

COVERAGE: O&GME AND R&PME AWARDS 2016 CELEBRATES SUCCESS

Oil & Gas MIDDLE EAST

NEWS, DATA AND ANALYSIS FOR THE MIDDLE EAST'S ENERGY PROFESSION

November 2016
Vol. 12 • Issue 11

INTERVIEW

AUTOMATION PIONEER

Multinational technology giant ABB is involved in some of the key regional oil and gas projects and is transforming the industry with its innovations

Trend Analysis

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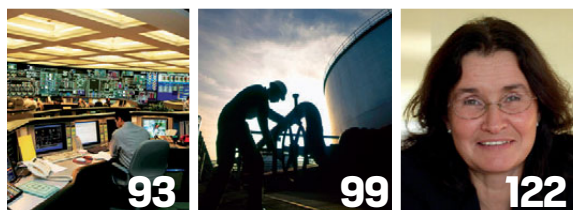
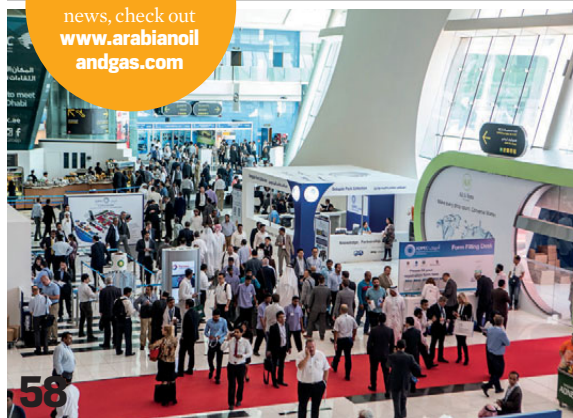
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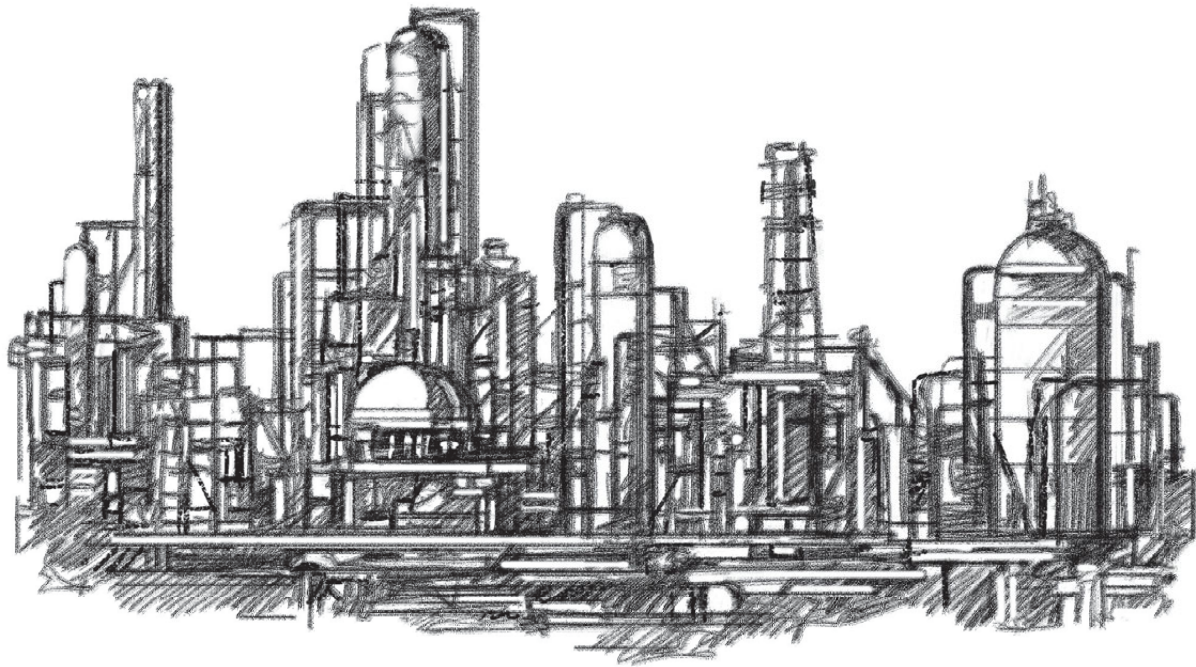




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US showdown coupled with a mega event

With the US election happening on the second day of ADIPEC, November could herald a new period for the oil industry



THIS ISSUE:
The Awards this year have been a success, with regional industry players gathering to cheer for the winners and celebrate resilience.

The election might be happening in America, but its outcome will set the tone of global diplomacy, as well as have a domino effect on the world's energy sector. With the US presidential election just days away, I couldn't help but don the soothsayer's cloak to predict what might happen if Donald Trump were to emerge victorious.

It might be worth sharing with you an interesting insight into the possible impact on the global energy market if Mr. Trump were to be elected as the next American president on November 8th. A victory for the Republican nominee would essentially mean the US administration adopting a belligerent foreign policy, especially against terrorism and its flagbearers.

With extremists controlling huge swathes of Iraq's oil reserves and strategic production facilities, any military offensive by the US or its allies on their bastion would cause them to destroy those crucial oil assets and thus cause major disruptions to the global crude supply (Iraq is OPEC's second largest oil producer). That would naturally result in oil prices spiking instantly.

The global oil industry has always been influenced by crucial international events, and there is good reason to believe that it will accommodate the whims of whichever of the two presidential contenders gets to dictate the course of the US shale oil and gas industry.

Speaking of changes closer to home, the re-

gional sector, it seems, has fully embraced the trend of mergers and acquisitions. In a major transformation, the UAE giant ADNOC group has announced in a month the consolidation of five of its holding companies – two offshore and three marine services firms – into two separate entities. The group CEO describes the tectonic shift in corporate policy “as a drive towards efficiency.”

Regional and global energy stakeholders and professionals are also gearing up to engage in four days of serious business and networking at ADIPEC in November. The organisers of the world's largest oil and gas industry exhibition and conference are estimating a footfall of 100,000 this year, and taking a look back at how the event has grown over the years, it hardly comes as a surprise.

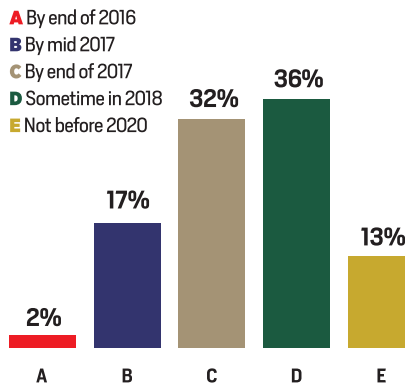
This issue we have produced a sizeable show preview (from page 58) to give you an idea of the objectives of some of the key exhibitors at ADIPEC .

See you soon in Abu Dhabi.

Indrajit Sen

Deputy Editor, *Oil & Gas Middle East*
indrajit.sen@itp.com

When do you expect oil output to reduce and prices to rise?



- ▲ By end of 2016
- By mid 2017
- By end of 2017
- Sometime in 2018
- Not before 2020

Oil & Gas MIDDLE EAST

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Audited by: BPA Worldwide.
Audited Average Monthly Circulation: 8,725
(January - June 2016)



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Registered in the B.V.I. under Company
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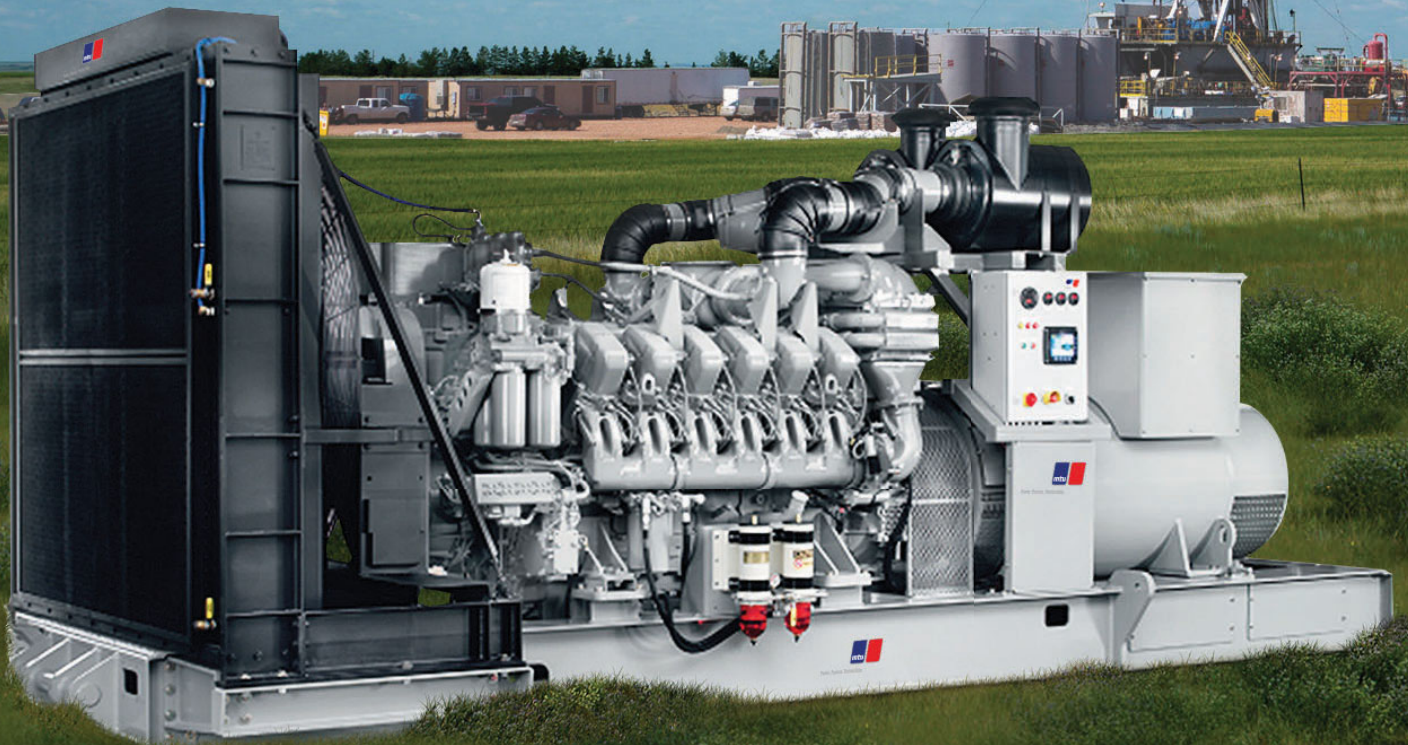
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Operational excellence holds key

According to a survey of HSE, maintenance and operations professionals in the oil and gas industry by Petrotechnics, 96% believe OpEx is important to their organisation

For oil and gas executives, the need for operational excellence (OpEx) has never been greater. Exploration, development and production costs are rising, and refining margins are under pressure. Activity levels are also increasing, causing sector inflation. A shortage of technical talent and capability has bid up the cost of employees and services even further.

Since one in four technical professionals retire every seven years, this shortage could become even more severe. The rise of unconventional resources like shale oil also contributes to a deeper focus on OpEx – including in the Middle East. The fundamentals are the same, but unconventional plays require different processes than those in conventional extraction.

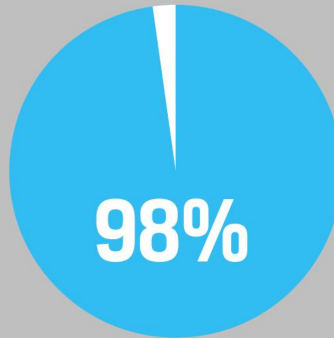
As international and national oil companies climb the learning curve on unconventional resources, successful operators are refining their approaches for these unique operating challenges.

At the same time, the oil and gas industry is under tremendous pressure to reduce risk, even as it takes on new challenges, such as drilling in ultra-deepwater or rocky formations, intensive onshore operations in populated areas, and pioneering technologies like floating liquefied natural gas (FLNG) terminals. Industry executives are working to define and deliver OpEx at the frontiers, where few benchmarks exist.

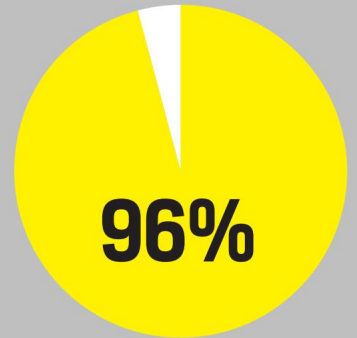
The shift to frontier sources accompanies a changing competitive landscape that requires oil and gas players to become more nimble and to compete in new roles.

Source: Petrotechnics

A survey measuring how HSE, maintenance and operations professionals perceive operational excellence (OpEx)



agree strongly or somewhat with the definition of OpEx



say OpEx is important to their organisation

DRIVERS AND OBJECTIVES

The most important drivers:



1 Reducing operational and major accident risk



2 Developing a systematic approach to OpEx



3 Achieving greater cost efficiencies

The most common drivers:



63% Achieving greater cost efficiencies



63% Reducing operational and major accident risk



56% Optimising maintenance programmes

BUT HOW IMPORTANT IS IT?

OpEx is most commonly sponsored by:



46%

Corporate / board level

18%

A specific OpEx function



31%

Everyone



And in the past two years:



33%

say it's become very/ more important to everyone in the organisation



47%

say it's become very/ more important to some people in the organisation



10%

think its importance has stayed the same



OpEx is the pursuit of world-class performance. It requires everyone, from the board-room to the front line, to consistently make the most effective operational decisions, based on an integrated view of operational reality, based on risk, cost and productivity.



LNG MARKET

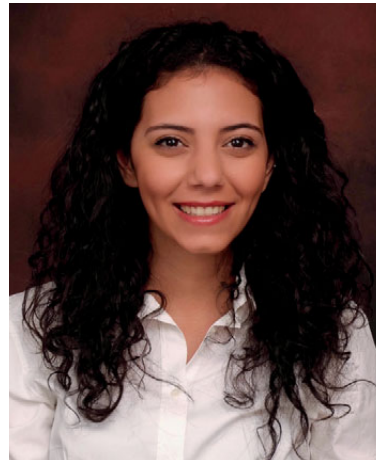
Middle East's rise as a major LNG consumer

Countries throughout the Middle East and North Africa region are being forced to turn to gas imports in order to meet their rapidly growing domestic gas demands

Words: **Roa Ibrahim**

The Middle East and North Africa (MENA) region is still the world's premier LNG exporting area. But this is largely the creation of Qatar and Algeria. Increasing domestic demand and struggles with supply mean several countries in the region are turning to gas imports.

Iran has found it hard to progress its ambitious LNG goals, with the suspension of the NIOC Persian and Pars' LNG projects. Other established players are, for various reasons, unable to keep up with contracted supply, such as Oman, Yemen, Algeria and Egypt. And some countries are now considering shifting new gas supplies towards domestic use, or importing gas themselves.



Oman's three-train, 10.4 Mtpa (million tonnes per year) name-plate LNG plant is under-utilised, with a 72% utilisation rate in 2015, and would need tight gas (Khazzan-Makarem) to sustain its LNG exports. The Sultanate is now considering importing pipeline gas from Iran for re-export through the under-utilised LNG



72%

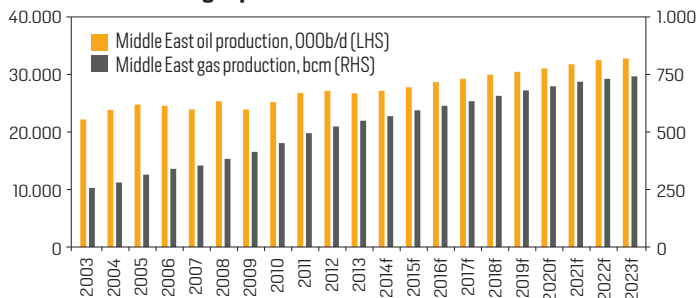
The utilisation rate of Oman's three-train LNG plant last year.

plant. In 2013, both countries signed an agreement, but international sanctions stalled it.

Now, the FEED (front-end engineering design) is already underway and the countries are planning to start the EPC (engineering, procurement and construction) work on the required subsea pipeline by 2017. This will take one year to complete. The pipeline will have the capacity to carry 1 bcf/d (billion cubic feet per day), which may be raised to 1.5-2 bcf/d as Oman's domestic demand for power, petrochemi-

10

Middle East oil and gas production



A robust growth story



According to data from the US Energy Information Administration, the Middle East holds over 40% of the world's recoverable gas resources, and almost half of its recoverable oil. It also hosts several highly prospective resource plays. Large areas of the Middle East remain heavily underexplored, and in recent years there has been a growing interest in the region's unconventional resource potential. The region also has an impressive production profile.



icals and enhanced oil recovery continues to grow.

Yemen's only LNG terminal has been shut-down since April 2015 due to domestic insecurity and war. The plant has a capacity of 6.7 Mtpa, with three long-term sales contracts with GDF Suez SA, Korea Gas Corp, and Total SA, and had a utilisation rate of only 21% in 2015.

Algeria increased LNG capacity in 2013 and 2014 with two new trains at Skikda and Arzew, (which together add 9.2 Mtpa of capacity), but is currently struggling to maintain exports due to fast growing domestic demand and a stagnant upstream sector. Total LNG installed capacity in Algeria is 27.2 Mtpa, and the LNG capacity utilisation rate was around 48% in 2014 (and 2015).

The Skikda plant decommis-

sioned two trains in early 2014 and will continue decommissioning ageing trains. Its gas production has been declining due to internal bureaucratic issues, such as slow government approvals for projects and lack of investments. Algeria would need to step up its unconventional gas projects to maintain future exports.

From being an LNG exporter from 2005 until 2014, Egypt has transformed into an LNG importer. It imported around 76 shipments of LNG in 2015. Egypt currently has two regasification units (FSRU) under five-year charters to EGAS (the Egyptian Natural Gas Holding Company): one from Hoegh LNG (Norway), which started up in April 2015, and the second from BW Gas (Singapore-based Norwegian group), which

[Continued on page 12 >>](#)



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Continued from page 11>> started up in October of last year.

Egypt launched a tender in June 2016 for a third floating storage regasification unit (FSRU) in 2017 with a capacity of 750 MMcf/d (million cubic feet per day). The 2015 super-giant Zohr discovery will ease the need for future imports. The size of the field is estimated at 850 billion cubic metres (30 trillion cubic feet) and is expected to start production in Q4 2017. However, we still do not expect that Egypt will return to being a sizeable LNG exporter, unless it makes further large discoveries or, possibly, imports Cypriot or Israeli gas for liquefaction and re-export.

ADGAS, the LNG plant in Abu Dhabi, UAE, has a name-plate capacity of 5.6 Mtpa, with Tokyo Electrical Power Company (TEPCO) as the main client. The contract for Japan LNG exports expires in 2019 and it is unclear whether it will be renewed, as the emirate is facing a possible gas crunch due to increasing domestic gas demand for power generation.

Abu Dhabi is also exporting electricity to the Northern Emirates to meet their demand. Abu Dhabi received an FSRU from US firm, Exceleerate Energy, at Ruwais, with a capacity of 1 Mtpa (0.14 bcf/d). It was installed amid delays to the construction of the Fujairah LNG import terminal. The emirate has already received



↑
The effects of the shifting global markets are impacting the LNG sector.

its first cargo and is the first LNG import for Abu Dhabi, which suggests that the emirate needs additional gas supplies before its planned onshore LNG import facility in Fujairah comes on stream.

Kuwait is already using a FSRU and is planning an onshore LNG import terminal with 1.5 bcf/d capacity. Bahrain is planning to develop a 0.8 bcf/d LNG regasification terminal at a total cost of around \$900mn and is expected to begin syndicating project finance. Jordan, with virtually no gas of its own, and badly affected by interruptions to Egyptian supplies, started LNG imports in 2015 through a contract with Shell of 0.49 bcf/d capacity.

Even oil giant Saudi Arabia is considering gas imports, with Khalid Al-Falih, Minister of

Energy, Industry and Mineral Resources of Saudi Arabia and chairman of Saudi Aramco, stating that Aramco was also considering investment in international gas.

The shifting global markets are affecting the world's leading LNG player, Qatar. Doha is defending its Asian LNG markets against the rise of new competition from Australia and the US. Australia seems to be the bigger threat for now, as it has seven operating LNG developments and three more under construction.

These are physically closer to Asian customers than the US plants, thus lowering shipping costs. Australia could be exporting 10 bcf/d (around 70 Mtpa) by 2020, almost equaling Qatar. Qatar has no plans for new LNG

THE LNG MARKET: THREE THINGS YOU NEED TO KNOW...

1 Abu Dhabi is exporting electricity to the Northern Emirates to meet their demand. Abu Dhabi received a floating storage regasification unit (FSRU) from US firm, Exceleerate Energy, at Ruwais, with a capacity of 1 Mtpa (0.14 bcf/d). It was installed amid delays to the construction of the Fujairah LNG import terminal.

2 Australia is posing a challenge to Qatar, as the former could be exporting 10 bcf/d by 2020, almost equaling the latter. Qatar has no plans for new LNG trains, and new gas is likely to be used to meet rising domestic demand. To meet this, Qatar is prioritising the Barzan project (North Field gas development).

3 Iran is considering pipeline exports to Kuwait – of between 0.3 bcf/d and 0.5 bcf/d – and to the UAE – of from 0.6 bcf/d to 1.5 bcf/d. This will depend on successful political negotiations. Routes for the Iran–Oman pipeline have been changed to avoid the UAE waters.

trains, (which had a utilisation capacity of 101% of nameplate in 2015), and new gas is likely to go to meet rising domestic demand. To meet this, Qatar is prioritising the Barzan project (North Field gas development) to increase production aimed for domestic use. It is expected to come online by this year. However, Qatar does have the ability to add around 10 Mtpa to LNG export capacity by de-bottlenecking.

Qatar, Saudi Arabia and Iran are expected to remain the largest gas producers in the Middle East through to 2030. Iran is likely to offer the most competitive gas supplies from the three large producers, but it is essential that it be able to maintain its gas exports to gain credibility in the region, which it could accomplish with its planned pipeline exports



to Oman and its commitments of gas supply to a Baghdad power station, and plans to increase exports to Iraq by 0.9 bcf/d, to a total of 1.6 bcf/d by 2017, to meet gas demand in Basra.

↑
Qatar, KSA and Iran look set to remain the region's key producers through to 2030.

Iran is also considering pipeline exports to Kuwait (0.3 bcf/d to 0.5 bcf/d); and to the UAE (0.6 bcf/d to 1.5 bcf/d), but this will depend on successful political negotiations; however, it is relevant to note that routes for the Iran-Oman pipeline have been changed to avoid UAE waters.

Qamar Energy forecasts that gas production in Iraq will reach 3.4 bcf/d in 2020, but demand would be much higher, at 5 bcf/d, thus requiring increased imports to meet demand driven by the power sector. Iraq's own LNG export plans appear, therefore, very much on the back burner.

Qamar also sees the Eastern Mediterranean having a significant export potential (more than 10 Mtpa), depending on the chosen export route, politics and exploration results. ○



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Coming up:

- [/16](#) Aramco broadens IPO offer
- [/18](#) News from around the GCC
- [/18](#) Sharjah to import extra LNG
- [/20](#) Gas leak delays Barzan project
- [/20](#) Brief stories from outside GCC

ADNOC embarks on major consolidation drive

UAE giant to consolidate two key offshore companies by 2018, three shipping and marine services firms by 2017, in a bid to maximise value and efficiency



14

INTEGRATION INITIATIVE

ADNOC says it has planned to consolidate the operations of ADMA-OPCO and ZADCO to drive operational efficiency.

The Abu Dhabi National Oil Co (ADNOC) has announced an ambitious consolidation campaign to make the UAE's main energy firm leaner and drive efficiency in an era of low oil prices. ADNOC says it has planned to consolidate the operations of two of its offshore oil companies into a new entity.

