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Oil Review Middle East

Covering Oil, Gas and Hydrocarbon Processing

VOLUME 19 | ISSUE 4 2016

PDO - boosting production while driving efficiency

Insight and intelligence on the latest developments and opportunities

UK £10, USA $16.50

- Iran - the re-emergence of an oil giant
- The rise of Fujairah as a hydrocarbons hub
- A new approach to meter calibration
- MENA energy investments set to rise
- Fire protection solutions for oil and gas

Joerg Theis, ABB's global Product Group manager for chemicals, on the company's renewed focus on its chemicals and refining business

See page 28

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Editor's note

WE HAVE A strong focus on Iran in this issue, as the country seeks to redevelop its oil and gas industry and regain its share of the oil market in the wake of the lifting of sanctions. This will require substantial investment as well as technology and expertise, creating exciting opportunities for international companies, as Moin Siddiqui discusses in his article on p18. Petroplan's CEO Andrew Speers discusses some of the human resource implications of Iran's oil and gas plans on p24, stressing the importance of adopting a collaborative approach and taking the time to build relationships. Also in this issue we carry interviews with PDO's managing director Raoul Restucci on the national oil company's projects and plans (p12), and ABB's global Product Group manager for chemicals on the process automation giant's renewed focus on its chemicals business, along with the usual mix of news, analysis and technology developments.

Contents

Front cover image: sss78/fotolia

➔ Executives' Calendar 2016

APRIL			
24-27	**5th Annual Cybersecurity for Energy & Utilities**	ABU DHABI	www.cybersecurityme.com
MAY			
2-5	**Offshore Technology Conference (OTC)**	HOUSTON	www.otcnet.org
24	**GPCA Supply Chain Conference**	DUBAI	www.gpca.org.ae/events
5-8	**Iran International Oil, Gas, Refining & Petrochems**	TEHRAN	www.iran-oilshow.ir
8-10	**Abu Dhabi International Downstream**	ABU DHABI	www.adid.wraconferences.com
9-13	**International Downstream Week**	MADRID	www.europetro.com
10-11	**Platts 8th Annual Crude Oil Summit**	LONDON	www.platts.com/events
11-12	**International Oil & Gas Security**	LONDON	www.oilgassecurity.com
15-16	**Oil, Rail & Ports Iran**	TEHRAN	http://oilrailports.com
16-18 May	**Saudi Safety & Security Forum 2016**	DAMMAM	www.sss-arabia.com
17	**EIC Connect - Middle East**	ABU DHABI	www.the-eic.com/EICConnect
16-18	**Saudi Safety & Security**	DAMMAM	www.sss-arabia.com
23-25	**Iraq Petroleum 2016**	LONDON	www.cwciraqpetroleum.com
JUNE			
1-4	**Caspian Oil & Gas**	BAKU	www.caspianoilgas.az/2016
AUGUST			
29-1 Sept	**ONS**	STAVANGER	www.ons.no/2016
SEPTEMBER			
6-8	**SPE Intelligent Energy International**	ABERDEEN	www.intelligentenergyevent.com
26-29	**Middle East Petrotech 2016**	BAHRAIN	www.mepetrotech.com

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

GPCA Supply Chain Conference provides platform to discuss key industry trends

NOW IN ITS 8th edition, the GPCA Supply Chain Conference will be held under the theme 'Supporting Downstream Development / Creating Integrated Supply Chain Linkages', and will take place on 2-4 May 2016 in Dubai, at the Intercontinental Hotel, Festival City.

The event will highlight the role of the supply chain in developing the regional, downstream sector and the challenges and opportunities associated with it. The petrochemical and chemical industry is a cornerstone in the GCC states' economic diversification drive and the industry's next phase of growth revolves around the development of the downstream industry. Supply chain efficiency is critical in making this drive successful. Using superior planning techniques and project management, the GCC countries are integrating supply chain linkages as new logistics infrastructure is coming on stream, giving rise to highly efficient inter-modal bases that are reducing delivery time and cost.

With 80 per cent of output exported overseas, the industry is leveraging the GCC's proximity to burgeoning global markets to open up new routes and markets. With the ongoing drive to diversify the industry's product portfolio, which entails producing new sets of specialty chemicals that will stimulate a new set of downstream industries in the region, the development and optimisation of the supply chain within the region has become critical for the success of this drive.

New logistics infrastructure is coming onstream in the Gulf (Photo: Jens Metschurat/fotolia)

The GPCA Supply Chain Conference will provide a platform to facilitate discussion on key industry trends and growth opportunities, and how to create value through optimising supply chain processes. Speakers include:

Mohammad Husain, CEO, EQUATE and Chairman, GPCA Supply Chain Committee

- Saleh Al-Rasheed, director general, Modon
- Baheej Beqawi, CEO, Almajdouie Logistics
- Mohammed Al Muallem, senior vice president & managing director, DP World, UAE Region
- Moneef Al-Moneef, director – Supply Chain Project Management, Global Supply Chain CoE, SABIC
- Richard Forrest, global head of Energy Practice, A.T. Kearney
- Riccardo Tonelli, regional director, Agility
- Jonathon James, CEO and general manager, IPS, Dammam Port
- Wayne Steel, Regional SC lead - Africa, Global SC CoE, SABIC
- Ahmed Al Kowsi, Logistics director, Qatar Rail.

For further information see the website at http://www.gpcasupplychain.com.

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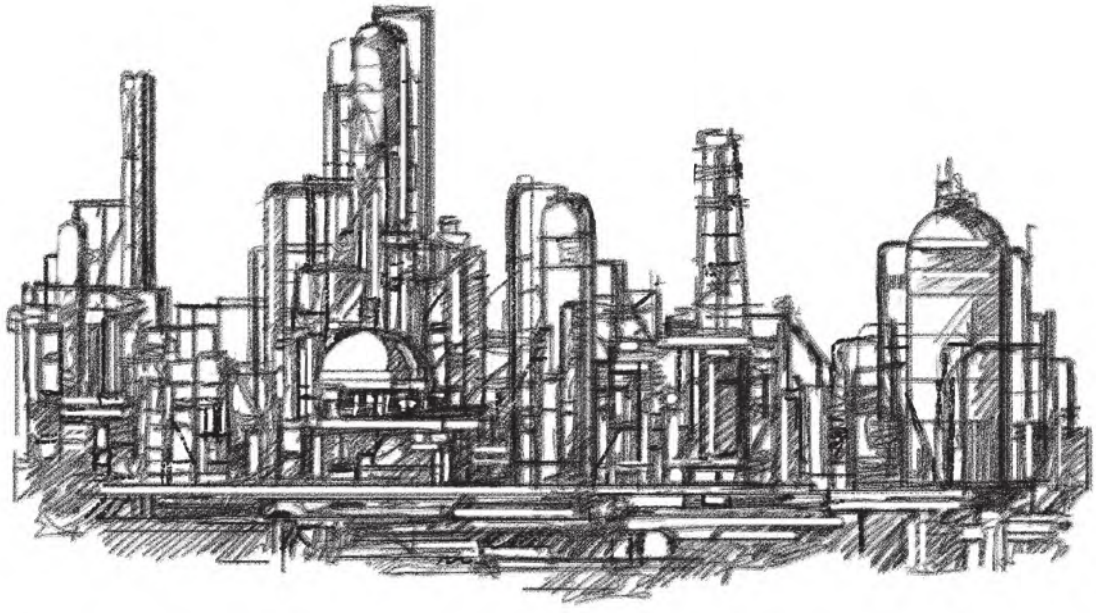

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Azerbaijan to host Caspian oil and gas exhibition in June

THE 23RD EDITION of international exhibition and conference 'Caspian Oil & Gas 2016', claimed to be the largest energy sector event in the Caspian region, will take place from 1-4 June 2016 at Baku Expo Center in Azerbaijan.

The exhibition and conference has been bringing together senior level directors every year to discuss key oil and gas projects in the Caspian region and ensure energy security. This year, the exhibition promises to bring together more than 200 companies presenting innovative technologies in oil production and energy transportation, oil and gas storage systems, services, current and future oil and gas projects in the region. The exhibition will feature companies from Belgium, China, Italy, Kazakhstan, Poland, Portugal, Spain, the Netherlands and other countries. The Czech Republic, Italy and Germany will hold national stands. The top sponsors for the show include SOCAR, BP, Petronas and Bos Shelf.

Issues of further development for Azerbaijan's oil and gas industry in today's realities, Azerbaijan's role in maintaining energy supplies to Europe, ensuring environmental and industrial safety, and other subjects will be covered at the international Caspian Oil and Gas conference, which will take place from 2-3 June at the JW Marriott Absheron Baku. More than 50 speakers including experts, representatives of government bodies, and directors of major oil and gas companies are expected to give presentations on key issues of producing, managing and transporting energy resources amidst falling oil prices.

UAE downstream industry to congregate in Abu Dhabi

Delegates at last year's event

THE MIDDLE EAST downstream industry is a resilient one, full of optimism despite the tighter margins around the world. There are expansion efforts to keep pushing the market with projects like Al Zour refinery in Kuwait and the Liwa Plastics project in Oman.

Co-hosted by Abu Dhabi Oil Refining Company, Takreer, for the past 13 years, 'Abu Dhabi International Downstream' is a refining and petrochemicals summit that provides a platform to discuss market dynamics, highlight new projects and hear about all of the latest technologies which are shaping the refining and petrochemical complexes of the future and that will help the region remain competitive in a low oil price environment.

The key themes for the conference this year include 'Global market dynamics in the face of a slowdown in U.S shale gas production and Chinese petrochemical demand', 'Catalyst selection, testing & recycling', 'European & global fuel standards', 'Re-aligning downstream strategies: seamless integration between gas processing', 'Refining and petrochemicals' and 'Maximising chemical value chains and shifting from light to heavier feedstocks'.

'Iraq Petroleum' to be held in London

Participants at last year's event

THE 10TH EDITION of Iraq Petroleum will be held in London from 23 – 25 May 2016. The event will bring together the Iraqi industry leaders and key international players to discuss the role of Iraq in the oil and gas industry. The event will be held in association with the Iraqi government and will focus on development and expansion strategy for the country's energy sector.the Iraqi deputy minister of industry and minerals, Adil Karim

Some of the confirmed speakers at the event are the Iraqi deputy minister of industry and minerals, Adil Kari, KRG minister of natural resources, Dr Ashti Hawrami and the UK minister of state at the department of energy and climate change, Andrea Leadsom MP. Iraq Petroleum 2016 will include a strategic conference including key speakers from leading companies, regulatory bodies and Iraqi ministers, a security seminar focussing on critical infrastructure protection and networking sessions.

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The future of MENA energy investments

Total committed and planned energy investments in the MENA region will reach US$900bn over the next five years, according to a new report published by the Arab Petroleum Investments Corporation (APICORP).

