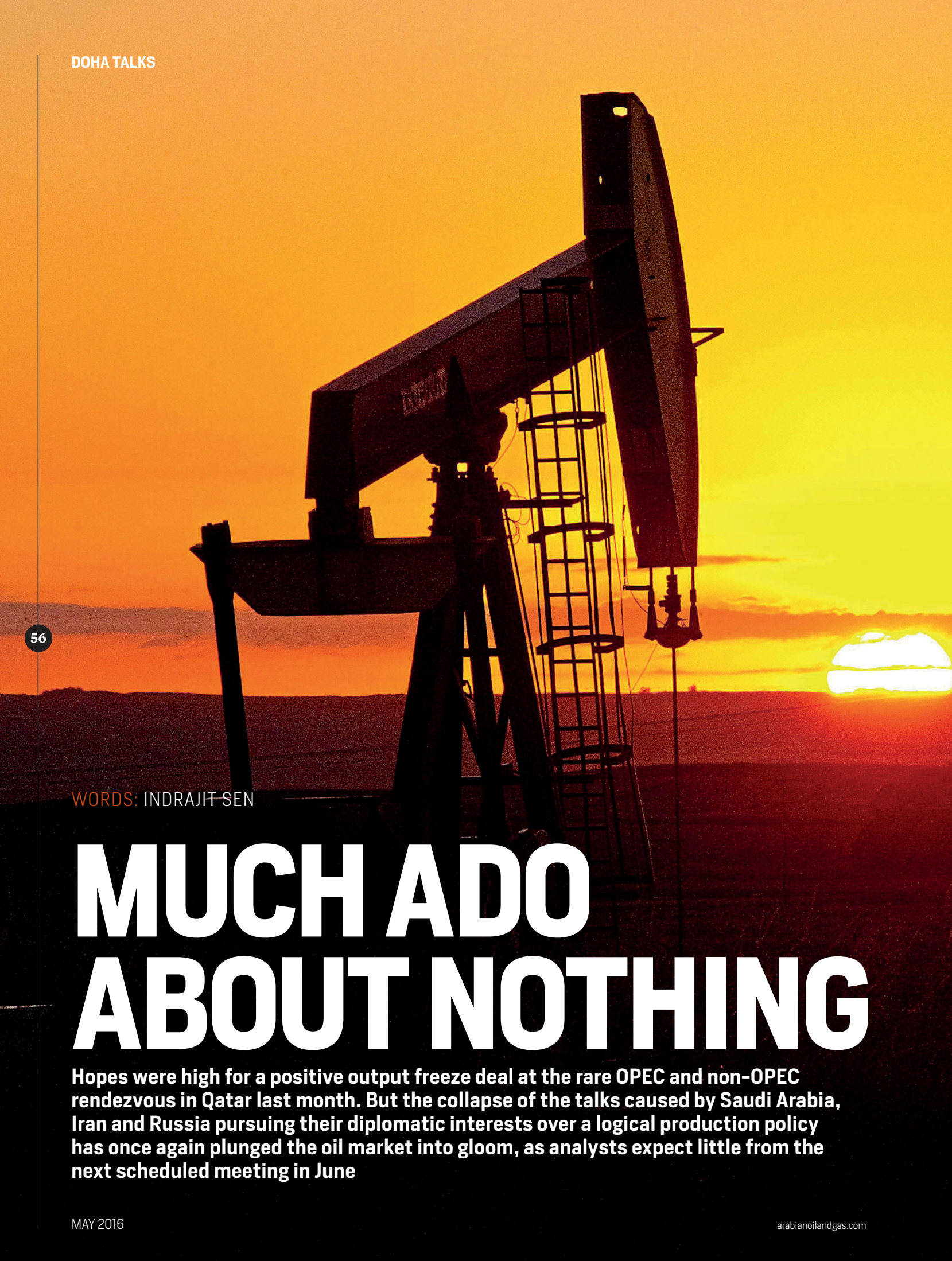
Its installations and fields haven't been targeted by militias and are ready to start production any time the ports are safe to use. Last year the company produced 30,000-35,000 barrels per day (bpd) for a total of 125 days, utilising one third of its capacity. In fact, it is still operating on contracts it signed during the time of King Idris, the first and only Libyan King, reigning from 1951 to 1969.

"We've been there for a very long time and we have an excellent pool of people. In fact, we are now at a point when our Libyan staff can operate the installation themselves. They don't need



any of us. We have all of the installations equipped with remote access, fibre optic cables, etc. So we can actually talk to them via video calls, can look at the plant from here (in Germany) and help them if they need help," Bachmann says.

"As Wintershall, we are embedded in society; that's why for us it's not a question of saying: 'Okay, we are out, close the door and come back later'. We are much closer to the society, our people are part of the Libyan fabric that's how we see ourselves," he says.



WORDS: INDRAJIT SEN

MUCH ADO ABOUT NOTHING

Hopes were high for a positive output freeze deal at the rare OPEC and non-OPEC rendezvous in Qatar last month. But the collapse of the talks caused by Saudi Arabia, Iran and Russia pursuing their diplomatic interests over a logical production policy has once again plunged the oil market into gloom, as analysts expect little from the next scheduled meeting in June

Ever since the Organisation of Petroleum Exporting Countries' (OPEC) de facto leader Saudi Arabia (along with fellow members Qatar and Venezuela) in February agreed with non-OPEC member Russia to temporarily freeze output to address the global oversupply situation, there was hope that more parties would follow the two largest oil producing countries in the world to reduce production. Encouraged by this positive development, Qatar volunteered to provide a common ground where all the cartel's members could have a rare meeting with those from outside, on April 17, to agree to hold, if not reduce, crude output at January, 2016 levels.

A handful of optimists believed countries participating in the meeting, having realised how their suicidal battle for market share was wreaking havoc on oil prices and subsequently their oil-dependent economies, would surely agree to maintain production at realistic levels to help rapidly push oil prices upward. The overwhelming majority of cynics, however, stood firm in stating that such a 'freeze deal' would never see the light of day, especially with Iran – which had been recently freed from the shackles of Western sanctions – issuing near-daily rhetoric to boost production by half a million barrels per day and soon achieving pre-sanction output levels of about 4.2mn barrels per day (bpd).

↓ Saudi Oil Minister Ali al-Naimi (centre) led the negotiations on the Kingdom's side.

> "SAUDI ARABIA MADE IT VERY CLEAR THAT IT WAS NOT PREPARED TO CUT PRODUCTION, AS EXPERIENCE TAUGHT IT THAT THIS WOULD SIMPLY ALLOW OTHER PRODUCERS TO MONETISE THEIR OIL AT SAUDI'S EXPENSE,"
> PAUL HODGES, ICIS SPECIAL ADVISOR AND CHAIRMAN OF INTERNATIONAL ECHEM.

The days leading to the parley was marked by uncertainty and pessimism, with the Islamic Republic rejecting all logical appeals to curtail its oil production, and Saudi Arabia insisting it would only agree to hold output if Iran promised to do so and affirmed its stand that Tehran must be a party to any freeze agreement. Come April 17, the majority's prediction prevailed.

Iran, which many felt would at least send a representative, if not the Oil Minister Bijan Zangeneh himself, remained absent from the talks. With no Iranian delegate present, oil ministers from the 18 participating OPEC and non-OPEC nations (particularly Saudi Arabia and Russia) fiercely debated the wording of a communiqué, and after a five hour-long meeting, announced that no deal had been reached. Mohammed Saleh Al Sada, the host nation's Energy Minister said, "We concluded that we all need time to consult further."

As soon as word was out that the talks had failed, prices of global benchmark Brent crude – which had been rallying ahead on the back of hopes for a successful freeze pact in Doha – tumbled by as much as 7% to settle at around $40 a barrel for the day, although further fall was prevented by the simultaneous oil workers strike in Kuwait, which more than halved the country's daily output.

"There was never much substance to the 50% rally in oil prices in recent weeks – and now the Doha fiasco has confirmed the point," Paul Hodges, ICIS special advisor and chairman of International eChem, told *Oil & Gas Middle East.*

"Saudi Arabia made it very clear that it was not prepared to cut production, as experience taught it that this would simply allow other producers to monetise their oil at Saudi's expense."

The blame game begins

The mud-slinging between the swing oil producers began as soon as delegates emerged out of the closed-door meeting in Doha. While Saudi Arabia squarely put the blame on Iran as the sole reason for a 'no-deal', officials in Tehran were not late to take a jibe at Riyadh. Iran's official *Shana* news agency quoted the country's OPEC representative as saying that, "Those who suggested an oil output freeze wrongly thought that Iran had no option but to accept." The Islamic Republic was also backed by key ally Russia, whose Energy Minister Alexander Novak termed the surprise Saudi demand in Doha for all countries to participate in a production freeze as 'unreasonable'.

Nigeria's Oil Minister Emmanuel Ibe Kachikwu (centre) was also present at the meeting. ↓

> "OPEC HAS BECOME THE BATTLEGROUND FOR POLITICAL TENSIONS BETWEEN RIYADH AND TEHRAN, ACKNOWLEDGING THAT THE DOHA MEETING WAS NO OFFICIAL OPEC MEETING." NORBERT RUECKER, HEAD OF COMMODITIES RESEARCH AT SWISS PRIVATE BANKING FIRM JULIUS BAER.

Analysts believe Saudi Arabia's oil policy is no longer being shaped by its 80-year-old Oil Minister Ali Al-Naimi, but by the young and dynamic son of King Salman Bin Abdulaziz - Deputy Crown Prince Mohammed Bin Salman, who as Defence Minister is consolidating his influence over the Kingdom's diplomatic, political and economic affairs. In a recent interview with *Bloomberg*, Deputy Crown Prince Mohammed – in a departure from the initial freeze agreement in January with Russia - categorically mentioned that Saudi Arabia would only slow down oil production if Iran committed to do so — a stance which experts believe the Kingdom's ageing oil minister merely echoed at the Doha meeting.

Venezuela's Oil Minister Eulogio Del Pino too named Saudi Arabia as being behind the failure of the talks, saying that he was under the impression that the Saudi delegation, led by al-Naimi, 'had no authority to decide on anything" as they were under strict instructions from Riyadh, in apparent reference to Mohammed Bin Salman's growing clout on the oil policy. The Latin American OPEC member

↑ Kuwait's newly appointed acting oil minister Anas Al Saleh (middle) faced a lot of questions from the media.

↗ Russia's Energy Minister Alexander Novak told reporters that Russia could raise output to 13bn bpd.

however also offered its own version of the collapse of the meeting, with Del Pino citing 'intense pressure' from the United States as being one of the reasons why OPEC and non-OPEC producers failed to reach a deal.

"The United States was behind the pressure. They have a problem with Venezuela, Russia... They are doing this for political reasons and are ignoring their own people suffering. Ask any oil company in the US — they are all very sad because of what happened [in Doha]," he said.

A blow to OPEC's credibility?

Experts believe the Doha debacle was more a result of diplomatic bickering than economic difference of opinions.

"OPEC has become the battleground for political tensions between Riyadh and Tehran, acknowledging that the Doha meeting was no official OPEC meeting," Norbert Ruecker, head of commodities research at Swiss private banking firm Julius Baer, told this magazine. "Most market observers have been very cautious on the outcome in the run-up to Doha, but the failure and the inability to come up with any agreement was nevertheless astonishing. From a pragmatic stand point it makes sense for Iran not to accept a freeze, when it's ramping up output after sanctions have been lifted. Similarly, it makes sense for Saudi Arabia to see a deal without Iran as lacking its teeth."

"The message send with the talks failure," Ruecker says is "that OPEC is unable to agree on a supply deal, is nevertheless bad news for the organisation's credibility."