The consolidation of the Abu Dhabi Marine Operating Co (ADMA-OPCO) and Zakum Development Co (ZADCO) is

'aimed at capitalising on synergies to drive operational efficiency and maximise value', ADNOC said in a statement.

ADNOC has also announced the consolidation of the operations of three of its shipping, marine and services companies into one firm in order to increase efficiency. Abu Dhabi National Tanker Co, Petroleum Services Co and Abu Dhabi Petroleum Ports Operating Co have been earmarked for integration, according to media reports.

"By leveraging the experience and assets across the three companies, we aim to deliver an improved and cost-effective service to meet the needs of the ADNOC Group," the group's chief executive officer Sultan Al Jaber has said.

A steering committee will be formed by ADNOC and its joint venture partners – BP, Exxon-Mobil, Japan Oil Development Company (JODCO) and Total – to oversee the integration.

Yaser al-Mazrouei, current chief executive of ADMA-OPCO, will be joint chief executive of ADMA-OPCO and ZADCO. The consolidation is expected to conclude by early 2018, ADNOC said.

ADNOC plans to invest over \$25bn in the next five years on boosting oil output from offshore fields to boost its oil output capacity to 3.5mn bpd by 2017-18.

Integration of the shipping and marine firms is expected to be completed by the end of 2017.

The group has also announced that the National Gas and Shipping Co (NGSCO) would remain a separate firm but that the stake would be transferred to the newly merged shipping company in order to maximise synergies.

The consolidation comes after ADNOC reshuffled its leadership in May, the first major shake-up since the appointment of Al Jaber as chief executive earlier this year.

QUOTE: "BY LEVERAGING THE EXPERIENCE AND ASSETS ACROSS THE THREE COMPANIES, WE AIM TO DELIVER AN IMPROVED AND COST-EFFECTIVE SERVICE TO MEET THE NEEDS OF THE ADNOC GROUP."

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Saudi Aramco IPO to offer stake in entire company: CEO

Oil giant IPO to offer shares in entire business, not just downstream operations

STOCK LISTING Saudi Aramco plans to sell shares in its entire business, not just its refining and distribution arms, it has been reported.

The government hopes to raise about \$100bn from an initial public offering (IPO) of the world's biggest oil company.

In an interview with *Bloomberg*, CEO Amin Nasser reportedly said that the plan is to list shares in the entire company, not just parts of it as previously reported.

Nasser was quoted as saying a list of investment banks and consultants advising on the IPO will be announced "very soon" – though he did not specify a date.

Saudi Aramco is considering

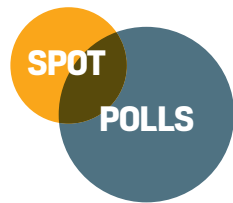


listing shares on Saudi stock exchange the Tadawul, New York, London and Hong Kong.

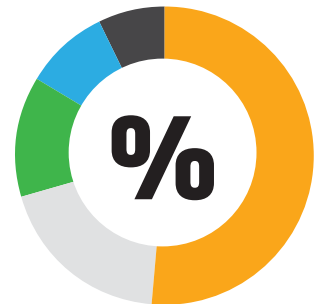
Nasser reportedly told *Bloomberg* the company was on track with plans for the IPO. "There are no obstacles. It's going very smoothly, and we are on target."

\$100BN

The Saudi government hopes to raise \$100bn from Aramco's IPO.



IN THIS 'LOWER FOR LONGER' OIL PRICE PERIOD, WHO WILL BE THE BIGGEST LOSER?



- 51% OPEC
- 19% Shale oil producers
- 13% Banks
- 9% Traders
- 7% Consumers

Source: Gulf Intelligence survey



Picture of the Month

A gathering to decide the world's energy future

Oil ministers and energy sector professionals gather for a group photo at the opening session of the 15th International Energy Forum in Algiers on September 27th. Among other crucial issues, the meeting witnessed a landmark agreement among OPEC members to reduce their oil production in an effort to help prop up crude oil prices.

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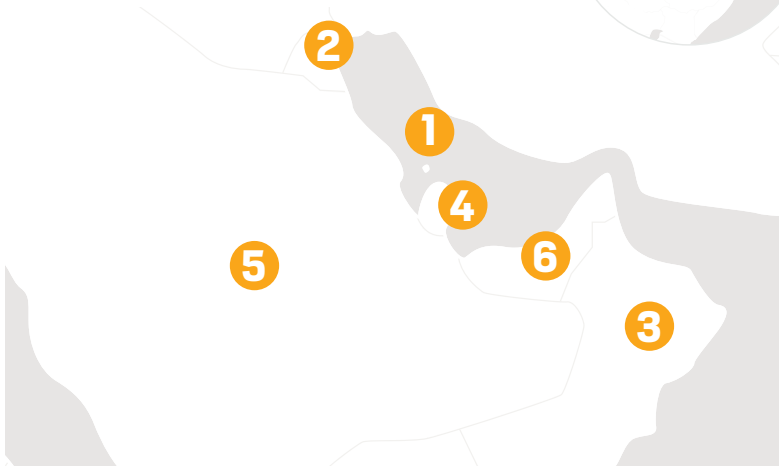


PETROTECHNICS

REGION

AROUND THE GCC

Latest developments across the region



1. BAHRAIN



In an effort to construct an additional storage and pipeline facility, the Bahrain National Gas Expansion Company (BNGEC) has signed an EPC contract with JGC Gulf International, a subsidiary of Japan Gas Corporation. The contract worth \$98.7mn will form the second part of the Bahrain Gas Plant project at BNGEC, the first part of which was signed earlier this year.

2. KUWAIT



Kuwait Energy has started commercial oil production at the Faihaa-2 well in the Block 9 concession at the Iraqi's southern governorate of Basra, according to an announcement made by the company. The well, which was dug up in early January and carried out testing production in September, has reportedly stabilised at a rate of 5,600 barrels per day.

3. OMAN



BP Oman announced that the first phase of its massive Khazzan natural gas project is 80% complete and on track to deliver first gas by the end of 2017. The Khazzan drilling programme is also on track, with 38 of the 50 wells needed by first gas already drilled. More than 300 wells will eventually be drilled by the end of the project. BP plans to contribute 1.5 bcf/d of gas to Oman's economy.

4. QATAR



Nakilat and Shell International Trading and Shipping Company Limited (Shell) signed an agreement to begin the planned phased transition of the management of the LNG fleet. Nakilat, has carried out preparations and planning for the management of these assets to Qatar's gas supply chain, which plays a major role in the national economic growth in alignment with the National Vision 2030.

5. SAUDI ARABIA



Finnish marine equipment engineering firm MacGregor signed a contract with Aramco to supply deck machinery packages to six AHTS vessels, built for long-term charter in the Middle East. Awarded by PaxOcean Engineering, the contract entails each AHTS to be fitted with a 150-tonne anchor handling and towing winch, shark jaws, towing pins, auxiliary winches and ancillary equipment.

6. UAE



ENOC has achieved AED 26mn (\$7mn) in savings since 2012 through its group-wide sustainability programme, the company has said. So far, the company has deployed a number of energy saving initiatives across its network of stations in the UAE and Saudi Arabia. One such programme is a process that enables the recovery of 99% gasoline vapour or other fuel emissions.



Sharjah to import extra LNG into UAE

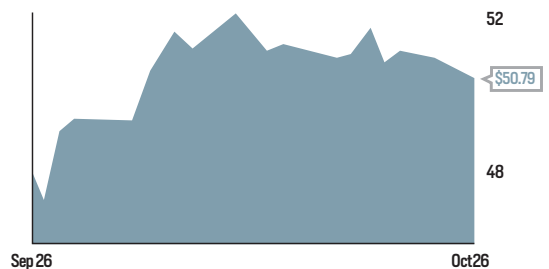
GAS IMPORT The Sharjah National Oil Corporation (SNOC) has signed a Memorandum of Understanding (MoU) with Uniper SE to import LNG into the Port of Hamriyah, in an effort to target both new and existing consumers, as also to meet growing demand for gas in the Northern Emirates.

According to the signed agreement, the first gas deliveries will arrive in 2018, after which it will flow to the Sajaa gas field complex and then into the existing pipeline network throughout the Northern Emirates.

Hatem Al Mosa, CEO of SNOC, said in a press release, "We recognise the urgent need for a reliable gas supply to support all consumers, from the big power generators to small businesses. The Sajaa complex has traditionally been the centre of the gas supply and it is well placed to continue supporting the region."

DATA SNAPSHOT

BRENT CRUDE OIL PRICE



A rare OPEC deal provided the necessary boost and helped Brent crude oil prices jump over the \$50 mark. *Source: oil-price.net*

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IN BRIEF

Egypt has launched the world's biggest LNG tender, and reports suggest major energy companies and trading houses are expressing ample interest. After months of speculation and delay, state-run Egypt Natural Gas Holding (EGAS) released tender documents bidding to secure 96 LNG shipments in 2017 and 2018, according to Reuters. An additional 12 optional cargoes were included in the tender. It is the biggest mid-term LNG buy tender ever issued, trade sources said.

Global oilfield services major Halliburton announced registering a profit of \$128mn in the third quarter of this year, up from a \$3.88bn loss in the second quarter. Revenue held steady from Q2 2016 at \$3.83bn, but was down from \$5.58bn in the same period last year. The net income attributable to the company climbed to \$6mn, compared to a \$54mn loss in the year-ago quarter. Middle East/Asia revenue fell 3% from the prior quarter to \$1bn in Q3 2016, while the operating income declined 4% sequentially to \$154mn.

Iran has entered negotiations with Maersk Oil for exploring the South Pars field. Negotiations were held for the development of the second phase of the South Pars oil layer, the National Iranian Oil Company (NIOC) said. NIOC reportedly plans to drill 300 wells at the South Pars oil layer, which requires Improved Oil Recovery (IOR) and Enhanced Oil Recovery (EOR) technologies to reach crude oil.

Qatar delays Barzan gas project start due to leakage disruption

The \$10bn gas project's first phase was due to start in November, boosting Qatari LNG output by up to 2 bcf/d upon reaching full capacity in H1 2017

GAS LEAK Qatar has reportedly delayed the start-up of its Barzan gas project because of a leak discovered in a gas pipeline.

The \$10bn worth project, a RasGas-operated joint venture between Qatar Petroleum and ExxonMobil, was designed to meet rising domestic energy demand in the Gulf state as it prepares to host the football World Cup in 2022.

After repeated delays, the project's first phase was due to start in November, boosting Qatari gas production capacity by up to 2 bcf/d when it reaches capacity in the first half of 2017. But a leak was discovered in recent weeks, according to *Reuters*.

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



The source declined to comment on the size of the leak or whether it had been fixed. The delay to Barzan is a setback for Qatar, which has said the project will sustain economic growth.

Doha's projections for an increase in gross domestic product in 2016 were partly based on output from the project starting by the end of the year, according to the Ministry of Development Planning and Statistics.

PROJECT DELAY
Doha's projections for an increase in GDP in 2016 were partly based on output from the Barzan project.

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



Two workers died and several others were injured in a fire accident at an Aramco facility near Riyadh. The company said in a Twitter post that the blaze was put out and did not affect operations.



Iran hopes to boost its natural gas production to Qatar's level by early next year, oil minister Bijan Zanganeh has recently said, in a bid to prioritise production of natural gas from the South Pars gas field.



Egypt did not receive October allocations of petroleum aid from Saudi Arabia, pushing the state oil buyer to seek out tenders despite the severe dollar shortage and the growing debts to oil producers.



Qatargas has signed a five-year agreement with Petronas LNG UK, expanding a strategic import deal to Europe. Under the agreement, Qatargas will deliver 1.1mn tonnes of LNG per year until 2023.



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"Energy and form are a major inspiration for my work"
Yousef Ahmad - Artist

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THE ENERGY TO TRANSFORM



Have your say:

Contact indrajit.sen@itp.com

Central Asia's upstream projects are in full swing

Experts at Euro Petroleum Consultants examine the different approaches taken by Central Asian countries to develop their energy sectors



About the author:

Colin Chapman is the president of Euro Petroleum Consultants.

The potential development of the energy sector in Central Asia can only be made possible with the implementation of announced upgrading and expansion projects. Despite project budgets being severely affected by oil price volatility and the vulnerability of engineering and equipment supplier markets, those projects that are of strategic importance are still likely to go ahead.

One example is Uzbekistan, which attracted substantial investment (over \$8bn) in upstream projects via production-sharing agreements with Russian, Chinese and Malaysian oil and gas majors. Quite recently, two additional natural gas pipelines – Gazli-Kagan and Gazli-Nukus – were built, to be a part of an integrated 14,000km-long transportation system.

The latest news states that final investment was made by the China Development Bank to finish the fourth leg of the Central Asia–China natural gas pipeline by 2017. The project, which will be under development for 10 years, will bring 85 bcm per annum of transported gas (a significant part of it being transit Turkmen gas) to the country's economy, and



Expansions and upgrades are necessary to ensure the development of the energy sector in Central Asia.

will become the biggest gas transportation system in Asia in terms of volume to date.

Turkmenistan has been following the example of its neighbour – the third stage of Galkynysh gas field complex development will start this year, after 10 years of exploration and development. This large-scale project consumed more than \$9.8bn and the estimates suggest an annual production rate of gas of about 30 bcm.

Azerbaijan also has high hopes for its major fields, but mostly offshore ones – Azeri-Chirag-Guneshli (ACG) and Shah Deniz – to maintain planned oil production levels. By August 2016, cumulated investments in ACG surpassed \$32bn and production amounted to 2.9 bbpa. Some experts see a possible decline of production from this field in the mid-term, as they believe it has already reached its peak production phase.

After its expansion, Shah Deniz will produce more gas condensate. In the first half of 2016, 4.5 bcm of gas and 1mt of condensate were extracted from the existing wells. The country's government and the field operator both believe that extra condensate volumes from these resources will partly compensate for the overall crude decline that is forecast.

In Kazakhstan, oil production remains the main source of profit for the country's budget, but the industry is in desperate need of modernisation: more than a half of oil wells under operation have been exploited for over 20 years, a fact that contributed to a production decline of 2% in 2015. Thus, Kazakhstan decided to put additional effort into sustaining its facilities, and it may become the leader of key developments during the 2016-2025 period in terms of CAPEX. Overall budget is estimated at around \$54bn, 98% of which will be allocated to the Kashagan project, which should be commissioned next year. The Kashagan field is the largest oil field outside of the Middle East and one of the most expensive (\$50bn of investments).

This strategically important project will contribute to an oil produc-

tion increase starting from 86mta in 2017. Since first production was not very successful three years ago, a new project was introduced to prevent leakage from pipelines from the oilfield. Saipem will supply Kashagan with upgraded pipes worth \$1.8bn, and production of about 1.7 mbpd will resume next year.

Another important project, the start-up of the third phase of the Karachaganak field, could resolve the problem of domestic gas supply in the short term.

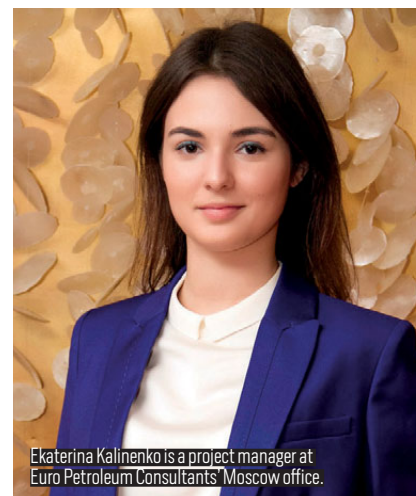
The Tengiz field expansion, meanwhile – which accounts for more than one-third of total crude production in Kazakhstan – is said to be the biggest final investment decision in the oil industry this year. The new Future Growth and Wellhead Pressure Management Project is estimated to cost \$36.8bn and will increase the field's total daily production to

about 1mbd, with start-up planned for 2022.

A very important issue is to ensure start-up of the third section of the Kazakhstan–China gas pipeline, which was actually due to be commissioned last year but was postponed until December this year. This will provide an increase of gas transportation capacity to 55 bcm per year.

Kazakhstan aims to increase oil pumping by 12 million tons annually by 2022. In 2017, Kazakhstan expects to export 250 bcf of gas to China via the Beineu-Bozoi-Shymkent pipeline (KazTransGaz project) – with part of the investments from the European Bank of Reconstruction and Development. Gas from Turkmenistan and Uzbekistan also is transported via Kazakhstan to China.

In conclusion, we are seeing continued investment in the region to



Ekaterina Kalinenko is a project manager at Euro Petroleum Consultants, Moscow office.

further develop the energy sector in each of the countries of Central Asia. Each country in the region has a different approach to cooperation models with western and other partners. This region is very important as a bridge between east and west and, for this reason, it attracts interest from many different backgrounds. ○

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Reliable communications are the key to success

Using a reliable communication platform to gain access to real-time data, use analytics, and improve collaboration is vital for any oil and gas industry players that hope to improve their productivity



About the author:

Osama Oulabi is the regional director of network and satellite communications service provider SpeedCast

Although the current market situation has caused key oil and gas industry players to initiate significant cost-cutting measures, global consulting firms have warned against short-term cost-cutting measures, advising the industry instead to invest in enabling digital technologies.

As Gartner points out, in its report *How Forward-Thinking Oil and Gas CIOs Should Approach Price Declines*, “The current low-price scenario is unlike prior ones because digital technologies are enabling optimisation of business performance, which is increasing ability of firms to compete at lower price levels. In this downturn, the ability of an upstream company to continue making strategic investments that improve its ability to compete may be an essential survival skill.”

Some of the areas in the oil and gas industry where technology can help to generate better returns from the same cost include improving the operational efficiency of existing projects, maintenance of assets and infrastructure, data analytics for faster and better decision-making, faster problem resolution, improved production efficiency, breakdown of



departmental silos, and integration of operational and digital technology platforms. However, to achieve these results, the level of automation across business processes needs to be enhanced. By leveraging digital technology, global oil and gas companies can improve rig uptime and oil recovery rates, reduce oil spillage, boost employee productivity, and shrink costs. The reduction in turnover of global sales can be offset by becoming more efficient in all areas of the upstream and downstream value chain.

The key to success

The oil and gas industry typically has its upstream sites located in hostile and inaccessible terrains – usually deep offshore seas, deserts and arctic regions that are constantly exposed to extreme weather conditions. Some upstream sites are even

exposed to geopolitical acts of war. Faced with these operational challenges, terrestrial network connectivity solutions often fail to provide the required reliability and durability, causing most organisations to rely on satellite-based communication solutions instead.

An example of how reliable communication solutions can boost productivity is through high-definition video and web conferencing through a low-latency satellite link. This has helped improve collaboration among internal team members at remote sites, facilitated better and faster access to subject matter experts, improved the troubleshooting of service and support issues, ensured isolated employees get continuous on-the-job training, and kept remote employees connected to their families. The gains from such applications include better role productivity, reduced travel costs, improved employee morale, and the capture and transfer of intellectual services.

The greatest challenge facing the industry is managing the high costs of exploration and operations. Com-

panies are increasingly using data analytics to support business decision-making about exploration and drilling, to help streamline processes, and to lower worker risk. Performing analytics through cloud-based applications, or through a remote enterprise datacentre, requires reliable connectivity, usually provided by satellite communication link. Monitoring remote pipelines and perimeter fences for security breaches requires video analytics also supported through reliable satellite communication.

Innovations in satellite communications

The oil and gas industry requires communication solutions across its lifecycle, from exploration to production, refinery, storage, and cross-border transportation. Typical applications transported on a satellite communication backbone include internet, real-time data transmission from sensors and other control systems, data analysis and feedback, and intelligent network management. This growing requirement in terms of bandwidth, reduced latency, and quality of transmission make it necessary for oil and gas companies to engage with forward-thinking satellite communication providers.

Leaders in the field are responding by adopting innovative measures to reduce costs and provide better service for the oil and gas industry. Switching to the Ka band in high-throughput satellites, in addition to the Ku and C band transmission, has brought in more bandwidth at lower cost. The deployment of medium earth orbit satellite constellations has brought in more competitive options and reduced latency, along with better voice and video quality. Also driving down the cost of satellite communication is the trend towards smaller antenna sizes, and the development of micro-satellite constellations in the lower orbit band.

By utilising technologies from best-in-class satellite communication providers and other ICT vendors, oil and gas organisations can transform their operations by leveraging the Internet of Things (IoT), data and analytics, and improved connectivity and collaboration, in order to drive better productivity from the same costs, thereby enabling them to ride out this market correction. ○



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INTERVIEW

Seafaring to engineering

Oil & Gas Middle East speaks to **David Blackwell**, engineering director at UK-based Belzona, about his experience in the corrosion mitigation industry and the trends he is currently observing in the market

INTERVIEWER: INDRAJIT SEN

You spent over a decade in the Merchant Navy – tell us a little about your life at sea.

I joined Shell Tankers fresh out of school as an engineering cadet. It was a great life, being at sea. Until you've been out of sight of land for two weeks at a time, you just don't realise how big the world is, how much ocean there is out there.

You also get a chance to observe some spectacular sights, like the green flash. When the sky is perfectly clear, as the sun sets, all the different colours in the spectrum of light start to disappear over the horizon, and green is always the last one. Just as it disappears, the whole sky goes bright green and back to blue again, before darkness falls.

I also vividly remember the stars at night. At midnight, after finishing a late shift in the engine room, we'd come out, make a cuppa, and sit out on the deck in the middle of the ocean, in pitch black. Nobody that lives on land can ever see that number of stars, because of the lights from the cities. It is just awe inspiring. And obviously you

see a lot of the world – I think the only continent I haven't visited is Antarctica. That's on the bucket list.

What have been the highlights of your career at Belzona?

I remember my first application offshore, on a deaerator in the North Sea, which was also the first application we did in the oil and gas industry. The process vessel was 17m high and 6.5m in diameter, and we coated the whole thing, top to bottom. As far as I know, the rig was in service for more than 12 years. It had a few patch repairs because of mechanical damage, but the coating itself was intact. I put that down to the way we held the blasted surface.

We wrapped the entire vessel in electric blankets, heated the skin up to 25°C and held it there. Even in the harsh climate above the Arctic Circle, we were able to hold the blast to ensure a good application. This platform has now been decommissioned, but a replica is installed in the Aberdeen Maritime Museum, preserving Belzona's offshore legacy.

“IN CERTAIN INDUSTRIES, FOR MAINTENANCE, I SEE COLD BONDING TAKING OVER FROM HOT WELDING.”

What are the emerging industries that Belzona is involved in?

A lot of things are happening in the renewable energy sector, with wind and wave power. There are two major wave generator manufacturers that we are working with to specify Belzona to protect their machines, and for some bonding applications. Another opportunity is in the protection of the leading edge on the blades of wind turbines. We've had meetings with the three major wind turbine manufacturers in Scandinavia.

What do you think will happen in the next 10 years in the corrosion and maintenance sectors?

If you look at the cost of corrosion worldwide, generally speaking, in any industrial country, it is approximately 4% of their gross national product. As far as Belzona is concerned, we haven't scratched the surface yet, we've just stroked it gently. I think we need to develop specific niche market products.

Health and safety legislation is starting to frown upon welding in the maintenance sector. Shutting the whole plant down for hot work repairs is also not economically viable and our kind of industry – repairs that are cold – will have the opportunity to advance faster than ever before.

If you look back in history, ships, tanks, bridges, everything used to be riveted together. Then we moved from rivets to welding. Industry is now moving away from welding to cold bonding. In certain industries, for maintenance, I see cold bonding taking over from hot welding. ○

**WHAT ELSE DO YOU NEED TO KNOW ABOUT DAVID?**

He joined Belzona in 1987 after spending 13 years with Shell in the Merchant Navy and rising through the ranks to become a senior engineering officer. At Belzona, he has held various positions over the years and now heads the company's Engineering Services department.