IN THE MULTILATERAL development bank's report, *MENA Investment Outlook – big plans in uncertain times*, APICORP estimates a 19 per cent increase in total MENA energy investment activity over the next five years through 2020, to US$900bn, despite uncertainties in the region's investment outlook.

APICORP states that US$289bn of investment has already been committed to projects under execution in the region, while an additional US$611bn worth of development is planned.

> "Against this trend, we expect the MENA region to continue investing heavily"

ADNOC is planning US$25bn of investments in offshore projects

Leading the investment drive will be Saudi Arabia, the UAE and Kuwait, which will look to invest across the energy value chain. Iraq and Iran will play catch-up and are determined to push their ambitious oil and gas plans forward, but will face many above-ground challenges, says APICORP.

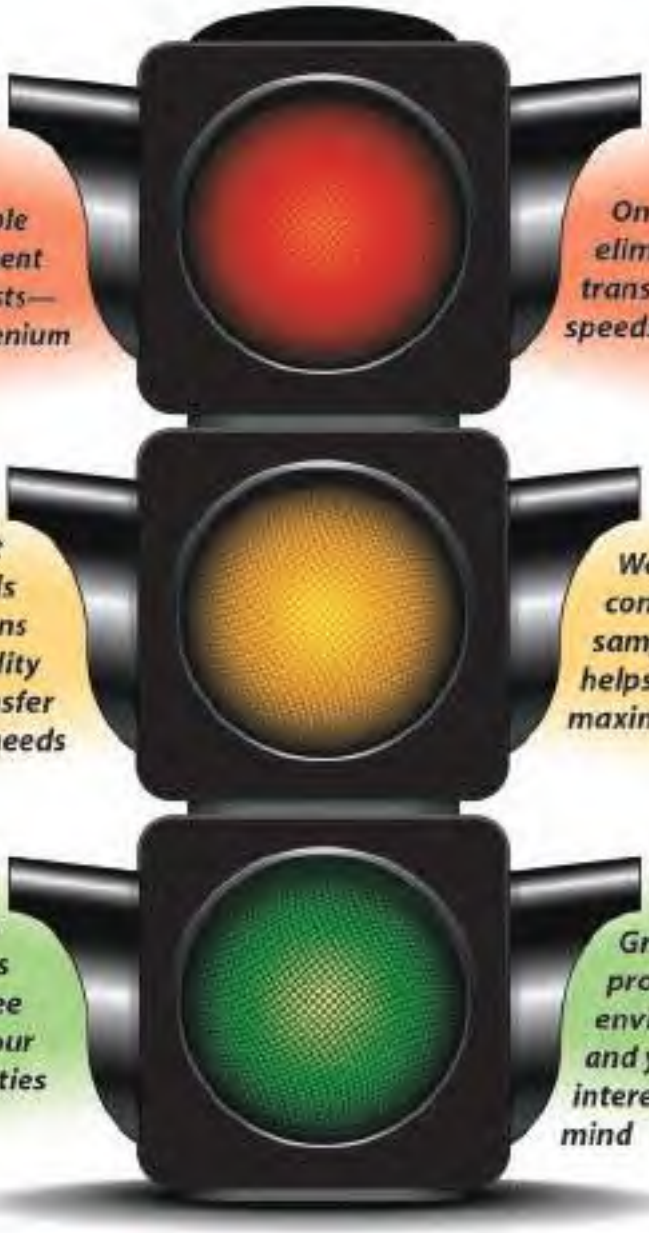
The report notes Saudi Arabia's plans to increase gas production, with major upstream plans including the Hasbah sour gas expansion, and the US$4.7bn Fadhili gas plant one of the largest investments due on line towards the end of the outlook period. Iran has prioritised the development of the South Pars gas field, where at least US$4.5bn will be invested over the outlook period. Further ahead, major planned projects include the US$4.5bn Kish gas development and the US$8.5bn Iran gas trunkline, currently at the design phase, which plans to connect Iranian gas to Europe via pipeline to Turkey.

As for UAE, the ADCO consortium will drive upstream investment, says the report, with major offshore upstream investments

Largest MENA energy projects by budget, 2016-2020

Project	Country	Sector	Budget (US$mn)	Completion year
IGAT Gas Trunkline	Iran	Gas	17,863	2019
South Gas Utilisation Project	Iraq	Gas upstream	17,200	2018
Clean Fuels Project 2020	Kuwait	Oil	16,285	2018
Upper Zakum Full Field Development	UAE	Oil upstream	16,180	2016
Khazzan & Makarem Fields Development	Oman	Gas	16,000	2018
Jizan Refinery & Power Project	Saudi Arabia	Oil/Power	16,000	2017
Al-Zour Refinery Project	Kuwait	Oil	15,500	2018
Jubail New Petrochemical Complex	Saudi Arabia	Chemicals	13,000	2018
Halfaya Project Surface Facility (HPSF)	Iraq	Oil upstream	10,000	2017
Shah Gas Development	UAE	Gas upstream	9,100	2019
South Pars Gas Field Development Phases 20 & 21	Iran	Gas	9,000	2016
Moroccan Solar Plan	Morocco	Power generation	9,000	2017

Source: MEED Projects



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also currently underway in Upper Zakum, while downstream the Fujairah refinery will be the major addition in the medium term.

Oman is currently prioritising upstream gas, while planned projects focus on downstream and petrochemicals, including the Duqm refinery and the US$4.5bn Liwa petrochemical plant. While the recently awarded Al-Zour refinery and the upgrading of refineries as part of the Clean Fuels Project are the major projects highlighted in Kuwait.

In North Africa, Algeria has vowed to pump billions into its upstream sector. Much is also expected in Egypt as recent gas finds promise to meet rapidly rising power demand, the BP-led West Nile Delta representing the majority of investment in gas under execution. Renewable energy projects will be at the forefront of efforts to meet rising power demand in Morocco, Tunisia and Jordan.

Commenting on the report, Dr. Raed Al-Rayes, deputy chief executive & general manager of APICORP, said, "Global investments in oil and gas fell by 20 per cent in 2015 compared with 2014, one of the biggest drops in history. However, against this trend, we expect the MENA region to continue investing heavily as major energy exporting countries expand the size of their energy sectors and strengthen their positions within global markets."

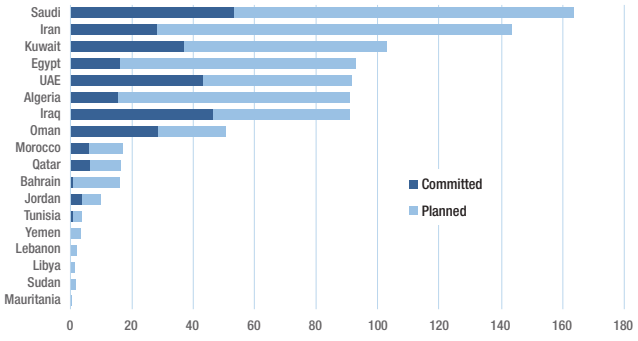
Challenges and constraints

Despite the increasing investment plans within the MENA region, APICORP's report also highlights several challenges and constraints that will prove pivotal over the medium term.

Although some MENA countries, including Saudi Arabia, Iran, the UAE and Kuwait, announced that they would go ahead with investment plans despite low prices, other countries with low fiscal buffers and competing pressures on its revenues, particularly Iraq, may have to reconsider their ambitious capacity-expansion programmes, says APICORP. The report notes that up to US$7bn worth of awarded contracts have been put on hold and a further US$2bn cancelled since 2014.

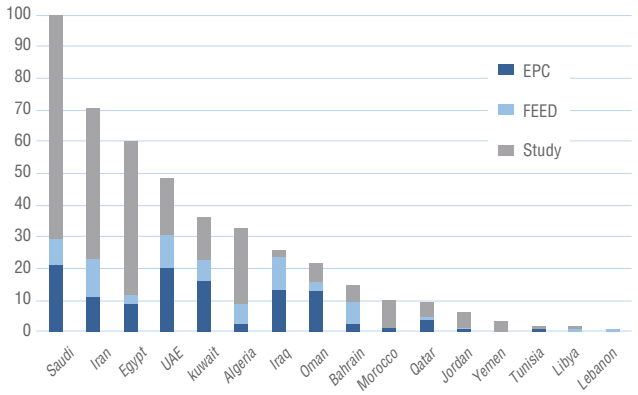
In addition, financing projects has become more challenging. Standard & Poor's Ratings has indicated that creditworthiness in the MENA region has deteriorated over the past six months, with average sovereign ratings of 'BBB'. Although recent efforts to attract foreign investment have seen some success, political and economic concerns mean investors will be cautious.

Total planned and committed MENA energy investment 2016-20($bn)



Source: APICORP Research

Planned MENA energy investment 2016-20 ($bn)



Source: APICORP Research

Persistent conflicts in Syria, Iraq and Libya, and the emergence of a new coalition in Yemen, are reshaping the geopolitical landscape. Conflicts and instability in these countries will keep investments at bay in the near term, says APICORP. Regional instability is unlikely to recede in the immediate future, and investors will be wary of spill-over effects in neighbouring countries.

Dr. Bassam Fattouh, an energy sector specialist and advisor to APICORP, added, "2015 was unsettling for the MENA region at a time of slower global economic growth and low oil prices. Many GCC governments have announced that budget deficits and public expenditure will be tightened in response. But, governments will prioritise critical investments in their energy sectors.

"Saudi Arabia has the largest committed and planned investments in the medium term, while the UAE and Kuwait have ambitious programmes throughout the value chain. The GCC will use their investments to maintain the status quo as the major supplier of energy to the rest of the world. Iran and Iraq will also play catch-up, especially as investments in Iran start flowing back after sanctions." ■

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Pushing ahead with **key projects**

Raoul Restucci, managing director of Petroleum Development Oman (PDO), speaks to *Oil Review* about the national oil company's projects and plans.

Aerial view of the site for the new "mega" Rabab Harweel integrated project

What is the current focus of PDO's development; are there any particular projects you would like to highlight?
We are staying the course on our key projects to deliver value and support the Government in its endeavours to address the fiscal deficit caused by the significant fall in oil prices.

Ensuring our business is sustainable is a long-term goal of PDO, but the current financial environment also underscores the critical importance of sustainability in the present. PDO has seized the opportunity to continue to drive business improvement and operate more efficiently, while maintaining our overarching commitment to safety.

> "We are well on course to deliver a new production plateau of 600,000 bpd before our 2019 target."

Last year, we achieved a record hydrocarbon production level of 1.29 million barrels of oil equivalent per day (boepd) while at the same time intensifying our cost-control programme. We are well on course to deliver a new oil production plateau of 600,000 bpd before our 2019 target.