As a fallout of the botched up meeting, the two largest oil producers, which were expected to prove instrumental in drafting a freeze agreement, threatened to ramp up production to defend market share. Just days after the Doha flop show, Saudi Arabia said it could jack up output instead to defend its position as the world's largest oil exporter — by as much as 2mn bpd to over 12mn bpd — which would also help it beat Russia as the world's largest producer. Russia soon retaliated by stating it was prepared to push oil production to historic highs, and Energy Minister Novak telling the local media, "They (Saudis) have the ability to raise output significantly. But so do we."

He said Russia was 'in theory' able to raise production to 12mn or even 13mn bpd from the current record levels of close to 11mn bpd.

"We [at Julius Baer] have long argued that OPEC is a broken cartel that influences prices by market psychology rather than supply action.

"Thus, from our perspective, OPEC was never really able to influence prices longer term but only temporarily by driving market sentiment. Instead it was primarily Saudi Arabia and its closest allies which at times acted as the oil market's central bank," Ruecker says.

12MN BPD

SAUDI ARABIA HAS THREATHENED TO RAISE PRODUCTION BY ALMOST 2MN BARRELS PER DAY TO 12MN BPD.

Building on his argument, he added: "From that perspective, Doha's failure is a blow to OPEC's relevance, which so far primarily relayed on its credibility to conduct oil policy. And if it wasn't for the Kuwait oil strike, oil prices would likely have tumbled further. On the other han-d, Saudi Arabia looks less likely to act as altruistic oil central bank going forward, cutting supplies and forgoing oil revenues at the expense of others, when Iran is growing supplies."

Oman has offered to narrow differences between Saudi and Iran. ↓

More attempts to be made

Certain participating nations have demonstrated maturity and made efforts to contain the negative consequences of the Doha fiasco. OPEC member Iraq has gone one step ahead of the other players by proposing another meeting of the world's major oil producers in May in Russia, as an urgent measure to address the oversupply situation.

"Iraq will take part in this [planned] meeting. Iraq's view is to have a freeze in output for a short period to help protect the interests of both producers and consumers equally by easing the surplus from the market and improving prices," Iraq's Deputy Oil Minister Fayyad Al-Nima has said, although Russia's Novak has been quick to quash the idea saying there is a lack of willingness among the squabbling oil producers to meet again May.

Oman, the biggest non-OPEC oil exporter in the Gulf, on the other hand has offered to narrow differences between Saudi Arabia and Iran. The Sultanate's Oil and Gas Minister Mohammed Bin Hamad Al Rumhy has emphasised that producers should still work on reaching a deal, while volunteering to facilitate discussions.

"Oman has a good relationship, by the way, with everyone, not just the Saudis and Iran, and we are prepared to see what is good for all of us," Ruhmy said. One suggestion to advance the talks that wasn't considered at the Doha meeting is to set the cap based on maximum production, he said.

"The reality is in the fields. Most of us have peaked, with the exception of maybe one or two, so if we say look, everybody is producing at a maximum level, let's try to agree on where we are now and then move forward," the Omani minister stated.

Producers should try to form consensus on a freeze by the time OPEC meets on June 2 at its headquarters in Vienna, Rumhy said. "Hopefully those who were not on board in Doha will be on board by June. From now on until June, we would be working on trying to convince everyone else that the freeze is the right way to do it."

Hopes for fresh talks between OPEC members and non-members at the cartel's planned meeting in June to achieve a viable production freeze

↑ Oil prices tumbled by as much as 7% to around $40 a barrel on the day the talks in Doha took place.

have been renewed after OPEC Secretary General Abdallah el-Badri said imposing limits on oil producers could be on the table again. Nigeria, which has been yearning to lead the bloc and has even nominated a seasoned energy professional to succeed el-Badri as secretary general, has also called on fellow OPEC members to find a consensus on an output freeze.

"We are just going to work on it," Nigeria's Oil Minister Emmanuel Ibe Kachikwu said in a recent statement issued by his ministry.

"It is a supply and demand issue and we need to consult and bring everybody into the circle and thank God that a committee is now in place to try and work towards getting everybody on board," he said. Observers however believe that the differences which caused the breakdown of talks in Doha are expected to prevail at OPEC's planned meeting in June, or even if another unofficial get-together of the parties concerned were to happen before that. Russia's Novak has stated that he will join a new round of talks on oil production freeze only if Moscow received guarantees from OPEC that its member countries have reached an agreement on the issue within the bloc.

"OPEC countries must first agree with each other, and if they say they have made a deal and invite the non-OPEC countries to join this deal, we will consider the proposal and take part in it," Novak said in a recent interview for a local radio station. "In other words, we need guarantees that these agreements have been reached before taking part in consultations," he said.

Experts say an output freeze deal, at least in the short term seems like a far-fetched probability, despite the optimism generated by a few OPEC and non-OPEC nations.

"Iran looks unlikely to agree to any OPEC deal to cut or freeze output, especially as it only returned to global oil markets in January, when international sanctions were lifted. Diplomatic tensions between Saudi and Iran may also scupper any potential OPEC agreement at least in the near term," Muhamad Fadhil, regional manager at ICIS MENA, told *Oil & Gas Middle East*.

"Due to the low oil price environment, Saudi is tapping on its vast foreign exchange rates to make up for the shortfall in oil receipts. The future of oil prices still remains unclear and the lack of consensus among OPEC members is making market players jittery," he concluded.

DEADLOCK IN DOHA:
Top 5 takeaways from the failure of the Doha talks

1 Saudi Arabia's Oil Policy now firmly in the hands of Deputy Crown Prince Mohammed Bin Salman.

2 Iran is focused on rebuilding Iran and not seeking approval from OPEC colleagues

3 Russia – once burnt twice shy – don't expect follow up meeting in Moscow anytime soon

4 International Markets absorb shock and awe of surprise, but emerging fundamentals of supply and demand provide floor.

5 OPEC picks up the deflated oil ball and will try inject some oxygen into rebuilding fractured OPEC harmony ahead of June meeting

Source: Sean Evers, managing partner, Gulf Intelligence in Doha

CURBING THE CORROSION MENACE

As the oil and gas industry in the region tries hard to make ends meet in this lean period, it is also seeking to prevent corrosion eat away their operations and budgets. Experts shed light on effective corrosion management and steps companies need to take to secure their machinery and facilities from rusting

WORDS: INDRAJIT SEN

As regional oil producing companies and countries march ahead with their plans of ramping up oil production in this current battle to defend market share, oil and gas equipment, drilling platforms, tools and manufacturing units in use are being subjected to more wear and tear than ever. Rigs and machinery – particularly in the high corrosion sectors such as offshore and sour gas – are rusting rapidly, thereby burdening companies with increased expenditure on maintenance and repair.

In this low oil price era, when energy players are striving to do 'more with less', corrosion control thus assumes paramount importance. Although a natural phenomenon, corrosion, if left unchecked, has the potential to not just render equipment useless but also damage entire operations.

Regional oil and gas companies have not been known to spend much on the proverbial 'stitch in time', as a result of which local oil and gas equip-

Andrew Duncan, lead consultant, Intertek Production & Integrity Assurance.

ment corrode by an estimated 4 to 5% annually, according to a senior industry expert.

"Normally you get 4-5% degradation annually, depending on the equipment and its usage. That's what you get when you build a pipeline and don't look at it - within 10-15 years it is out. So you have to put the protection and make the investment to recover some of it or eventually you will have to replace it," Mohammad A. Al-Sultan, manager of Saudi Aramco's Mechanical Services Shops Department, told *Oil & Gas Middle East*.

Are some sectors more corrosion-prone?

Corrosion in the oil and gas industry can occur on both the internal and external surfaces of production and processing equipment. Aqueous corrosion occurs in the presence of water. Internally, the main corrosion threats are due to carbon dioxide (CO2), hydrogen sulphide (H2S), microbially induced corrosion (MIC), and under-deposit corrosion.

Safety Critical Elements (SCE), or equipment that handles potentially hazardous fluids such as hydrocarbon liquids and gases, are fabricated from carbon steels, making them prone to rusting. CO2 corrosion is caused by the creation of carbonic acid in solution, which is aggressive to carbon steels. As the flow rate increases the rate of corrosion can increase, causing Flow Influenced CO2 corrosion (FICC).

In addition to corrosion, SCE's can suffer from stress assisted environmental cracking. For the internal surface of carbon steels, this is typically in the form of Sulphide Stress Corrosion Cracking (SSCC), Hydrogen Induced Cracking (HIC) and Hydrogen Blistering caused by the presence of Hydrogen Sulphide (H2S), or sour gas.

"Different parts of oil and gas processing units will be more susceptible to corrosion depending on the fluid properties and metallurgies used in certain parts of the asset. Produced fluid that contains high sulphur content or sour gas is more corrosive and more care should be taken to ensure the pipe wall is not corroded too quickly," Jake Davies, marketing director, Permasense, told this magazine.

> "NORMALLY YOU GET 4-5% [EQUIPMENT] DEGRADATION ANNUALLY, DEPENDING ON THE EQUIPMENT AND ITS USAGE. THAT'S WHAT YOU GET WHEN YOU BUILD A PIPELINE AND DON'T LOOK AT IT – WITHIN 10-15 YEARS IT IS OUT."
> MOHAMMAD A. AL-SULTAN, MANAGER MECHANICAL SERVICES SHOPS DEPARTMENT, SAUDI ARAMCO.

When H2S is present, the corrosion rate can increase further, and can be calculated using mathematical models. However, sour gas producing units are not generally prone to corrosion and H2S in fact can also be 'beneficial' in reducing general weight-loss corrosion, as one expert points out.

"Some operators even deliberately introduce H2S into pipelines to lower corrosion rates. But, some material such as high strength steel, can fail in different ways by cracking when H2S is present. There are well known international standards (ISO 15156) that provide guidance on the safe selection of materials for sour gas conditions," Dr. Liane Smith, founder and managing director of Wood Group Intetech, says.

"Elemental sulphur production can be exceedingly aggressive to carbon steel and the most effective protection is to keep the sulphur in solution by adding solvent, so that it does not deposit as a solid on the surface of the steel. Sulphur is a catalyst to a specific set of reactions that can cause localised pitting. Corrosion rates from sulphur deposits can be over 10 millimetres per year.

"In many cases the worst corrosion can be in the less high profile systems. Operators worldwide are plagued by corrosion in their water injection systems because of the difficulty in maintaining excellent oxygen removal from water. Excursions in conditions to higher oxygen levels quickly result in high rates of corrosion attack," she added.

According to Smith, non-flowing 'dead-legs' can be another problem area for operators because the low flow conditions encourage proliferation of

Dr. Hussain Al Fadhli, secretary general, Saudi Council of Engineers.

→ Mohammad A. Al Sultan, manager, Mechanical Services Shops Department, Saudi Aramco.

microbial species. "There is a vast amount of hydrocarbon nutrients in oil and gas systems and temperatures are generally pleasantly warm, encouraging microbial species to colonise the surface with a microbiological biofilm. Under this slimy film the species metabolise hydrogen sulphide into various other sulphur species like sulphate ions – the same way animals metabolise oxygen to carbon dioxide to get energy – and those sulphur species then cause localised corrosion of the steel," she said.

$12.18BN

THE THEORETICAL COST OF CORROSION THE UAE IS ESTIMATED TO HAVE BORNE IN 2015.

Effective corrosion control

The global cost of corrosion in the oil and gas industry was estimated by the US National Association of Corrosion Engineers (NACE) to be over $5bn. Without online monitoring of corrosion in their operational assets, it is almost impossible to know whether operators are investing enough in corrosion control.

A reduction in capital expenditure favours the use of cheaper metallurgies in the building and maintenance of oil and gas assets. However, this must then be adequately monitored and may result in increased operational spend in corrosion inhibitor chemicals.

There is consensus among industry players, however, that the GCC oil and gas industry is quite aware of the menace of corrosion eating into both its budget and operations.