**Per-Erik Holsten,
the head of ABB's oil,
gas, and chemicals
business, talks about
how a dedicated
portfolio is enabling
the global giant to lead
the regional industry
towards digitally
efficient operations**

30

PROPELLING DIGITALISATION

WORDS: INDRAJIT SEN

The global oil and gas industry is seeing conventional methods of operations challenged by uncomfortable crude oil prices. Against this backdrop, ABB is demonstrating how the concepts of automation and digitalisation can be applied to oil, gas, and chemicals operations to make them more efficient and productive.

The Swiss-Swedish multinational corporation is celebrating its 125th anniversary this year and has firmly established itself as a pioneering technology leader, working closely with companies around the world to drive the fourth industrial revolution. In the Middle East, where ABB has been a

dominant player for around three decades, the behemoth caters to its clientele throughout the region, as well as in Africa, from its hub in Abu Dhabi.

The technology leader's managing director of the Oil, Gas, and Chemicals business, in an exclusive interview, explains that ABB's industrial offerings are structured into four distinct portfolios. "We are a pioneering technology leader in four key areas: robotics and motion, which provides drive systems, rotating equipment, motors, and machines; the power grid segment, which provides utility equipment for the electricity sector; industrial automation, which provides equipment to industries such as mining, oil and gas, and so on; and the electrification segment, which offers products to various industries and businesses,"



→ ABB's portfolio caters to all businesses in the automation, power, transport, infrastructure, and utilities sectors.

→ ABB is currently involved in two high-profile oil and gas projects in the GCC, an upstream and a downstream venture.

→ Per-Erik Holsten, ABB's managing director of the Oil, Gas, and Chemicals business.

says Per-Erik Holsten, an ABB veteran with a career spanning 30 years, who started out as an engineer at the organisation in 1986.

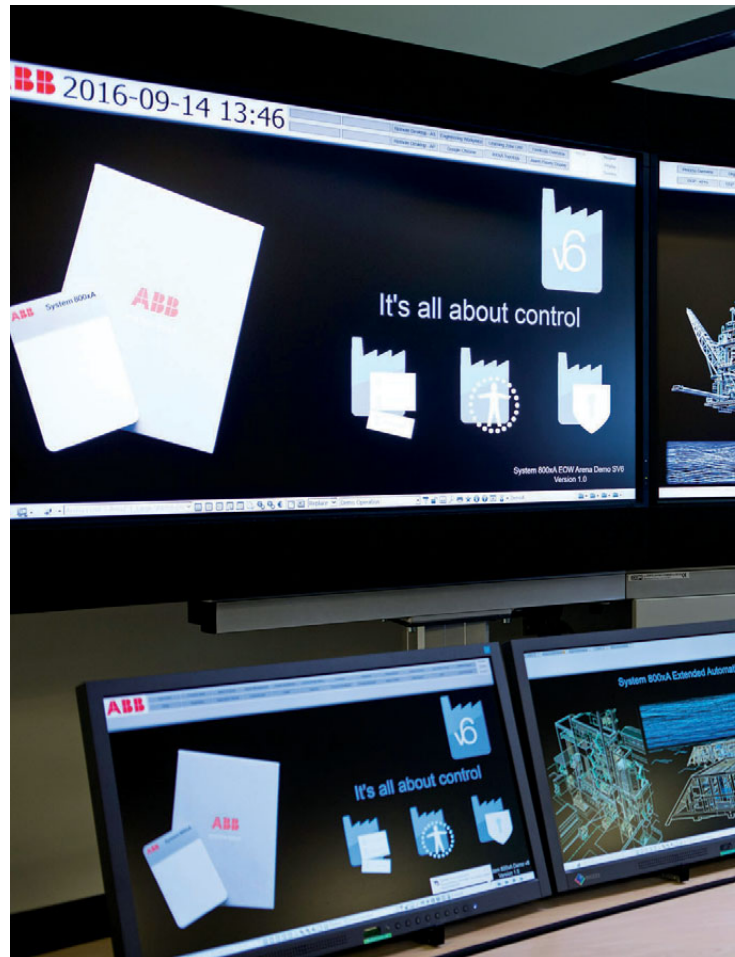
“Our portfolio is wide and covers most of the electro-technical and automation sides. We cover all businesses within the sectors of automation, power, infrastructure, transport, and utilities,” he continues.

ABB has an admirable record of serving the region's oil and gas industry with its innovative products and services. The global company boasts of an impressive client base in the oil and gas sector that includes NOCs like Qatar Petroleum, Kuwait Oil Company, and Kuwait National Petroleum Company, and major EPC contractors like Petrofac, Technip, and Saipem. “Our customer base is formed of players that are dominant in the industry, from significant global companies to the national oil companies,” Holsten says.

ABB is currently involved in two high-profile oil and gas projects in the region – an upstream and a downstream venture. The company is working on an offshore oilfield project operated by the Abu Dhabi Marine Operating Co (ADMA-OPCO), a subsidiary of ADNOC, and bagged a significant deal in Q4 2015 from the main contractor, National Petroleum Construction Company (NPCC), for the delivery of electrical and telecommunication systems to the Al Nasr full field development, located about 130km northwest of Abu Dhabi.

As part of the contract, reported to be worth \$18mn, ABB is providing electrical distribution systems and equipment, power management and telecommunication systems for the entire Al Nasr project, which will help both ADMA-OPCO and NPCC maintain the highest levels of efficiency, reliability and safety for the development, which Holsten describes as “a large electrical project for us”.

“[The Al Nasr offshore oilfield] is a large project and our scope of work is the electrical delivery, which is part of the process power management and forms the umbrella structure of all the electrical offerings of ABB – such as low voltage



“WE HAVE EIGHT REGIONAL CENTRES OF EXPERTISE IN ABB'S OIL, GAS, AND CHEMICALS BUSINESS. FOR THE MIDDLE EAST REGION, ABU DHABI IS WHERE THE LARGEST TEAM IS BASED.”



transformers,” Holsten describes. “Process power management involves collecting the electronic signals of the operation and making sure it functions in a reliable way. The technical feature of such a system is that every time you have either a general shutdown or lack of power, or your equipment is sucking [more] power from the system than the normal rate, you’re offloading some of the power. Now that is a critical element.”

With regards to the downstream project, ABB, as the MAC (main automation contractor), is providing integrated power and automation solutions to the Sadara complex in Saudi Arabia – a \$20bn project, estimated to be the world’s largest petrochemical project ever built in a single phase. The project won the Downstream Project of the Year award at the *Oil & Gas Middle East and Refining & Petrochemicals Middle East Awards 2016* (for more, see page 52). Also, as a measure of ABB’s commitment to nurturing and employing local talent in the region, Holsten reveals that the ABB team working on the Sadara project comprises 30 Saudi engineers.

He elaborates: “We have eight regional centres



of expertise in ABB’s oil, gas, and chemicals business. For the Middle East region, Abu Dhabi is where the largest team is based. Now, that is not to [say] that we are focussing only on the UAE, or that our biggest successes have been in the UAE. Our successes in the region lie in different countries. Take, for example, Saudi Arabia – we have built up our capabilities in the oil and gas industry, as our involvement in the Sadara project demonstrates.”

Holsten says that ABB is working on a number of greenfield projects in the Middle East, which have either been recently completed or are at various stages of execution. “We are taking up study or study-type work for some of our customers. Some of the projects are significant and there are some really good opportunities,” he says.

“The region is developing its oil and gas industry towards productivity, and is looking at more efficient measures for exploring and producing oil in a more productive way. ABB is clearly capable of helping with that. Our portfolio is all about driving productivity, and we have several applications that can help, like process power management systems, making sure that the platform is reliable and stable.”

Exhaustive oil and gas offering

ABB has, for decades, been known as a global major, scaling new heights by providing outstanding digitalisation and automation solutions to a whole host of industries. “ABB is in the sweet spot to help our customers face this IoT [Internet of Things] revolution, with more than 70 million connected devices and more than 70,000 installed control systems across the world. That’s the world’s largest installed base of connected

→ ABB's oil and gas portfolio includes telecommunications, electrification and automation services.

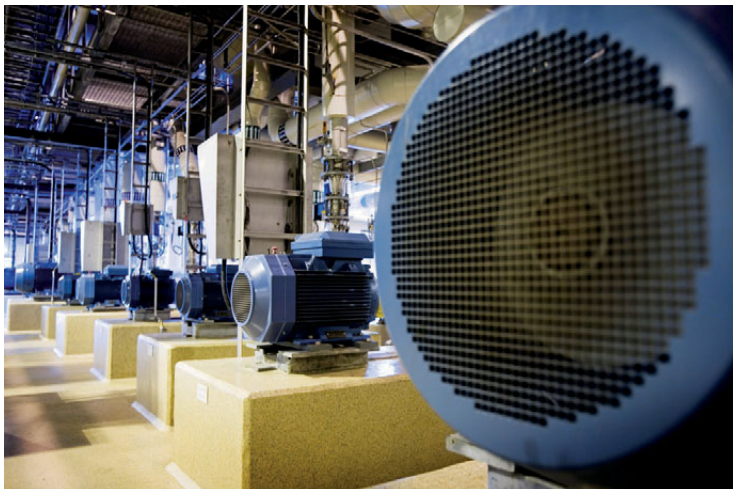
Research and development plays a crucial role in helping ABB forge an innovative path. ↓

industrial devices,” says Holsten. “Utilising this network, we help our customers go further by turning data insights into the direct action that ‘closes the loop’ and generates customer value in the physical world.”

ABB's oil and gas portfolio offering can be clearly segmented in four parts: telecommunications, electrification, automation, and service. When asked about which component in the organisation's oil and gas business line witnesses most demand from the regional industry, Holsten answers: “I see an even interest or demand for all our oil and gas products. ABB is known in the industry for developing high-quality products that improve both efficiency and productivity. I wouldn't say a particular equipment or line sticks out in terms of demand from the region. Our ability to seamlessly integrate across electrification, automation, and telecommunications is where we see customers find significant savings.”

Talking about the impact of digitalisation on this industry, he explains: “Our integrated operations offering is leading the way when it comes to connecting the power of the Industrial Internet of Things [IIoT]. To explain, how do you make sure that your operations, from an end-user perspective, are streamlined in the most efficient way? It is an IoT-driven offering that facilitates collaboration between people and things – tying together engineering, infrastructure, applications, and services, into a single interface. When all of these pieces are tied together, we ensure customers have actionable insights to optimise their performance.”

Quite naturally, research and development (R&D) plays a crucial role in helping the organisation to forge a pioneering, innovative path.



“WE ENSURE CUSTOMERS HAVE ACTIONABLE INSIGHTS TO OPTIMISE THEIR PERFORMANCE.”

Holsten also reveals that, as a global entity, ABB invests a whopping \$1.5bn into its R&D activities annually.

“That is a significant undertaking for us, as an organisation, and oil and gas is obviously part of that effort,” he says.

“In terms of ABB's capability to provide disruptive technologies to the market, that has been tremendous. If you look at our history, we have been a pioneering technology company. We have a significant track record and, within the oil and gas industry, we have quite an offering in the form of the integrated systems and products portfolio, and the power management systems.”

Continuing on the subject of R&D for innovation, Holsten reveals a certain initiative that ABB has been working on. “Our customers want to cut their costs by 30 or 40%. One of the technology developments we are working on to help them do this is subsea technology,” he explains.

“We are integrating seabed equipment with our automation platform to provide actionable information to the remote control room. At the same time, we are making this seabed equipment more reliable and durable than ever before. So you don't have to build an infrastructure for an existing well



\$1.5BN

AS A GLOBAL ENTITY, ABB INVESTS \$1.5BN INTO ITS R&D ANNUALLY, IN ORDER TO PIONEER TECHNICAL INNOVATIONS

↑
ABB's 2020 strategy for the oil and gas sector is all-round efficiency, standardisation, productivity, and safety.

any more in the subsea field. Our drive is now to bring these solutions to customers around the world, for which we are putting in a lot of R&D.”

Sub-par crude oil prices have not just affected oil and gas producers in the region and globally, but have also taken a toll on the industry's service providers. Stakeholders across the board – from upstream companies, to EPC contractors, to technology providers, to consultancy firms – have all had to bear the brunt of the free-fall in oil prices. However, a tough economic climate has led the regional oil and gas industry to strive to become leaner and more effective by digitalising their operations.

“The market has changed for everyone, for sure.

What is most important to ABB during this time is that we help our customers deal with these impacts on the market and stay competitive. We are doing this by focussing on innovative solutions that help cut costs, improve uptime, and reduce project risks,” Holsten says.

From a global perspective, the Middle East's oil and gas industry is one where, interestingly, investments are still being made, according to the executive. “We are seeing the [regional] operators coming out with productivity measures to drive up oil prices. I think we will swing back into action soon,” he states.

“ABB's 2020 strategy for this important industry is all-round efficiency, standardisation, productivity, and safety. We want to make sure we are serving our customers with exactly what they need [in] this changing market, helping them transform their business with innovative solutions that add real value.”

Holsten concludes: “The world is changing. ABB's pioneering spirit for technology leadership is helping our customers lead the way.” ○



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THE ACHIEVERS

The 2016 Awards recognised 13 winners from both the upstream and downstream segments for their achievements and initiatives across various categories



More than 200 energy professionals from across the region gathered in the UAE capital on October 5 to celebrate the industry's achievements at the seventh *Oil & Gas Middle East* and *Refining & Petrochemicals Middle East* Awards 2016, held at the Sofitel Abu Dhabi Corniche hotel.

Despite the subdued mood in the oil and gas sector due to low oil prices, the Awards

team at ITP received a high volume of quality nominations, particularly for the Technical Innovation of the Year and the Young Oil & Gas Professional categories.

Celebrating the energy industry's excellence, as well as individual achievement, the final results were determined by the magazines' editorial teams, in conjunction with the highly experienced judging panel.

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BETEC CAD.

WINNER

Emerson Process Management



“THERE ARE A LOT OF RISKS AND HARD WORK [INVOLVED] IN DEVELOPING NEW TECHNOLOGY SOLUTIONS [...] AND IT IS REWARDING THAT EMERSON IS RECOGNISED FOR THE RISKS IT TOOK.”



ABOUT THE WINNER

Emerson Process Management bagged HSE Product/Application of the Year for its Rosemount Guided Wave Radar Verification Service, which can verify the level instrument performance across a full range without the need to break a tank’s seal. This helps improve safety as plant operators don’t have to send personnel to the top of the tank to take readings manually.

Cor Corbeek, general manager for Emerson Process Management in the UAE, Oman, Egypt, Yemen, and Lebanon, said: “I think what appealed to the judges was our clear focus on solving one big challenge, and that is increasing personnel safety while making level instrument verification quicker, more accurate and safer.”

Highly Commended in this category was Duraseal from Honeywell Process Solutions.

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BETEC CAD.

WINNER

Kuwait Oil Company - HSE Team



“THERE IS NO OTHER PROJECT IN THE MIDDLE EAST WHERE A COMPANY AND REGULATOR ARE WORKING TOGETHER IN SUCH A WAY, AND THE EFFECTS [...] WILL BE FELT NATIONWIDE.”

41



ABOUT THE WINNER

The winner of this year’s Health, Safety and the Environment Initiative of the Year was the Kuwait Oil Company’s Health and Environment team. The jury recognised that the company had a strong focus on critically assessing its HSE policies, and a real commitment to implementing them. One of the judges said: “KOC is one of the oil and gas majors in the Middle East that has made HSE one of its priorities and implements plans and programmes to increase safety levels.”

Yousef Al-Qallaf, team leader of the Health, Safety & Environment Group at KOC, said: “This initiative involved development of a system providing real-time measurement of pollution across the country, as well as a pioneering national air quality inventory with research-grade dispersion modelling techniques to determine human health risk.”

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BETEC CAD.

WINNER

Gulf Petrochemicals & Chemicals Association



ABOUT THE WINNER

The Waste Free Environment campaign by the Gulf Petrochemicals and Chemicals Association (GPCA) scooped the Corporate Social Responsibility (CSR) Initiative of the Year award. One judge said the initiative was “helping increase awareness in relation to reducing waste, recycling and taking care of the environment”, while another praised the programme’s “focus on reduce, reuse, and not just recycle”.

Dima Horani, acting head of marketing and communications at the GPCA, said: “I think the main achievement of this initiative is that the GPCA was able to bring together big names in the industry to collaborate and work together for a cause focussed on raising awareness about recycling in the region and, more importantly, among youngsters, because they are key for our future.”

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“WASTE FREE ENVIRONMENT IS A REFLECTION OF COLLABORATION AND HOW COLLABORATION EQUALS INNOVATION – IT’S ABOUT CREATING REAL AWARENESS BEHIND THE CAUSE.”

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WINNER

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ICV STRATEGY OF THE YEAR

44

“THIS AWARD HAS MOTIVATED US TO DELIVER FURTHER ON THIS INITIATIVE. WE BELIEVE IN SETTING A BENCHMARK AND THEN [STRIVING] TO RAISE THE STANDARD.”



ABOUT THE WINNER

The ICV department at the Oman Oil Refineries and Petroleum Industries Company (Orpic) won the In-Country Value Strategy of the Year award. Orpic impressed one of the judges as “having a focus on training and skill development, [and a] strong focus on SMEs”.

Orpic established its In-Country Value (ICV) department with the objective of becoming a leading performer in localisation.

“Orpic works really hard to ensure that all ICV elements are adhered to. In aspects of employment and contracts awarding, Orpic sees it that all ICV elements are covered, whether in terms of Omanisation, contribution of SMEs, and so on. Part of our ICV strategy is also to impart training courses and run several programmes,” said Mazen Al Ansari, a communications specialist at Orpic.

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WINNER

Petroleum Development Oman



TRAINING INITIATIVE/ PROGRAMME OF THE YEAR

"I AM PROUD THAT SO MANY OMANI NATIONALS ARE INVOLVED IN OUR WORK, AND THEY ACT AS A BEACON FOR OUR PEOPLE, SHOWING OTHERS THAT THERE ARE SKILLED JOBS AVAILABLE."



ABOUT THE WINNER

Winner of the award for Training Initiative/ Programme of the Year, which recognised the importance of knowledge-sharing across the industry, was Petroleum Development Oman. The company was recognised for its National Objectives Programme, which successfully integrated vital skills in oil extraction and included accreditation in all its technical aspects. The jury praised the "large reach" of the programme and the visible results it has obtained, especially in the more complex aspects of the business.

The company's Said Amur Al-Abri said: "Our objective was to meet all the national objectives, in particular when it comes to the fields of welding and drilling. These are both extremely important areas in the entire oil and gas business and aspects in which Oman wants to take a lead in the global market."

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WINNER

Kuwait Oil Company - Well Delivery Team



OPERATIONAL
EXCELLENCE
STRATEGY OF THE YEAR

46

“[THE KUWAIT OIL COMPANY’S WELL DELIVERY TEAM DEMONSTRATED] CLEAR IMPROVEMENTS ACHIEVED THROUGH THIS STRATEGY; SOMETHING THAT APPEARS TO BE EXTENDABLE.”



ABOUT THE WINNER

The category of Operational Excellence assumed great importance at this year’s Awards, in light of the prevailing climate, in which the regional oil and gas industry is striving to ‘do more with less’. The Kuwait Oil Company’s Well Delivery Team – part of the South East Kuwait Asset – claimed the top spot in the category this year.

One member of the judging panel described the Kuwait Oil Company’s nomination as a proven method that demonstrated “clear improvements achieved through this strategy; something that appears to be extendable”.

Emerson Process Management’s entry was also highly commended by the judges in this closely fought category, for the company’s work in providing the control system solution for Saudi Aramco.

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Schlumberger

WINNER

Aramco – Seawater Fracturing Fluid System

TECHNICAL INNOVATION OF THE YEAR



“PIONEERING AND EXCEPTIONAL RESEARCH HAS RESULTED IN THE DEVELOPMENT OF [...] A BREAKTHROUGH TECHNOLOGY IN HYDRAULIC FRACTURING OPERATIONS.”



ABOUT THE WINNER

Saudi Aramco bagged the Technical Innovation of the Year award for its seawater-based fracturing fluid system. The system – “developed entirely in-house, so it is impressive”, as one of the judges observed – “avoids the costly treatment of seawater in wells, saving operating costs, energy, and reducing the waste footprint of the project”.

Mohammed Al Khaldi, a supervisor at Saudi Aramco, said: “The judges might have been impressed with the cost-saving that we are associated with; we are in a region where we have an abundance of seawater, and that’s been put to use.”

Elaborating on the development and application of the system, he continued: “I believe that seawater will open doors to saving large amounts of freshwater resources.”

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WINNER

Saudi International Petrochemical Company



ABOUT THE WINNER

The Saudi International Petrochemical Company (Sipchem) won the new Sustainability Initiative of the Year award. Its 'Caring for the environment' project was recognised for its well-measured impact, low capital investment, and energy efficiency, with one of the judges saying it addressed "one of the most critical issues, that of wastewater".

"We are doing a great job in [the area of] sustainability, and we are very happy to be among the companies recognised by the *Oil & Gas Awards*," said Abdullah Al-Hariri, general manager for communication and corporate affairs at Sipchem.

Highly Commended in the category was Arabian Gulf Oil Co (AGOCO), for its work in biodegradation of Libyan light crude oils, praised for its focus on environmental issues despite the country's political uncertainties.

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"[SIPCHEM IS] DOING A GREAT JOB IN [THE AREA OF] SUSTAINABILITY, AND WE ARE VERY HAPPY TO BE AMONG THE COMPANIES RECOGNISED BY THE *OIL & GAS AWARDS*."

WINNER

PDO-Glasspoint Solar for Miraah



ENHANCED OIL RECOVERY PROJECT OF THE YEAR



“THERE IS A LOT OF PRESSURE [ON PDO AND THE REGIONAL INDUSTRY] TO CUT DOWN THE CARBON FOOTPRINT. THIS [PROJECT] IS MORE EFFECTIVE AND SAVES ENERGY FOR UPCOMING GENERATIONS.”



ABOUT THE WINNER

Petroleum Development Oman (PDO) and US-based Glasspoint Solar's combined solar enhanced oil recovery (EOR) project, in the Amal oilfield in southern Oman, won the best EOR Project of the Year award. The project, known as Miraah, ('mirror' in Arabic) has, in the past, been recognised in the regional industry for its use of solar power (captured in a glasshouse-type structure) to produce steam to extract oil from the tricky geological formation – thereby saving PDO a significant amount of money in expensive gas-based extraction methods.

Said Amur Al-Abri, PDO's Yibal Khuff project engineering team lead, said: "This is a green project that utilises a natural resource for the production of oil. This, indeed, is a pioneering project in the Middle East."

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WINNER

Sadara petrochemical complex in KSA



“WE ARE HAPPY THAT WE ARE DOING ENOUGH TO BE RECOGNISED [WITH THIS AWARD], AND WE ARE LOOKING FORWARD TO BEING ABLE TO DO A LOT MORE IN THE FUTURE.”



ABOUT THE WINNER

Saudi Arabia's Sadara petrochemical complex won the Downstream Project of the Year award. The project, which is expected to be fully operational next year, is the world's largest chemical complex ever built in a single phase.

When asked what he believed impressed the judges most, Sadara's Sami Amin, director for public affairs, said: "If I had to guess, I would say the scale, the complexity, and the scope. Sadara [...] has 26 units and they are all integrated. The complexity that goes into getting everything working and bringing it on stream is mind-blowing."

The \$20bn-plus joint venture between Saudi Aramco and Dow Chemicals is expected to be a game-changer for the GCC's downstream sector, having a huge impact on petrochemical and chemical production.

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WINNER

Mohammed K AlMedallah, Aramco



ABOUT THE WINNER

Saudi Aramco's Mohammed K AlMedallah was named the Young Oil and Gas Professional of the Year for 2016. The judging panel said the 29-year-old had already made his mark on the industry, and praised his leadership skills, and his business acumen, which has led to savings of millions of dollars for his company.