Our (externally recognised) world-class well, reservoir and facilities management has enabled us to arrest decline in our maturing fields while we continue to add to and develop our production portfolio.

In terms of individual projects, Miraah at Amal, which was announced last year and is being developed with our partners GlassPoint Solar, is a real statement of intent.

This one gigawatt installation will be the largest solar energy project of its kind in the world at peak production and produce steam for thermal enhanced oil recovery (EOR) by harnessing the sun's rays through innovate glasshouse technology. It will save 5.6 trillion btu of natural gas each year which can be diverted to higher value uses in Oman, and reduce CO_2 emissions by 300,000 tons annually, the equivalent of taking 63,000 cars off the road.

Harweel 2AB, where we are running our first full-scale miscible gas EOR injection project, was commissioned in 2012. We have overcome a series of technical and operational challenges to deliver a project that is performing impressively, with high uptimes and strong oil and gas recoveries.

We have secured full and accelerated payback of the entire Harweel 2AB investment and continue to increase reserves and production, despite working in a complex environment characterised by very high pressure (> 550 bar) and corrosive sour fluids.

The surface facilities have been built to ensure the highest possible levels of integrity, as well as featuring multiple safety mechanisms, in order to minimise the risks of leaks.

We originally earmarked an additional 160mn bbl of oil that could be produced through miscible gas EOR

Raoul Restucci, managing director, PDO

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Creating employment and training opportunities for Omanis remains a strategic priority for PDO

at Harweel 2AB, but we are now targeting a further 250mn bbl of oil that will be delivered by the new, multi-billion dollar Rabab Harweel integrated project (RHIP), which is currently being built. This is one-and-a-half times bigger than the existing Harweel 2AB scheme, and will see miscible gas injected into seven oil reservoirs. It will also involve recycling sour gas in the neighbouring Rabab field to develop condensate. Production is expected to begin in 2019.

The RHIP was the first mega sour project to undertake in-house Front End Engineering Design (FEED) and the Engineering, Procurement and Construction contract requires considerable ownership and control by the PDO project team, so it provides an excellent development opportunity for our staff. Local contractors are also featuring prominently as the scheme progresses.

To what extent has the low oil price affected PDO's development plans, and have you adopted any particular measures to address this?

We have been able to maintain our growth plans and will continue to actively pursue and accelerate projects which can generate increased revenues, with early monetisation of discoveries and opportunities, top quartile recovery, meeting government gas requirements, delivering projects on promise, and ensuring stakeholder expectations are fulfilled.

> "Much emphasis has been placed on accelerating conventional oil and gas opportunities."

At the same time, we are leaving no stone unturned in our cost control efforts. In this respect, closer collaboration with our contractors has been essential and we have so far held 25 contract optimisation reviews to drive greater efficiency with more to come. We already had an active Lean continuous business improvement programme to target waste and duplication and streamline operations, and this has put us in good shape to withstand the current challenges.

We have also launched an "Every Rial Counts" campaign, putting the onus on our staff to treat PDO's money as if it were their own. This has led to ongoing savings in areas such as travel and hospitality right down to the volume of food which is wasted and the amount of printing we do.

Our overall approach has been very much one of seizing the opportunities provided by lower oil prices to drive greater efficiencies, and we have been able to reduce planned expenditure in 2016 by US$1.6bn.

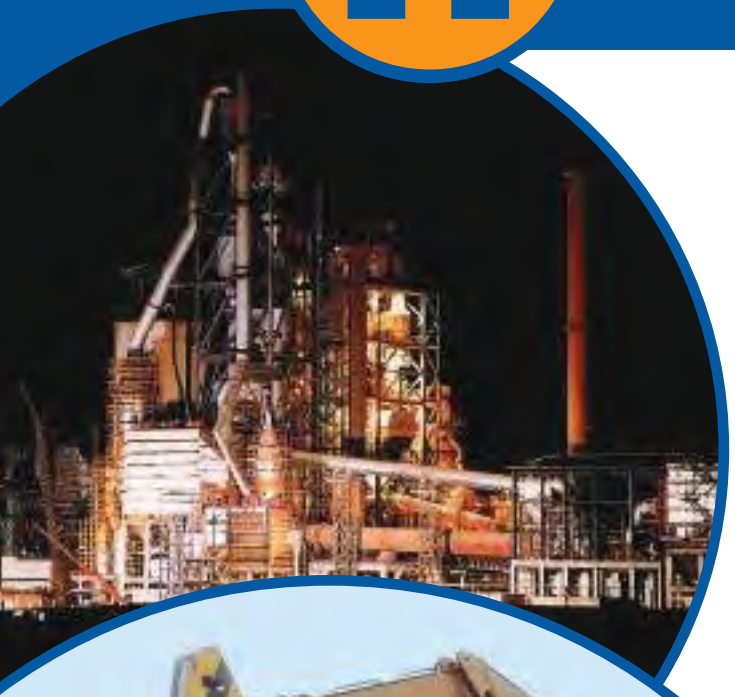
Aside from lower revenues, every single key performance measure exceeds targets established when oil prices exceeded US$100/bbl in early 2014. In safety, production, exploration, reserves and hydrocarbon maturation, project delivery, lower costs, operational excellence and In-Country Value (employment and local supply chain development), we are significantly ahead of our 2014 and 2015 plans.

PDO has played a pioneering role in developing EOR techniques; are there any successes you would like to highlight, and are there any particular techniques you are currently focusing on?

We are currently operating a variety of commercial-scale enhanced oil recovery (EOR) projects that include chemical EOR, miscible gas injection and thermal applications. Across our portfolio, we continue the maturation of promising and novel EOR technologies through laboratory and field testing, such as the adoption of superheated steam and solvents.

However, because of the resource-intensive nature and higher cost of tertiary recovery mechanisms, much emphasis has been placed on accelerating conventional oil and gas opportunities instead of additional short-term expansion of EOR projects.

RELIABILITY IN OIL WELL CEMENTS



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A new single buoy mooring being floated at PDO's Mina Al Fahal port to assist in the safe export of crude oil

This optimisation is very much enabled by the several development choices we have in our portfolio, and means that EOR is now expected to account for approximately 25 per cent of PDO oil production by 2025, as opposed to last year's projections of 33 per cent over the same period.

We are proud of our status as pioneers in EOR, which started for us in the 1980s with a polymer flooding pilot project in Marmul field, and our first field-scale EOR development began there in early 2010. Marmul has produced in the last three years at annual rates that have exceeded the prior 30-plus years of production under primary, infill, horizontal well and waterflood development.

At Qarn Alam, we are using the thermally assisted gas-oil gravity drainage (TAGOGD) technique, which has never previously been deployed on this scale in a reservoir featuring fractured carbonate rock. Here, steam is injected directly into the fractures, heating the surrounding rock and lowering the viscosity of the oil by a factor of up to 100 times.

The 'gravity drainage' element then comes into play with the freer-flowing oil draining down into horizontally drilled producer wells that are situated towards the bottom of the reservoir.

In February of this year, we started our Alkaline Surfactant Polymer (ASP) field trials in a sector of the Marmul field, aiming to further reduce residual oil saturations and increase overall field recovery over polymer flooding by about 10 per cent. Analysis of the subsurface performance of the trial will be performed during the course of this year.

What do you think have been the main achievements of the ICV and National Objectives programme, and what are your future plans for the programme?

Despite the recessionary pressures, it has been more important than ever to pursue our In-Country Value (ICV) programme to build a sustainable Omani industrial/private sector base able to compete on the international stage and retain more of the industry's wealth in the Sultanate.

The creation of employment and training opportunities for Omanis remains a strategic priority for PDO, and we are determined to play our part in helping the thousands of nationals who come onto the job market each year to find meaningful and rewarding work.

ICV is not just a "nice-to-have." It makes strong business sense to reduce the extra cost and work timescales often associated with international vendors in favour of developing local capabilities and supply chains, especially in the current challenging environment.

Our 2015 estimated retained ICV for goods and services was 37 per cent, higher than the 36 per cent target we set ourselves in the ICV Blueprint Strategy and Roadmap for 2020 – well above several other nations that have been pursuing local contract strategies for several decades.

Strong momentum is now evident across the full spectrum of our ICV activities. Last year, and together with our contractors, our National Objectives programme generated 7,200 employment, training and re-deployment opportunities for Omani jobseekers, yielding a cumulative total of more than 20,000 since 2011. One example of the success of the programe has been the recent graduation of almost 200 young Omani trainees as 6G welders – the highest internationally accredited standard – and these are being employed on our Rabab Harweel integrated oil and gas "mega" project, the largest project in our history.

> "We intend to keep creating 7,000 job opportunities each year."

Going forward, we intend to keep creating 7,000 opportunities each year and we are targeting job areas which have low Omanisation levels but high industry demand – such as scaffolding, lifting and hoisting, electrics, mechanics and carpentry.

Overall last year, we invested US$3.7bn with nationally-registered companies. Our 2015 spend on Super and Local Community Contractors – Omani-owned companies set up to carry out core oilfield services – rose by 16 per cent to US$273mn, meaning total expenditure on SLCCs and LCCs since 2010 now exceeds US$1 billion. This strong vote of confidence can be attributed to the excellent safety and operational performance of SLCCs and the ever-increasing ring-fenced scope of opportunities for LCCs with our main contractors.

We are particularly proud of the four SLCCs which we established and have been supporting and mentoring. These are now owned by 9,400 shareholders drawn from their local communities, have a capital value of around US$60mn and employ almost 800 Omanis. The SLCCs are a living, breathing example of ICV in action.

What is PDO doing to attract and retain more women in the oil and gas sector?

PDO is a pioneer for female empowerment in the industry and in the region.

There are currently four women on our Managing Director's Committee: Finance director Haifa Al Khaifi, Exploration director Intisaar Al Kindy, People and Change director Ibtisam Al Riyami and Corporate Planning director Ruqaiya Al Hinai.

PDO currently has around 1,000 female staff working in all aspects of our business. One area which we are particularly proud is our programme to train female graduates as field operations engineers. This is a first for the Middle East and North Africa region and won the ADIPEC award for the Empowerment of Women in the Oil and Gas industry in 2013.

We have a dedicated women's network called HAWA (Eve in English) which gives female staff the opportunity to meet their peers and senior leaders from within and outside PDO and engage in relevant learning opportunities. The network also welcomes male colleagues to participate in discussions that contribute to a more inclusive environment.

The company offers generous part-time and flexible working arrangements and also has a Diversity and Inclusion team and programme, which works actively to promote gender equality and challenge any form of discrimination in the workplace. ■

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Iran's oil industry is in urgent need of investment and new technology (Photo: Fotolia / Petrovich12)

The re-emergence of an **oil giant**

Iran could re-emerge as a key superpower affecting the global energy market over the coming decades and providing significant business opportunities, says Moin Siddiqi, Economist.