"I would say that over the years, corrosion management in the regional oil and gas industry, and at Aramco specifically, has been good," Sultan told this magazine on the sidelines of the Manufacturing Conference & Exhibition for Oil & Gas (MAF 2016) in April in Dubai.

He elaborated on an interested practice at Aramco: "I think we have gone a long way in protecting our equipment and scrapping our pipelines. Aramco has designed and implemented a quality inspection programme that monitor all aspects of degradation, corrosion and erosion. We have Aramco-designed specific corrosion programmes. We have 17-steps that we need to comply with and each operating facility needs to comply with. It (inspection) happens every year. Then there are findings (reports) also. I think in the last 7 years we have made a leap forward in corrosion control through this 17-step programme."

Dr. Hussain Al Fadhli, secretary general of the Saudi Council of Engineers, revealed to this magazine during the recently held that Aramco spends about SAR 1bn ($266.58mn) each year on corrosion control.

Industry professionals suggest a number of methods for efficient corrosion control, with the choice of technique being used based upon its ability to work effectively and also the cost of applying the technique. Andrew Duncan, lead consultant at Intertek Production & Integrity Assurance, outlines a number of proven methods to contain rusting of equipment.

"Corrosion inhibitor chemicals are used to manage internal corrosion in carbon steel pipelines,

↘ Dr. Liane Smith, founder and managing director of Wood Group Intetech.

↓ Jake Davies, marketing director, Permasense.

> "CORROSION RESISTANT ALLOYS MAY BE USED TO MANAGE VERY HIGH CORROSION THREATS, HOWEVER, THESE MATERIALS ALSO HAVE THEIR OWN CORROSION RISKS,"
>
> DR. HUSSAIN AL FADHLI, SECRETARY GENERAL OF THE SAUDI COUNCIL OF ENGINEERS.

↑ To manage internal corrosion in carbon steel pipelines, experts use corrosion inhibitor chemicals.

For Abu Dhabi alone, the theoretical cost of corrosion at 3.1% amounts to a whopping $6.38bn. ↗

while biocides can be used to control sulphate reducing bacteria. Scale inhibitor chemicals are also used to control scaling precipitates in pipelines, while wax inhibitors are used to control wax deposition in pipelines. Metallurgical solutions may be used to control SSCC and HIC by controlling the hardness of the steel and by using steel with low levels of inclusions," he says.

He further suggests: "Corrosion resistant alloys may be used to manage very high corrosion threats, however, these materials also have their own corrosion risks. Cathodic protection can be used to protect the external surfaces of buried or submerged pipelines and structures and also of the internal surfaces of vessels. Coatings can be used to protect the external surfaces of buried or submerged pipelines and structures and also of the internal surfaces of vessels. Coatings are also used on above ground or surface steel work which is exposed to marine environment corrosion. Design may be used to minimise corrosion, for example by using swept bends to reduce erosion, and by avoiding 'dead legs' in process piping."

Along with corrosion management techniques it is essential to deploy corrosion monitoring techniques which measure the corrosivity of the fluids, and non-destructive testing (NDT) techniques which measure the wall thickness of the SCE, analysts recommend. In 2015, the GDP of the UAE was estimated to be $406bn, hence the theoretical cost of corrosion at 3.1% was a mammoth $12.18bn. For Abu Dhabi alone, with an estimated GDP of $206bn, the theoretical cost of corrosion at 3.1% amounts to a whopping $6.38bn.

"The cost of corrosion reports estimate that 25% of the amount spent could be saved by application of corrosion management techniques, equating to a potential saving of $3bn and $1.6bn for the UAE and Abu Dhabi respectively," Duncan said.

"It is important to understand that corrosion is first and foremost a safety risk which has to be managed. Once the safety risks are managed the economic risks associated with uncontrolled corrosion will fall into place," he said.

INDUSTRY INNOVATIONS

Unmanned aerial vehicles

DRONE Cyberhawk has announced that it has completed the first ever commercial oil and gas drone inspection in Qatar. The project, which saw the inspection of 136m high flares, while still operational, was completed at an onshore oil and gas refinery in March 2016. The inspection marks a major step forward in the commercial use of drones in the Middle East. The company claims it has already inspected more than 75 live flares and other oil and gas structures in Saudi Arabia, Abu Dhabi, Dubai and Oman.

NEW LAUNCHES

A round-up of some of the best releases this month

TANK MIXING AND PUMPING

SPX FLOW 'Plenty' brand of pumps and mixers offer excellent performance and ease of maintenance in a wide variety of tank duties ranging from homogenisation of clean fluids through to crude oil bottom sludge and water (BS&W) control. Swivel and fixed angle models use high performance impellers that produce high pumping and thrust with minimum power draw to ensure highly efficient operation. Maintenance is minimised through the use of bearings that are specifically engineered to maximise L10 bearing life. A special wear-resistant tank shut-off device further enhances maintenance efficiency by enabling the mixer shaft and bearings to be changed under full tank conditions.

FAST PURGING OF PIPEWORK

Huntingdon Fusion Techniques (HFT) has developed HotPurge Inflatable Pipe Purging System for Heat Treated Chrome and High Strength Stainless Steel Pipe Joints where the temperatures might be as high as 7600ºC (1,400ºF) for many hours. HotPurge is manufactured as standard with PurgeGate to prevent over inflation of, and damage to the dams. No matter how high the user increases the pressure in order to deliver more gas flow, PurgeGate prevents too much pressure being delivered to the inflatable dams, but allows the increased flow, should it be required, to achieve a lower oxygen level, or for faster cooling of the weld zone. The purge space remains tightly sealed at all times.

INTEGRATED BATTERY BACKUP

Dialight has announced it has secured CID1 Certification for its SafeSite LED linear fixture with battery backup. The 85W fixture delivers 7,250 lumens on primary power, with 500 lumens in battery backup mode. Providing up to three hours of illumination on battery backup for Class I Div 1 hazardous locations, the new linear is suited for offshore drilling operations and refineries. The fixture carries a T4A temperature rating and ambient operating range of -20ºC to 65ºC. The factory-sealed linear is IP66 and NEMA 4X rated for ingress protection, highly resistant to shock and vibration and features a hardened glass lens with a polyester/epoxy powder coated aluminum housing for corrosion resistance.

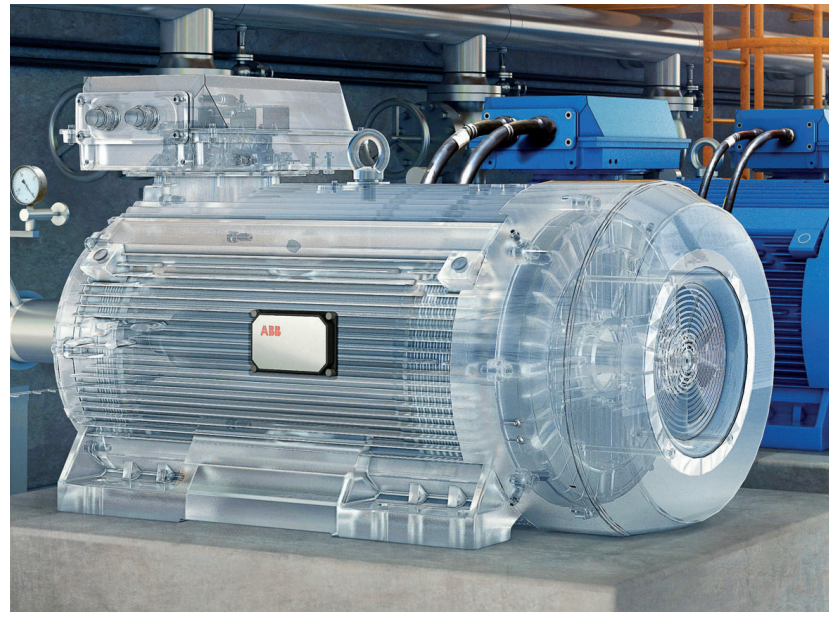
GE Oil & Gas to have facility in Dammam

Unit will be a manufacturing, assembly, repair, services and training hub

NEW HUB GE Oil & Gas has marked the groundbreaking of its multi-modal manufacturing and service facility at the company's MODON (Saudi Industrial Property Authority) site in 2nd Industrial City, Dammam. This new phase of work will build upon the recent expansion of the GE Oil & Gas Pressure Control manufacturing facility that was inaugurated in late 2015 with additional capabilities to manufacture and service the entire range of the company's oil and gas portfolio. With the new facility, GE Oil & Gas is bringing added 'Made in Saudi' products. It will serve as a manufacturing, assembly, repair, services and training facility for advanced gas turbines and mechanical drives. The addition of 18,000 square meters of facilities at the MODON site will create over 100 new jobs in the start-up phase with 80% 'Saudisation'. Additionally, the new facility will also deliver the services of GE's recently acquired Alstom Grid business.

THREE REASONS TO BUY

ABB's smart sensing product can reduce downtimes of low-voltage motors by 70%



1 COST EFFICIENT

The sensor technology offers plant operators huge potential savings on maintenance and repair. It also makes it easy to utilise the Internet of Things, Services and People (IoTSP) for millions of motors. Small and mid-sized firms can also benefit from the advantages of the IoTSP.

2 ANALYSES DATA

The smart sensor provides information on parameters such as vibration, temperature or overload and calculates power consumption. The data are analysed by a special software and provided to the plant operator, thereby enabling downtime reductions of up to 70%.

3 CYBER SECURITY

Cyber security is guaranteed at all times. The sensor is not electrically connected to the motor, so unauthorised parties cannot access the motor via this route. The sensors offer wireless transmittion of data via encryption protocols to a secure server.

SELLING POWER

David Paja, president, Honeywell Security and Fire on Honeywell completing acquisition of Xtralis

WHAT IS XTRALIS ALL ABOUT?

Xtralis' aspirating smoke detection solutions protect many Fortune 500 companies, iconic sites, and critical infrastructures worldwide to provide very early warning and verification of threats to speed response time and minimise facility damages and potential injuries.

HOW MUCH WAS THE ACQUISITION WORTH?

Honeywell has acquired Xtralis for $480mn. The company will be integrated into Honeywell's Automation and Control Solution strategic business group.

HOW DOES THIS ACQUISITION HELP HONEYWELL?

The acquisition of Xtralis is a good strategic fit to our current fire detection portfolio and will bring unique capabilities and customer solutions in remote visual verification of fire and intrusion risks, advanced perimeter security technologies, and video analytics software. This acquisition helps us expand our Critical Infrastructure Protection (CIP) business and will help enable strong growth in the coming years.

WJM wins support vessel deal

William Jacob Management to develop new 'Moss V' support vessel

CONTRACT William Jacob Management Inc. (WJM) has secured its initial contract to complete the detailed engineering and design of its first Mobile Offshore Support Services Vessel; the MOSS V. Northport Marine LLC will be the first client to receive delivery of the new concept vessel, scheduled for completion in Q1 2018. The MOSS V is a heavy-duty jack up drilling rig, converted to a self-propelled vessel. Potential applications include rigless plug and abandonment, construction support, floatel, storm damage repair, decommissioning, wireline, workover, support of a skid off rig and maintenance. WJM will provide the engineering design and construction management for the conversion and refit of a candidate vessel. By removing pre-existing drilling equipment from the top deck during the conversion, a 10,000 sqft open deck serves to create a utility vessel that allows for the accommodation of a number of different services.

REASONS TO HAVE:

- The MOSS V is a heavy-duty jack up drilling rig, converted to a self-propelled vessel.
- Potential applications include rigless plug and abandonment (P&A), construction support, floatel, storm damage repair, decommissioning, wireline, workover, support of a skid off rig and maintenance.
- The MOSS V is designed for 350 to 400 ft water depth capability
- It can endure substantial adverse weather conditions due to its size and weight.
- A 2,000sq ft enclosed machine and welding shop is also located on the deck of the MOSS V. This means that workers can safely perform construction tasks for repairs in an environment shielded from the elements whilst offshore on the vessel.