AlMedallah, an offshore specialist engineer and flow assurance unit supervisor at Aramco, was also commended for his "variety of skills and participation in multiple aspects of the upstream process". In addition, the panel was impressed that he currently has a patent under filing.

He said: "I do not feel this is the end of my success. As a young person, I feel it is important that I [...] offer innovative ideas and new ways of thinking."

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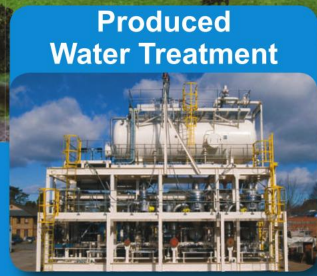
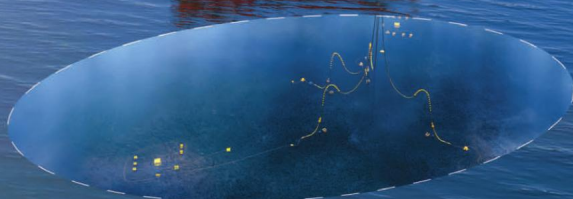
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WINNER

Reem Al Anbari, CFO of Borouge



“SOME PEOPLE MIGHT SAY THAT ONLY A MAN CAN DO THIS JOB. [BUT] A WOMAN CAN PERFORM ANY ROLE, [IN ANY] SEGMENT OF THE BUSINESS, WHETHER OFFSHORE OR ONSHORE.”



ABOUT THE WINNER

Reem Al Anbari, the first woman ever to occupy the position of chief financial officer (CFO) of an ADNOC group company, has been named the Woman of the Year for 2016. She was praised as “a role-model to many young female specialists that are looking forward to building their career in that field” by the Awards’ judges.

“I am serving two companies – one located here in Abu Dhabi that is mainly into production activities, and the sales and marketing office located in Singapore. It’s a big role and quite challenging as well, managing two CEOs,” said Al Anbari.

She also started an initiative last year to encourage other female professionals, especially Emirati women, to take up careers in the region’s oil and gas sector.

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WINNER

Weatherford International



“HERE IN THE UAE, [...] WE CAN FACILITATE A LOT OF THINGS FOR THE CUSTOMERS. TO CONTINUE LIKE THIS, YOU NEED TO SUSTAIN THE SAME PERFORMANCE.”

57



ABOUT THE WINNER

The category of Oil Field Services Company of the Year saw a hard-fought contest between global majors and local players. Houston-based Weatherford International emerged victorious, however, thanks to its success in securing contracts of late, and its high-quality work on regional projects. The jury felt the company stood out clearly, highlighting not only the fact that it had “bagged recent contract awards”, but also its focus on “digital oil fields and the cloud computing era”.

“We deliver very good service. If we talk about here in the UAE, since we have a facility here, we can facilitate a lot of things for the customers,” said Mohammed El-Komy, country product line manager for the UAE – Drilling Services at Weatherford. He added: “To continue like this, you need to sustain the same performance.”

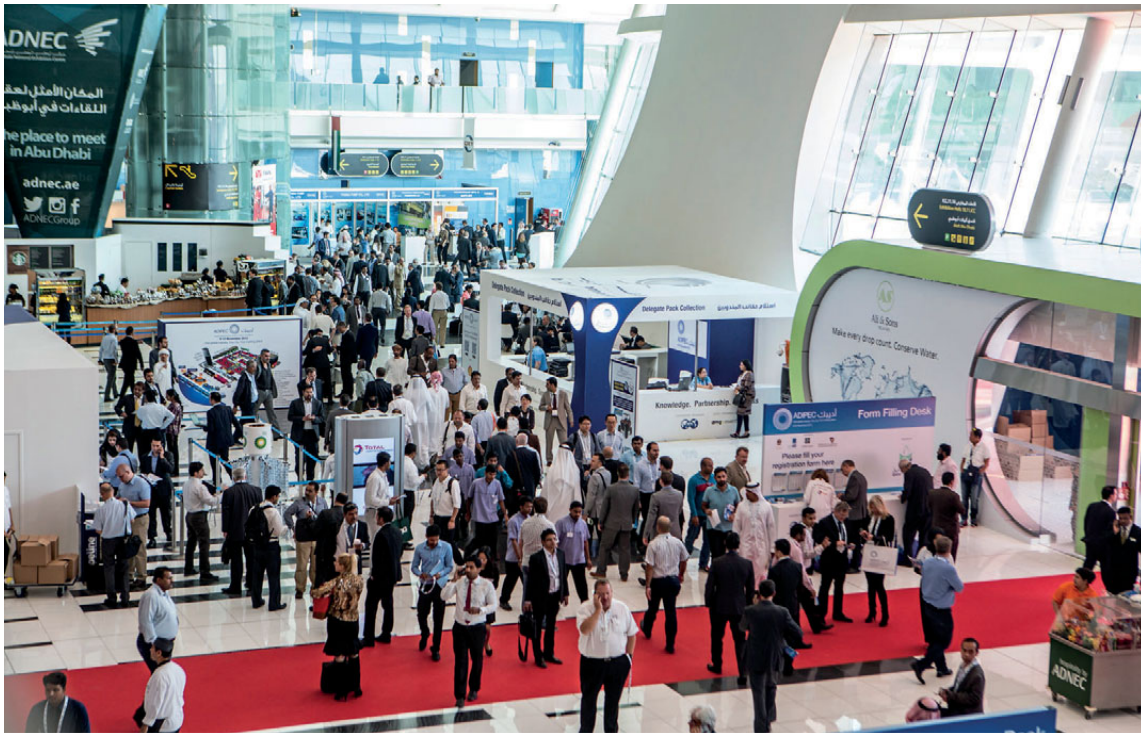
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LET THE MEGA EVENT BEGIN

The Abu Dhabi International Petroleum Exhibition & Conference 2016 is expected to host close to 100,000 stakeholders from November 7th-10th. *O&GME* speaks to some of the key exhibitors about their core objectives





INTERVIEWEE: AL COLLINS, PRESIDENT OF ENERGY & CHEMICALS BUSINESS IN EUROPE, AFRICA AND MIDDLE EAST

Fluor Corporation

What is Fluor's role in the oil and gas industry?

Fluor provides full-service engineering, procurement, fabrication, construction and project management services to clients in the upstream, downstream, chemicals and offshore markets in the Middle East. Fluor also acquired Stork, a maintenance, modification and asset integrity service provider headquartered in The Netherlands, to expand our life cycle capabilities.

What are your major EPC projects in the region?

Fluor Corporation is currently undertaking a wide range of projects across the region including front end engineering design (FEED), engineering, procurement, fabrication, construction as well as operations and maintenance services for clients in Qatar, Saudi Arabia, Kuwait, Iraq and the UAE.

We are developing several centres of excellence for projects in the GCC. In the past five years, we have used local execution teams to source nearly \$1.6bn-worth of material and equipment from vendors across the Middle East.

Providing these types of opportunities to local teams and vendors goes a long way toward building effective local supply chains.

"WE ARE SUPPORTING SOME OF THE REGION'S LARGEST PROJECTS [...]. WE HAVE USED LOCAL EXECUTION TEAMS TO SOURCE NEARLY \$1.6BN-WORTH OF MATERIAL AND EQUIPMENT FROM VENDORS ACROSS THE MIDDLE EAST."



What has been your largest project award in recent years?

One of the largest projects was the award in 2015 from the Kuwait National Petroleum Company of two EPC packages for key process support units, utilities and infrastructure for its new Al-Zour Refinery. Fluor, in JV with its partners, is executing the project which has a contract value to Fluor of \$2.6 billion. When completed, the new complex is expected to be one of the largest refineries in the world.

What is the largest project currently under construction?

Awarded in 2014, Kuwait National Petroleum Company's Clean Fuels

Project is the largest Fluor project currently under construction in the GCC. Construction is well under way with 12,000 craft workers expected to be employed at peak.

For this lump-sum, turnkey project, Fluor is providing EPC services as well as associated commissioning, start-up and testing support for the Mina Abdullah Package 2 (MAB2) which will increase capacities and provide low-sulphur fuel.

What are you showcasing at this year's ADIPEC?

Stork, a Fluor company, improves asset performance, safety and cost efficiency throughout an asset's life cycle.

Stork offers a wide range of asset solutions and specialist services across all areas of maintenance, modification and asset integrity. A global company, Stork has 19,000 employees based in more than 100 countries.

Stork is showcasing its specialist services for the oil and gas sector along with our power services capabilities for rotating and process equipment, as well as shutdown and turnaround capabilities. Stork is also pleased to be introducing two new services at ADIPEC – Multi Disciplined Rope Access and Condition Monitoring services.

Fluor experts will be available to discuss how our integrated solutions approach provides opportunities to reduce costs at every phase of a project. They can provide examples of how Fluor is leveraging innovation to improve project delivery providing cost and schedule certainty.

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INTERVIEWEE: IAIN MCKAY, CHIEF OPERATING OFFICER, PETROTECHNICS

Petrotechnics

What is the scope of your company's business within the industry?

We have been keeping people safe in the oil and gas industry for more than 25 years. In today's operating environment, the pressure to improve productivity, increase efficiency, and reduce risk is mounting, all at the same time. The solution is Petrotechnics' Proscient, the world's first operational excellence software platform.

For the first time, Proscient provides a global view of a plant's operational reality – in real-time. By looking at three simple screens, everyone from the boardroom to the frontline can now visualise every activity and its associated risk, right across the enterprise: what's happening, where it's happening, and what's driving the risk. More importantly, you now have the tools to practically and routinely manage activity and mitigate risk in a joined-up way. This allows everyone to make better, more informed decisions.

Proscient is the smart and low-risk approach to empower your organisation's OE programme to deliver the tangible business advantage that's long been promised. Cut costs, reduce risk and increase productivity.

Who are your clients and what is the scope of your work with them. What oil and gas projects have you been – or are you currently – involved in?

Across the industry, the pressure to improve productivity and efficiency and increasing scrutiny from stakeholders is higher than ever. This has only deepened operators' focus on operational excellence programmes.

In the GCC, we are seeing com-

panies leading the way to realise the promise of operational excellence. Operators in the GCC understand operational excellence is about less risk and more reward, lower maintenance costs and downtime, increased production and greater financial control. And technology must play a key role in underpinning operational excellence.

Specifically, there are three current projects that stand out. We were recently selected by Accenture and Saudi Aramco to be a key part of the Integrated Manufacturing Operations Management System (iMOMS), which will be deployed at the Jazan Complex. iMOMS is a 21st century approach to excellence in industrial operation that tightly integrates world class operations and leading enterprise technology solutions.

It is designed to close the loop between operations, maintenance and engineering to reduce risk, improve productivity and lower costs. It will transform complex data into meaningful information ensuring everyone has the right information at the right time to make the right decisions. It is a comprehensive set of 12 applications and 20 integrated solutions of which we are providing process safety and operations risk management capabilities through our Proscient Operational Excellence software platform.

The intended ADMA OPCO – ZADCO merger is a forward-looking



response to the challenging market conditions. The consolidation is about achieving operational efficiencies to take advantage of strategic opportunities for future operator growth. As a part of the overall effort, we are currently working with ZADCO to improve operational efficiency, effectiveness and safety processes and underpinning it with petrotechnics technology.

Additionally, across the size, scope, and nature of the Mukhaizna field in Oman, the seamless introduction of our activity management and risk management software solutions has seen outstanding results in both safety and efficiency.

What do you hope to gain from this year's ADIPEC?

ADIPEC reaches far beyond the current market conditions. Whilst there may be less footfall than previous years, this shouldn't distract from the high-quality speakers, dialogue, knowledge transfer, and networking that define the high-value experience of ADIPEC each year.

“IN TODAY'S OPERATING ENVIRONMENT, THE PRESSURE TO IMPROVE PRODUCTIVITY, INCREASE EFFICIENCY, AND REDUCE RISK, IS MOUNTING, ALL AT THE SAME TIME.”

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INTERVIEWEE: GIGI KORAH, MANAGING DIRECTOR, ALDERLEY FZE

Alderley

What business does your company do within the oil and gas industry?

Alderley are market leaders in the supply of bespoke engineering packages for custody transfer/fiscal measurement solutions, produced water treatment solutions, hydraulic onshore and offshore control systems and skid mounted package units from their manufacturing facilities in Jebel Ali, UAE, Dammam, Saudi Arabia and headquarters in the UK.

Where in the Middle East are you most active, and how do you wish to expand your reach in the region?

Alderley is in the United Arab Emirates, Kuwait, Qatar and Saudi Arabia. We are expanding our facility capabilities in Saudi Arabia and the ‘new’ Iranian market presents a great opportunity for us going forward as we already have a strong installed based in the region.

Who are some of your clients in the region, and what projects are you working on now?

We have developed strong relationships with Saudi Aramco, Kuwait Oil Company, Kuwait National Petroleum Co, RasGas, Gazprom Neft, Gasco, ADCO, Qatar Petroleum, QatarGas as well as international EPCs such as Petrofac, JGC, Saipem, Fluor, Daelim, Tecnicas Reunidas.

The team is currently in the process of executing different metering packages for the Jazan Refinery and Terminal Project, KNPC Clean Fuels project in Kuwait, Master Gas Phase I Project and Truck loading systems for the Jubail Bulk Plant in Saudi Arabia.



How successful do you think ADIPEC will be this year, considering the downturn in the industry?

ADIPEC is one of the biggest exhibitions in the oil and gas industry and we do not believe this would be hugely affected by the lower oil prices; however we might notice less international footfall as international exhibitors, delegates, and companies may consider reduced travel as well as investment spend.



How has business been for your company this year? What are your plans and goals for 2017?

Business has been good this year and our pipeline remains healthy. Going into 2017, Alderley is gearing up for growth in the Kingdom of Saudi Arabia having recently secured a new facility. The new facility located in 2nd Industrial City in Dammam, a total of 9025m², will have four times the manufacturing capacity of their existing site in Dammam. Alderley is recognised for top engineering and the manufacturing of metering and control systems. To date Alderley provide services to the 122 liquid metering systems and 72 gas metering systems installed across the Kingdom.

This substantial investment in new facilities, demonstrates Alderley’s ongoing commitment to further strengthen local Saudi manufacturing and play their role in contributing to Saudi Aramco’s In-Kingdom Total Value Add (IKTVA) Programme.

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NOV Rig Systems

INTERVIEWEE: SURENDRANATH DHANEKULA, MANAGING DIRECTOR, TRANS ASIA PIPELINE SERVICES FZC

Trans Asia Pipeline

What business does the company do within the oil and gas industry?

Headquartered in the UAE, Trans Asia is leading provider of pipeline, process and specialty services to the oil, gas and petrochemical sector.

Trans Asia comprises of a team of more than 300 specialists and has a presence in 12 countries around the middle east and Asia, meeting needs across pre-commissioning and commissioning activities.

We have started focussing on a range of process and speciality services since last couple of years and are providing process services to the industry such as chemical cleaning, oil flushing, nitrogen helium leak testing, flange management etc. This year we have added hot tapping as our latest service line in partnership with PTS UK and very soon we will have locally available hot tapping equipment and resources.

We wish to be an integrated service provider and will be able to provide integrated pipeline services all across from pigging to inspections and testing, maintenance of existing pipelines, emergency pipeline repairs, etc.

Who are your client, and what oil and gas projects have you been – or are you – involved in?

Although the bulk of our services are offered to the major national and international EPC contractors on their various projects, we also work directly with the international oil and gas majors as well as National Oil Companies for some of their service requirements.

Typically, with most of the projects,

we are associated with our clients from the bidding stage itself. Receiving repeat clients on a regular basis, the longevity of positive relationships formed in the sector have already reaped rewards at the beginning of 2016 via the attainment of a project in the Middle East alongside one the largest national oil majors.

Presently we are working on quite a few jobs in the UAE, Saudi Arabia, Kuwait, Qatar and India. We have just commenced work on our maiden Qatar project.

**WHERE:
STAND: CN25
HALL:
CONCOURSE**

What are you are looking to showcase at ADIPEC?

We will be showcasing our complete suite of service capabilities through ADIPEC 2016. The main focus of course would be to be considered as a one stop solution provider for all the service needs of our clients. We will be highlighting our latest service offering of hot tapping and line stopping, as well as a few process related services.

What are your objectives for ADIPEC



this year, and how do you hope to generate business during the exhibition?

ADIPEC is a global event with participation from most of the world wide companies in the oil and gas space and has being going from strength to strength every year. We are hoping that we will be able to introduce our services to a lot of new clients as well as generate a number of enquiries.

With optimisation being the buzzword, we expect the ADIPEC to provide a range of innovative solutions for better resource management in terms of manpower, equipment and facilities.



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Al-Bahar

What led you to decide in favour of exhibiting at ADIPEC 2016?

Reaching the international and regional oil and gas professionals, who are involved in both the technical and non-technical functions within the industry, is the prime agenda for Al-Bahar participating in ADIPEC with Caterpillar®. We intend to exhibit our strong commitment, market leadership, and customer service. ADIPEC offers us an unrivalled platform to come together, share knowledge, and meet with industry experts from an approximately 120 countries.

**WHERE:
STAND: 9430
HALL: 9**

68 What are the main products/services that you are looking to highlight at ADIPEC? Talk about those in detail.

We have several key focus areas, one of which being Gas Field Development. Together with Caterpillar® and their Gas Treatment Partner GTUIT we are showcasing on site solutions to gas treatment, harnessing associated gas and utilising it through power generation for a variety of applications such as Compression, Well Service, Drilling and Production.

Utilising associated gas provides operator's considerable cost savings while also reducing the need to flare gas, so it's a win win.

Another key focus of the stand is that of connected assets. From Cat® Connect to Advanced Condition Monitoring solutions, we are showing where operators can improve uptime, which in turn reduces operational costs. We will be having live demos throughout the exhibition days, to which we invite the audience to see first-hand the advantages this technology provides.

What are your business objectives for ADIPEC this year?

We will be meeting valued customers and partners to explore areas where we can help optimise their operations. With an ever-increasing focus on operational costs, uptime, and safety we must work together, to develop solutions that help our customers succeed in this regard. Considering our agenda for this ADIPEC, we intend to communicate more about Cat® Connect and its benefits to our customers especially for the Oil and Gas segment.

How successful do you think ADIPEC will be this year?

ADIPEC grows each year and we attend alongside Caterpillar. A platform that offers collaboration at this level is a success in itself. ADIPEC provides a great forum to

meet our customers, share ideas and explore areas we can utilise the latest advances in technology to provide the best solutions.

How has business for your company been this year? What are your plans and goals for 2017?

The low oil price period has driven a key focus on cost efficiency and optimisation. We have found that through leveraging different fuel sources and connecting assets, our customers can take advantage of the cost savings and improved uptime that our offerings bring. Times ahead have always been hopeful, and when we look at the region poised for development, we are sure to see much more enabled tomorrows. Al-Bahar along with our partner Caterpillar plans to enable businesses reach growth optimally and collaboratively.

“ONE OF OUR KEY FOCUS AREAS IS GAS FIELD DEVELOPMENT. TOGETHER WITH CATERPILLAR AND ITS GAS TREATMENT PARTNER, GTUIT, WE ARE SHOWCASING ON SITE SOLUTIONS TO GAS TREATMENT.”





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300T & 1,100T

INTERVIEWEE: ANDREW DENNANT – OIL & GAS DIRECTOR MEA, EMERSON AUTOMATION SOLUTIONS

Emerson Automation Solutions

What business does your company do within the oil and gas industry.

Emerson provides end-to-end automation solutions across the oil and gas industry. Our technologies measure, control, optimise, and reduce risk in onshore and offshore production facilities, gas processing, and LNG sites, tank farms and terminals.

These technologies are backed by a comprehensive set of capabilities including consulting, engineering and design, project execution, start-up and commissioning support, maintenance, reliability services, training, and other lifecycle services. All of these help our customers to reduce their operational costs, extend the life of their assets, and improve production.

Where in the Middle East are you most active, and what expansion plans do you have for the region?

Emerson has significant installed base across the Middle East, and it is growing in all of the countries of the GCC, as well as Iraq. We are increasing our local presence in the region, making investments to put support and manufacturing capabilities closer to our customers by investing in new facilities, expanding our capabilities and services, and growing our local workforce.

Who are some of your clients, and what oil and gas projects have you been involved in recently?

We work with national and inter-

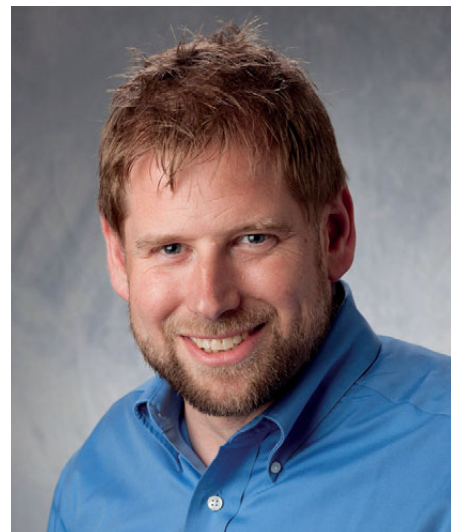
national oil and gas companies in implementing solutions covering the entire automation scope, spanning control and safety systems, plant asset management, operations management, instrumentation, and final control elements, solenoids, and pneumatics. Our project services help our customers to keep their projects on-time, on-budget, and on-schedule, while our lifecycle services ensure that our customers get the support that they need, when and where they need it, in a matter of hours or even minutes.

Recently, we completed a project with Saudi Aramco, where we performed an upgrade of the control and safety systems in the Abqaiq Plants facility, the largest oil processing facility in the world. This successful hot cutover project was completed two months ahead of schedule, and was highly commended at the *O&GME Awards 2016*.

Why are you participating in ADIPEC?

[ADIPEC] is a perfect venue to meet with industry leaders and discuss with them the solutions to the challenges facing our industry. It is also a

**WHERE:
STAND: 3221
HALL: 3**



wonderful opportunity for Emerson to connect with our current and potential customers and showcase how they can use our innovative automation technologies to help them solve some of their most pressing business issues.

What are you showcasing at the exhibition this year?

Emerson’s stand at ADIPEC will focus on the areas of digital oilfield, production monitoring and surveillance, custody transfer, terminals, transportation and storage, and essential-asset monitoring.

“EMERSON’S STAND AT ADIPEC WILL FOCUS ON THE AREAS OF DIGITAL OILFIELD, PRODUCTION MONITORING AND SURVEILLANCE, CUSTODY TRANSFER, TERMINALS, TRANSPORTATION AND STORAGE, AND ESSENTIAL-ASSET MONITORING.”

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INTERVIEWEE: AHMED KENAWI, SENIOR VICE PRESIDENT, MIDDLE EAST AND NORTH AFRICA REGION, HALLIBURTON

Halliburton

Where in the Middle East are you most active, and what growth plans do you have for the company in the region?

Halliburton has been active in the Middle East for over 75 years with operations in the majority of countries. We are a service provider in collaborating with customers to help them maximise their asset's value and deliver the lowest cost per barrel OE.

What are your objectives for ADIPEC this year?

ADIPEC is a great place to showcase how Halliburton's processes and technologies can help customers get the most out of their reservoirs while focusing on lowering the overall cost per BOE. The Halliburton booth will showcase our technologies that customers can use to solve challenges and our technical team will be on-hand to collaborate and network with attendees.

How successful do you think ADIPEC will be this year, given the current downturn in the regional market caused by low oil prices?

Year after year ADIPEC has increased in attendance, which Halliburton views as a sign of the importance and growth of our industry. Despite depressed oil prices, it's critical to remain engaged in industry conferences to exchange ideas, discuss technologies and meet with customers.