IRAN, REGARDED AS an "El Dorado" by many international oil companies (IOCs), has yet to capitalise on its energy resources domestically and internationally. The country's geo-strategic location – a bridge between East and West – allows it to export energy to both European and emerging Asian markets. Once a major oil exporter, Iran could re-emerge as a key superpower affecting the global energy market over the coming decades.

Oppressive sanctions over several years and increasing politicisation have prevented Iran's hydrocarbons sector (the Middle East's oldest) from securing much-needed foreign direct investment (FDI), technology and expertise. Many projects have been cancelled or delayed. Subsequently, Iran has struggled to expand production capacity and to halt and reverse declines at its mature fields. A largely decrepit industry needs innovations and colossal investments across many areas. According to Ali Kardor, the deputy for investment affairs at the National Iranian Oil Company (NIOC), the upstream and downstream sectors require US$176bn and US$77bn, respectively, from 2016-25. The bulk of new investments would target exploration and production (E&P) as well as processing facilities, petrochemicals and the construction of new refineries, in order to boost Iran's economy (the Middle East's second largest after Saudi Arabia) over the next decade.

Recently improved international relations promise to open up unprecedented opportunities for IOCs - mostly Western, but also including firms such as Malaysia's Petronas – to collaborate on Iran's huge development, by bringing skills in megaprojects, managing mature fields, and exploration. The hydrocarbons sector needs at least US$150bn of investment to optimise the development of existing oil and gas fields by 2019/20. A number of foreign majors, including BP, Shell, ENI, Total, Statoil, Repsol, Gaz de France and OMV, have expressed interest in re-entering the Iranian market.

> "Recently improved international relations promise to open up unprecedented opportunities"

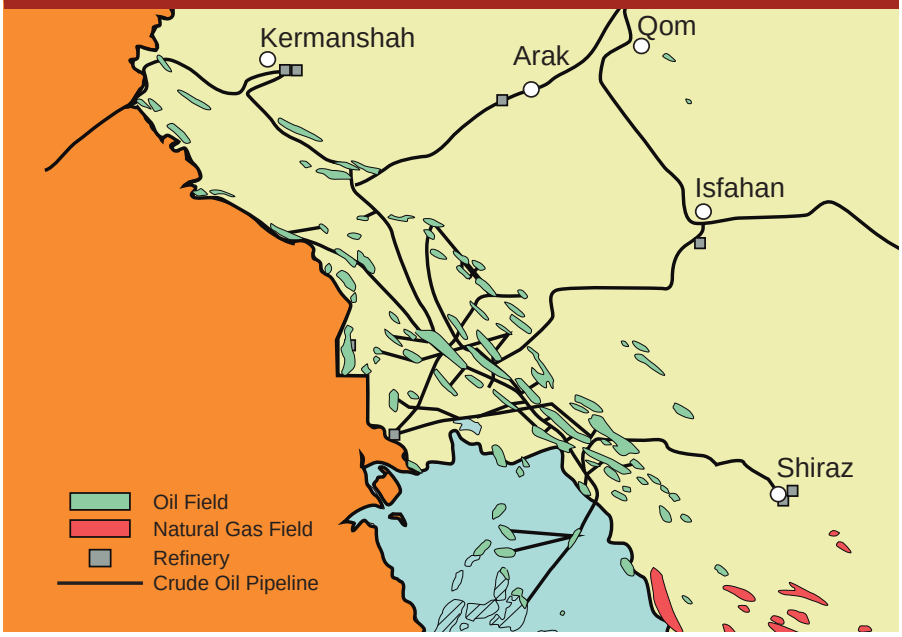
Why invest in post-sanctions Iran?

- IOCs (including US majors) seeking long-term growth cannot ignore Iran, which arguably holds the world's largest combined oil and gas reserves. Holding the equivalent of 364.68bn barrels of recoverable hydrocarbon resources – representing a tenth of total global hydrocarbon reserves – is a clear competitive edge for Iran's petroleum industry. As much as 70 per cent of hydrocarbons reserves still remain untapped;
- Iran possesses the largest natural gas reserves (ahead of Russia) and second largest conventional oil reserves (after Saudi Arabia), estimated at 34 trillion cubic metres and 157.8bn barrels, respectively, according to the BP Statistical Review of World Energy 2015. Massive energy and natural resources in the reservoir offer potential upstream investment opportunities at relatively lower costs;
- There are an estimated 500bn bbl of untapped oil in the fields across Iran. Managing Director of NIOC, Rokneddin Javadi, said that less than one third of recoverable oil and gas reserves, which he

put at 345bn barrels of oil equivalent, had been exploited;

- Proved record of exploration, development and production for over a century. The first successful well was Masjid Suleiman-1 in 1908. Since then, 145 fields and 297 oil and gas reservoirs have been discovered. Despite vast experience, Iran's oil industry is in dire need of investment and new oilfield technology, which it has been deprived of for almost three decades;
- The hydrocarbons prize is significant, since Iran is among the very few energy producers with an exceptionally high reserve-to-production (R/P) ratio – i.e. relation between volume of hydrocarbon reserves and production rate – of more than 100 years. Comparable end-2014 figures for Saudi Arabia and the Russian Federation were 75.4 and 56.4 years (natural gas); 63.6 and 26.1 years (crude oil), based on the BP database;
- In contrast to non-conventional oil projects in North America, Iran could probably expand its production capacity gradually in the current low oil price environment. Bijan Zangeneh, Iran's Petroleum Minister, said, "Our oil production costs are low, so they will not cause a problem with repayment on investments, or profitability for foreign companies," adding that development

Iran's major oilfields



Sources: US EIA; Peter Hermes Furian / Fotolia

costs are below US$10/barrel for both onshore and offshore production activities – thereby adding to the country's appeal;
- Profitability of projects underpinned by low E&P cost, and low-risk investment for enhanced oil recovery (EOR) and improved oil recovery (IOR) projects;
- Improved industrial base and engineering services within the hydrocarbons industry (Iran ranks 5th in the world in the number of engineering graduates);
- Security of installations and pipelines; 35,000 km of gas pipelines for transport of fuel to different cities across the country as well as for export, with the capacity for transfer of 620mn cubic metres of gas/day, and 10,000 km of crude oil transfer pipelines, are further advantages of Iran's oil sector.

Table 1: Major Iranian Oilfields' Production and Reserves

Field	Date of Discovery	Output Capacity (000' bpd)	Gravity (average) API	Proved & Probable Reserves (mn bbl)
Ahwaz-Asmari	1958	900	32	16,800
Marun	1963	500	34	22,000
Agha Jari	1937	200	34	8,700
Gachsaran	1928	450	32	8,500
Karanj-Parsi	1963	250	34	6,500
Bangestan	1958	158	N/A	6,500
Soroosh & Nowruz	1962	190	20	6,000
Rag-e-Safid	1963	180	29	3,500
Bibi Hakimeh	1961	130	30	3,400
Doroud 1&2	1961	200	34	2,400
Major Field Total		**3,158**	**31***	**84,300**

Crude oil is classified as light, medium or heavy, referring to its gravity as measured on the American Petroleum Institute (API) scale. According to the Centre for Energy, API gravity is measured in degrees and is calculated using a formula [141.5/ S.G.] - 131.5 = API gravity. Light crude is defined as having an API gravity exceeding 31.1; medium crude (22.3 - 31.1 API); and heavy crude oil has an API gravity of below 22.3.

Sources: Global Insight, IEA, NIOC and Arab Petroleum Research Centre.

Note: According to a report by Clyde & Co, about four-fifths of Iran´s oil reserves were discovered before 1965, the bulk of which (70 per cent) are located in south-western Khuzestan region and the remainder offshore in the Persian Gulf. Two-thirds of Iran´s landscape is comprised of sedimentary basins with significant potential. Original-Oil-In-Place (OOIP): 561.9bn barrels.

Technical challenges

The past two decades of chronic under-investment, maturing oilfields and a lack of field and well maintenance have damaged fields, destroying some of the country's production capacity. Given the maturity of Iranian fields, the replenishment of oil reserves remains a top priority for NIOC – which holds exclusive rights to oil and gas exploration and development. As Global Insight, the US-based consultancy, explained, "Iran's main problem is that it remains cut off from the kind of expertise to extend the life of its fields that IOCs could offer: advanced production, reservoir management and enhanced oil recovery (EOR) technologies. That makes it necessary to bring increasing amounts of new production capacity on-stream every year, to offset output declines at mature fields."

More than three fifths of Iran's crude oil production comes from oilfields discovered 60 years ago. Hence, major oilfields (notably Gachsaran, Agha Jari and Ahwaz-Asmari) are old and in decline. The annual 'natural' field depletion rates in mature areas are estimated to average eight to 13 per cent, while the current recovery rate of 20-25 per cent falls one-tenth below the global average, according to Facts Global Energy (FGE). Besides continued declines at matured oilfields, around half of Iran's oil reserves are located in complex reservoirs, which reinforces the sore need to deploy EOR techniques, where polymers and fluids are injected into ageing fields to boost production. UK-based NewsBase Research Oil Forecasting Service estimates that undeveloped fields will add another 100,000-200,000 bpd by 2020 – helped by new oilfield technologies. Iran has not had a new oilfield enter into production since 2007.

NIOC seeks to add a further one million bpd to capacity by developing fields straddling borders with neighbours; some 25-30 fields lie untapped along the Iraqi border. IOCs' technology and expertise will be paramount in bringing them on-stream. Iran also needs to develop offshore oil and gas reservoirs that include joint fields with neighbouring countries. Weak oil prices (if sustained), however, may deter IOCs from investing on the scale and complexity demanded in Iran.

Most observers reckon that 3–3.5mn bpd is a more realistic target over a period of a year after the dismantling of sanctions. A significant expansion in output and exports to pre-sanction levels would take (at the very least) three to four years. To boost sustainable capacity towards its longer-term goal of 4.7mn bpd by 2021 requires massive capital spending and gaining access to sophisticated technologies of Western majors – especially since most of Iran's oil is heavy, making it more difficult to produce and refine. Given increasing social demands on the government's budget, in the post-sanction phase of economic recovery, external financing for the hydrocarbons industry is likely to be required.

New longer-term contracts to woo IOCs

The Ministry of Petroleum has unveiled a list of projects (worth an estimated US$185bn), which are key to Iran becoming a top energy producer in the medium-term. 29 of the 52 on the list are new and currently producing oilfields and 23 are gas developments. Onshore fields comprise two-thirds of the schemes. Cross-border fields also feature prominently on the list: nine projects listed are for fields shared with Iraq, five with Qatar, five with Saudi Arabia, and two each, respectively, shared with UAE and Kuwait. 18 exploration blocks hold around 200bn barrels of 'probable' oil reserves, according to official sources.