PRODUCT FOCUS

E Instruments E8500 PLUS emissions analyser is a portable tool for emissions monitoring

CO2 measurements now up to 50% with NDIR sensor.

NEW PID VOC sensor option.

Internal thermoelectric chiller with automatic condensate removal.

New sample conditioning system for low NOx and SO2.

Includes up to 9 gas sensors.

Upgraded software with automatic data-logging.

WHERE CAN I BUY IT?

For more information visit: www.E-Inst.com or e-mail: dkelly@E-Inst.com.

ALSO IN STOCK

OLDHAM'S GAS DETECTION CONTROLLER

Fully scalable, the MX 43 is an analog and digital controller designed to continuously measure and control gases in the atmosphere. The MX 43 gas detector manages both digital lines and analog channels, and covers all needs for a wide variety of gas monitoring applications. The MX 43 digital technology allows up to 32 detectors to be distributed on 8 lines for increased cost savings.

WHY SHOULD I BUY IT?

- ANALOG AND DIGITAL CONTROLLER
- 4 OR 8 LINES, UP TO 32 DETECTORS

BAUMER'S IDENTIFICATION FOCUS

After the launching the 'Original Bourdon' in May 2014, Baumer has taken the next level of clear identification. From September 2015, the core products of 'Original Bourdon', the stainless steel pressure gauges from diameter 63 and 100mm are having the brand name printed directly onto the dial of the manometer. 'Now, with the latest activity the valuable customer can be assured of getting supplied unique Original Bourdon', Baumer said in a statement.

WHY SHOULD I BUY IT?

- DEVICE CAN BE USED IN ANY ENVIRONMENT
- ALLOWS MANUAL PRESSURE READING
- RELIABLE AND ACCURATE

SPIE wins Ras Laffan deal again

Qatar Petroleum renews for the second time SPIE Oil & Gas Services contract

WHAT IS SPIE'S SCOPE OF WORK?
SPIE is to mainly provide manpower with hand tools, vehicles, original equipment manufacturer/vendor specialist support.

WHAT WILL QATAR PETROLEUM DO?
QP will carry out the materials management, engineering and maintenance planning, and provide senior maintenance staff.

HOW BIG IS THE SPIE TEAM?
The contract will be carried out by some 127 SPIE coordinators, engineers, inspectors and technicians.

CONTRACT SPIE Oil & Gas Services Middle East LLC, a subsidiary of SPIE Oil & Gas Services, was again awarded a five-year contract to provide manpower with hand tools, vehicles, original equipment manufacturer/vendor specialist support and other support services for the operation and maintenance of all existing and future equipment and facilities at the Common Seawater Facility (CSF) in Ras Laffan Industrial City (RLC). The contract came into effect from April 1, and covers all areas within RLC on a continuous and call-off basis. Qatar Petroleum will carry out the materials management, engineering and maintenance planning, and provide senior maintenance staff. RLC is an industrial centre administered by Qatar Petroleum that provides the infrastructure needed by gas-based industries using the North Field gas reserve in Qatar. The Common Seawater Facility supplies cooling water, desalinated water, potable water and fire-fighting water to industries in the city. Built with 100% availability and designed to 99.7% reliability, it is vital to the uninterrupted operation of industries located in RLC. Capacity currently reaches 1,166,000 cubic meters per hour following expansion of the facility. This large, complex hydraulic system shared by different consumers requires highly technical solutions to ensure reliability and availability.

BIBBY OFFSHORE WINS FIRST CONTRACT IN NORWAY

Company's Norway unit bags deal from ConocoPhillips

Bibby Offshore's Norway division, Bibby Offshore AS, has successfully secured its first contract in the region with ConocoPhillips Skandinavia. Managed from Bibby Offshore's Stavanger office, the workscope involves project management, installation engineering, procurement and subsea installation works, related to maintenance activities on the Norpipe Oil pipeline. The contract is due for completion in Q3 2016 and will utilise the construction support vessel Olympic Ares to support operator ConocoPhillips on integrity management of the Norpipe Oil pipeline between the Ekofisk area and the Teesside facility in the UK. "We are delighted to have secured our first Norwegian contract with a leading E&P company such as ConocoPhillips," Arne Lier, managing director of Bibby Offshore Norway, said.

Veolia wins Dolphin Energy contract

Veolia to engineer, procure and deliver a wastewater treatment plant for Dolphin Energy's gas production unit in Qatar

CONTRACT Paris-based Veolia, through its subsidiary Veolia Water Technologies, has been awarded a contract by the Qatar Engineering & Construction Company to engineer, procure and deliver a wastewater treatment plant for Dolphin Energy's natural gas production and processing facilities in Ras Laffan, Qatar. The wastewater treatment facility will provide quality water for reuse, reducing both the volume of wastewater currently being injected into the existing re-injection wells at the Ras Laffan gas plant, and the volume of desalinated water purchased from external sources. Kinetic Hydrate Inhibitor (KHI) polymers will also be eliminated from the residual wastewater. Start-up is scheduled for September 2017. Industry regulators in Qatar have concluded that the presence of KHI polymers in the injected wastewater leads to long-term reservoir damage, which is why it is essential to remove them from re-injected wastewater. Veolia was awarded a contract in 2015 for its HPD evaporators which will be used for KHI removal and distillate recovery. Veolia will also provide a pre-treatment package upstream of the evaporators using its MPP Tilted Plate Flotation technology.

Rotork wins oil terminal maintenance contract

Rotork to maintain critical valve actuation assets at the VTTV oil storage terminal in Cyprus

MAINTENANCE Energy storage provider VTTI B.V., has awarded a contract to Rotork for the maintenance of critical valve actuation assets at the VTTV Oil Storage Terminal in Cyprus. About 400 Rotork IQ3 actuators, controlled by Rotork's Pakscan 2-wire digital networks that manage the flow of media throughout the terminal, have been covered on the 'tailor-made' contract. The programme exploits the functionality of intelligent IQ3 technology with remote diagnostics and monitoring via dataloggers, enabling preventative maintenance to be organised.

PRODUCT FOCUS

Clarcor offers glass fibre product to protect gas turbines in offshore installations from moisture an hydrocarbons

The altair Static Offshore Filter EPA System uses glass fibre media, which has a deep filtration layer that better handles moisture and hydrocarbons.

Glass fibre media is around ten times thicker and its greater pore volume makes it naturally less prone to sudden blockage.

The altair Static Offshore EPA System was specifically for offshore use.

The altair system provides three-stages of filtration to handle the multiple environmental elements found on an oil platform.

WHERE CAN I BUY IT?

For more information visit www.CLARCORindustrialair.com or e-mail daniel.burch@clarcor.com

SELL IT TO ME

Jupiter model JM4: Magnetostrictive level transmitter that offers 'Smart Probe' technology

HIGH QUALITY HARDWARE AND SOFTWARE

The JM4 is engineered to be the smartest, most innovative magnetostrictive transmitter available. To this end, numerous enhancements have been introduced, including greater signal-to-noise ratio (SNR), a full graphic local user interface, HART 7.0 (Foundation fieldbus available), local waveform capture, and a more intuitive device type manager (DTM) allowing for remote configuration, trending, and diagnostics.

FIELD ROTATABLE AND REMOVABLE TRANSMITTER HEAD

The JM4 is the first magnetostrictive transmitter in the industry to offer a field-removable and rotatable head. The removable head allows for simpler transmitter maintenance and troubleshooting without disrupting the process. 310º of head rotation provides users with greater accessibility to operate the JM4's on-board graphical interface.

SMART PROBE

To further enhance the removable head, the JUPITER Model JM4 also features Smart Probe technology. When any JM4 transmitter head is attached to a probe, a single push of a button imports factory configuration settings into the head, and in seconds, the transmitter is ready for operation.

REMOTE MOUNT OPTION

JUPITER now offers a remote mount option. Available in 3 and 12 ft lengths, the transmitter head is attached to the probe via a flexible cable to allow for easier viewing under various spatial constraints.

Enhanced gas recovery in Oman

Oman turns to WEG to enhance gas recovery in major depletion project

ENHANCED GAS RECOVERY WEG has developed variable speed drive systems to help with extraction from some of Oman's older oilfields where the natural pressure is beginning to fade. Boosting extraction from depleting reserves is part of a $33bn project which aims to enhance Oman's hydrocarbon production capabilities and help the country broaden its economic base. It is expected that Oman will unlock about 1tn cubic metres of natural gas over the next 25 years, representing a long-term sustainable competitive feedstock for its petrochemical industry. As part of this major effort, the Petroleum Development Oman (PDO) Saih Rawl Field Depletion Project Phase 2, will see $550mn invested on developing a daily gas production capacity of 30mn cubic metres, which will be fed to the existing Saih Rawl central processing facility. Extra compressors will be installed to increase the pressure so that gas continues to flow, enabling the field to feed the liquefied natural gas (LNG) industry, while offering a back-up when other plants are shut down for maintenance purposes.

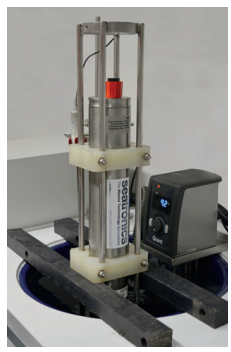
WHAT WAS THE NEED FOR SUCH A PROJECT IN OMAN?

- Boosting extraction from depleting reserves is part of a $33bn project which aims to enhance Oman's hydrocarbon production capabilities and help the Sultanate broaden its economic base. It is expected that Oman will unlock about 1cm of natural gas over the next 25 years, representing a long term sustainable competitive feedstock for its petrochemical industry.
- The PDO Saih Rawl Field Depletion Project, Phase 2, will see $550mn invested on developing a daily gas production capacity of 30mcm, which will be fed to the existing Saih Rawl central processing facility. Extra compressors will be installed to increase the pressure so that gas continues to flow.

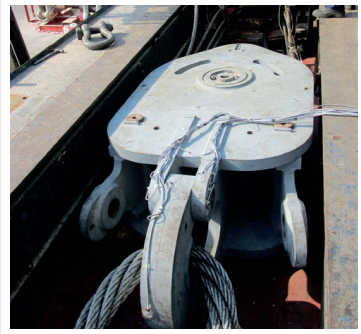
SEATRONICS ACHIEVES ACCREDITATION FEAT

Seatronics is the first company to achieve Valeport calibration

Seatronics, an Acteon company, is the first to sign up to enhanced accreditation as a supplier of third party calibrations to the ROV and survey communities, globally. The enhanced accreditation is provided by Valeport; the UK-based manufacturer of oceanographic, hydrographic and hydrometric instrumentation. Seatronics has established calibration facilities in Scotland's Aberdeen, Singapore and Houston. The original calibration facility was established in Aberdeen in 2003 to manage Seatronics' extensive range of Valeport assets. Since



then, the facility has been extended to handle increased throughput and to support the growing demands of Seatronics' customers requiring local third party calibrations. Following the success of the operation in Aberdeen, Seatronics replicated the facility in Singapore in 2005, and Houston in 2008. In March, Seatronics achieved 100 successful global installations with the Subsea Deflection Monitoring system (SDM).



SSG conducts load test of prototype block

The first prototype travelling block tested to 907 tonnes in the Middle East

The UAE-based Safety Services Group (SSG) recently conducted the load test of the first prototype travelling block, designed and fabricated in the Middle East. Proof Load test of the travelling block was done through tensile test up to 907 tonnes. Safety Marine Services, a subsidiary company of Safety Services Group, performed the test on its in-house hydraulic tensile test bed in the presence of representatives from National Oilwell Varco (NOV), American Petroleum Institute (API) and American Bureau of Shipping (ABS) Class Surveyors. Mohammed Seethi Padiyath, general manager – Operations, Safety Services Group, said: "The travelling block was a prototype and handling such an enormous block was a real challenge to the company. A trial run was conducted on the test bed up to 960 tonnes prior to the actual load test. Achieving 907 tonnes and holding it in a static mode was also a task. With the expertise of our highly skilled engineers and technology we were able to successfully test the prototype." Special rope was used in the testing as the safe working load (SWL) of the rope required was high. The rope ends were socketed for the end terminations.