How has business for your company been this year? What are your plans and goals for 2017?

This year has been challenging for both service companies and operators. Halliburton has taken advantage of the market conditions to develop closer relationships with our customers and set a new standard for collaboration and efficiency. We believe that this approach, combined with our continued research and development activities, will pay dividends as the market begins to correct.

What are you showcasing at ADIPEC this year?

The Acoustic Conformance Xaminer Service - Uses hydrophone array technology to locate, identify and characterise leaks and flow vertically and radially around the wellbore and behind pipe in real-time. The array triangulates on the sound/flow source in or around the wellbore. The radial locator has proven invaluable in some wells that have been logged by identifying which annulus or component of a completions system is leaking.

Endure™ Motor Technology - Enhances motor reliability. The Endure motor technology features a proprietary metal helix reinforcement that controls vibration and prevents overloading the stator elastomer.



**WHERE:
STAND: 6310
HALL: 6**

EquiFlow® Autonomous Inflow Control Device – Utilizes a simple, innovative dynamic fluid technology to differentiate between fluids flowing through it in order to help maximize oil production, delay the flow of unwanted fluids into the horizontal wellbore, and reduce cost and risk of handling unwanted fluid at surface.

Geo-Pilot® Duro Rotary Steerable System – aimed at increasing drilling efficiency with higher ROP and tripping speeds; provides accurate well placement with enhanced BHA dynamics and less formation damage.

Uplift® Mature Fields Service - A collaborative approach which identifies and delivers the right combination of solutions to help operators maximize well productivity and achieve the asset's full economic potential.

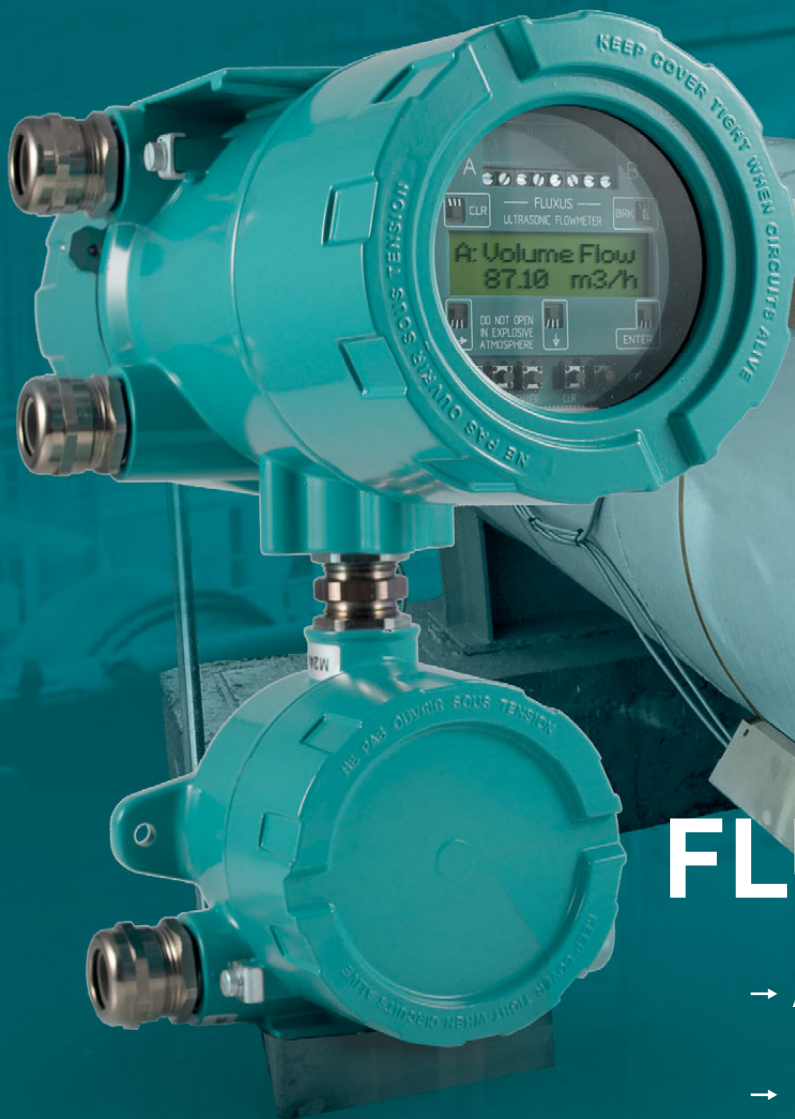
Cruzer™ Depth-of-cut Rolling Element – Features a rolling element on the bit, designed to minimize torque and wear and optimize placement during drilling operations.

SPECTRUM Real-Time Coiled Tubing Services-- Combines intervention and diagnostic services to help operators monitor and optimize job performance in real time, for greater efficiency, increased reliability, and higher return on investment.

72

“ADIPEC IS A GREAT PLACE TO SHOWCASE HOW HALLIBURTON'S PROCESSES AND TECHNOLOGIES CAN HELP CUSTOMERS GET THE MOST OUT OF THEIR RESERVOIRS WHILE FOCUSING ON LOWERING THE OVERALL COST.”

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INTERVIEWEE: RAMI QASEM, PRESIDENT AND CEO FOR MENAT REGION OF GE OIL & GAS

GE Oil & Gas

What led you to decide in favour of participating in ADIPEC 2016?

We have been an active participant at ADIPEC for several years now, and it has enabled us to further strengthen our relationships with our partners.

ADIPEC also serves as a platform to identify and nurture local talent through our workshops, and through our earlier initiatives to support the Young ADIPEC Program. We have leveraged the platform to present our Customer Training Learning Management System.

74

What are the main products that you will showcase at ADIPEC?

The focus of our participation is to highlight our digital industrial solutions. The digital industrial transformation is an opportunity for every market, and we see strong prospects across the region. In a low price oil environment, it is increasingly important for customers to embrace Industrial Internet technologies to increase uptime and maximise production.

Some of the solutions on display include the LM6000-PF+ – with enhanced efficiency, reliability and fuel flexibility in both power generation and mechanical-drive applications, whether installed onshore or offshore.

The highlight will be our Industrial Internet solutions that are powered by Predix, a cloud-based operating system built exclusively for the industry, including:

- Unified Operations – connecting asset intelligence and operational data.
- Field Vantage – keeping customers connected to their field data, allow-

ing them to reduce downtime.

- Intelligent pipelines – an Industrial Internet solution for pipeline management.

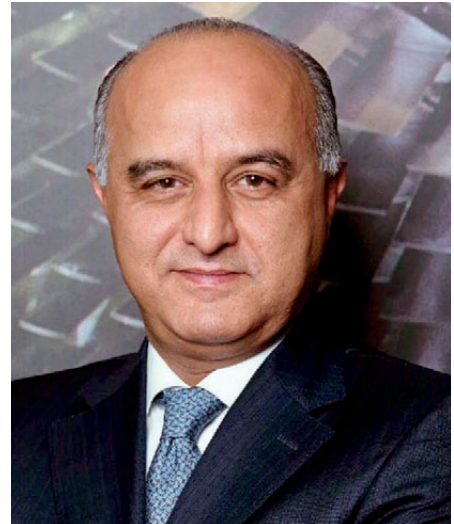
What are your objectives for ADIPEC this year?

We see great potential to grow in the oil & gas sector due to the increasing need for technical intensity to complete the complex projects being undertaken to serve growing demand for energy.

Our offer is full-stream, from wellhead to refinery and beyond, helping customers to constantly assess and upgrade their operations through the industrial internet.

How successful do you think ADIPEC will be, bearing in mind the current circumstances caused by low oil prices?

While oil prices have fallen, it is important to understand that simplifying in many parts of the oil and gas industry is happening and the cost out taking place now sets our industry up well



for the next industrial era. This is a challenging environment, but not one that you can't execute in. We believe opportunity like this can be answered with technology, so we are focussed on this.

How has business for your company been in 2016? What are your plans and goals for next year?

We are able to take the experience GE has in the aviation, power and water business and apply it to oil and gas. Through harnessing commercial and technological innovations such as the Industrial Internet, we lower costs, make things faster, simpler or more productive for our partners. This will continue to drive our growth.

WHERE:
STAND: 3432
HALL: 3





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INTERVIEWEE: ALAN MCLEAN, EXECUTIVE VICE PRESIDENT - OIL & GAS, SNC-LAVALIN MIDDLE EAST

SNC-Lavalin

What are your objectives for ADIPEC this year?

We've been exhibiting for three years at ADIPEC. As a result of our participation last year, we secured a project in Saudi Arabia. We will showcase our training capabilities this year with a 3D printed pump motor and Oculus VR glasses that will provide training demo at the stand. Additionally, our experts will present two technical papers on modularisation for megaprojects and electrical efficiency.

What will your company showcase at ADIPEC?

We will highlight engineering, construction and capital investment capabilities for public-private partnerships (PPP). While not new to the region, PPP have been slow to take off in the past due to lack of financial drivers.

With government budgets being challenged in the current economic environment, this has created new opportunities to explore these options.

Our experts will present two technical papers on modularisation for megaprojects and improved electrical efficiency. Our development director John Jeffers will present a technical session on "Achieving Predictable Outcomes for Modular Construction in Mega Projects." Immediately following, Peter Dennis will present an ePoster session on "Improving Electrical System Efficiency in Oil & Gas Facilities."

What are your expectations from ADIPEC will be this year?

Despite drop in oil prices, most coun-

tries are producing at a maximum capacity. To maintain production at this level, there is a focus on maintaining potential and sustaining capital. As a group, we are a Tier 1 EPC contractor offering turnkey EPC services.

In terms of new projects, there has been a significant drop in full packages for new projects so far this year, compared to last year. Most GCC countries are experiencing short falls in revenues and are running a fiscal deficit. However, this helps create opportunities for us as clients need

help in safeguarding cost effectiveness, quality and delivery excellence. There have been a number of projects in this respect where we are enhancing or sustaining existing assets, or providing our services over a multi-year framework agreement.

Clients are more and more seeking the involvement of the private sector to help fund and execute projects,



mainly through PPPs or similar financing models.

How would you describe 2016? And what are your plans for 2017?

The Middle East region contributes significantly to our business volume, with approximately one quarter of profit, and one third of the Oil & Gas workforce are based in the region. While the oil price will remain subject to movement, we expect that our clients will continue to seek efficiencies and improvements in their existing assets, and will continue to look for innovative engineering and commercial solutions on all their projects.

**WHERE:
STAND: CN15
HALL:
CONCOURSE**





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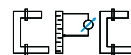
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INTERVIEWEE: ROSS ATHERTON, GLOBAL SALES LEADER
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Ingersoll Rand

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Ingersoll Rand works with major clients in the drilling space providing them with BOP handling systems as well as utility winches and hoists. We support those products with start-up assistance, predictive maintenance programmes, refurbishments and authorised service.

Why are you participating in ADIPEC this year?

The oil and gas market is a key market for Ingersoll Rand and ARO and despite the downturn in the market our commitment has not changed and remains strong.

What will you showcase at ADIPEC?

MR150 Man Rider® Winch which has built-in safety mechanisms including

a slack line prevention system and an emergency lowering system, as well as a number of intuitive design elements that help rig workers protect themselves and co-workers during operation.

Ingersoll Rand Liftstar winches feature tough, yet compact design that helps them fit almost anywhere. Their gear motors have only two moving parts making them virtually maintenance free – even after storage or down times.

Ingersoll Rand Liftchain Hoists incorporate all the features developed from long experience into a durable compact, modular frame

ARO Controller & PE Intelligent diaphragm Pumps, which paves way for a touch and walk-away automation system for Diaphragm Pumps with remote operating, sensing and monitoring capability using a closed loop controller.

**WHERE:
STAND: 12430
HALL: 12**



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EXP Series Diaphragm Pumps come in sizes from 1/4" to 3" and can deliver up to a 1040 lpm flow rate. The patented air motor technology boasts of a non-stallable, non-freezing design.

How successful do you think ADIPEC will be this year?

ADIPEC is one of the most important oil and gas shows in one of the most important regions of the world. We expect to see great success from the show despite the current market.

Considering the fact that we are approaching the end of 2016, how has business for your company been this year? What are your plans and goals for 2017?

Like all companies who do business in the oil and gas market, our business has been impacted this year but we are continuing to invest in products and processes to serve the market. We will continue this in 2017.



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INTERVIEWEE: WAJID ABBAS,
OIL & GAS LEADER – GULF
REGION, 3M

3M

Which countries in the Middle East are you most active in and how do you wish to expand your reach in the region?

3M Gulf established its oil and gas solutions division to oversee the markets of the UAE, Kuwait, Oman and Qatar.

Furthermore, the new 3M Customer Experience Centre is located in Abu Dhabi to attract key decision makers from the UAE and across the region.

Why did you decide to participating in ADIPEC 2016?

Over the years, ADIPEC has consistently grown to become the most respected and anticipated exhibition in the oil and gas sector across the Middle East region. The event provides an unprecedented access to senior technologists, decision makers, executives and key stake holders in the region, all of whom are looking for innovative ways to maximise productivity and reduce costs, which 3M solutions offer.

With global volatility in the Oil & Gas market, we do believe that the demand for innovative solutions that increase efficiency and lower costs is significantly higher than before.

What will you be showcasing at ADIPEC?

At ADIPEC 2016, we will be showcasing a variety of products from our



personal safety division that provides respiratory and hearing protection solutions. Visitors will also have the opportunity to experience products and solutions in other safety categories such as reflective materials for high-visibility apparel, protective clothing and eyewear, among others.

Furthermore, our stand will also feature Capital Safety's industry-leading products and solutions that include harnesses, lanyards, self-retracting lifelines and engineered systems.

What are your objectives for ADIPEC this year?

At 3M, we understand the challenges the industry is now facing which enables us to work closely with the oil and gas companies to help them conserve resources by doing more with less. Our technologies and products help these companies solve complex problems across the value chain - upstream,

midstream as well as downstream segments. At ADIPEC, we want to connect with our customers and reinforce this understanding.

How successful do you think ADIPEC will be this year, bearing in mind the current market circumstances caused by low oil prices?

ADIPEC 2016 will be quite beneficial in helping us generate potential leads. We foresee a number of visits from senior executives and key decision makers of reputed organizations and we are excited to see the interest and engagement in 3M solutions. We are bullish on this region and look forward to continued growth in our business in the middle east.

Considering the fact that we are approaching the end of 2016, how has business for your company been this year? What are your plans and goals for 2017?

Our ambition is to provide organizations in the region's oil and gas industry with the most innovative and sustainable solutions to improve productivity, increase the lifespan of equipment, reduce costs and significantly contribute to protecting the environment.

**WHERE:
STAND: 2450
HALL: 2**

“OUR TECHNOLOGIES AND PRODUCTS HELP COMPANIES SOLVE COMPLEX PROBLEMS ACROSS THE UPSTREAM, MIDSTREAM AS WELL AS DOWNSTREAM SEGMENTS. WE WANT TO REINFORCE THIS UNDERSTANDING.”



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- EHS consultancy services
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INTERVIEWEE: DUNCAN ANDERSON, CHIEF EXECUTIVE OFFICER, GULF MARINE SERVICES

Gulf Marine Services

What led you to participate in ADIPEC this year?

GMS has been attending ADIPEC for many years, given its importance to the industry and our role within it. We are always visited by senior executives of oil companies from all around the world, who express interest in our vessels.

What are the main services that you are looking to showcase?

The most recent addition to our services is our new cantilever system, which gives clients a range of options in the way they use our barges to service their offshore assets. This system offers new cost-effective solutions for work that has traditionally been performed by more expensive non-

propelled drilling rigs.

This opened up a new area of the market which had previously been predominantly served by drilling rigs, at a greater cost to operators. The new cantilever system will be able to replace them.

We are also finding that the platforms we are servicing are located mainly in shallow water and were installed quite some time ago, so that a lot of the infrastructure is well advanced in its useful life. This creates asset integrity issues, which traditional servicing methods will struggle to resolve, because only smaller weights can be transferred and handled, a function for which the new cantilever system is ideally suited.

**WHERE:
STAND: 12110
HALL: 12**



What are your objectives for ADIPEC this year?

ADIPEC is the perfect place for companies to showcase their capabilities and the same goes for GMS. Our stand always receives visits from existing and prospective customers and even potential recruits, so we are looking forward eagerly to the event.

How successful do you think ADIPEC will be this year, bearing in mind the current market circumstances caused by low oil prices?

ADIPEC has become the oil industry's leading worldwide event and the current market conditions will not change that. If anything, it will be even more important and significant this year, because while the long term objective is for the oil rich countries of the Gulf region to become less hydrocarbon dependent, the fact remains that oil and gas remain its most valuable resource. ADIPEC therefore acts as a beacon for the entire industry to come together, share expertise and experience and find ways to work together more productively and more efficiently.



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INTERVIEWEE: ROBBIE POND,
GENERAL MANAGER - ABU
DHABI, TWMA

TWMA

Give us an idea of your clientele. Also mention some of your recent oil and gas projects.

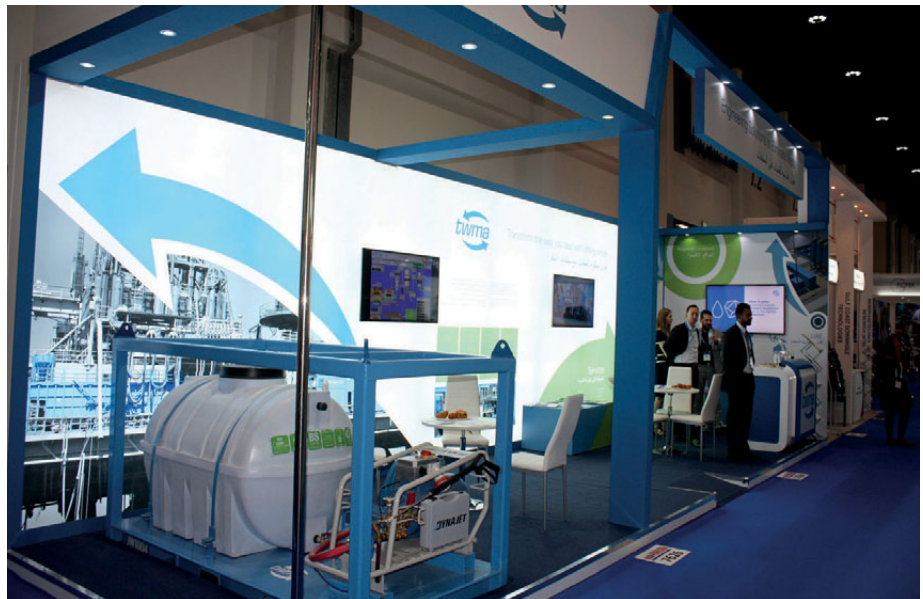
We work in partnership with all of our global customers to reduce expenditure and minimise liabilities through the safe and effective delivery of solutions designed to meet each individual project's needs.

We were recently recognised at the ADNOC HSE Awards for our partnership with Abu Dhabi-based petroleum services company ESNAAD-PJS. We were awarded the Company & Contractor Partnership Award in recognition of our integrated drilling waste management services on all four of the ZADCO artificial islands. The aim of this project was to commission and operate an advanced solids control and fluid recovery system to handle and treat drill cuttings.

What are the main products that you are looking to showcase at ADIPEC?

At ADIPEC we will be showcasing our range of engineered solutions in the onshore, offshore, decommissioning, slops and environmental markets. Our exhibition stand will feature an innovative augmented reality wall to bring our technology to life and show visitors the full process for each solution across multiple assets, including offshore rigs, land rigs and onshore processing facilities.

We will also have a model of our TCC RotoMill® which will be animated through augmented reality to demonstrate how drill cuttings travel through the system, before being separated into their three constituent parts



of oil, water and solids for recycling and reuse.

Our solutions are proven to deliver value and allow our customers to deliver projects at a lower cost point.

What are your objectives for ADIPEC this year?

ADIPEC provides an excellent opportunity for us to build and maintain important relationships in the Middle East. We always look forward to meeting with new and existing customers and will be using this opportunity to demonstrate our range of safe and reliable solutions.

How successful do you think ADIPEC



will be this year, bearing in mind the current market circumstances caused by low oil prices?

Current market conditions are still challenging across the globe, but these times can also create excellent opportunities. Businesses are very aware of the requirement to maximise value within operations and ADIPEC is a great platform to allow us to share our solutions with the wider industry.

Considering the fact that we are approaching the end of 2016, how has business for your company been this year? What are your plans and goals for 2017?

(The year) 2016 has been a challenging year for the industry as a whole, but as a group we have sustained a good level of business, which is due largely to our innovative solutions that support our customers' project goals. As we look toward next year, we are focused on maintaining our excellent customer service levels, in the Middle East and beyond, and will continue to deliver innovative solutions aimed at supporting our customers' needs, to ensure we all enjoy further growth and long-term success.

**WHERE:
STAND: 8510
HALL: 8**



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INTERVIEWEE: ERIC EIFERT, SENIOR VICE PRESIDENT OF MANAGED SECURITY SERVICES

DarkMatter

Kindly elaborate on your company's line and scope of business within the oil and gas industry.

We assist critical national infrastructure providers by protecting their networks from cyber attack. We predict that attacks on critical infrastructure including oil and gas distribution systems, power grid, financial markets, air traffic controllers' networks, nuclear power plants and satellites represent a clear and present danger to economies and countries around the world.

The danger is particularly acute within the GCC where an attack on critical national infrastructure could pose a threat to the economy and physical well-being of tens of millions of people.

How do you wish to expand your reach in the region?

Our home market is the UAE, so we have a strong presence here. We are also ramping up our activities in the Gulf and the wider Middle East, and intend to achieve this through engagements with governments and large enterprises in various parts of the region.

What are some of the oil and gas projects that you are involved in?

We believe the Middle East is rapidly recognising its level of vulnerability to cyber attack and working to improve

its overall posture. Energy firms in particular underpin the GCC economy and as more systems become interconnected with the Internet, they can be targeted by a host of threat actors to include cyber criminals.

We see two main areas of concern facing the Middle East as it relates to cyber criminals. The first is theft of information that can be sold to those interested in obtaining this information through illegal means. The second is cyber extortion where cyber criminals are leveraging threats to disrupt or deny service if a ransom is not paid.

What are the main products/services that you are looking to showcase at ADIPEC? Talk about those in detail.

Our main reason for participating in ADIPEC is to bring to bear our vast cyber security experience across sectors, including the energy sector, and connect with regional oil and gas companies. We are keen to work together with them to improve their security posture given the vast complexity and risk surface found within the industry. From a cyber security standpoint, we see significant potential for technologies such as block-chain and big data analytics helping in the creation of greater efficiencies across sectors, and we'll be showcasing some of our capabilities in these

**WHERE:
STAND: 6312
HALL: 6**



areas during the event.

We also believe the oil and gas sector faces a challenging time in the future but with the right planning, commitment to innovation and sensible best practices, energy companies can mitigate, if not completely prevent, cyber security attacks. It is the responsibility of both the private and public sectors working together to ensure infrastructure as vital as oil and gas platforms is not just defended from attacks but shielded from criminals and hostile predators.

What are your objectives for ADIPEC this year? What are your objectives for ADIPEC this year? Are you looking at ADIPEC, like any other trade event, as more of a networking platform, or do you intend to generate considerable business during the exhibition?

This will be our inaugural participation at ADIPEC, and as mentioned above, we're looking to bring to bear our vast cyber security experience across sectors, including the energy sector, and connect with oil and gas companies with the view to helping them improve their overall cyber security posture.

"OUR MAIN REASON FOR PARTICIPATING IN ADIPEC IS TO BRING TO BEAR OUR VAST CYBER SECURITY EXPERIENCE ACROSS SECTORS, INCLUDING THE ENERGY SECTOR, AND CONNECT WITH REGIONAL OIL AND GAS COMPANIES."