The Ministry of Petroleum is also looking to offer contracts for several oil and gas storage and pipeline projects. These include the construction of a terminal and oil tanks at Jask; construction of a pipeline from Goreh in Bushehr to Jask; development of the Bahregan oil terminal; construction of several unnamed associated gas projects; and construction of residential and recreational facilities at a host of unnamed plants and installations.

Tehran has changed its regulatory framework by introducing a new upstream contract model to woo some of the industry's biggest players, with the objective of materialising the development of joint oil and gas fields and enhancement of recovery from oil reservoirs. In contrast with previous unpopular buyback contracts, the Integrated Petroleum Contract (IPC) encompasses all three stages of exploration, development and production into a single contract, which offers more flexible transition from the exploration to production phase should a commercial discovery be reported, and allows foreign upstream investment to last for a maximum 25 years, versus five to seven, and eight to 12 years, in the first, second and third generations of buybacks.

Under the new structure, NIOC can establish joint ventures with IOCs, which will be paid with a share of the output, compensation being linked to oil prices and the level of risk. It also offers better terms

for enhanced and improved recovery projects; companies can negotiate to determine the amount of capital expenditure required, with their profit deriving from additional oil produced from the various fields. According to officials, the IPC is a risk service contract under which both Iranian and foreign contractors would bear the risks of an operation. There would be no caps on capital expenditure over the lifespan of a project. To help facilitate technical and managerial know-how, IOCs are expected to fulfil local content requirement, which may be 51 per cent of the contract. "More than cash or using the technology, we would like to have foreign companies' advanced technology to be transferred to domestic companies," said Minister of Petroleum Bijan Zangeneh.

> "Iran's oil industry is in dire need of investment and new oilfield technology"

Table 2: Status of New Upstream Oil Projects (as of mid-2015)

Project	Developer	Plateau Output '000 bpd	Expected Year On-stream
Yadavaran phase-1	Sinopec	85	2016
Yadavaran phase-2	Sinopec	95	2019-20
Yadavaran phase-3	Sinopec	120	post-2020
Azar phase1	NIOC subsidiaries	30	2016
North Yaran	Persian Energy	30	2016
South Yaran	NIOC subsidiaries	55	2018
North Azadegan phase-1	CNPC	75	2016-17
North Azadegan phase-2	CNPC	75	2019
Forouzan	NIOC subsidiaries	100	2017-18

CNPC: China National Petroleum Corporation.
Sinopec: China Petroleum & Chemical Corporation.

Source: Facts Global Energy.

Note: Future production plans hinge chiefly on super-giant fields: the Azadegan and Yadavaran (discovered in the early 2000s), where OOIP is estimated at 26bn & 18bn bbl, respectively, which between them could produce 900,000 bpd, equivalent to Oman´s total output. But production targets at both fields as well as Forouzan are reported to be well behind schedule.

Although the new contracts promise to be more conducive to IOCs and attract more capital/technology, an overall improvement in the business environment is also needed to decrease the level of uncertainty stemming from Iran's bureaucratic political structure.

Iran ranked 130th out of 189 countries in the World Bank's *Ease of Doing Business* report for 2015 – reflecting continuous problems of red tape in "registering property," "protecting investors," and "resolving insolvency".

Cautious optimism

Leonardo Maugeri, an associate at Harvard University's Kennedy School, told Bloomberg, "Iran could explode in terms of production if it opens to investment and improves contract terms for foreign companies," adding "The country really has the ability to arrive in a relatively short period of time, let's say five years, at production capacity of 5mn bpd of crude."

The government aims to expand production capacity by 2mn bpd to reach 4.7m bpd by the end of Sixth Development Plan (2016–21).

Due to technical and political obstacles, reaching and developing optimal energy and export potential could take longer. Douglas Westwood does not expect Iran to reach its 2016 target of raising total oil production to over 4mn bpd until 2018. Nonetheless, very few countries offer such a wealth of opportunity for production optimisation and enhanced recovery projects in the conventional upstream oil industry as Iran.

Iran's revival would have a significant impact on global oil markets – and, in the longer term, on the international gas trade. The opportunities across the hydrocarbons sector, and at all levels of the market, are therefore substantial. ■

Table 3: Iran's Oil and Gas Reserves & Production versus Middle East Gulf Arab Neighbours

	Proved Oil Reserves* bn bbl	R/P ratio (years)**	Output 2015 000' bpd	Proved Gas Reserves* (tcf)	R/P ratio (years)**	Output 2014 (bcm)
Iran	157.8	100+	2,837	1201.4	100+	172.6
Iraq	150.0	100+	3,927	126.7	100+	1.3
Kuwait	101.5	89.0	2,728	63.0	100+	16.4
Oman	5.2	15.0	900	24.9	24.3	29.0
Qatar	25.7	35.5	668	866.2	100+	177.2
Saudi Arabia	267.0	63.6	10,108	288.4	75.4	108.2
UAE	97.8	72.2	2,853	215.1	100+	57.8
Iran % of						
OPEC Total	13.0	91.1	9.0			
World Total	9.3	52.5	3.2	18.2	54.1	5.0

Sources: OPEC Secretariat and BP Statistical Review of World Energy 2015.

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

**** End 2014***

Note: Current oil production is around 3.1mn bpd, down from more than 4mn bpd in 2011 and less than half of its peak of 6mn bpd in 1974. Iran has around 40 productive oilfields (27 onshore and 13 offshore). The country also shares a number of onshore and offshore fields with Iraq, Qatar, Kuwait and Saudi Arabia.

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Challenges and opportunities - Iran's oil workforce

Andrew Speers, CEO of Petroplan, with David Grassick, Oil & Gas consultant, and Paul Mullarky, senior advisor to Afraj Advisors, discusses the human resource implications of Iran's plans to rehabilitate its oil industry.

OVER THE PAST century, Iran has become one of the world's largest oil producers, and is now recognised to have the largest combined oil and gas reserves in the world, with 9.3 per cent of global oil reserves and 18.2 per cent of gas reserves. Following the lifting of sanctions, Iran is looking to increase production substantially. There is a window of opportunity for Western oil and gas companies in Iran. The challenge is to seize this opportunity before the window closes, whilst also accommodating Iran's market specificities. But what does this mean in terms of attracting and retaining the workforce required?

Iran is a very resourceful country. As well as huge natural resources, there are resources of the human kind – a workforce that is extremely well educated. Iran had to learn to cope with the sanctions, which meant that Iranian oil producers had to complete projects using indigenous talent. From this, some highly competent service contractors sprang up and developed their own technologies to meet the country's requirements, and a number of projects have been completed using 100 per cent Iranian content, proving the capability, resilience and ingenuity of Iranian engineers. As Jalal Chaikar Tavallali, an international lawyer based in Iran, (half) jokingly stated, "Whilst the United States is commonly known as the 'Land of Opportunity', Iran is the 'Land of Possibilities'.

> "Some highly competent service contractors sprang up and developed their own technologies to meet the country's requirements."

The Iranian government is now looking to increase production as quickly as possible, rehabilitating fields that have been denied investment or the latest production technology. For that they will need money, access to more advanced technology, such as EOR, and good project management. Domestic capability notwithstanding, this is where the early opportunity will lie for Western oil and gas companies.

Iran enjoys greater political stability than many of its neighbours, and this could influence many oil companies to shift their resources here, from elsewhere in the Middle East. From their side, Iran is looking for the big multinationals to get the work done and bring in

Iran enjoys greater political stability than many of its neighbours (Photo: takawildcats/fotolia)

the latest technology. To give one example, Iran shares the world's largest gas asset with Qatar and has the ability to become a leading LNG exporter if it can access the necessary technology.

The market for oil and gas workers in Iran is huge, but staffing is likely to pose a particular challenge for foreign firms. Iranian workers bring language skills, cultural understanding and willingness to the table, but have not been exposed to some of the management methods and technical skills developed outside of the country during the period of sanctions. This gap will need to be filled by expatriate workers, if not in the long run then certainly for an initial period.

> "A more strategic, long-term approach is likely to pay off for Western oil and gas companies."

Government policy, however, states that 51 per cent of the projects have to utilise Iranian content, and this is likely to become even tighter going forward. The Labour Law separately states that only one in five workers (20 per cent) can be foreigners. So the opportunity for workers from other parts of the world is likely to be finite, before knowledge needs to be transferred to the local workforce.

As US and European companies re-enter Iran, pay may well be another point to address. Major oil companies have back office overheads to cover, which is factored into contracts and passed on. Iranians will only expect to pay workers for hours worked however, and not for the support infrastructure or for apprentice training.

To address both above issues, a more strategic, long-term approach is likely to pay off for Western oil and gas companies. Paul Mullarkey, senior advisor to Afraz Advisors, said, "The Iranians are quite rightly very proud of their nation and what they have achieved while sanctions have been imposed. It will be important for anybody working in Iran to work with locals in a collaborative manner and with a humble attitude. Trust will be a key factor, and it will be necessary to show how higher salaries will justify the expected results."

Historically, buy-back contracts provided a fixed rate of return. So effectively, Western companies assumed the majority of the risk, and Iran reaped the majority of any upside in the return. The big concern for the Western companies was that they would invest and would then have to hand over production to an Iranian company to operate. The Iranians were then in charge of generating the revenue, to pay back all the money the Western company invested, and investors had no say in how operations were run.

The new Iran Petroleum Contracts (IPCs) being offered to Western companies are designed to get over this hurdle, and give investors a part interest in operations from beginning to end. And, instead of being eight year contracts (three years to build and five years to recover the money), the new IPCs are 25-year incentivised "no-flare" service contracts. This means investors do have an interest in the long-term production and operation of the field – but still not the actual reserves in-ground.

In conclusion, the next few years are likely to be a great period for Western oil and gas companies to invest in Iran, bringing to bear the technology, as well as the technical and management expertise they have honed through operating around the world. That will mean searching out and placing the best talent from other markets.

Andrew Speers, CEO of Petroplan

Pursuing short-term gain alone will not pay off, however. As David Grassick, Oil & Gas consultant, commented, "Those companies and individuals willing to take the time to build trust and relationships will be the ones who reap the rewards, provided of course they bring expertise and funding." ■

Offshore Technology Conference 2016
Date: 2 – 5 May 2016
Venue: NRG Park, Houston, Texas

Offshore Technology Conference: 2016 edition

Energy professionals will meet to exchange ideas and opinions to advance scientific and technical knowledge for offshore resources and environmental matters at the Offshore Technology Conference (OTC) this year.

THE EVENT, WHICH will be held from 2 – 5 May 2016 is held annually in the first week of May at NRG Park in Houston, Texas. OTC is sponsored this year by 13 industry organisations and societies who work cooperatively to develop the technical programme and use revenue to provide its members with many other important programmes such as training and technical journals. More than 90,000 professionals are expected to attend the show this year.