ON THE MOVE

Archie Kennedy
Non-executive director of Board
Bibby Offshore

Bibby Offshore Holdings Limited has announced the appointment of Archie Kennedy to the company's Board as a non-executive director. Kennedy previously served on the company's board between 2011 and 2012. Kennedy is a Chartered Engineer with over 35 years' experience in the oil and gas industry, having previously worked in the UK, the USA and Canada.

Ali Al Janabi
Abu Dhabi head
Royal Dutch Shell

Royal Dutch Shell has named Ali Al Janabi as its new head of Abu Dhabi, as it begins the process of the worldwide integration of BG after closing the $52bn takeover in February. Al Janabi takes over from Andrew Vaughan, who also had oversight responsibility for Kuwait and Syria. 'Al Janabi is responsible for providing governance and support to Shell's projects in Abu Dhabi', Shell said.

Jake Rowley and Donal Heery
Lokring Northern (UK)

Lokring Northern (UK), provider of advanced fluid and gas transfer connectors, has announced making two appointments. Jake Rowley appointed as technical sales engineer for Aberdeen and Donal Heery promoted to technical sales manager. Rowley joins Lokring Northern on a six month training programme with the company. On the other hand, his new role will allow Heery to manage a team of sales engineers and consultants throughout the UK and Ireland.

Moustafa El Chiati
Chief Executive Officer – UAE
EFG Hermes

Egypt-based investment bank EFG Hermes has announced the appointment of Moustafa El Chiati as the chief executive officer of EFG Hermes' UAE Operations, the firm's second-largest regional office, established in 2002. A 13-year banking professional, El Chiati has a strong track record of leading high-profile mergers and acquisitions transactions as well as equity and debt offerings to a variety of the firm's clients who operate across multiple industries in various regional markets.

Mohammed Barkindo

Appointment of the Month

OPEC Secretary General nominee

Nigeria has nominated the former chief of its state oil company to be the next secretary-general of the Organisation of the Petroleum Exporting Countries, potentially ending a deadlock over the cartel's leadership. The nomination of Mohammed Barkindo was put forward in recent days by Nigeria to replace Abdalla Salem el-Badri as OPEC's secretary-general. Badri has led OPEC for over nine years and was supposed to leave at the end of 2012, but the cartel couldn't reach a consensus on a replacement. Barkindo worked as OPEC's acting secretary-general a decade ago. He led the Nigerian National Petroleum Corp. from 2009 to 2010. The secretary-general is nominated for a three-year term by member countries. The position is voted on at ministerial meetings, with the next one scheduled on June 2 in Vienna.

JOBS

NOTICE BOARD

The latest jobs available in the oil and gas industry

QATARGAS, QATAR
Business Continuity Management Specialist
To lead and supervise the ongoing maintenance and enhancement of the corporate Business Continuity Management programme. An O&G experience of 8 to 10 years is preferrable.

KENTZ, KHOBAR, SAUDI ARABIA
Project Engineer
The key responsibility will be to provide short term plans to and get those approved by the project manager. A 2 to 3 years' of experience in project management in the industrial lift/construction industry is desirable.

SCHNEIDER ELECTRIC, OMAN
Site Services Engineer
The candidate will be mainly responsible for installation, erection testing and commissioning of MV/LV products/equipment. A degree in Electrical Engineering and 7 years of relevant experience is a must.

DarkMatter builds team; makes two key appointments

CAREER NEWS

NEW APPOINTMENTS Newly-formed cyber security firm DarkMatter has announced the appointment of Rabih Dabboussi as its senior vice president of Sales, Marketing & Business Development. Dabboussi joins the Abu Dhabi-based firm from Cisco UAE, where he was managing director. In his new position at DarkMatter, Dabboussi is responsible for the company's overall business development, sales, and go-to-market strategy as it looks to secure engagements across various industry sectors. Dabboussi will also ensure the company's business objectives are well positioned through industry and leadership engagements, as well as internal and external communications. DarkMatter has also appointed Scott Rea as senior vice president - Public Key Infrastructure (PKI), where he will lead the company's efforts to elevate Identity Management in the UAE and GCC region by establishing domestic Root Certification Authority services.

RABIH DABBOUSSI JOINS THE ABU DHABI-BASED FIRM FROM CISCO UAE, WHERE HE WORKED FOR 20 YEARS AND WAS MANAGING DIRECTOR.

Glasspoint appoints Nazar Al Lawati as senior VP of project development

EXECUTIVE GlassPoint Solar has announced the appointment of energy finance expert Nazar Al Lawati as senior vice president of Project Development, International. Al Lawati, who most recently served as chief financial officer of the Oman Oil Refineries and Petroleum Industries Company (ORPIC), will lead GlassPoint's growth in the Middle East region. His scope of work includes fostering partnerships with strategic and international partners to develop and finance large scale solar enhanced oil recovery (EOR) projects. Al Lawati will be based in GlassPoint's regional headquarters in Muscat alongside the majority of the executive team.

Ruscev joins Weatherford International as senior operating executive

EXECUTIVE Weatherford International plc has announced that Dr. Mario Ruscev has joined Weatherford International plc as a senior operating executive reporting directly to the Chief Executive Officer. Ruscev brings over 25 years of operations experience in the oilfield service and technology industries, having served as vice president and chief technology officer of Baker Hughes since August 2012. Ruscev previously served as chief executive officer of Geotech Seismic Services, chief executive officer of FormFactor Inc. and in various management positions at Schlumberger Ltd., including as president of several product lines.

OPINION

The changing oil market reality

What are the characteristics of this changed oil market reality, and what impact does this have on national oil companies of the Middle East? Antoine Rostand has his say

About the author
Antoine Rostand is a senior advisor and member of the board of the global energy practice at global management consulting firm A T Kearney

The drop in oil prices has prompted some industry observers to compare what we are witnessing in the market to the previous downturn of 1986 to 2000. We, however, see a big difference between these two time periods. When we look at the previous upcycle in 1978, the price rose drastically as supply was cut in an increasing demand environment.

This led to the investment in new technologies of the time such as deep water drilling and increased exploration in areas such as the North Sea. About eight years later, the increased supply combined with a demand drop resulting from high oil prices led to a price collapse in 1986. At this point in time, there was a spare capacity (a capacity available but not used) of 10mn barrels per day, equating to around 25% of total production. Even if OPEC did cut production it took a long time to absorb this spare capacity, explaining why the downturn lasted from 1986 through to 2000.

The period from 2000 to 2008 ushered a renaissance in the oil industry, with a price hike from just under $30 per barrel to $140. The resurgence in revenue

helped drive growth in both the industry as well as the regions which supplied this oil. In this context, the sudden drop in prices necessitates bold industry moves and looking to the past for direction can be a tempting option for most. There are, however, some fundamental differences between the current situation and that of the past, which make it unlikely that we will continue to see sustained low oil prices in the medium to long-term.

The spare capacity today is much lower at an estimated 2mn barrels per day or 5% of total production, as compared to the 25% of 1986, so the market is not characterized by a massive over-capacity. However, bear sentiment, along with low oil prices, has halted investment activities in the oil industry over the past 18 months, impacting production in the short term in the US and in the medium to long term everywhere else.

The question on everyone's mind is how fast the shale industry in the US can ramp up and act as swing producer if demand growth outstrips supply capacity. There is one school of thought that shale exploration in the US will quash global demand, but this must be challenged. The financing of shale will be much more difficult in the future due to the estimated $1.6tn of debt that has been use to fuel shale production. This overleveraging has led to several US companies filing for bankruptcy. Hence the next wave of shale drilling will cost far more to finance as banks will be more reluctant to lend.

Additionally, oilfield services companies have already made drastic cuts to their head-counts and operations, so when demand picks up they will look to benefit from the increased price before increasing capacity, slowing production growth and increasing cost of developing shale oil.

Another crucial difference from the previous downturn cycle is that we already see demand increasing, so there is not a long-term structural demand drop. India is a key driver of increased global demand for oil, overtaking the Chinese growth in demand. In 2015 alone, India's oil demand grew by 300,000 barrels a day, as living standards improved and more people bought cars. This is double the average rate of the country's fuel consumption in the previous decade and amounted to 4mn barrels of oil in 2015.


Antoine Rostand

The ingredients for a medium-to-long-term rebound in oil price are in place – an increase in global demand and a reduced supply resulting from the investment cuts producers have had to implement during the past years of low oil price. As demand increases there will be a point where there is tension in the market, leading to increased volatility.

All these factors considered, it is likely we will see oil prices climb again and they may even spike in the medium-term.

So what does all this mean for oil producers in the Middle East? We argue that NOCs should apply the same modern management techniques as shale producers in order to reduce costs. These techniques have been applied in the past by the automotive industry, where manufactures collaborate with suppliers to drive innovation. Through increasing such cooperation within the oil and gas industry, we could reduce the costs of oil companies by 30-35%. At the same time, NOCs must keep investing in maintaining capacity, as those with spare capacity will be in the strongest position when prices rise again.

Budget: $80MN

Bahrain Petroleum Company (Bapco) – offshore blocks

PROJECT SCOPE

The scope of work includes the exploration of a few offshore blocks

Bapco has built its reputation as a complex organisation with vast experience in upstream, midstream and downstream developments. The company boasts of a good management and possesses technical expertise, underpinned by its technology partners and suppliers. It is spearheading several initiatives from upgrades to the existing Awali field to major offshore exploration partnerships with international oil companies to secure gas supplies.

On the other hand, Bapco is planning to build a new oil pipeline with Saudi Arabia, to import crude oil for its refinery, although various aspects of the project are yet to be finalised. The two GCC states plan to build

CONTRACTORS

Contract Type	Pre-Qualified	Bidders
PMC	• Vinson & Elkins • Baker Botts LLP • Ashurst LLP	• Vinson & Elkins • Baker Botts LLP • Ashurst LLP

PROJECT SCHEDULES

Project	Date
Feasibility Study	Q3 2015
EPC ITB	Q4 2015
Engineering & Procurement	Q2 2016
Completed	Q3 2020

Date	Status
Aug 2015	Bapco receives proposal from a single bidder for the consultancy services contract for promotion of Bahrain's offshore exploration blocks. The bidder is UK's CGG Services.
Sep 2015	Bapco receives the bid for consultancy services contract for promotion from CGG Services UK with a value of $482,885.
28 Jan 2016	Bapco receives offshore bid round 2015 consultancy services for Exploration & Production Sharing Agreement (EPSA)from three companies. – Vinson & Elkins: $50,000 – Ashurst LLP: $85,000 – Baker Botts LLP (UK): $320,000

FAST FACTS

Name of Client
Bahrain Petroleum Company (Bapco)
Estimated Budget ($ US)
80,000,000
Facility Type
Exploration
Sector
Oil
Status
EPC ITB
Location
Various
Project Start
Q3 2015
End Date
Q2 2020
Last Updated
11-02-2016
FEED
PMC
Main Contractor
Not known yet
Award Date
Q2 2016

a new 115km-long pipeline, with a carrying capacity of 350,000 bpd to replace the ageing 230,000 bpd pipeline. The cost of the project is estimated to be $300mn. Bapco imports oil from Saudi's Ras Tanura oilfield – through a pipeline – to be refined at the Kingdom's main refinery at Sitra.

The project also has a strategic significance, not only in terms of replacing the old pipeline (which had less capacity and higher maintenance costs), but also to increase the export capacity.