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Oil 8



STAND 2452 Hall 2



STAND 140 - Hall 1



STAND 3310 Hall 3



STAND 4356 Hall 4



STAND 5210 Hall 5



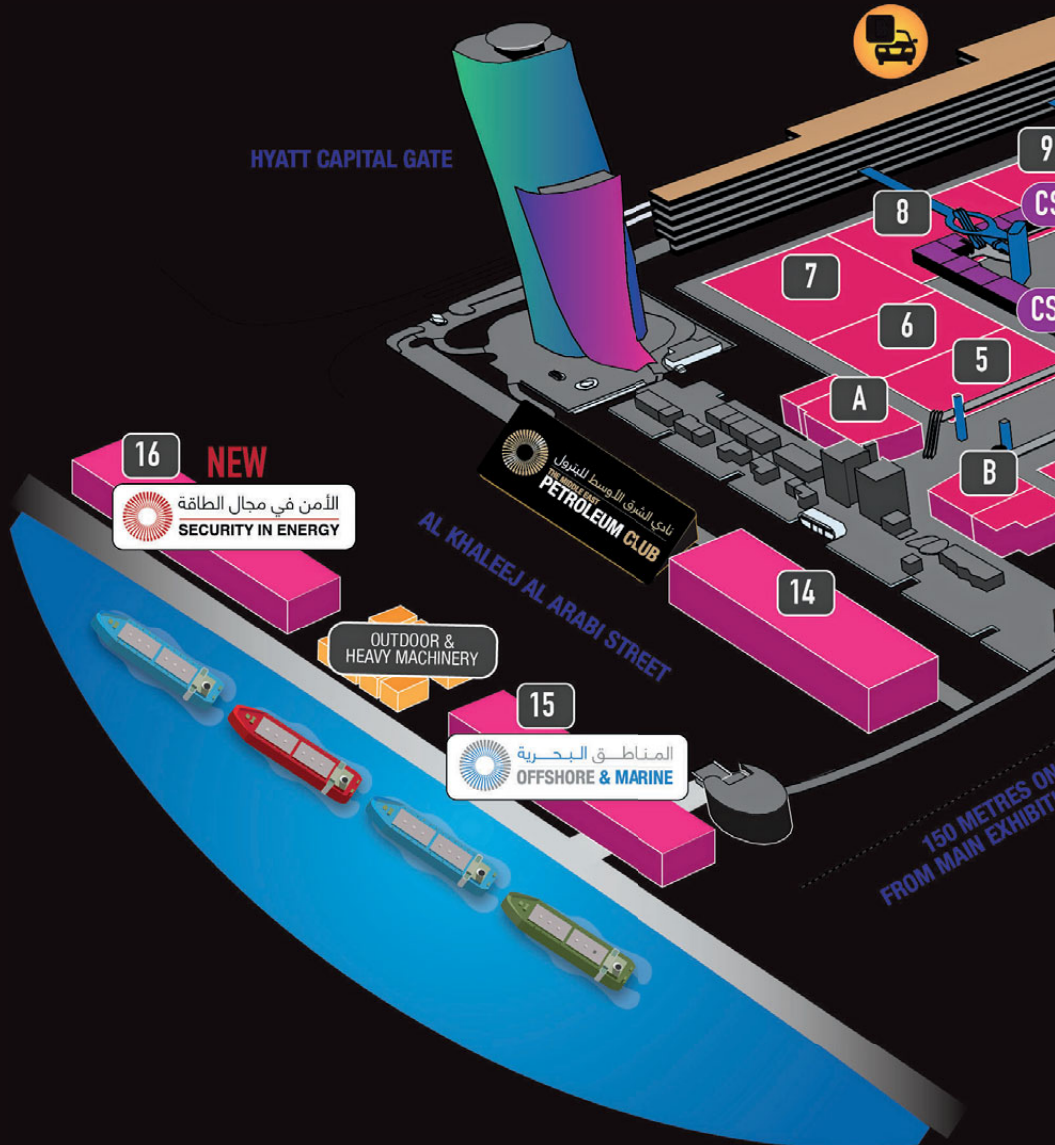
STAND 6312 - Hall 6



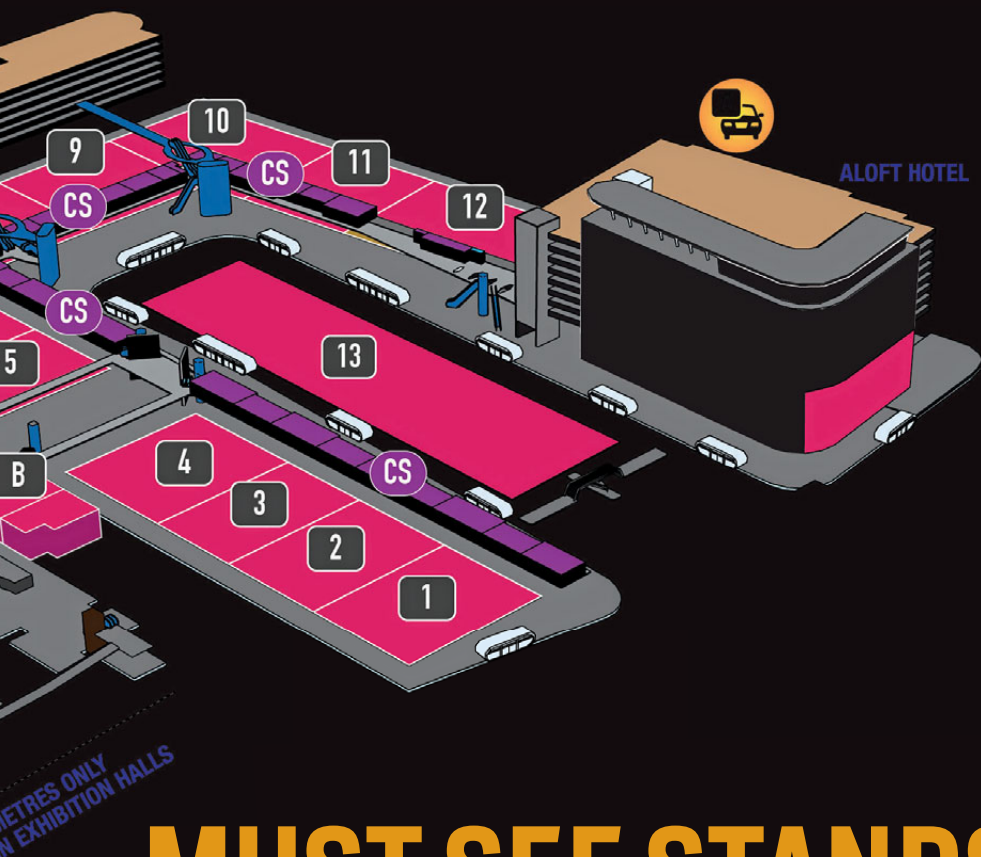
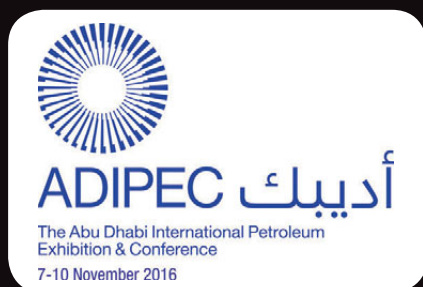
STAND 7410 - Hall 7



STAND 8930 Hall 8



& Gas MIDDLE EAST




STAND 15150 Hall 15



STAND 14633 Hall 14



STAND 13435 Hall 13



STAND 12356 Hall 12

MUST SEE STANDS

Your one-stop guide to major exhibitors at ADIPEC 2016



STAND 9536 Hall 9



STAND 10510 Hall 10



STAND 11650 Hall 11

#1 HI-FORCE
STAND: 104 HALL: 1



Hi-Force, the UK's leading manufacturer and supplier of hydraulic tools, offers an extensive product range including cylinders, pumps, bolting equipment, nut splitters, puller kits and crimping tools. As a result, Hi-Force customers and their industries include; oil and gas, mining, petrochemicals and refining, ship building and repair, heavy engineering and construction. In addition to supply, Hi-Force offers first class onsite bolting

and jacking services, repair, calibration as well as ECITB approved mechanical joint integrity training courses. Extensive rental fleets are also available at all Hi-Force offices and its distributors.

With headquarters in Daventry, UK, regional offices in 7 countries and authorised distributors covering over 100 countries, Hi-Force ensures that the products and services are available to hydraulic tools users anywhere in the world.

#2 SERVTECH
STAND: 2452 HALL: 2



Servtech is a leading supplier serving the oil and gas industry at different levels including exploration, drilling and production. The company is committed to customer satisfaction through continuous development and improvement of its qualified staff, thus providing valuable solutions to its customers in particular and positive contribution to the

business community.

Equipped with good quality permanent and portable facilities, Servtech is able to cater to most of its clients' needs on and off-site, having carried out activities not only in the UAE, but also in Oman, Qatar, Yemen, Kazakhstan, Turkmenistan, Pakistan, Egypt, Algeria and Libya.

#3 SCHLUMBERGER
STAND: 4356 HALL: 4



Schlumberger is a leading provider of technology for reservoir characterisation, drilling, production, and processing to the oil and gas industry. Working in more than 85 countries and employing approximately 100,000 people who represent over 140 nationalities, Schlumberger supplies the industry's most comprehensive range of products and services, from exploration

through production and integrated pore-to-pipeline solutions for hydrocarbon recovery that optimise reservoir performance.

Schlumberger has principal offices in Paris, Houston, London and The Hague. The company registered a revenue of \$35.5bn in 2015. Schlumberger stock is listed on the New York and London stock markets, among other major exchanges.

#4 DARKMATTER
STAND: 6312 HALL: 6



DarkMatter assists critical national infrastructure providers protect their networks from cyberattack. The Abu Dhabi-based company predicts that attacks on critical infrastructure including oil and gas distribution systems, power grid, financial markets, air traffic controllers' networks, nuclear power plants and satellites represent a clear and present dan-

ger to economies and countries around the world. The danger is particularly acute within the GCC where an attack on critical national infrastructure could pose a threat to the economy and physical well-being of tens of millions of people. DarkMatter's products extend to Secure Communications, Public Key Infrastructure, Innovation & Research, and Big Data & Analytics.

#5

NEW TECH SYSTEMS

STAND: 7410 HALL: 7



New Tech Systems, Inc is one of the prominent independent manufacturer of quality pipe (OCTG) inspection equipment in the petroleum industry. The company's equipment is currently in use in over 50 countries worldwide, utilising Ultrasonic and EMI technologies (for the inspection of drill pipes, casing, tubing, drill collars, sucker rods, etc.) New

Tech Systems also offers a variety of training, calibration, and repair services, spare parts and Non-Destructive Testing (NDT) inspection supplies. The company provides a range of repair services including equipment refurbishment and repairs on New Tech Systems and NDT gadgets. It also has portable EMI inspection equipment available for short or long term rentals.

#6

JEREH

STAND: 10510 HALL: 10



Jereh is a Chinese company providing integrated solutions of oilfield equipment and services for oil and gas drilling, well intervention, well completion, natural gas transportation, natural gas liquefaction, environmental control. Equipment manufactured by Jereh has been distributed to more than 30 countries and regions, providing safe, environment-friendly and reliable

service for the oil and gas industry.

As the first Chinese company to be accredited with API and QHSE management system certification, Jereh is constantly applying technology to produce value for its customers, while maintaining the strict standards of industry, providing the industry drilling, completion, well intervention and downhole services.

#7

BYRNE RENTAL

STAND: 12356 HALL: 12



Byrne Rental Equipment focusses on the rental needs of a wide range of industries including construction, oil and gas, events, industrial and facilities management. Totalling almost 8,000 items, Byrne's mechanical and non-mechanical fleets include power generation, compressed air, welding equipment, temporary buildings and operated plant.

Byrne has a large fleet of equipment, approved as required to meet onshore and offshore specifications. Byrne operates a specialist arm specifically for the oil and gas industry, and helps its customers meet standards including DNV approval and Zone II requirements. The company endeavours to help its clientele avoid issues of downtime which can be taxing.

#8

GULF MARINE SERVICES

STAND: 15150 HALL: 15



Gulf Marine Services' (GMS) assets provide a stable platform for the delivery of a wide range of services performed by the Group's clients throughout the lifecycle of offshore oil, gas and renewable energy projects. The vessels are capable of operations in the Middle East, South East Asia, West Africa and Europe. The Group constructs and maintains its vessels at its yard in Abu Dhabi; its extensive new build programme in recent years has

made the GMS fleet highly competitive in the industry.

GMS operates the largest independent self-elevated support vessel (SESV) fleet in the MENA region and is the largest in the world. It charters the SESVs to a client base that includes NOCs, oil majors and oil and gas services companies operating in the MENA and northwest Europe, for use as customised work platforms for offshore oil and gas construction and well maintenance services.

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SAUDI PRIORITISES ENERGY EXPANSION

93

How will Saudi Arabia maintain its share of the global oil and gas market in the years ahead, while at the same time striving to diversify its economy, and continuing to supply growing domestic and international demand?

WORDS: YASMIN HELAL

↑ Saudi Arabia's gas programme has become a top priority recently as the Kingdom aims to meet rising domestic demand for power and grow its oil exports.

Saudi Arabia enjoys one of the world's highest energy production capacities. Last year alone, the state-owned Aramco produced 10.2mn barrels per day (bpd) of crude oil, in addition to its natural gas output, which is estimated at 11.6bn cubic feet per day (bcf/d). Aramco, as well as other suppliers around the world, continued to increase output, exacerbating the oil glut, and driving prices down by 30% in 2015.

The expansion of energy production remains one of the Kingdom's priorities. However, Saudi officials believe that it is time for the government to diversify its economy to avoid volatility. To this end, the government took several steps towards developing other sectors, including gas production.

While the Kingdom's gas programme was launched back in 1975, developing the gas industry became a top priority only recently, with the aim of meeting rising domestic demand for power, enabling the export of more oil.

Ehsan Ul-Haq, senior analyst at KBC Energy Economics, says, "Saudi Arabia has the world's fifth largest natural gas reserves, but natural gas production has remained limited due to its emphasis on oil output."

The target now is to boost gas production to reach 17bcf/d by 2020, supporting other industries, including steel, aluminium, and other downstream sectors. To achieve this, Aramco an-

→ nounced in late July the signing of \$13.3bn-worth of contracts to build the Fadhili gas processing project, which is scheduled to be completed by 2019.

Saudi Energy Minister, Khalid Al-Falih.

Created, or shaped, by Aramco?

Since 1933, when Aramco – or California Arabian Standard Oil Company, as it was then known – signed its first oil concession agreement, it has played a significant role in the local economy and greatly contributed to the Kingdom’s transformation from an arid desert to an urban centre.

“The Kingdom is known to have maintained a swing capacity. The higher – and record – level of production over the past lean period proves its ability to increase production at short notice and low investment,” says Saji Sam, a partner at global management consulting firm, Oliver Wyman.

The oilfields that it manages throughout the Kingdom are the key to Aramco’s substantial output. Discovered in 1948, Al-Ahsa-based Ghawar is the world’s largest conventional oilfield, producing 5mn bpd of oil and 2bcf/d of gas.

The expansion of another field, Khurais, due to be completed in 2018, is one of the world’s largest upstream projects, for which output will increase by 300,000 bpd to reach a capacity of 1.5mn bpd.

Located on the northern edge of the Empty Quarter, 10km from Abu Dhabi’s borders, the output of Shaybah field also increased to 1mn bpd in 2016, up from 750,000 bpd previously.



“THE KINGDOM IS KNOWN TO HAVE MAINTAINED A SWING CAPACITY. THE HIGHER – AND RECORD – LEVEL OVER THE PAST LEAN PERIOD PROVES ITS ABILITY TO INCREASE PRODUCTION AT SHORT NOTICE.”

SAJI SAM, PARTNER AT OLIVER WYMAN

With one-fifth of the world’s oil reserves, Aramco is worth some \$2tn. It aims to evolve to become a global industrial conglomerate that is involved in many sectors and services.

Abdulaziz al-Abdulkarim, vice president for procurement and supply chain management at Aramco, announced at a conference in early October that the company plans to invest a total of \$334bn in infrastructure and projects within the next decade to maintain oil capacity. “That is the 10-year investment. It is everything,” *Reuters* reported him as saying.

Experts contacted by *O&GME* say the proceeds from the initial public offering (IPO) of Aramco will generate enough wealth to diversify the Kingdom’s economy. The move is expected to reform the Kingdom’s economy in unprecedented ways. Some expected Aramco to regress on the initially offered 5% of its shares but, instead, officials eventually announced the offering of its entire stakes.

In order to trade Aramco’s share in the stocks, the



↑ Saji Sam, a partner at global management consulting firm, Oliver Wyman.

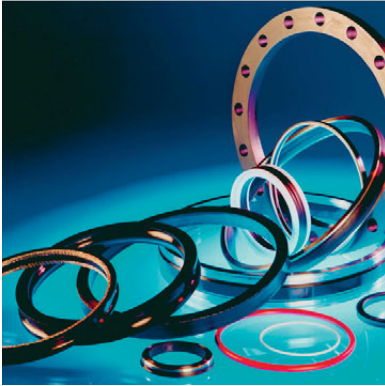
↖ Ehsan Ul-Haq, senior analyst at KBC Energy Economics.



← Iain Stewart-Linnhe, a specialist in global regulatory policy, risk management, and capital markets.

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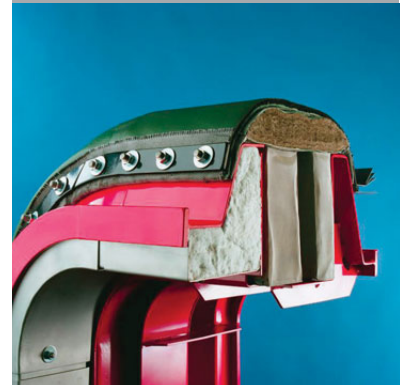
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↑ The In-Kingdom Total Value Add programme will invest more than \$300bn over the next decade to double the rate of locally produced, energy-related goods and services to 70%.

company will be subject to an independent audit, reviewing Saudi's reserves and production capacity, the first review of its kind done in the country, and a welcome step towards transparency.

The government is hoping to raise around \$100bn from the IPO. According to the company's announcements, Aramco plans to list shares on the Saudi stock exchange, Tadawul, and is also considering listing in New York, London, and Hong Kong.

Aramco's CEO, Amin Nasser, told *Bloomberg*: "There are no obstacles. It is going very smoothly. We are on target."

Boosting local supplies

Saudi's government realises that its future success depends on the involvement of local people. Hence, one of its top priorities is to align the demand for talent with supply. The Kingdom has taken concrete steps towards defining the specific market requirements, which are being translated into vocational and other training institutes with

→ Aramco CEO, Amin Nasser.

\$2TN

WITH ONE-FIFTH OF THE WORLD'S OIL RESERVES, ARAMCO IS WORTH SOME \$2TN

relevant curriculums. The industry typically holds a stake in these programmes, selecting, sponsoring, and eventually hiring the institutes' students.

Ul-Haq, from KBC Energy Economics, says, "Although it is going to be an uphill task to train Saudi nationals to take over key positions in the oil industry, proper investment in education could bring jobs to Saudi nationals and cut spending on foreign specialists."

A recent study, conducted by Aramco Drilling and Workover Admin Area, showed that upto 90,000 Saudis will need to be trained within the next 20 years. In an effort to cater to this demand, the government launched the In-Kingdom Total Value Add (IKTVA) programme, which will invest more than \$300bn over the next decade to double the rate of locally produced, energy-related goods and services to 70%.

Even though Aramco has traditionally relied heavily on foreign contractors, the company recently announced that it aims to contribute to IKTVA by creating around 500,000 direct and in-





↑ Aramco plans to list shares on the Saudi stock exchange and is also considering listing in the New York, London and Hong Kong markets.

➔ Last year, Aramco produced 10.2 million bpd of crude oil in addition to its natural gas output.

➔ Saudi Arabia's government realises that the Kingdom's future success depends on the involvement of local people.

direct jobs for Saudi nationals. In another effort to boost the local supply chain, the company plans to develop an energy industrial city between Al Ahsa and Dammam, which includes manufacturing oil and gas equipment and drilling centres.

International oil players that are present in the Kingdom, such as Schlumberger, General Electric, Siemens, and Vallourec, also plan to contribute to the IKTVA programme. Being a key component in the Kingdom's master gas system, the cost of the Fadhili gas project will also contribute, with 40% of its expenditure going to benefit localisation initiatives, and to accommodate 4,500 jobs for Saudis.

If implemented successfully, these programmes will create a diverse, non-oil dependent economy for the Kingdom.

Bright prospects

During the September 28 OPEC meeting of this year, Saudi finally consented to reduce its oil production in a bid to collaborate with other global producers to recover oil prices, a decision that marked the first OPEC deal since 2008. According to the announcement, output would be reduced to a range of 32.5mn to 33mn bpd from the current 33.24mn bpd.

According to experts, the benefit of the price rise that the cut will entail to the Kingdom's economy should outweigh any production output lost.

KBC's Ul-Haq says: "Saudi Arabia has been a

swing producer for several decades and can still micro-manage supplies, although its clout has been reduced [slightly] by shale production in the US. Riyadh understands that it has to bear the burden of OPEC's production cuts, by contributing massively to OPEC cuts."

The market has yet to discover where the axe will fall. Saudi's Energy Minister, Khalid al-Falih, has intimated that OPEC might go the extra mile and discuss a production cut at the November meeting. However, sceptics feel that another agreement on the cutting of production cannot realistically be expected, given that every oil producer is trying to monetise its production to reap benefits.

According to Oliver Wyman's Sam, "Whether KSA will reduce production is probably the wrong question to ask. Over the next few years, as global demand increases, the real question is who will serve the incremental demand."

Iain Stewart-Linnhe, a specialist in global regulatory policy, risk management, and capital markets, agrees. He concludes: "What is perhaps more significant is how the next OPEC meeting plays out, should certain oil producers – such as Iran – look to increase output in the face of overall output cuts from other members." ○



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Oil & Gas MIDDLE EAST

A SPECIAL REPORT INTO A KEY SEGMENT OF THE REGIONAL UPSTREAM INDUSTRY



TECH FOCUS

SOLAR POWER
IS BOOSTING EOR
/p106

MARKET FOCUS

The GCC enjoys the highest
EOR market growth worldwide
/p102

KNOWLEDGE PARTNER

Rob Hull and José Luis Mogollón of
Halliburton share their EOR insights
/p104

ENHANCED OIL RECOVERY

SPECIAL REPORT

Oil & Gas Middle East takes an in-depth look at the growing EOR market in this month's Special Report, examining the effectiveness of some of the innovative techniques that are being deployed in the Middle East

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COMMENT

EDITOR'S LETTER

Indrajit Sen is the deputy editor of *Oil & Gas Middle East*. He can be reached at: indrajit.sen@itp.com

Development through enhancement

As oil reserves in the Middle East deplete, EOR seems to be the only plausible way left for regional producers to extract the remaining crude trapped in tricky geological formations

Let's face it: the easy-to-drill oil reserves in the GCC are declining steadily, and the region's oilfields, although nowhere close to drying up, are left with crude that lies underneath complex geological structures and carbonate formations. This trapped oil is difficult to extract through the traditional drilling methods that the regional oil producers have relied upon for decades.

Enter enhanced oil recovery (EOR) technology – a scientific approach to procuring oil locked in challenging reserves, which in due course will emerge to be a viable solution for regional producers to not only stem the depletion of oil wells, but to extract the most out of the reserves.

EOR, as an oil-producing technique, has been in use in the GCC for many years now. While in the past, the application of EOR methods in the region has been limited to just a handful of reservoirs, however, the technology's demand is now growing as NOCs battle global competition to maintain or increase their market share by raising oil output. Oman and the UAE, which both face geological challenges in their oil production, are on the front line of implementing EOR methodology.