The first session of the event will bring BP's Upstream CEO Bernard Looney offering his perspective on the changing environment for the oil and gas industry, looking ahead to the next decade and the challenges and opportunities it presents. The challenges we face also bring opportunities for those who can adapt and compete. Looney looks at how investments in safety and capability, advances in technology, and greater efficiencies can help the most resilient operators succeed. The other sessions will also deal with topics along the same theme – coping with the downturn in the industry.

Day 2 of the event is packed with technical seminars surrounding topics like the pipeline industry, fluid analysis, reservoir characterization and seismic design of subsea structures etc along with a panel discussion on Mexico's energy reform.

There will be several sessions conducted about the ways to recovery for the oil and gas industry. There have been mergers, bankruptcies, drops in share prices and buyouts over the past year. The panel on 4 May in particular will focus on understanding strategies and actions from the perspective of industry leaders to manage through one of the toughest downturns in the industry.

> "OTC has also accommodated D5, an event that aims to bring together the brightest minds in exploration and production."

A still from last year's OTC

The last two days are filled with sessions on a miscellaneous collection of exciting topics relevant to the industry that include cyber security assurance, improving safety through industry collaboration, future of SEMS, advances in EOR for offshore environment, deepwater brownfield technology, applying geoscience technology to drilling and completions, integrated asset optimization for offshore fields, needs of offshore ultradeepwater floating facilities and risers, mooring systems and related technologies, hydrate remediation methods and geostatistical reservoir and lithology characterisation amongst others.

OTC has also accommodated D5, an event that aims to bring together the brightest minds in exploration and production to listen to presentations and participate in discussions that inspire ideas, innovation and leave a lasting impact. This will be held at Rice University in Houston, Texas. D5 aims to include thought-provoking presentations focused on diverse topics around ideas (in energy outlook, startups, competitive advantage and winning strategies, innovation game-changing capabilities, science, and big data), and impact (motivation, sense of purpose, risks, and workplace culture).

Several press conferences have already been scheduled for the event. These include the government of Canada's update on oil and gas development, Sky-Futures' first FAA-approved operator inspecting oil rigs in the Gulf of Mexico, and Bureau of Safety and Environmental Enforcement's annual report and youth tech challenge.

OTC will also be giving out distinguished achievement awards for individual and institutional achievement. ■

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COMMITMENT TOWARDS PERFECTION

A renewed focus on the chemicals business

Process automation giant ABB is looking to take its chemicals business to the next level, says Joerg Theis, ABB's global Product Group manager for Chemicals.

Joerg Theis, ABB's global Product Group manager for Chemicals

"ABB HAS ALWAYS been strong in the chemicals and refining business, and we still have quite a big footprint in the market with our existing installed base," explains Theis. "We have been looking for some time at how we can refocus on this sector and offer more to our customers by leveraging the more mature values and solutions we are offering in sectors such as food and beverage. We are seeing certain trends that started in foods and beverage and are now moving to chemicals and other sectors."

Theis highlights in particular the move towards scalable DCS and modularisation. "A modular plant allows the customer to have different products running through the plant modules over the life of the plant. If you make everything exchangeable, you make yourself a little more independent from the supplier, which is on the one hand, increasing competition but on the other, helping everyone to standardise and focus on value. We also see a trend for helping everyone to get a bit more momentum in place in the development of petrochemicals."

Theis cites Exxon Mobil's tie-up with Lockheed Martin as an approach which ABB is looking to emulate. ExxonMobil Research and Engineering Company (EMRE) has awarded a contract to Lockheed Martin to serve as the systems integrator in the early stage development of a next-generation open and secure automation system involving advanced processing architecture, the goal being to control and optimise refining and chemical manufacturing facilities while enabling future equipment and information services such as preventative maintenance and fleet optimisation. The design and implementation is based on architecture standards that will ensure modularity, interoperability, extensibility, reuse, portability and scalability of the new system.

> "The trend now is for smaller, multi-purpose plants, which you are able to change over a lifetime."

"What they are designing there is more or less standard in the food and beverage industry, and we are now seeing a slow evolution into other industries," says Theis.

"Our main focus is on automation; the trend now is for smaller, multi-purpose plants, which you are able to change over a lifetime. That involves scalable DCS, it involves modular automation, these are the trends we see in the automation area, and where we offer fit for purpose solutions, connecting to various PLC (programmable logic controllers), and also supporting the trend towards software. More and more value comes in the software, ie Level 3, DPM. Today when you want to optimise production you have much more data and a huge cost structure; maintenance for example has a huge cost structure, so if you can go from periodic maintenance to condition-based or even predictive maintenance, that will have a huge impact on your plant.

"The second element which we are seeking is more collaboration with OEMs, especially with process OEMs," Theis continues. "ABB is a big supplier of EICT (electrical instrumentation control and telecoms), and we see that the next logical step as a supplier is to package it with process equipment. In some countries, for example, we are delivering complete compressor skips which the customer can simply connect for complete functionality, without needing to worry about all the various elements and functions. So you don't look at electrical and automation separately, you see the function from a process point of view. This aspect is something where we see ABB can definitely add value and where there is an increasing demand; we are delivering a large number of analyser houses every year out of Shanghai. We can ship over a complete e-house in a

container, already tested and commissioned, which saves a lot of time and effort for the customer.

"As well as automation and integration, another element where we see ABB can and should bring more value is in software, where we have some ongoing pilots. Everyone is talking about the internet of things, of Industry 4.0, but there is still a lack of standardisation. We are working with a broad cross-section of interests including customers, universities, and our research centre to address issues such as: What is the real standard? What is the data model? What should be in the cloud, and what should be local? We are looking to find the most efficient, reusable solution, so you really focus on value."

How is ABB helping to promote safety and reliability with its solutions?

"There is a need in the industry to cut costs, while at the same time overall risk is increasing," says Theis. "We are seeing a big move towards remote technologies, where we have a number of solutions we are able to install locally with scalable delivery, from Level 0 to Level 4, working with process specialists and certified safety personnel. We can help with safety requirements, from cybersecurity to plant safety, according to customer requirements, covering responsibilities such as defining hazard zones and making audits.

"We also have software tracking elements where we can indicate to the customer what is working, what is not working, where we have a breach of safety, and so on. We can mix the expertise of a consultant with new technology to bring value to the customer, so he can pick the most suitable solutions according to his specific needs. Our approach is to make it remote, make it scalable, make sure there is the right level of expertise at the right time for the customer."

Promoting operational and cost efficiency

In the current low oil price scenario, there is an increasing interest in automation and solutions promoting operational and cost efficiency.

"It's all about people," comments Theis. "In Europe the focus is on using more software and sensors to reduce the number of operators because of the cost impact; however, in the Middle East it's less about the cost of the people, and more about the quality of the product and reducing human error; here the focus is on using software to get more out of your plant, to bring it to the top potential for productivity. ABB has identified ways that we can help fill these gaps to reduce overall risk and increase productivity.

> "In the Middle East it's less about the cost of the people, and more about the quality of the product and reducing human error."

"This is what automation is about; the more you automate, the more it impacts on costs," stresses Theis. "We have put a lot of effort into high performance HMI (Human Machine Interface). The operator room, for example, can be designed to enable one operator to look after multiple parts of the plant at the same time, while sound and light schemes and alarms can be designed to facilitate a faster reaction to abnormal situations.

"One customer wanted to be warned three hours in advance if they were running into a problem, so we have to go back and look at

ABB is looking to renew its focus on the chemicals sector

The Middle East is a key market for ABB (Photo: eugenesergeev / Fotolia)

how we can ensure the operator can react faster, how we can ensure the right software data is collected which can indicate negative trends in the process condition and which can be an early warning or indicator of something going wrong. We can collect tons of data on condition monitoring and build predictive monitors to indicate, for example, if critical equipment starts to deteriorate and the plant is at risk. This is something we see as a major trend now, because that has a big impact on costs at the end of the day, and a one or two per cent increase in productivity can make a big difference to the customer.

"The cost structure is another focus; the aim of the operator is to reduce fixed costs and produce more with less, which means less hardware. We do commissioning audits, and we advise that plants are reviewed every five years to ensure they are still fit for purpose. Plant managers are looking for complete optimisation, and want to know exactly what they need to get the most out of their facilities."

Key markets

So how does the Middle East feature in ABB's plans?

"We see two key markets – one is China, the world's biggest chemical market, and the other is the Middle East, where the low oil price is forcing them to focus on moving up the value chain," says Theis. "We are seeing many new chemical projects coming up in the Middle East, ranging from refining petrochemicals to specialty chemicals.

"Specialty chemicals are manufactured using batch processing rather than a continuous process, involving very fine limits, and requiring a high level of automation and flexibility. That's where ABB's expertise comes into play, because our biggest footprint is definitely in specialty chemicals, and we can help facilities to optimise by, for example, running more batches in a shorter time, being more flexible at adjusting recipes, and so on.

"What we are definitely seeing, and are seeking, is stronger collaboration among stakeholders in the industry, rather than purely transactional business," Theis emphasises in conclusion. "In oil and gas, the value lies in a closer relationship, we have a lot of contact with our customers, which makes it easier to collaborate, and we have global service agreements where customers all over the world get the same service, with one contact person for all their needs.

"We see scope for this in the chemicals area in particular, because our customers are globalising and increasing their footprint in various regions of the world. Suppliers like ABB can play an important role in helping the industry to standardise; we see a trend towards aligning processes, making things more efficient, and looking for stronger collaboration. ABB is willing to share the risks and be a partner for the project, which means sharing the positive as well as the negative elements in order to bring together the right products and technologies for industry needs. At the end of the day, this is the key to successful projects." ■

Unique fire protection solutions for oil and gas

Firefighting equipment manufacturer NAFFCO exhibited its array of products at the recently held ISNR 2016

UAE-BASED NAFFCO PROVIDES wide range of fire protection solutions to vertical sectors including oil and gas. In the business for more than 30 years, NAFFCO had a strong presence at the recently held International Exhibition for National Security and Resilience (ISNR) 2016.

Taha Haniya, marketing manager at NAFFCO, talks about the specialised product ranges that the company was showcasing at the show.

"Oil and gas is a unique market for us as the demand is slightly different from other sectors. The sector demands special fire protection solutions with certification like UL and FM standards."

Some of the specialised products for oil and gas include automatic sprinkler systems, automatic separation systems, CO_2 solutions, FM 200 kitchen hood, water separation, deluge systems, in addition to certified firefighting pumps that can be custom-made and configured to individual requirements.

"We deliver full turnkey solutions to the oil and gas industry with extended warranties. We have special foam solutions, hydrants, special underground network pipes, above the ground pipes, fire alarm, gas detection system and security CCTV system."