Late last year, Bapco also awarded a project management contract, worth $87mn, to WorleyParsons for the 'Bapco Modernisation Program'.

Ongoing and upcoming projects

Information is supplied by DMS Projects

GCC GAS - APRIL 2016

Project	Country	City	Facility	Budget	Status	Completion Date
ADCO- Bab TH-F Peripheral Development	U.A.E.	Abu Dhabi	Nitrogen	400,000,000	FEED ITB	2017-Q4
ADCO- Bu Hasa Shuaiba South- Gas Lift Network	U.A.E.	Abu Dhabi	Gas Network	800,000,000	Construction	2018-Q1
ADGAS - Das Island Flaring & Emission Reduction (Package 2 & 3)	U.A.E.	Das Island	Gas Production	100,000,000	Construction	2018-Q1
ADGAS- Integrated Facilities Project (IGD-S) Expansion (Phase 4)	U.A.E.	Abu Dhabi	Gas Field Development	1,057,000,000	EPC ITB	2019-Q3
ADGAS- Integrated Gas Development (IGD) - Expansion (Overview)	U.A.E.	Abu Dhabi	Gas Field Development	1,057,000,000	EPC ITB	2019-Q1
ADGAS- Integrated Gas Development (IGD) - Expansion (Phase 1)	U.A.E.	Abu Dhabi	Gas Field Development	1,057,000,000	Engineering & Procurement	2017-Q3
ADGAS- Integrated Gas Development (IGD) - Expansion (Phase 2)	U.A.E.	Abu Dhabi	Gas Field Development	1,057,000,000	Construction	2019-Q1
ADMA OPCO- Nitrogen Plant Upgrade	U.A.E.	Abu Dhabi	Nitrogen	55,000,000	Design	2017-Q1
ADMA-OPCO - Das Island Flares Modifications - Revamp Project	U.A.E.	Das Island	Gas Processing	50,000,000	Construction	2015-Q2
ADMA-OPCO - Nasr Full Field Development - (Overview)	U.A.E.	Nasr Field	Oil Field Development	1,700,000,000	Construction	2018-Q4
ADMA-OPCO - SARB Offshore Oil Field Development - Package 2	U.A.E.	Abu Dhabi	Oil & Gas Field	500,000,000	Construction	2016-Q4
ADMA-OPCO - SARB Offshore Oil Field Development - Package 3	U.A.E.	Abu Dhabi	Gas Pipeline	600,000,000	Construction	2016-Q1
ADMA-OPCO - SARB Offshore Oil Field Development - Package 4	U.A.E.	Abu Dhabi	Gas Processing	500,000,000	Construction	2017-Q3
ADMA-OPCO - Zakum Facilities for 4 Gas Injectors	U.A.E.	Abu Dhabi	Gas Production	100,000,000	Construction	2016-Q1
Bahrain LNG WLL - Liquefied Natural Gas Receiving and Regasification Terminal	Bahrain	Hidd	Liquefied Natural Gas (LNG)	660,000,000	Engineering & Procurement	2018-Q3
Banagas - Central Gas plant 3	Bahrain	Sitra	Gas Treatment Plant	600,000,000	Engineering & Procurement	2018-Q2
Banagas - Fuel Pipelines and Storage Facilities Expansion	Bahrain	Sitra	Gas Storage Tanks	80,000,000	EPC ITB	2018-Q2
BP - Block 61 - Khazzan and Makarem Gas Fields Development	Oman	Oman	Gas Field Development	24,000,000,000	Construction	2022-Q1
BP - Block 61 - Khazzan Gas Fields Development - Phase 1 - Central Processing Facility	Oman	Al Dahirah	Gas Processing	1,200,000,000	Construction	2017-Q2
BP - Block 61 - Khazzan Gas Fields Development - Phase 1 - Overview	Oman	Al Dahirah	Gas Field Development	15,000,000,000	Construction	2017-Q4
BP - Block 61 - Khazzan Gas Fields Development - Phase 1 - Package 1	Oman	Al Dahirah	Gas Field Development	1,500,000,000	Construction	2018-Q4
BP - Block 61 - Khazzan Gas Fields Development - Phase 1 - Package 2	Oman	Al Dahirah	Gas Field Development	130,000,000	Construction	2017-Q3
Dana Gas - Zora Gas Field	U.A.E.	Sharjah	Gas Exploration	100,000,000	Construction	2016-Q4
DNO - Block 8 Oil & Gas Field Development	Oman	West Bukha	Gas Field	45,000,000	Construction	2018-Q4
Emirates LNG - Fujairah LNG	U.A.E.	Fujairah	Liquefied Natural Gas (LNG)	3,000,000,000	EPC ITB	2016-Q3
GASCO - Abu Dhabi Sales Gas Network- Compression Station	U.A.E.	Abu Dhabi	Gas Pipeline	900,000,000	EPC ITB	2018-Q2
GASCO - Black Powder Management	U.A.E.	Abu Dhabi	Gas Pipeline	44,000,000	Construction	2017-Q4
GASCO - Habshan to Ruwais - 16 inch Condensate Replacement Pipeline	U.A.E.	Abu Dhabi	Gas Pipeline	90,000,000	Construction	2015-Q4
GASCO - Integrated Gas Development (IGD) - Expansion (Onshore Pipeline)	U.A.E.	Abu Dhabi	Gas Production	12,000,000,000	Engineering & Procurement	2016-Q4
GASCO - Yas - Mina Zayed Gas Pipeline	U.A.E.	Abu Dhabi	Gas Processing	45,000,000	Construction	2015-Q1
GASCO- Gas Turbine Replacement (Phase 1 - Asab & Buhasa)	U.A.E.	Abu Dhabi	Gas Processing	130,000,000	FEED	2017-Q4
GASCO- Habshan 5 - New Compression Train	U.A.E.	Abu Dhabi	Gas Processing	800,000,000	EPC ITB	2018-Q1
GASCO- Taweelah Compression Station	U.A.E.	Abu Dhabi	Gas Processing	700,000,000	FEED	2018-Q4
Kuwait Gulf Oil Company (KGOC) - Central Gas Utilization Project	Kuwait	Wafra	Gas Processing	1,000,000,000	FEED	2018-Q1
Kuwait National Petroleum Company (KNPC) - Acid Gas Removal Plant	Kuwait	Ahmadi	Acid Gas	522,176,000	Construction	2016-Q1
Kuwait National Petroleum Company (KNPC) - Fifth Gas Train in Mina Al Ahmadi Refinery	Kuwait	Mina Al Ahmadi	Gas Production	2,000,000,000	Construction	2017-Q4
Kuwait National Petroleum Company (KNPC) - LNG Import and Regasification Terminal	Kuwait	Al Zour	Liquefied Natural Gas (LNG)	3,330,000,000	Engineering & Procurement	2018-Q4
Kuwait National Petroleum Company (KNPC) - LNG Storage & Re-gasification Services	Kuwait	Mina Al Ahmadi	Liquefied Natural Gas (LNG)	250,000,000	Construction	2016-Q2
Kuwait National Petroleum Company (KNPC) - Mutla Ridge Project	Kuwait	Mutla Ridge	Oil Storage Tanks	1,000,000,000	Feasibility Study	2019-Q4
Kuwait National Petroleum Company (KNPC) - Sulphur Recovery Units - Mina Abdulla Refinery	Kuwait	Mina Abdullah	Sulphur Recovery	1,000,000,000	EPC ITB	2018-Q2

Project	Country	City	Facility	Budget	Status	Completion Date
Kuwait National Petroleum Company (KNPC) – Sulphur Recovery Units – Mina Al Ahmadi Refinery	Kuwait	Mina Al Ahmadi	Sulphur Recovery	50,000,000	EPC ITB	2018-Q2
Kuwait Oil Company (KOC) – Booster Station 171 (BS-171)	Kuwait	West Kuwait	Gas Gathering Centre	950,000,000	Construction	2015-Q4
Kuwait Oil Company (KOC) – Manifold Gathering System – Gathering Centers (GC) 29, 30, 31	Kuwait	Northern Kuwait	Gas Gathering Centre	2,500,000,000	Construction	2017-Q4
Kuwait Oil Company (KOC) – Replacement of HIC Affected Equipment in Gathering Centres 3,4,7,8 & 21	Kuwait	Ahmadi	Gas Gathering Centre	50,000,000	Construction	2015-Q2
MASDAR – Carbon Dioxide Capture and Storage – Phase I (Mussafah Steel Rolling Mill)	U.A.E.	Abu Dhabi	Carbon Dioxide	280,000,000	Construction	2016-Q2
MASDAR – Carbon Dioxide Capture and Storage – Phase I (Overview)	U.A.E.	Abu Dhabi	Carbon Dioxide	2,500,000,000	Construction	2016-Q2
NOGA – Gazprom – Liquefied Natural Gas (LNG) distribution centre	Bahrain	Various	Liquefied Natural Gas (LNG)	600,000,000	Feasibility Study	2018-Q2
NOGA – Onshore Deep Gas Exploration	Bahrain	Various	Gas Exploration	200,000,000	Engineering & Procurement	2015-Q4
Oman Gas Company – Murayrat PLS Upgrade	Oman	Adam Ad Dakhliya	Gas Processing	100,000,000	Engineering & Procurement	2017-Q4
Oman Gas Company – Muscat Gas Network	Oman	Muscat	Gas Network	100,000,000	FEED ITB	2020-Q1
Oman Gas Company – Salalah Loopline	Oman	Salalah	Gas Pipeline	70,000,000	Engineering & Procurement	2017-Q2
Oman Gas Company – Salalah LPG Extraction	Oman	Salalah	Liquefied Petroleum Gas (LPG)	100,000,000	FEED	2019-Q2
Orpic – Liwa Plastics Industries Complex (LPIC) – NGL Extraction Units	Oman	Sohar	Natural Gas Liquefaction (NGL)	400,000,000	Engineering & Procurement	2019-Q1
Oryx GTL – Expansion of Gas To Liquids Plant	Qatar	Ras Laffan	Gas to Liquids (GTL)	1,500,000,000	Feasibility Study	2019-Q4
PDO – Amal Steam Phase 1C Surface Facilities	Oman	Amal Oilfield	Gas Field Development	80,000,000	Engineering & Procurement	2018-Q1
PDO – Ghaba North Gas Field Re-Development	Oman	Northern Oman	Gas Field Development	250,000,000	Engineering & Procurement	2016-Q1
PDO – Kauther Depletion Compression Phase 2 (KDC2)	Oman	Al Dakhiliya	Gas Compression	190,000,000	Engineering & Procurement	2019-Q2
PDO – Khulud Tight Gas Development Project (KLD)	Oman	Kauther Field	Gas Field Development	100,000,000	Feasibility Study	2021-Q4
PDO – Rabab-Harweel Integrated Plant (RHIP) – Overview	Oman	Harweel	Gas Processing	3,000,000,000	Construction	2018-Q4
PDO – Saih Nahaydah Depletion Compression Phase-2 (SNDC2)	Oman	Saih Nihayda	Gas Compression	180,000,000	Engineering & Procurement	2019-Q2
PDO – Saih Nihayda Condensate Stabilization Plant	Oman	Saih Nihayda	Gas Treatment Plant	115,000,000	Construction	2016-Q3
PDO – SRCPP & SNGP Condensate Recovery Maximisation	Oman	Saih Nihayda	Gas Processing	300,000,000	Construction	2017-Q1
PDO – Yibal Depletion Compression – Phase 3 (Y3DC)	Oman	Yibal	Gas Processing	300,000,000	Construction	2016-Q4
PDO – Zauliah Gas Plant Project	Oman	Al Wusta	Gas Processing	110,000,000	Construction	2016-Q1
Qatar Petroleum (QP) – Air Compressor Replacement at Mesaieed Refinery	Qatar	Mesaieed	Gas Processing	50,000,000	Construction	2016-Q4
Qatar Petroleum (QP) – Bi-directional Pipeline Between KM and KS	Qatar	Doha	Gas Pipeline	80,000,000	Construction	2015-Q3
Qatar Petroleum (QP) – Vapour Recovery System at Multi Product Berth	Qatar	Mesaieed	Gas Processing	50,000,000	FEED	2017-Q2
RasGas – Qatar Barzan Gas Field Development Project (Overview)	Qatar	North Field	Gas Field Development	10,300,000,000	Construction	2021-Q4
RasGas – Qatar Barzan Gas Field Development Project – Offshore – Phase 2	Qatar	North Field	Gas Field Development	700,000,000	Engineering & Procurement	2019-Q4
RasGas – Qatar Barzan Gas Field Development Project – Offshore – Phase 3	Qatar	North Field	Gas Field Development	300,000,000	Engineering & Procurement	2023-Q4
RasGas – Qatar Barzan Gas Field Development Project – Onshore – Phase 1	Qatar	North Field	Gas Field Development	1,700,000,000	Construction	2016-Q1
RasGas – Qatar Barzan Gas Field Development Project – Onshore – Phase 2	Qatar	North Field	Gas Field Development	2,000,000,000	Feasibility Study	2019-Q4
Saudi Aramco – Arabiyah and Hasbah Gas Field Development	Saudi Arabia	Arabiyah	Gas Field	3,000,000,000	Construction	2019-Q1
Saudi Aramco – Dow – Ras Tanura Gas Plant (Overview)	Saudi Arabia	Ras Tanura	Gas Field	4,000,000,000	EPC ITB	2019-Q4
Saudi Aramco – Duba-1 Gas field	Saudi Arabia	Red Sea	Gas Field	25,000,000,000	Feasibility Study	2016-Q3
Saudi Aramco – Fadhili Gas Plant – Main Processing Facilities (Package 1)	Saudi Arabia	Eastern Region	Gas Treatment Plant	2,500,000,000	Engineering & Procurement	2021-Q1
Saudi Aramco – Fadhili Gas Plant – Offsites & Utilities (Package 3)	Saudi Arabia	Eastern Region	Gas Field	2,000,000,000	Engineering & Procurement	2021-Q1
Saudi Aramco – Fadhili Gas Plant – Sulphur Recovery Unit SRU (Package 2)	Saudi Arabia	Eastern Region	Gas Treatment Plant	2,500,000,000	Engineering & Procurement	2021-Q2
Saudi Aramco – Fadhili Plant (Overview)	Saudi Arabia	Eastern Region	Gas Field	5,000,000,000	Construction	2021-Q1
Saudi Aramco – Hasbah Offshore Gas Field Expansion	Saudi Arabia	Hasbah	Gas Field	1,500,000,000	EPC ITB	2019-Q2
Saudi Aramco – Liquefied Gas Station For Shadqam & Al Uthmaniah Gas Plants	Saudi Arabia	Abqaiq	Natural Gas Liquefaction (NGL)	74,000,000	Construction	2018-Q3
Saudi Aramco – Liquefied Natural Gas (LNG) Receiving Terminal	Saudi Arabia	Jeddah	Liquefied Natural Gas (LNG)	1,000,000,000	Feasibility Study	2017-Q3
Saudi Aramco – Master Gas System Expansion (MGSE) (Overview)	Saudi Arabia	Various	Natural Gas Liquefaction (NGL)	4,050,000,000	Construction	2020-Q1
Saudi Aramco – Master Gas System Expansion (MGSE) – Phase I	Saudi Arabia	Various	Gas Pipeline	1,650,000,000	Construction	2020-Q1
Saudi Aramco – Midyan Gas Processing Plant	Saudi Arabia	Tabuk	Gas Processing	800,000,000	Construction	2016-Q2