EOR's popularity in the regional upstream sector has also risen by virtue of another benefit of the technology: cost-efficiency. As companies acclimatise to the reality of low oil prices, a wave of transformations is sweeping the region, and investments in exploration and production are going to decline as a result of economic diversification efforts.



Spending on the development of EOR methods that address the region's geological challenges will

Consequently, regional oil producers, with defined financial strength, are going to have to do more with less. This translates into a need to optimise production from their existing assets.

As a natural corollary, spending on improvements in the science behind EOR solutions – and specifically on those methods that are customised to address the region's particular geological challenges – is going to increase rapidly.

As a result, international providers of EOR technology, with experience working on successful project executions, are being attracted to this market, as illustrated by the numerous NOCs now working with foreign players to begin the EOR process for their oilfields.

In one such case, the UAE's ADNOC has collaborated with Germany's Wintershall to conduct EOR feasibility studies for the

Shuwaihat oilfield in Abu Dhabi – an initiative involving chemical EOR techniques that has shown positive results to date.

Another successful pilot project has been carried out in Oman, where PDO and US-based Glasspoint have worked together to complete the test-run of a solar EOR initiative. This involves harnessing the sun's heat in a glasshouse-type structure in order to generate steam that can be used as an alternative to expensive gas-burning to extract oil from the Amal oilfield in the desert landscape of southern Oman.

Global oilfield services major, Halliburton, meanwhile – *Oil & Gas Middle East's* Knowledge Partner for this Special Report – gives details of its engagement in EOR work in the region on pages 104-105.

It seems beyond doubt that many more collaborations and ventures in the field of EOR will – and should – follow. ●

EOR market set to grow exponentially

Estimates suggest that the global EOR market is projected to grow at a CAGR of 24%, and experts predict that the GCC is likely to account for the highest growth rate due to its ageing oilfields

WORDS: INDRAJIT SEN

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Enanced oil recovery (EOR) methods are being widely adopted by oil and gas producers worldwide for their existing and newly explored wells. In addition, new technologies are being developed to improve the efficiency of the technique. The GCC is one of the more mature oil extractors and has a good number of older oil wells. To extract the proven reserves, oil producing companies are pushing the use of EOR in existing oil wells. In addition, a number of new methods are being developed in the market, such as chemical EOR to reduce the cost of oil recovery.

“The EOR market is ramping up due to ageing oil fields,” senior officials at Halliburton tell the magazine. “For example, between 2007 and 2011, it grew from \$56bn to \$125bn. Recent estimates indicate that, as oil consumption grows, while there are fewer reserves and discoveries, EOR may take a significant share of the oil market. It has to be considered that a mere 1% recovery increase could yield a two-year oil supply, and EOR may increase recovery factor 5 to 15% over secondary recovery.”

Experts at Baker Hughes, another US-based oilfield services company, predict the total available market for EOR globally to be around \$5bn.

The GCC is expected to show the highest growth rate in the global EOR market. This is mainly attributed to the growing number of oil reserves that exist in the Middle East. More than 8bn barrels of oil are expected to remain performing primary and secondary operations on Gulf’s offshore reservoirs. Such factors are driving demand for new EOR installations in GCC and, as a result – and also due to environmental strategies – the GCC is developing EOR techniques that are renewable or bio-based, such as solar-powered thermal EOR.

One of the key strategies of the GCC EOR market is to develop patented technologies. For instance, Gulf Energy LLC developed its microbial EOR system with the water scarcity in GCC in mind.

Companies are also involved in expansion through the exploration of new fields. With the emergence of the GCC market, it is expected that affiliated markets like technology services, maintenance services, and



consulting services, will also grow. Market participants are also expanding their business in the service model. International players like BP, Cenovus Energy, Anadarko Petroleum Corporation, Chevron, ConocoPhillips, Lukoil, ExxonMobil, Petronas, Statoil ASA, and Royal Dutch Shell are key market participants in the GCC EOR market.

Estimates suggest that the EOR market is projected to grow at a compound annual growth rate (CAGR) of 24%. It is tipped to be one of the fastest-growing segments within the global oil and gas market.

The EOR market is highly fragmented, owing to the huge energy demand and changing technologies. Major companies rely on regional and local distributors to increase their share, as well as their geographical presence in the market. The major developments in the EOR market are agreements, contracts, joint ventures, and partnerships. The application requirements for EOR, and the operating conditions, are continually changing, making it essential for manufacturers and service providers to invest in research and development [R&D] to come up with innovative solutions.

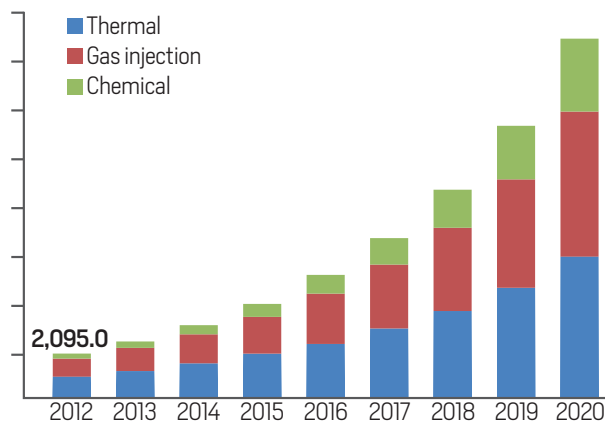
Companies are adopting inorganic growth strategies, such as acquisitions, to cope with the increasing demand for EOR technology in key emerging markets. These strategies have helped companies to create a large customer and partner base in key markets.

From a global perspective, the EOR market is expected



to reach \$283bn by 2020, according to a study by Grand View Research. Growing global energy demand is expected to remain a key driving factor for the global EOR market. The rising number of mature oil wells, particularly in the Middle East and Latin America, coupled with high productivity yields associated with EOR techniques, are also expected to have a positive impact on market growth over the next four years. Long lead-time and volatile crude oil prices are expected to remain key challenges.

Thermal EOR has so far been the most dominant technology, accounting for nearly 50% of total market volume in 2013. Growing demand for high hydrocarbon recovery in low permeability and mature reserves, in addition to technological advances, are expected to drive growth in this



↑ Past and projected EOR market growth, showing the comparative popularity of various techniques.

segment. Thermal EOR technologies are expected to lose some of their share to other high-growth technologies like chemical and gas injection techniques over the forecast period, however.

Chemical EOR is estimated to gain market share over the next few years, particularly in Asia Pacific and the Middle East. New techniques are expected to drive the chemical EOR market over the forecast period.



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PERFORMING EOR THE HALLIBURTON WAY

Rob Hull, director of global technical solutions, and José Luis Mogollón, global EOR team leader at Halliburton, talk about the US-based oilfield services company's involvement in EOR projects in the GCC, and the techniques it uses to provide cost-efficient yet effective EOR solutions to its regional clients

INTERVIEW: INDRAJIT SEN

Why do you think EOR has become so important, especially in the Middle East?

EOR is a methodology that has been used for decades. It consists of providing energy to oil reservoirs by injecting fluids to increase daily oil production, improve recovery rates, and extend the reservoir life.

There are different types of EOR, mainly chemical, thermal, and miscible gas, which are selected according to the reservoir properties, exploitation stage, fluid and facilities availability, and forecasted economy.

Many reservoirs in the Middle East are approaching – or are already – at the mature stage. In order to arrest declining production and leave less oil behind, EOR is a suitable technology. Also, as the Middle East starts exploiting heavy oil reservoirs, EOR will grow, given the very low recovery factors of primary and secondary production methods.

What EOR projects – particularly in the Middle East – has Halliburton been involved in?

Halliburton has been engaged throughout the world on EOR projects. Specific examples include the injection of silicates in the North Sea, CO₂ in the Arab Gulf, and polymer in Asia Pacific. There is a continued role that our technical services groups are playing with our customers, such as in consulting and project management, to support the design, evaluation, and optimisation of EOR.

Practically, all our product service lines (PSL) provide support to EOR projects and,



↑ Rob Hull is the director of global technical solutions at Halliburton.

by customer request, we integrate multi-PSL efforts for delivering successful execution of complex projects.

What EOR techniques and methods does Halliburton employ, and what role does R&D play in solving the problems of your clients in the region?

Halliburton works very closely with our customers in a collaborative environment. We listen to our customers [and their] individual challenges. We have, for example, advanced software and workflows that we apply to the asset to maximise its value.

We also engage with our customers to

develop specific technologies that will help them to access and extract hydrocarbons and monitor the processes. We do this across Halliburton, and not just with EOR.

How does your product line boost performance when it comes to your EOR offering?

Halliburton is aware that, in difficult economic conditions, the oil industry tends to fall back on remedial productivity tactics. Halliburton integrates its oilfield equipment, tools, and technology, along the value chain, to reduce risk and cost per incremental barrel, shorten the negative cash flow period during EOR pilot and commercial deployments, and adapt and develop methods to expand EOR applicability to harsher conditions.

What are the current EOR projects that Halliburton is working on in the region?

Halliburton provides support to a large number of EOR projects throughout its PSLs. One project in the GCC that deserves particular attention is the visualisation and design of workflows for technical and business processes for cyclic and continuous steam injection operations.

Halliburton has been pioneering these kinds of projects. The successful completion of the project was due largely to the onsite deployment of a seasoned team with expertise in heavy-oil production, thermal EOR, and digital oilfields, supported by Halliburton Landmark.

“HISTORY HAS TAUGHT US THE IMPACT ON WORLDWIDE EOR OF PAST LOW OIL PRICE PERIODS: SIGNIFICANT REDUCTIONS IN R&D, LOST EXPERTISE, AND SUSPENDED PROJECTS THAT ARE NEVER REVISITED. THE INDUSTRY NEEDS TO AVOID [THESE ISSUES] THIS TIME.”

This project is one of the first digital oilfield projects of this magnitude in steam flooding and cyclic steam that considers the integrated optimisation of production networks, injection networks, and reservoir models.

The expected benefit for this project is a substantial reduction of the production cost per barrel. For the operator, this is a benefit of paramount importance, given the current low oil prices and the relatively high operational cost associated with many heavy-oil fields. This kind of project sets a new industry standard for the operation of heavy-oil and EOR fields.

How has Halliburton seen the below-par crude oil prices affect the development of EOR projects in this region? Do you expect to see more investment in EOR projects in the future?

History has taught us the impact on worldwide EOR of past low oil price periods: significant reductions in research and development, lost expertise, and suspended projects that are never revisited. The oil industry needs to avoid [these issues] this time.

Operators are currently implementing three types of strategies. [They are] continuing to design, pilot, and plan deployments; further optimising projects already in place;



↑ José Luis Mogollón is Halliburton's global EOR team leader.

and halting efforts until conditions improve. We believe that, while keeping costs in check, a certain EOR investment level can be maintained, and operators in the GCC are in a good position – maybe the best in the world – to do that.

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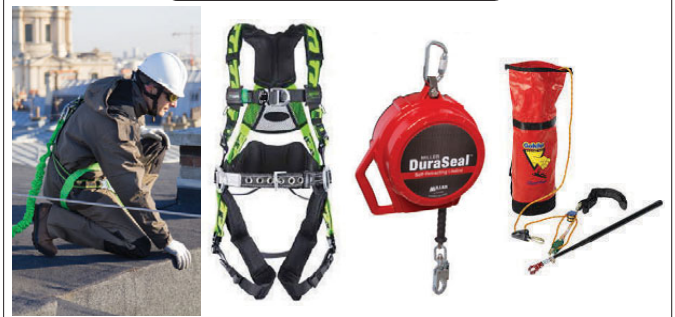
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OILFIELD EXTRACTION BEYOND THE LAST DROP

As the regional industry improves its sustainability, the application of solar power is boosting the sector's EOR portfolio beyond traditional gas- or chemical-based methods

WORDS: INDRAJIT SEN

On the basis of technology, the market in GCC can be broadly categorised as thermal EOR, gas or CO₂ EOR, and chemical EOR. Thermal EOR technology consumes hot water and steam to stimulate the extraction of crude oil from the reservoir. Older oil wells in the Gulf, with heavy and viscous oil flow, are adopting this technique on a large scale. The commonly used steam injection methods are cyclic steam stimulation (CSS), steam assisted gravity drainage (SAGD), and steam flooding.

Gas injection-based EOR utilises CO₂, therefore also resolving the issue of greenhouse gas disposal. Tightening environmental regulatory standards in the GCC to reduce greenhouse gas emissions

are driving adoption of the gas-based EOR method. Gas EOR can be further categorised as nitrogen-, hydrogen-, or CO₂-based. Chemical-injection EOR includes polymer-, surfactant solution-, alkali-, and microbial-based methods. One of the major technological trends of the GCC EOR market is to combine chemical EOR techniques with other technologies to derive maximum advantage.

Many Gulf countries are witnessing a shortage of gas; however, they have high subsidies for fuel, which alter the retail price of gas. Market players such as Glasspoint Solar have, therefore, developed solar steam generators for the oil and gas industry, to be used in EOR.

"These two valuable technologies (chemical and solar) have very

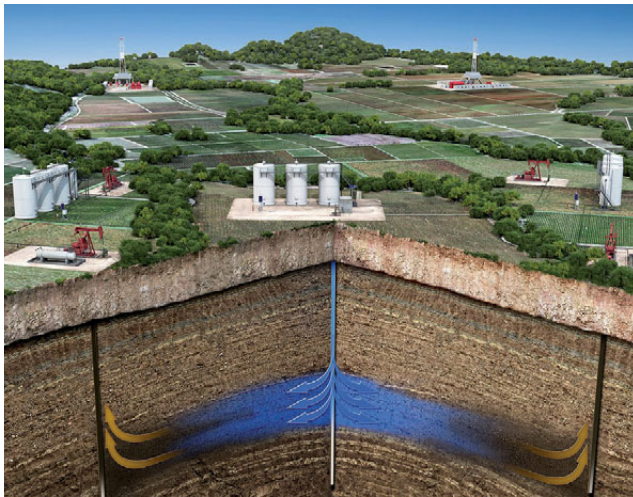


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↑ A representational image of Halliburton's water-flooding EOR


different maturity. Chemical EOR has been used for decades to produce light to medium oil onshore. With minor adaptation and field pilot testing, it is ready to be used in the GCC. Its applicability has been extended recently to heavy oils," according to Rob Hull and José Luis Mogollón of Halliburton.

"Currently, chemical EOR is starting to be deployed in offshore environments that contain two big challenges: limited space in the platforms, and the inter-well distance. These are being overcome with reduced-size, modular facilities and larger injection rates. The expectation is that, with the proper economic environment, offshore applications can flourish in the years to come," the experts say.

"Solar EOR is a variation within thermal EOR that is new in the market. It uses the energy captured by panels to boil water that is injected as steam. Traditionally, the heat to boil the water is obtained by burning gas or oil. Using solar energy has environmental advantages and lower cost is expected, particularly with the climate characteristics of the GCC," they state.


There has been much talk about whether, despite the increasing use of EOR technology, the regional industry's methodology is on par with those in play in other global upstream markets. Experts maintain that while the EOR technology in use in the GCC is, in some ways, different from that used elsewhere, the regional industry stands to benefit from the adoption of techniques that have been proven in the US industry, for instance.

"Halliburton [aims] to meet the strictest environmental regulations and devote extraordinary efforts to develop sustainable offerings. Examples of this are FullCircle Cuttings Re-Injection (CRI); low-toxicity, biodegradable drilling muds (Accolade, Encore); sand production control (PetroGuard Advance Mesh); water production control (ICDs, AICDs, H₂Zero); biocide-free water purification (CleanStream Service); reduction of surface equipment dimensions, and more," the company's officials say.



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JANUARY

BIG DATA

FEBRUARY

**PIPELINE
MANAGEMENT**

CHEMISTRY APPLIED

Adriano Gentilucci, commercial director for the India, Middle East and Africa (IMEA) region for the Oil, Gas, and Mining wing at Dow, explains the merits of chemical EOR and how the method can help the GCC industry to unlock hard-to-reach crude reservoirs

The recent volatility in the global energy market and the effects of declining oil prices have prompted oil and gas players that are faced with budget constraints to seek new, more efficient techniques that will maximise resources deployed in the enhanced oil recovery process.

While the potential for polymer flooding in the Middle East is immense, the region has significant reserves in tight carbonate formations [for which it has] proved difficult to implement polymer-based EOR.

Reservoir conditions – such as natural fractures in the reservoir rock or resistance from heavier or more viscous oils – can cause traditional water flooding to be less effective in injection operations.

High temperature inside the reservoirs can lead to the degradation of many traditional chemicals used in EOR, while high connate water salt concentration causes issues of compatibility with EOR chemicals.

The structure of carbon formations can often be the main obstacle in implementing EOR in the region. Rock surfaces of carbonates have a tendency to prefer contact to oil in the wetting phase, whereas rock surfaces of sandstone reservoirs prefer contact to water. This makes EOR applications more difficult and requires advanced physical and chemical research to enhance the oil recovery process.

Furthermore, EOR programmes almost always require a displacement fluid – most often water, but also supercritical carbon dioxide. Much of the region suffers freshwater scarcity and projects must incorporate water treatment for injection and produced-water treatment.

Adding to the geological challenges of the implementation of EOR is the lower

oil price environment, which has seen companies cut down their spending, particularly on projects that don't have an immediate return on investment. Unfortunately, this is the case with EOR programmes.

The greatest challenge facing the EOR market is, therefore, the drop in oil prices. EOR investments are becoming less commercially attractive in comparison to other low-risk investments that can generate positive cash flows more quickly.

Today, oil and gas companies are becoming more and more cash constrained. EOR economics have traditionally suffered from the high costs associated with energy, carbon dioxide, and chemicals supply.

Through the unique merger of chemistry and engineering experience, however, Dow's advanced innovations and valuable service helps customers achieve more efficient flow, control contaminants, and enhance all phases of an asset's performance across the oil and gas value chain.

As the region increasingly turns to specialty chemistries to address its unique oil and gas challenges, Dow is investing in expanding its local innovation capabilities, to continue developing and customising solutions for the region's unique needs.

One such example is Dow's partnership with King Abdullah University of Science and Technology (KAUST), a multi-year, multimillion-dollar research and development (R&D) framework that included



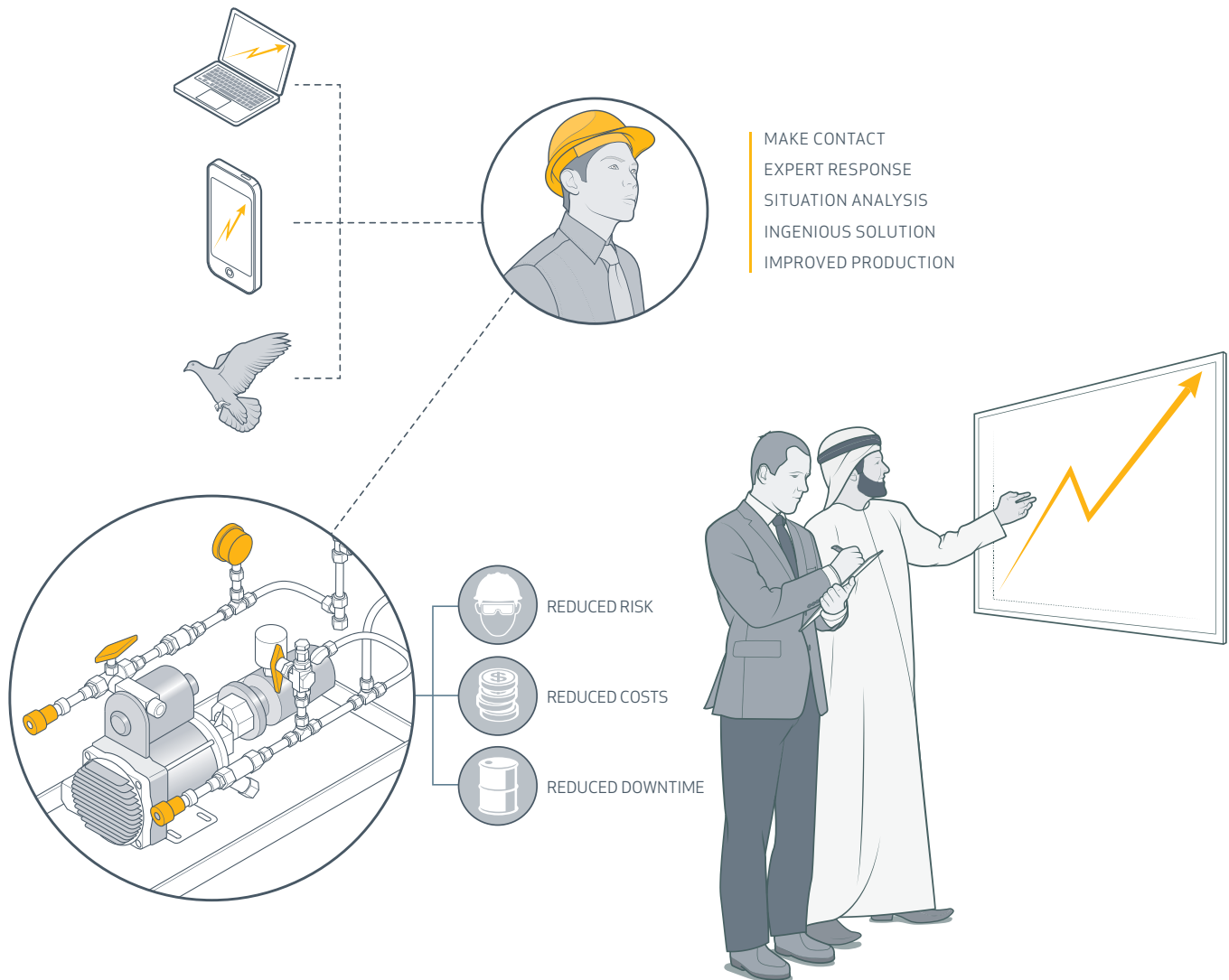
↑ Dow's Adriano Gentilucci.

the establishment of Dow's Middle East Innovation Centre (MEIC) in KAUST in 2011.

The work carried out at MEIC focusses on research into water treatment, and technologies for oil and gas applications like flow assurance. An agreement was signed with KAUST in 2015 to further expand this centre into a dedicated building, to expand its research capabilities into other oil and gas related fields, such as EOR and exploration. ●

“WHILE THE POTENTIAL FOR POLYMER FLOODING IN THE MIDDLE EAST IS IMMENSE, THE REGION HAS SIGNIFICANT RESERVES IN TIGHT CARBONITE FORMATIONS [FOR WHICH IT HAS] PROVED DIFFICULT TO IMPLEMENT POLYMER-BASED EOR.”

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INDUSTRY INNOVATIONS

New handheld communicator

TECHNOLOGY Emerson Automation Solutions has launched the AMS Trex Device Communicator, a handheld communicator that delivers a consumer-quality user experience in a tool built to withstand harsh industrial environments. With a task-based graphical user interface, the Trex communicator simplifies device and loop diagnostics, and aids the completion of field activities. Protected against moisture and extreme temperatures, the Trex communicator boasts a rugged design to withstand normal use in the plant.



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NEW LAUNCHES

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



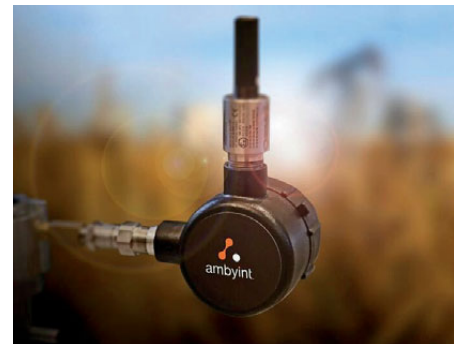
TYCO'S NEW GAS DETECTOR

➤ Tyco Gas & Flame Detection has launched a new portable gas detection device. The Gasurveyor 700 (GS700) is an IR detector with a user-friendly interface that is suitable for all gas utility applications. Through its natural gas discrimination application, the GS700 determines if the source of gas leaks is from a utility pipeline, saving valuable time and reducing excavation costs. The GS700 also ensures compliance through intelligent data-logging and GPS mapping, simplifying data collection and allowing managers to make better decisions from tracking data reports. At only 1.4kg, the durable GS700 enables workers to manoeuvre the device in demanding environments and harsh conditions.