Haniya added that NAFFCO is currently involved in small, medium and large offshore projects for both onshore and offshore applications. The client list includes ADCO, ZADCO as well as IOCs in the region on development projects. The company, however, has a presence in more than a 100 countries worldwide.

NAFFCO also provides a full project management solution – from initial contact through design, engineering, installing to final testing and commissioning.

Talking about unique solutions, Haniya made a special mention about IG541 inert gas, which is part of NAFFCOInert® Fire Suppression System, and demands no water. This can be useful for regions that have water scarcity. It consists of 50 per cent argon, 42 per cent nitrogen and eight per cent CO_2. NAFFCOInert® also offers IG01, IG100, IG55 gases with all the components needed to configure a complete system for 200/300 bar inert gas extinguishing agent and has a full range of cylinders with 67, 80 and 140 litre capacities.

NAFFCO's ARFF FALCON series is suitable for airport firefighting and rescue as these vehicles are built to meet the requirements of fast intervention in case of emergency, exceeding the applicable standard NFPA 414 and ICAO regulations (Photo: NAFFCO)

When the inert gas is discharged into a protected space, it is clear and does not obscure vision. It leaves no residue and has zero ozone depleting potential and zero global warming potential. Health and safety is of the utmost priority, reiterated Haniya.

At ISNR 2016, NAFFCO also exhibited wide ranges of extra low voltage solutions in the firefighting industry that included fire detection systems, voice evacuation systems, thermal imaging systems and video surveillance systems.

"Most alarm systems work with a very high voltage, say 22db. Incase of fire, high voltage may be fatal. NAFFCO provides evacuation solutions with minimum voltage."

Haniya revealed that the region is seeing a booming market for firefighting equipment with the demand for better international standards. There is an increasing awareness to protect lives and properties.

NAFFCO is also one of the very few manufacturers that provide firefighting vehicles, medical ambulances and mobile hospitals. "We have a manufacturing facility of more than 3mn sq ft in Jebel Ali as well as in KSA, Qatar and Egypt.

"We are also one of the rare manufacturers that provide extended warranties as we are confident about our engineering solutions."

NAFFCO's client list includes, but is not limited to, ADNOC group, Abu Dhabi Educational Council, Abu Dhabi Commercial Bank, FGB, Emirates Steel and Jaheziya.

NAFFCO is also the authorised distributor for SHIELD in the region. ■

Fujairah: a growing hydrocarbon hub

Malek Azizeh, commercial director at Fujairah Oil Terminal, takes a look at the remarkable growth Fujairah as a strategic regional hub for crude oil and products.

AS THE THIRD largest oil storage and petroleum products trading centre, and second largest bunkering port in the world after Singapore, Fujairah is growing at an impressive rate, as it aims to become the leading global oil hub.

Fujairah offers the trading community a one-stop-shop of products and services, for bunkering, trading and maintaining vessels. It is commercially designed to provide for the transfer of products (ITT) between the various independent terminals; complete flexibility for traders to buy and sell under the Freezone umbrella; the ability to purchase bunker fuel for the purpose of refuelling; changing of crew if needed; medical services; ship maintenance; and ship supplies.

Growing volumes of traffic through the port have helped to position the region as the third largest oil products hub globally; in 2015, the Port of Fujairah reached a new record of 50mn tonnes of refined products throughput. Fujairah's strategic location close to the Strait of Hormuz, the world's most important oil transit chokepoint, has reinforced its importance.

Additionally, the continued focus on diversification in Fujairah is resulting in investments being made in the downstream sector, including product specialty chemicals, bitumen and biofuels refineries, as well as chemical storage.

ADNOC commissioned its eight million barrel terminal in Fujairah back in 2012, as a receiving point for Murban crude, which is transported from the heart of UAE through the 400 km Habshan pipeline. It is designed to transport up to 1.5mn bpd of this sweet crude, when fully utilised.

Fujairah Oil Terminal FZC (FOT), owned by China's Sinopec (50 per cent) Australia's Prostar Capital (40 per cent) and the Government of Fujairah (10 per cent) is the first independent third-party crude oil terminal to offer commercial storage to crude oil traders. FOT is currently considering expansion options and evaluating the future market outlook to build the most suitable tanks for the future. As crude storage and throughout volumes are gaining momentum, thanks to ADNOC's large crude storage facility and the Port's considerable investment in Very Large Crude Oil Carriers (VLCC) berths, many terminals in Fujairah are now considering building crude tanks instead of the traditional refined products tanks, which form the majority of Fujairah's current capacity.

Fujairah is now the world's third largest oil storage and petroleum products hub (Photo: Dave Crosby/flickr)

> "In 2015, the Port Of Fujairah reached a new record of 50mn tonnes of refined products throughput."

There is much activity in Fujairah; a new refinery will be coming into operation and Vopak is looking to commission a new project imminently.

There is also expected to be a positive impact from the lifting of Iranian sanctions, with oil traders looking to supply and receive products from Iran. As a result, there will be even more demand for storage in Fujairah, as gasoline cargos will be blended to specifications ready for export and fuel oil imports will add to the existing pool.

All in all, the success story of Fujairah in such a short period of time is making other ports carefully monitor its progress. If it carries on at the same rate of growth that has been witnessed to date, it is only a matter of time before it takes over as the largest global oil hub. ■

This is an abbreviated version of the presentation made by Malek Azizeh at Tank World Expo 2016, held from 12-13 April in Dubai.

SledgeHammer set for further growth and success

IN THE SPACE of three decades, India-headquartered SledgeHammer has grown from a small centralizer manufacturer to a world leading cementing products company and the largest producer of cementing and float equipment in Asia. Specialising in cementing centralizers for oil wells, the company currently supplies more than 62 countries and is the only company in Asia with the capability of manufacturing the complete product line under one roof.

SledgeHammer is proud to have API 10D, 5CT & ISO 9001:2008, 14001:2004 and 18001:2007 certifications under its belt, and manufactures a wide range of equipment confirming to API 10D, 5CT, 10F, and TR5 specifications.

SledgeHammer provides a complete range of cementing products and accessories for both offshore and onshore needs as well as a complete line of welded and non-welded bow spring centralizers, turbolizers, solid centralizers, rubber cementing plugs, stop collars, stage cementing tools, DV tools, float equipment, cement retainers, bridge plugs, packers, cementing heads and other accessories for the oil and gas drilling industry.

The company takes pride in the fact that all its products are designed, assembled, tested and inspected in-house, resulting in superior quality, cost-effectiveness and unrivalled delivery timelines. Its facility is equipped with the most modern machines such as robotics welding, robotics paint shop, flow loop testing cell, CNC, VMC,VTL, HMC, fully automated heat treatment plant for bow spring manufacturing, state-of-the-art press shop, complete machine shop, organised paint shop along with all required testing machines.

The design department and tool room of SledgeHammer boasts all the latest software and other equipment for testing and quality control such as centralizer placement software and standoff calculation software, as well as a computerised load testing machine for starting, running and restoring force testing. It also houses a well-appointed material testing laboratory, various mechanical, pneumatic and hydraulically driven machines for fitting, assembly and robotic welding of centralizers, along with qualified and trained engineers.

The company prides itself on its commitment to innovation, excellence and customer satisfaction and constantly strives to improve its products, which are subjected to rigorous on-site testing. Its four pillars of faith are to be cost efficient, use resources effectively, engage people and deliver value. Caring for its people, community, and the environment are also amongst its core values.

SledgeHammer continues to expand its global footprint, with the establishment of a joint manufacturing facility in Oman and Saudi Arabia and sales offices in the UAE, Malaysia and the USA. The company looks forward to a bright future and further international expansion, with plans to open a new office in Moscow to cater for the CIS region.

SledgeHammer supplies its equipment to more than 62 countries

Modernising meter calibration

Neil Bowman, project engineer at NEL, outlines the benefits of a new approach to meter calibration.

ACCURATE MEASUREMENT OF the flow of oil and gas has always been of high importance to operating companies. This is because flow meters act as "cash registers", effectively measuring the amount of revenue being generated by the company. For example, in custody transfer measurement, many national regulations stipulate an uncertainty of 0.25 per cent on liquid and of one per cent on gas for standard volume. To achieve this level of accuracy, the measuring equipment has to be installed properly and rigorously maintained, verified and periodically calibrated.

In the past, flow measurement was performed by mature technologies such as Orifice Plate Meters, turbine meters and positive displacement type devices. Over the last two decades however, these have gradually been supplanted by newer technologies such as ultrasonic, electromagnetic and Coriolis meters. These meters are generally non-intrusive and have much higher turn-down ratios, so that they can measure a much larger range of flows to the required accuracy. These developments have been accompanied by rapid developments in sensing technology, process monitoring and the introduction of meter diagnostics.

Meter diagnostics

These diagnostics work by post-processing data collected during the measurement process to provide additional insight to the performance of the meter. An example of this is the capability of Ultrasonic meters (USMs) to record the speed of sound (SOS) of the fluid which allows the tracking of deviations in fluid composition which may impact the estimated flow rate. Coriolis meters also have a range of new diagnostics available.

Experimental work has also allowed some of the traditional flow measurement devices to be used in this way as well. Differential pressure meters in particular can be made to work in wet-gas flow conditions where correlations derived based on experimental research can allow the Gas Volume Fraction (GVF) to be established based on differential pressure ratios measured at different points within the device.

Meter calibration in NEL's flow measurement facility

However, these diagnostics alone are not enough to ensure that the required accuracy of the device is met, which means that periodic calibration remains an essential part of the flow measurement system maintenance. The issue that operators have to deal with is that when you consider the cost of system shutdown, packaging, transport, calibration, and witnessing, it is clear that calibrations can be an expensive and time-consuming undertaking.

> "These diagnostics alone are not enough to ensure that the required accuracy of the device is met."

Managing calibration

At present, flow meters are normally calibrated on a specified time interval, typically six months or a year. When deciding on this calibration interval, several factors have to be taken into consideration.

These factors include instrument type, system operating conditions, measurement application and the recommendation from the meter manufacturer. However, this approach means operators will incur an annual or bi-annual expense, in addition to the inconvenience, loss of revenue and other negative factors caused by system shutdowns.

This is just one possible approach to system maintenance, as there are a number of other calibration scheduling methodologies available that operators should increasingly consider to harness the benefits of modern technological

developments. One such approach is known as risk-based calibration, where calibration scheduling is based on the degree of financial exposure caused by calibration drift over time weighed against the cost of calibrating and otherwise maintaining the device for a given calibration interval. Another alternative approach is called condition-based calibration, which involves the use of diagnostic data acquired from the device or measurement system, either through post-processing of the primary measurement data or by using ancillary data that can give qualitative insight into the overall health of the measurement system, as well as indicate anomalies in the performance of that device or system.