Project	Country	City	Facility	Budget	Status	Completion Date
Saudi Aramco – Unconventional Gas Program – Tight Gas Production Systems A	Saudi Arabia	Turaif	Gas Field Development	200,000,000	Construction	2020-Q4
Saudi Aramco – Unconventional Gas Program – Tight Gas Production Systems A and B (Overview)	Saudi Arabia	Turaif	Gas Field Development	3,500,000,000	Construction	2020-Q4
Saudi Aramco – Unconventional Gas Program – Tight Gas Production Systems B	Saudi Arabia	Turaif	Gas Field Development	800,000,000	Engineering & Procurement	2020-Q4
Saudi Aramco – Uthmaniya Gas Treatment Units	Saudi Arabia	Uthmaniyah	Gas Network	500,000,000	EPC ITB	2019-Q2
Shell – Pearl GTL Scheme – Onshore & Offshore Facilities	Qatar	Qatar	Natural Gas Liquefaction (NGL)	20,000,000,000	Construction	2019-Q3
Takreer- Hamriya Jetty and Pipeline Network Project – Marine Works 2	U.A.E.	Hamriyah	Oil Storage Tanks	250,000,000	Construction	2014-Q4
Tatweer Petroleum – Central Gas Dehydration Facilities	Bahrain	Awali	Gas Processing	100,000,000	Engineering & Procurement	2018-Q3
VOPAK HORIZON – Fujairah Oil Terminal Expansion (Phase 7)	U.A.E.	Fujairah	Gas Storage Tanks	200,000,000	Engineering & Procurement	2015-Q2
ZADCO – Upper Zakum Full Field Development – 750 Project – Surface Facilities – EPC 1	U.A.E.	Zakum	Oil Field Development	1,300,000,000	Construction	2017-Q4
ZADCO – Upper Zakum Full Field Development – 750 Project – Surface Facilities – EPC 2	U.A.E.	Zakum	Oil Production	4,200,000,000	Construction	2017-Q4
ZADCO- 750 West Region- Capacity Expansion & Sulphate Reduction Plant- EPC 3	U.A.E.	Zirku	Oil & Gas Field	300,000,000	EPC ITB	2019-Q1

GCC OIL – APRIL 2016

Project	Country	City	Facility	Budget	Status	Completion Date
ADCO – Bab Far North CO2 Injection Pilot Project	U.A.E.	Bab Habshan	Oil Field Development	305,000,000	Construction	2016-Q4
ADCO – Mender Field Development	U.A.E.	Abu Dhabi	Oil Field Development	350,000,000	Construction	2018-Q3
ADCO – North East Bab (NEB) – (Al Dabbiya) ASR	U.A.E.	Abu Dhabi	Oil Production	2,500,000,000	FEED	2020-Q1
ADCO – North East Bab (NEB) – Phase 3 (Al Dabbiya)	U.A.E.	Abu Dhabi	Oil Production	2,500,000,000	Construction	2017-Q4
ADCO – North East Bab (NEB) – Phase 3 (Rumaitha-Shanayel)	U.A.E.	Abu Dhabi	Oil Production	2,500,000,000	Construction	2017-Q4
ADCO – Rumaitha North CO2 Injection Project	U.A.E.	Rumaitha	Oil Field Development	500,000,000	Construction	2016-Q4
ADCO – South East Asset- Sahil Field Development – Phase 2	U.A.E.	Abu Dhabi	Oil Field Development	800,000,000	Construction	2016-Q3
ADCO- Bab Integrated Facilities Project- Expansion	U.A.E.	Bab	Oil Field Development	3,000,000,000	EPC ITB	2020-Q1
ADCO- Bab TH-F Peripheral Development	U.A.E.	Abu Dhabi	Nitrogen	400,000,000	FEED ITB	2017-Q4
ADCO- Buhasa- Wellhead Automation	U.A.E.	Abu Dhabi	Oil Field Development	100,000,000	FEED	2019-Q3
ADCO- Fujairah MOT – Hydraulic Pressure Recovery System Turbine	U.A.E.	Fujairah	Oil Field Development	800,000,000	FEED	2017-Q1
ADCO- Qusahwira Field Development – Phase 2	U.A.E.	Abu Dhabi	Oil Field Development	900,000,000	EPC ITB	2018-Q3
ADCO- South East Asset- Tie-in Project	U.A.E.	Abu Dhabi	Oil Field Development	650,000,000	Engineering & Procurement	2018-Q1
ADMA OPCO – Nasr Full Field Development – Phase 2 (Package 2 – Platforms)	U.A.E.	Abu Dhabi	Oil Field Development	200,000,000	Engineering & Procurement	2018-Q4
ADMA OPCO – Nasr Full Field Development – Phase 2 (Package 3)	U.A.E.	Abu Dhabi	Oil Field Development	200,000,000	Construction	2018-Q4
ADMA OPCO- Nasr Full Field Development – Phase 2 (Package 1 – Wellheads and Pipeline)	U.A.E.	Abu Dhabi	Oil Field Development	900,000,000	Construction	2018-Q4
ADMA OPCO-Umm Shaif Oil Network Expansion	U.A.E.	Abu Dhabi	Oil Field Development	300,000,000	EPC ITB	2019-Q4
ADMA-OPCO – 100 MBD DAS Facilities Upgrade Project	U.A.E.	Abu Dhabi	Oil Field Development	48,000,000	Construction	2014-Q3
ADMA-OPCO – Das Island Flares Modifications – Revamp Project	U.A.E.	Das Island	Gas Processing	50,000,000	Construction	2015-Q2
ADMA-OPCO – Nasr Full Field Development – (Overview)	U.A.E.	Nasr Field	Oil Field Development	1,700,000,000	Construction	2018-Q4
ADMA-OPCO – SARB Offshore Oil Field Development – Package 2	U.A.E.	Abu Dhabi	Oil & Gas Field	500,000,000	Construction	2016-Q4
ADMA-OPCO – SARB Offshore Oil Field Development – Package 3	U.A.E.	Abu Dhabi	Gas Pipeline	600,000,000	Construction	2016-Q1
ADMA-OPCO – SARB Offshore Oil Field Development – Package 4	U.A.E.	Abu Dhabi	Gas Processing	500,000,000	Construction	2017-Q3
ADMA-OPCO – Umm Al Lulu Field Development – (Overview)	U.A.E.	Umm Al Lulu	Oil Field Development	2,500,000,000	Construction	2018-Q1
ADMA-OPCO – Umm Al Lulu Field Development – Package 1	U.A.E.	Abu Dhabi	Oil Field Development	2,500,000,000	Construction	2018-Q1
ADMA-OPCO – Umm Al Lulu Field Development – Package 2	U.A.E.	Abu Dhabi	Oil Field Development	2,500,000,000	Construction	2015-Q4
ADMA-OPCO – Umm Shaif Infield Pipelines Replacement	U.A.E.	Umm Shaif	Oil Field Development	500,000,000	EPC ITB	2015-Q4
ADMA-OPCO – Zakum Facilities for 4 Gas Injectors	U.A.E.	Abu Dhabi	Gas Production	100,000,000	Construction	2016-Q1
ADMA-OPCO- Lower Zakum – Oil Lines Replacement (Phase 1)	U.A.E.	Zakum	Pipeline	950,000,000	Construction	2016-Q4
ADNOC & EMARAT – Fujairah Terminal Expansion Phase 3	U.A.E.	Fujairah	Oil Storage Tanks	40,000,000	Feasibility Study	2018-Q4
ADOC – Hail Offshore Oilfield	U.A.E.	Abu Dhabi	Oil Field Development	500,000,000	Engineering & Procurement	2018-Q3