DEVICES FOR HAZARDOUS AREAS

➤ Ecom instruments has expanded its comprehensive mobile worker ecosystem with two new peripherals – the hand-held scanner, Ident-Ex 01, and the BLE Beacon Loc-Ex 01 for ATEX/IECEx Zone 1. The Ident-Ex 01 is a powerful, intrinsically safe, all-in-one barcode scanner and RFID reader for use in hazardous areas. With its modular design, the rugged Bluetooth-capable Ident Ex 01 can be specifically configured to a customer's needs and requirements, and can be operated with just one hand. Ecom's Loc-Ex 01 – BLE beacons are small radio beacons that use Bluetooth low energy signals at periodic intervals to provide proximity awareness.



WIRELESS LEAK DETECTION

➤ Ambyint has launched its new, pre-emptive, leak-detection device, ambySense:SLD. The proprietary device uses wireless sensor technology and machine intelligence to detect and immediately alert field operators to impending leaks within the dual-pack stuffing box, before they can pose an environmental risk. With the containment and environmental repair of even minor leaks from an oil well costing from \$20,000 to \$50,000, operators have relied on regular well site visits to track well integrity. Ambyint's advanced remote leak monitoring technology offers significant time and cost savings to operators, as well as ensuring critical environmental protection.

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THREE REASONS TO BUY

Archer launches Stronghold systems – a cost- and time-efficient technology



1 ALL-IN-ONE TECHNOLOGY

Stronghold encompasses perforation, wash and cement systems for a permanent annular barrier, and includes a barricade system that perforates, washes and cements the annulus, creating a rock-to-rock barrier in one trip; a barrier test system to perforate and test annular barrier; and a cup-less system.

2 VITAL MEASUREMENTS

The new systems will generate cost and time savings for operators while protecting the environment. Archer Oiltools' newly launched product family, Stronghold, is a series of perforating, washing and cementing systems that offer safer, faster and more economic solutions for operators.

3 RELIABILITY PROMISE

The Stronghold systems have been designed by Archer's engineers and technical specialists to deliver innovative solutions to challenges faced by major operators globally. Together with tubing conveyed perforating (TCP) products and new charge development, the systems support safe and efficient operations.

Wison completes test on FLNG facility

The new complex is the world's first floating LNG production unit



FLNG Wison Offshore & Marine has announced that the first natural gas floating liquefaction (FLNG) unit, which the company delivered under an engineering, procurement, construction, installation, and commissioning contract with Exmar, has successfully completed its performance test at the Wison yard in Nantong, China. This marks the first time LNG has been produced onboard a floating facility.

During the 72-hour test, the performance of the FLNG ensured all design requirements and production capacities were achieved for the unit's operational effectiveness.

It is the world's first gas trial for a floating liquefaction unit before sail-out. All systems on the FLNG have been commissioned and tested without leaving the shipyard by using LNG to supply gas without connection to a pipeline. Conducting gas trials and performance testing in the shipyard shortened the time required for project completion.

SELLING POWER

Mike Allen, CEO of Reactive Downhole Tools, on completing an oil swellable packer installation in Abu Dhabi for a major operator



TELL US ABOUT THE PROJECT

Reactive Downhole Tools has completed an oil swellable packer installation in the Middle East for a major operator in Abu Dhabi, worth in excess of £250,000 (\$306,861). Measuring 19,000m, it is the longest liner of this size deployed by all parties to date, and a world record for the liner type.

WHAT CHALLENGES DID YOU FACE?

With the length of wells in the Middle East always increasing, it can be difficult for operators to find packers with a long enough delay time to allow the liner to travel to depth and circulate breaker fluids before production begins. Reactive provided a long-delay oil swell packer – a new compound designed for this application.

WHAT DOES THIS MEAN FOR REACTIVE?

This project is a significant achievement for Reactive and is testament to our hard-working, dedicated team. We not only manufactured and delivered the packer from Houston to Abu Dhabi with a quick turnaround, but the successful mechanism allowed the operator to drill deeper and further than ever before.



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Rockwell acquires ACP

Acquisition of US software provider supports Rockwell's growth strategy



ACQUISITION Rockwell Automation has acquired US-based software provider Automation Control Products (ACP) to enhance its Connected Enterprise offering. ACP's two core products, ThinManager and Relevance, provide manufacturing and industrial leaders with visual display and software solutions to manage information and streamline workflows for a more connected manufacturing environment. Rockwell said the acquisition supports its growth strategy to help companies increase their global competitiveness through the Connected Enterprise – a vision that connects information across the plant floor to the rest of the organisation. ThinManager centralises the visualisation of content, from the control room to the end user. Relevance extends the ThinManager functionality through proprietary, location-based technology, enabling users to gain secure mobile access to content and applications.

WHAT ROCKWELL STANDS TO GAIN:

- Rockwell said the acquisition supports its goal to connect information across the plant floor to the rest of the organisation via its Connected Enterprise concept.
- ACP's two core products, ThinManager and Relevance, provide visual display and software solutions to manage information and streamline workflows for a more connected manufacturing environment.
- ThinManager centralises the management of content to every facet of the manufacturing operation, streamlining workflows and allowing users to reduce hardware operation and maintenance costs.
- Relevance's proprietary, location-based technology enables secure mobile access to content and applications for users anywhere.

PRODUCT FOCUS

Rotork introduces RI Wireless valve monitoring concept

The field-proven solution transmits real-time position indication to the control room and enables predictive maintenance for actuated valves, delivering capital and operational savings.

Designed for new and existing plants in the process industries and utilities, RI Wireless products are certified as Zone 1 Intrinsically Safe for use in hazardous areas.



The system comprises a small, battery-powered valve monitoring device that is installed on existing or new valve actuators using a NAMUR interface, or on manual valves with an ISO 5211 interface.

The RI Wireless Management System provides operational and maintenance data in common industrial-standard connections to an HMI, DCS or PLC.

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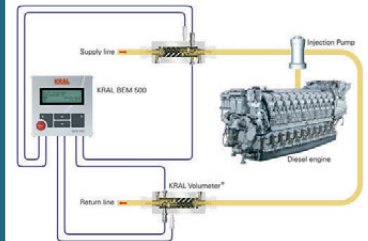
ALSO IN STOCK



STRAIGHTPOINT'S WIRELESS MONITORING PRODUCTS

Straightpoint increases range of its wireless products to 700m

- Safety and productivity when monitoring loads during heavy, critical, and multi-point lifting applications will be enhanced as Straightpoint extends the range of its wireless products to 700m. The force measurement, load monitoring, and suspended weighing load cell manufacturer launched the enhanced technology as standard at the turn of the year, covering all wireless products. The wireless range has a 1,200-hour battery life.



KRAL FLOWMETERS

Retrofit kit launched for diesel engines using Kral flowmeters

- Caterpillar now offers a retrofit kit for fuel consumption monitoring for all diesel engines that include Kral flowmeters. Kral flowmeters allow for accurate tracking of fuel consumption in real time, and the management of asset utilisation. The data can be displayed remotely. Two flowmeters are necessary, one in the supply line of the engine and the other in the return line. Kral Volumeter can measure with an accuracy of +/- 0.1%, regardless of fuel quality and temperature.

Emerson announces its acquisition of UK-based Permasense Limited

Acquisition adds non-intrusive wireless corrosion monitoring to Pervasive Sensing strategies portfolio

Emerson has announced that it has agreed to acquire UK-based Permasense Limited, a provider of non-intrusive corrosion monitoring technologies for the offshore and onshore oil production, refining, chemical, power, pipelines, metals and mining, and other industries. Permasense monitoring systems use sensor technology, wireless data delivery, and advanced analytics to continuously monitor for metal loss from corrosion or erosion in pipes, pipelines or vessels, and reliably deliver high-integrity data from harsh environments.

The acquisition is in line with Emerson's strategy to invest in its core business platforms and expand in markets that hold significant long-term growth

opportunity. The Permasense product line will become part of Emerson's Rosemount portfolio of measurement and analytical technologies.

Permasense technologies complement Emerson's Roxar intrusive corrosion monitoring, and non-intrusive sand management systems, and strengthen the company's Pervasive Sensing applications, which provide customers with a more complete view of their operations and facilities. With Permasense and Roxar technologies in its portfolio, Emerson will be the largest provider of integrity and corrosion management solutions in the marketplace.

Lal Karsanbhai, group vice president, measurement and analytical technolo-

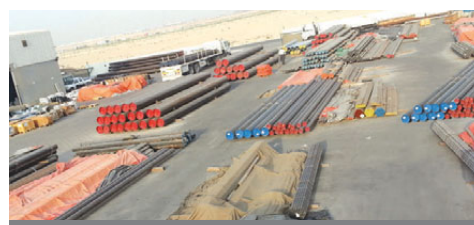


gies at Emerson Automation Solutions, said this extension to its portfolio would enable Emerson "to provide its customers with a more complete corrosion monitoring solution and a clearer picture into the performance of their infrastructure".



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Bentley launches OpenRoads Navigator

Application provides quick access to design information in the field for civil and transportation professionals



NAVIGATION Bentley Systems has launched the OpenRoads Navigator CONNECT Edition. Supporting Windows, iOS, and Android, OpenRoads Navigator is built specifically for civil engineers, surveyors, designers, and other professionals to use while working in the field. The application helps users make more informed decisions throughout the lifecycle of a project, reducing project risk. It also integrates with ProjectWise to support collaboration with all team members for faster resolution of issues in the field.

PRODUCT FOCUS

Parker has secured SIL approval for its range of bi-directional, high-performance HiPro instrumentation ball valves

Parker's manual, pneumatic, and electrically actuated HiPro Ball Valves provide quick turn on-off control of fluids used in process and instrumentation applications.

The free-floating ball design provides seat wear compensation, while the straight-through flow path ensures minimal pressure drop.



The valves can be used in a wide range of pressure and temperatures and are available in 316 stainless steel or 6Mo construction.

The high-performance, two piece, bi-directional HiPro Ball Valves offer working pressure ratings up to 10,000psi (689 bar), giving 100% bubble-tight shut-off and continuous, repeatable performance.

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For more information, visit www.parker.com/ipd

SELL IT TO ME

Allspeeds launches new cut loop cutter for well intervention

BLOW-OUT PREVENTER (BOP):

Hydraulic cutters and systems specialist Allspeeds, the designer and manufacturer of Webtool, has launched a compact ROV cut loop cutter for emergency activation of a blow-out preventer (BOP). The Webtool cut loop cutter will sever the cutting loop to activate the BOP in the event that other measures have failed.

EFFECTIVE IN SUBSEA OPERATIONS:

Subsea intervention involves using remotely operated tools that often include cut loops as a redundancy measure to prevent a blow-out once all topside solutions have failed. The cut loop prevents pressure lock in the hydraulic system needed to activate the BOP.

CONVENIENT:

During intervention, the Webtool cutter is held in position over the cut loop by an ROV in case of an emergency situation. The wide mouth, open-sided design of

the Webtool cutter allows for easy positioning of the tool on the stainless steel, hydraulic cut loop pipe. The specially designed blade has been developed to ensure the cut loop will always fully release pressure immediately after the cutter is activated.

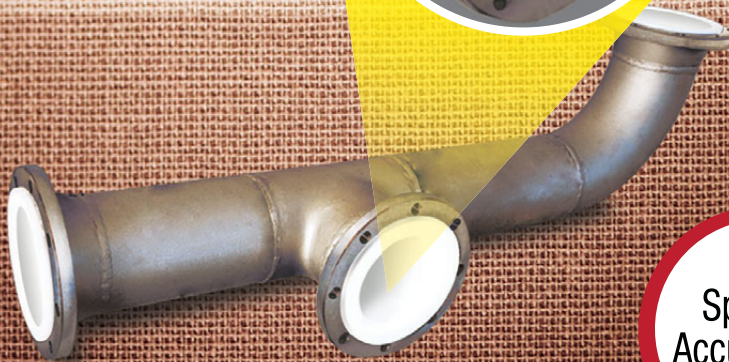
LOADED WITH FEATURES: This is Webtool's smallest hydraulic guillotine cutter so far, making it ideal for operation in confined spaces. It has a corrosion-resistant, stainless-steel body and cylinder. The blade design is optimised for cutting stainless steel tube. Long blade and anvil life ensures tool maintenance is kept to a minimum. The Webtool cutter can be used at any water depth, with pressure compensation on the hydraulic supply. Weighing 7kg in water, the cutter uses 700bar maximum input pressure. An optional hydraulic intensifier is available.



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ON THE MOVE



Othman Al-Ghamdi

Chief executive officer,
S-Oil

S-Oil has appointed Othman Al-Ghamdi as its new CEO. Having previously handled Korea-related businesses, and due to his 25-year career at Saudi Aramco – a major shareholder of S-Oil Corporation – he has nurtured the expertise and leadership skills necessary to play a key role in areas of production, maintenance, and project management.



Paul Shrieve

CEO – North Sea
offshore operations,
Bureau Veritas

Testing, inspection and
certification services

provider, Bureau Veritas, has appointed Paul Shrieve as chief executive officer of North Sea offshore operations, marine and offshore. Based at the company's Aberdeen office, the appointment marks Shrieve's return to the company, as he was the firm's vice president of North Sea oil and gas from 1999 until 2006.



Peter Soroka

Advanced completions
commercialisation manager,
Tendeka

Completions systems provider Tendeka has announced the appointment of Peter Soroka to the role of advanced completions commercialisation manager. Soroka joins the company from OMV UK, where his last post was as head of increased oil recovery/enhanced oil recovery technology. His career includes technologi-

cal development for a wide range of oil and gas projects.



Alberto Morandi

Head of Technical
Authority Board,
Global Maritime Consultancy
& Engineering

Norway-based Global Maritime Consultancy & Engineering has established a Technical Authority Board to be led by Alberto Morandi, formerly head of Global Maritime – Americas. The board will promote excellence throughout Global Maritime, ensuring consistent technical standards. Each board member, who will be nominated for a two-year term, will have specific knowledge in the disciplines of marine operations, structural engineering, naval architecture, dynamic positioning assurance, marine systems, risk, insurance or mooring.

Christiaan van der Wouden

Appointment
of the
Month

Chief operating officer,
Orpic

The Oman Oil Refineries and Petroleum Industries Company (Orpic) has appointed Christiaan van der Wouden as its chief operating officer. Wouden started his career with Shell in The Netherlands, and was later assigned to work at the company's various assets, including in the UK, Rotterdam and the Dominican Republic, where he served as general manager of Shell's joint venture with the government until 2000. He then became general manager of Shell's Petit Couronne Refinery in France, a role he held until mid-2004, playing an instrumental role in achieving key company targets. Van der Wouden relocated to Qatar in 2010 to oversee Shell's contract and procurement business. In 2013, he was appointed COO for Al Kaarana petrochemicals, a joint venture (JV) between Shell and Qatar Petroleum (QP). After the JV was scrapped in January last year, he became senior advisor to QP's executive vice president for operations for upstream, gas processing, distribution and refining.



JOBS

NOTICE BOARD

The latest jobs available in
the oil and gas industry

QATARGAS, RAS LAFFAN, QATAR

Instrument and control engineer

The successful candidate will supervise, plan, and provide technical support for the safe operation and functionality of integrated control systems (ICS) deployed at the Qatar-gas Onshore and Offshore facilities.

HALLIBURTON, KHOBAR, KSA

Senior accountant

Halliburton is seeking a senior accountant, with a graduate degree in accounting and a minimum of three years' experience in the field, to oversee the company's financial systems, processes, policies, and procedures.

ORION ENGINEERING, QATAR

Contracts engineer

As contracts engineer for Orion Engineering Services, the successful candidate will prepare and maintain a list of qualified contractors, suppliers, potential tenders, and contracts, in order to perform market studies.

Siemens appoints Klausner as CEO of Kuwait operations

**CAREER
NEWS**

APPOINTMENT Siemens has appointed Herbert Klausner as chief executive officer of the company's operations in Kuwait. Klausner joins the regional management team from the Power and Gas Division at Siemens AG in Germany, where he headed Large Gas Turbine Berlin Operations. His 34-year career at Siemens has included positions in Indonesia, Austria and Germany. This current post marks a return to Kuwait, where he previously held the position of group manager for Power Generation, Transmission and Distribution, Automation & Drives, Industry Solutions, and Siemens Building Technologies.

"[Klausner's] knowledge of the market and customers' needs is invaluable," said Dietmar Siersdorfer, CEO of Siemens Middle East and UAE. He continued: "[Kuwait's] vision for 2035 seeks to strengthen the economy and support social and human development. With a focus on electrification, automation and digitalisation, Siemens will continue its role as a technology partner, providing reliable and innovative solutions that assist Kuwait's long-term plans."



"SIEMENS WILL CONTINUE [TO PROVIDE] RELIABLE AND INNOVATIVE SOLUTIONS THAT ASSIST KUWAIT'S LONG-TERM PLANS."

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OPINION

The ticking talent time bomb

The oil industry has reduced headcounts in an attempt to create more efficient operations. But what is the true cost of letting the best talent go?



Airswift's Andy Ryan.

About the author:

Andy Ryan is the senior vice president of the Middle East division at Airswift, a recently formed, specialised oil and gas recruitment firm.

It has long been recognised that the oil and gas industry is facing what optimists call a demographic gap, and what pessimists describe as a talent time bomb. Even before the precipitous drop in the price of oil, an aging cohort of expertise was leaving the industry, hard-won pension in hand, and with little sign of replacement in sight.

Accelerated departures

With the average age of workers on the rise, the volume of engineers, technicians and professionals retiring out of the industry will widen the already large gap in qualified talent needed to fill essential roles. Individuals with five to 10 years' experience are expected to be of greatest demand.

In the past couple of years, the exodus of talent has been accelerated by cost-cutting and efficiency drives in the face of low oil prices and unsustainable break-even points. Airswift estimates that since March 2015, more than 290,000 jobs have been lost worldwide, with many employees opting for early retirement packages where offered.

The cuts have primarily been at the operator and service company level in the upstream sector, whereas downstream

companies, which are more sheltered from the direct impact of oil prices, are in a better position to sustain current headcounts.

The Middle East has also been sheltered from the direct impact of the lower-for-longer environment, however cost optimisation has now come to the fore. The region's major players have joined their global counterparts in balancing along the fine line between cost optimisation and talent retention.

Expendable experience

Initial stopgap reductions of the contingent workforce are now extending deeper into organisations where some of the most skilled and experienced individuals have become expendable. At Airswift, we have seen examples of Middle East operators and other participants across the value chain offloading talent with more than 10 years' experience on specific assets or projects.

The consequences of the growing talent shortage have already been seen in a number of ways. In a recent report, Marsh, a major insurance broker and risk adviser, highlighted the link between low oil prices and an increase in major incidents. In the short term, this lower-for-longer environment is producing a new dynamic between people, safety and cost, which needs to be carefully managed to ensure safe and sustainable operations.

In the long-term, there could be even greater consequences for the industry. As so many individuals with oil and gas expertise are now looking for work, sectors such as metals, mining and infrastructure can, for the first time, afford some of the most skilled talent in the world.

Talent transfer

For individuals who can transfer their skills to more stable sectors, this is not necessarily bad news. Project management and engineering talent is moving into other project-related sectors – for example mining, nuclear power, renewables, downstream, and chemicals, as well as infrastructure.

We are seeing similar moves when it comes to quality, health, safety and environment (QHSE). Here, the experience of working in one of the most hazardous environments in the world is a valuable badge of honour that is an extremely attractive commodity to companies in other sectors.

When the price of oil recovers, there may be a long-term, more pronounced talent shortage. There is the growing possibility that the oil and gas sector will face an even greater skills shortage than pre-recession levels. And if companies are unable to fill essential positions, then the risk to their business is significant.

Long-term effects

It is almost impossible to calculate what this loss of talent will cost the industry. Oil and gas projects are bigger, more complex, and more resource-intensive than ever before. This requires a large, international and scalable employee base with the right skills and experience to support projects through to completion. If the right people aren't available, these projects will be delayed, costing operators potentially millions of dollars.

Before the economic downturn in the late 2000s, the estimated average cost of an unfilled vacancy in the oil and gas sector was as high as \$30,000 per month. Taking multiple regions into account, the scale of the issue becomes apparent. And this is not simply a matter of economics. If the loss of QSHE professionals is permanent, then the safety and cost conundrum highlighted in the Marsh report will continue long after the oil price picks up.

As the price of oil drifts upwards from the \$50 mark, the industry can realistically expect more projects to come online and hiring activity to increase once more. Before the downturn, the shortage of talent made it difficult for companies to find and retain top workers. As the price of oil declined, more talent became available and so power shifted back to organisations. Once the market starts to recover, that balance can tip very quickly in the other direction and the talent shortage will return in full force.

If knowledge transfer doesn't take place internally, then organisations will be forced to compete for the most experienced – and rarest – talent. That time bomb is ticking... ○




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ABOUT THE INTERVIEWEE:
Karen McDonnell is an occupational health and safety policy adviser at the Royal Society for the Prevention of Accidents.

Karen McDonnell, occupational safety adviser at RoSPA



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

0.00

How is RoSPA working to prevent industrial accidents?

Next year represents the charity's centenary, and in that time it has campaigned to reduce the burden of injury in the UK and globally, by working with companies and organisations through schemes such as the RoSPA Health and Safety Awards. By implementing the systems and processes necessary to be successful in the awards, this good practice is passed on along the supply chain and, ultimately, we achieve fewer life-changing injuries and deaths, and a reduction in ill health caused by work.

122

1.10

Which organisations comprise RoSPA's industrial fellowship/clientele, and what is the scope of your work with them?

Some of the RoSPA Health and Safety Award sector winners for 2016 included Gulf Petrochemical Industries Company; Bahrain National Gas Company; Qatar Power Company – Doha, Qatar; and Ras Girtas Power Company.

1.45

How is RoSPA involved with the Middle East's oil and gas industry?

We have a number of high-achieving entrants to the RoSPA Health and Safety Awards from the sector in the Middle East, and we would always welcome more – registration for 2017's awards opened at the beginning of October. The region's industry

could also get involved in our Awards Excellence Forum, which brings together a formalised network of higher-performing organisations and acts as a research and reference facility on key health and safety topics and messages. Higher-performing organisations are a reservoir of commitment and expertise that can be harnessed to raise standards across the sector, locally and globally. We also have excellent trainers, who regularly travel to the Middle East.

What is your opinion of the HSE standards in the regional oil and gas industry?

This sector has risen to the challenge of developing systems and processes to manage the hazards and risks associated with the industry. RoSPA award winners share how they meet standards and seek incremental improvements. As technology advances, the global health and safety community needs to consider new ways of working, identify emerging risks, and share learning.

3.05

"IF YOU TELL PEOPLE ABOUT HEALTH AND SAFETY THEN THEY WILL KNOW ABOUT IT, BUT IF YOU INVOLVE THEM IN HEALTH AND SAFETY THEN THEY WILL UNDERSTAND IT."

4.25

What are RoSPA's recommendations for improving workplace safety, particularly in the oil and gas sector?

The key is to engage, involve and simplify. Utilise straightforward communications processes and, very importantly, listen to your employees and other stakeholders. If you tell people about health and safety then they will know about it, but if you involve them in health and safety then they will understand it. Company's should review their existing approaches, refine where needed, and make sure to share their success with others, as success breeds success.

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