Project	Country	City	Facility	Budget	Status	Completion Date
ADOC – Mubaraz Field Expansion	U.A.E.	Abu Dhabi	Oil Field Development	500,000,000	FEED ITB	2017-Q4
Al Hosn Gas – Dalma Field	U.A.E.	Abu Dhabi	Oil Field Development	800,000,000	FEED ITB	2020-Q4
BAC – Bahrain International Airport Modernization Program – New Aviation Fuel Farm & Fuel Hydrant	Bahrain	Muharraq	Oil Storage Tanks	200,000,000	EPC ITB	2017-Q4
Bapco – Offshore Blocks	Bahrain	Various	Exploration	80,000,000	EPC ITB	2020-Q2
BPGIC – Fujairah Oil Terminal (Phase 1 & 2)	U.A.E.	Fujairah	Oil Storage Tanks	200,000,000	Construction	2017-Q1
Duqm Petroleum Terminal Company – Duqm Liquid Jetty	Oman	Duqm	Oil Storage Terminal	1,000,000,000	EPC ITB	2018-Q4
Duqm Petroleum Terminal Company – Duqm Liquid Jetty – Topside Facilities	Oman	Duqm	Oil Storage Terminal	250,000,000	EPC ITB	2018-Q4
Fujairah Port – Port Facilities Expansion	U.A.E.	Fujairah	Oil Storage Tanks	100,000,000	Construction	2015-Q4
GASCO – Integrated Gas Development (IGD) – Expansion (Onshore Pipeline)	U.A.E.	Abu Dhabi	Gas Production	12,000,000,000	Engineering & Procurement	2016-Q4
GASCO – Yas – Mina Zayed Gas Pipeline	U.A.E.	Abu Dhabi	Gas Processing	45,000,000	Construction	2015-Q1
GASCO– Integrated Gas Development – Expansion (42 Inch Pipeline)	U.A.E.	Abu Dhabi	Oil Field Development	12,000,000,000	Construction	2018-Q4
Gulf Petrochem – Oil Storage Terminal Facility at Fujairah – Phase 2	U.A.E.	Fujairah	Oil Storage Tanks	300,000,000	Feasibility Study	2016-Q4
Hydrocarbon Finder – Block 7 Onshore Exploration and Production	Oman	Al Wusta	Exploration	50,000,000	Engineering & Procurement	2019-Q1
IPIC – Fujairah Refinery (EPC 1 & 2)	U.A.E.	Fujairah	Refinery	3,500,000,000	EPC ITB	2018-Q4
Kuwait National Petroleum Company (KNPC) – Discharge of Treated Effluent	Kuwait	Various	Pipeline	100,000,000	Feasibility Study	2018-Q4
Kuwait National Petroleum Company (KNPC) – Mutla Ridge Project	Kuwait	Mutla Ridge	Oil Storage Tanks	1,000,000,000	Feasibility Study	2019-Q4
Kuwait National Petroleum Company (KNPC) – New Depot At Matlaa	Kuwait	Northern Kuwait	Oil Storage Tanks	500,000,000	EPC ITB	2019-Q4
Kuwait Oil Company (KOC) – Jurassic Early Production Facility (EPF) – Phase 2	Kuwait	Northern Kuwait	Oil Production	100,000,000	EPC ITB	2017-Q3
Kuwait Oil Company (KOC) – Jurassic Oil and Gas Field Development	Kuwait	Northern Kuwait	Oil & Gas Field	1,300,000,000	EPC ITB	2018-Q2
Kuwait Oil Company (KOC) – Kuwait Environmental Remediation Program (KERP) – North Package	Kuwait	Northern Kuwait	Oil & Gas Field	100,000,000	Construction	2021-Q4
Kuwait Oil Company (KOC) – Kuwait Environmental Remediation Program (KERP) – Overview	Kuwait	Kuwait	Oil & Gas Field	3,000,000,000	Construction	2021-Q4
Kuwait Oil Company (KOC) – Maintenance of Southern Oil Production Facilities	Kuwait	Kuwait South	Oil Production	150,000,000	EPC ITB	2017-Q3
Kuwait Oil Company (KOC) – Offshore Exploration of Kuwait Bay and Divided Zone	Kuwait	Various	Oil Field Development	900,000,000	Engineering & Procurement	2017-Q2
Kuwait Oil Company (KOC) – Operation and Maintenance of Wara Pressure Facilities	Kuwait	Southeast Kuwait	Oil Field Development	500,000,000	EPC ITB	2017-Q3
Kuwait Oil Company (KOC) – Ratqa Lower Fars Heavy Oil Development – Phase 1	Kuwait	Northern Kuwait	Steam Injection	4,500,000,000	Construction	2019-Q2
Kuwait Oil Company (KOC) – Soil Remediation Services – Lot A	Kuwait	Kuwait	Oil & Gas Field	100,000,000	Construction	2017-Q3
Kuwait Oil Company (KOC) / Exxon Mobil Corporation – Ratqa Lower Fars Heavy Oil Handling Facilities – Drilling Package	Kuwait	Jahra	Oil Field Development	500,000,000	Construction	2018-Q2
Kuwait Petroleum Corporation (KPC) – Northern Oil Field Development	Kuwait	Northern Kuwait	Oil Field Development	900,000,000	EPC ITB	2017-Q1
Masirah Oil Ltd – Block 50 (Masirah Bay Offshore) – Exploration	Oman	Masirah Basin	Exploration	25,000,000	Construction	2020-Q1
Medco Arabia – Block 56 Onshore Exploration and Production	Oman	Adam Ad Dakhliya	Exploration	20,000,000	Engineering & Procurement	2020-Q4
MOG – Block 54 Onshore Exploration and Production	Oman	Al Wusta	Exploration	50,000,000	Engineering & Procurement	2020-Q3
MOG – Block 55 Onshore Exploration and Production	Oman	Al Wusta	Exploration	45,000,000	Engineering & Procurement	2019-Q1
National Shipping Company of Saudi Arabia (Bahri) – VLCC Construction	Saudi Arabia	Various	Very Large Crude Carriers (VLCCs)	1,000,000,000	Construction	2017-Q4
OOCEP – Block 60 Concession – Onshore	Oman	Oman	Oil & Gas Field	1,100,000,000	Engineering & Procurement	2020-Q4
OTTCO – Ras Markaz Crude Oil Park – Crude Storage Facility	Oman	Duqm	Oil Storage Tanks	80,000,000	EPC ITB	2019-Q4
OTTCO – Ras Markaz Crude Oil Park – Export Terminal	Oman	Duqm	Oil Storage Terminal	400,000,000	EPC ITB	2019-Q4
PDO – Amal Steam Phase 1C-2	Oman	Amal Oilfield	Oil Field Development	300,000,000	EPC ITB	2019-Q1
PDO – Yibal Khuff Sudair Field Development	Oman	Northern Oman	Oil Field Development	3,000,000,000	Construction	2019-Q1
Primestar Energy – Prime Tank Terminal & Jetty Pipeline	U.A.E.	Fujairah	Oil Storage Tanks	165,000,000	Construction	2014-Q3
Qatar Petroleum (QP) – Bul Hanine Redevelopment (Offshore)	Qatar	Bul Hanine	Oil Field Development	11,000,000,000	EPC ITB	2028-Q1
Qatar Petroleum (QP) – Wellhead Scada & Cathodic Protection (Dukhan Field)	Qatar	Dukhan	Oil Production	200,000,000	Construction	2016-Q4
Qatar Petroleum – Al Shaheen Offshore Field Development Plan	Qatar	Qatar	Oil & Gas Field	500,000,000	Construction	2016-Q4
Sabic – Oil-to-Chemicals Plant	Saudi Arabia	Yanbu	Oil Production	30,000,000,000	Feasibility Study	2020-Q4
Sadara Chemical Company – Jubail Petrochemicals Complex – Refinery Tank Farm Package	Saudi Arabia	Jubail	Oil Storage Tanks	500,000,000	Construction	2016-Q4

Note : The above information is the sole property of DMS Projects

Source: dmsprojects.net

ABOUT THE INTERVIEWEE:
Ahmed Hamad Al Khonaini is the managing director of Saudi Arabia-based Global Pipe Company. He has over 30 years of experience in the oil, gas and petrochemicals business.

Ahmed Hamad Al Khonaini, Managing Director, GPC

FIVE MINUTES WITH...

Oil & Gas Middle East delves below the corporate strategy to understand what really makes the industry's leaders tick

0.00

Explain your company's scope of work with the oil and gas industry?
Global Pipe Company (GPC) is a Saudi-German joint venture company established between EEW, Saudi Steel Pipe Company (SSP), Pan Gulf Holding and Ahmed Hamad Al Khonaini. During Q2 2013, GPC won approval from the American Petroleum Institute (API) and on November 25, 2013, the company's pipe mill was awarded official supplier status by Aramco for non-sour pipes and structural tubular. GPC now produces pipes with heavy wall thickness and large-size diameters, with an annual capacity of 200,000 tonnes.

1.05

What are some of the recent jobs you have done for Saudi Aramco? What are your upcoming contracts with them?
We have completed our most recent job for Saudi Aramco – the Yanbu Gas Pipeline, a 150km, east-west gas pipeline connecting the Shedgum gas processing plant. More recently, GPC secured a major supply contract with Aramco for an extension of Saudi Arabia's Master Gas System (MGSE). GPC has agreed to supply 550km out of the pipeline out of the 1000km-long pipeline. The project is anticipated to begin in May 2016.

2.55

Is there a specific product that you would like to highlight?
GPC's approval by Aramco for supply of sour service material is particularly notable given the fact that GPC is a comparatively new player in Saudi Arabia. Crucially, it also means the company now occupies an exclusive market position shared by only a limited number of global producers. Around 12 pipe manufactures worldwide, including GPC, are currently certified by Aramco for sour service material longitudinal welded pipes. We are diversifying our portfolio by supporting Aramco's upstream development activities through supply of the well casings used in drilling.

Do you work with other clients in Saudi other than Aramco?
The company commenced operations from its manufacturing facility in Q4 2012 and, after the initial trial production phase, completed its first pipe delivery in March 2013. While we are working with other NOCs throughout the GCC, many of these companies require a five-year operating track record, and so diversifying our customers and growing our presence throughout the region remains an ongoing process.

3.35

"GPC'S APPROVAL BY SAUDI ARAMCO FOR SUPPLY OF SOUR SERVICE MATERIAL IS PARTICULARLY NOTABLE GIVEN THE FACT THAT GPC IS A COMPARATIVELY NEW PLAYER IN SAUDI ARABIA'S DOMESTIC MARKET."

4.10

With oil prices creeping up slightly do you feel business will be good for your company in 2016?
The oil price drop observed during the last months was not affecting our business with Saudi Aramco as they did not cancel, shift or delay any projects. We have observed a strong re-tendering activity, but this is quite normal since steel prices were also going down. Given the sheer scale of GPC's current workload, the company certainly has good reason to look towards the future with a sense of optimism.

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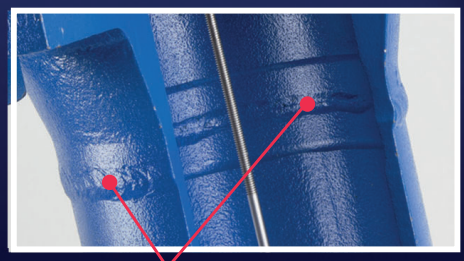
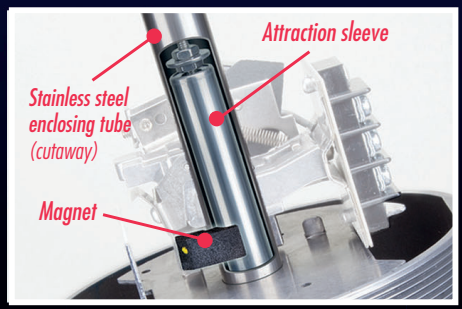
Heavy-duty flange configuration is designed to perform reliably in service pressures up to 5000 psig (345 bar).



Full-penetration chamber welds meet ASME Section IX and B31 construction and inspection requirements.



The stainless steel enclosing tube completely isolates the switch magnet from the process environment, preventing interference with the magnet, while allowing reliable magnetic coupling with the attraction sleeve.

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