The increased sophistication and availability of modern meter diagnostic technologies has given the industry the potential to take advantage of the possibilities afforded by risk and condition-based calibration scheduling. The advantages are particularly clear from an operational standpoint, as these new meter calibration approaches deliver increased operational efficiencies.

A matter of balance

One significant issue with the current system of performing calibrations based on a set time-based interval is that this does not necessarily take any account of the conditions to which the meter has been subjected. It also does not consider whether the instrument has suffered a statistically significant degree of calibration drift that is likely to impinge on measurement accuracy, or the resulting financial exposure such inaccuracies create for operators.

This means that the operator could be performing calibrations with unnecessary frequency, incurring all the associated costs and impacts on operational efficiency. Conversely, the meter may be drifting or deteriorating at a higher rate than anticipated, resulting in increased financial exposure. The problem is that without any form of diagnostics or condition monitoring in place, the operator does not know if either of these situations arises.

Neil Bowman, project engineer, NEL

Risk-based calibration attempts to address these issues by trading off the decreasing cost of calibration with an increasing calibration period, against the increasing financial exposure as the calibration cost increases. By balancing these two factors, it is possible to find the optimal calibration period that represents the minimum overall cost to the operator. There are a number of ways that this can be achieved. One method is to use the calibration history of a meter to identify drift characteristic trends. It is then possible to use this data to approximate how the meter will drift over time and when calibration should be scheduled.

> “Risk-based calibration attempts to address these issues.”

Formulating a cost-effective meter calibration strategy

With the recent reduction in the oil price, attitudes within the oil and gas industry are beginning to shift towards more cost-effective, evidence-based methodologies, despite the current popularity of ‘time-based’ calibration scheduling.

In principle however, the ideal calibration strategy would be a combination of these approaches where qualitative ‘condition-based’ diagnostic data is used in conjunction with statistical modelling based on data from historical calibrations to drive up efficiency, reduce costs and maintain accuracy.

Despite the benefits of using one of these modern approaches to the calibration scheduling, many operators still use time-based scheduling. Factors such as the simplicity of time-based scheduling, lack of training and awareness, outmoded measurement apparatus, lack of budget and systemic and procedural inertia may all be factors in why some operators have not yet fully embraced this new mind-set. What is clear is that many operators will soon have to adopt a new approach, and possibly a new attitude towards flow meter calibration scheduling before risk or condition-based calibration, rather than time-based calibration, become the norm.

However, the financial facts of oil and gas flow measurement make clear the importance of being able to achieve a high degree of measurement accuracy. With an oil price in early 2016 of under US$40 per barrel, and with daily global sales in the

> “Many operators will soon have to adopt a new approach towards flow meter calibration scheduling.”

region of 100mn bbl, this would raise US$4 bn revenue per day. If we accept that the uncertainty in fiscal measurement for liquid was ± 0.25 per cent, the resulting daily financial exposure would be about US$10mn. This equates to an exposure of US$3.6bn per year, or the equivalent of nearly a day’s production. The significant fiscal and custody transfer implications of inaccuracy and not adapting to a new meter calibration approach can clearly be seen. ■

NEL, a provider of technical consultancy, research, testing and programme management services, is part of the TÜV SÜD Group. NEL is also a global centre of excellence for flow measurement and fluid flow systems and custodian of the UK’s National Flow Measurement Standards.

A multiphase meter undergoing testing at NEL’s multiphase flow measurement facility

Jotun launches Jotachar 1709 passive fire protection coating

JOTUN HAS LAUNCHED Jotachar 1709, a mesh free epoxy passive fire protection coating developed specifically for the hydrocarbon processing and energy industries.

Jotachar 1709 has been developed using the revolutionary technology platform behind Jotun's successful Jotachar JF750 coating, which continues to be embraced by offshore and onshore industries as an alternative to traditional mesh containing solutions for hydrocarbon pool and jet fire scenarios.

Jotachar 1709 has been specifically designed to protect steel against hydrocarbon pool fire scenarios for up to four hours, as defined within the ANSI/UL1709 Standard. Operators also benefit from long-term corrosion protection, reduced life cycle costs and the elimination of any risk associated with mesh installation errors.

According to John Warner, Jotun category manager (Intumescent Coatings), Jotachar 1709 offers the land-based hydrocarbon processing industry significant advantages compared with traditional passive fire protection solutions.

Jotachar 1709 offers the land-based hydrocarbon processing industry significant advantages compared with traditional passive fire protection solutions

"Today, concrete or cementitious-based PFP materials are widely used in the hydrocarbon process and related industries to manage risks associated with pool fires," he explains. "Installation of lightweight cementitious material often includes welded or galvanised steel mesh systems, all of which add to cost and installation time whilst extending the shutdown period. Dense concrete options have a high installed weight, often requiring additional engineering considerations, and are susceptible to deterioration if not correctly maintained. Whilst these PFP solutions may appear to have a low initial cost, they often deteriorate rapidly due to the harsh industrial environment, leading to extensive substrate corrosion with compromises in fire safety. Frequent inspection and extensive maintenance over the life of the asset is often required to ensure fire performance and steel integrity."

By contrast, Jotachar 1709 can be applied in a continuous application process.

"Our mesh free solution does not require additional welded pins, metal or fabric reinforcement, eliminating the need for complex mesh depth or overlap rules, reducing both material cost and installation time," Warner says.

"Unlike concrete or cementitious-based solutions, Jotachar 1709 is highly durable and does not require additional weather-proofing to prevent deterioration. No topcoat is required as part of our UL1709 certification. For maintenance and repair, ease of application with Jotachar 1709 significantly reduces installation time and shortens asset downtime."

Raccortubi Group extends global distribution network

RACCORTUBI GROUP HAS further developed its global distribution network in order to fulfil complete piping packages to short timescales.

Over the course of the last three years, Raccortubi Group has undergone significant expansion, with the establishment of three stockholding subsidiaries in Dubai, Brazil and Singapore, the acquisition of a second butt weld fittings manufacturer in Italy, the opening of a branch office just outside London, and finally the acquisition of a renowned stockholder for offshore platforms in Aberdeen (Scotland). These investments have all been made to offer customers added value; a single Group which can fulfil requirements worldwide from both stock and production in the provision of complete packages, as well as single item necessities, to short timescales.

Raccortubi stock of pipes, fittings and flanges

The Group's latest developments, including the recent acquisition of Norsk Alloys (now Raccortubi Norsk), have allowed Raccortubi to extend its distribution network and therefore its value-added service provision, cutting times and costs for customers around the world.

In addition, the acquisition of Petrol Raccord at the end of 2014 has enabled Raccortubi Group to extend its butt weld fittings' manufacturing range from ½" to 56", with unlimited wall thicknesses and an increasing part of production dedicated to special/customised fittings. Thanks to its integrated production facilities, Raccortubi Group is able to guarantee not only the quality of the final product, but also short lead times resulting from adaptive planning and flexibility. The quality control throughout production means that the highest standards are achieved and fully certified products, in accordance with the most stringent market requirements, are available off-the-shelf from stocks around the world.

Manufacturer, stockholder and supplier Raccortubi Group provides customers with pipes, tubes, fittings and flanges in stainless steel, duplex, superduplex, 6Mo, nickel alloys and titanium from strategic global locations. It fulfils piping packages for critical applications, such as chemical and petrochemical plants, oil installations, power plants, shipyards, fertiliser plants and offshore platforms.

Axis introduces new video analytics application for intrusion detection

AXIS COMMUNICATIONS, A market leader in network video, has strengthened its perimeter defense solutions portfolio with the launch of AXIS Perimeter Defender, a scalable and flexible high-end video analytics application for intrusion detection in the enterprise market. Combined with Axis network cameras, Axis network horn speakers and third party video management software, the application forms a comprehensive, video-based solution for effective perimeter surveillance and protection, designed to reinforce physical access control in demanding and large-scale installations.

Designed for easy installation, configuration and management, AXIS Perimeter Defender uses edge-based video analytics for maximum accuracy, efficiency and scalability. The application supports multiple detection scenarios including several types of intrusion detection and loitering. It specifically meets the needs of high-security perimeter protection scenarios such as oil and gas companies, power plants, chemical plants and demanding installations where there is a need to reinforce the physical access control system with reliable intrusion detection.

"Scalability is a key challenge in high-security scenarios as a perimeter may require anything from 10 to 100 cameras," said Peter Friberg, director Solution Management, Axis Communications. "By performing analytics at the edge, in the cameras themselves, AXIS Perimeter Defender does not depend on a central server to process the video footage. This makes the solution highly scalable, as there is no need for system redesign or expensive hardware replacements each time a new camera is added to the network."

Axis Communications offers a complete perimeter defense solution with the addition of AXIS Perimeter Defender

The application comes with intuitive management and setup tools in one single management interface. A dedicated, easy-to-use design tool simplifies the initial system layout and the installation. The central management interface allows operators to configure and manage all analytics-enabled cameras in the network through efficient and time-saving batch operations. In addition, a graphical representation of detection distances ensures that any potential blind spots are eliminated, and the entire perimeter is protected with the highest level of accuracy and consistency.

AXIS Perimeter Defender has been certified for sterile zone monitoring applications by i-LIDS®, the UK government's benchmark for Video Analytics (VA) systems developed in partnership with the Centre for the Protection of National Infrastructure.

It will be available in Q2 2016 through Axis distribution channels, with a 60-day free trial period available.

For more information visit http://www.axis.com/products/axis-perimeter-defender.

A new entrant to the Abu Dhabi offshore market - DNV GL classed JOPETWIL 300

"WE HAVE HIGH ambitions to grow in the Abu Dhabi offshore business and service the oil majors of Abu Dhabi. When we started looking at various options, my operations team decided to look for an accommodation jack up which can be involved in major maintenance of fixed offshore platforms. As the owner and operator, I would like to maintain the highest quality and safety standards and so I decided to go with the classification requirements of DNV GL," said Saleh Muqattash, CEO of Jopetwil.

The jack up barge, "JOPETWIL 300" has DNV GL Class notation as + 1A1, Self-Elevating Accommodation Unit, in compliance with IMO MODU 2009 under the UAE flag.

The jack up barge was built in Korea, and after arriving at the CCTC yard in Musaffah, Abu Dhabi, underwent a major modification to the requirements of oil majors with a tight schedule of five months.

The vessel has 250 POB accommodation to ILO 92 with a deck space of 500 sq m. It has a rectangular shaped hull and a primary crane of 280T capacity, with an aluminum helideck installed aft of the vessel. An auxiliary crane of approximately 50T capacity and a boom rest were added as part of the modification. New power generation capacity has been added to suit the new POB & HVAC requirement. The entire modification was carried out in-house by the Jopetwil team.

"Complete approval work has been carried out at DNV GL's Dubai jack up service centre, and we gave top priority for timely completion of the project, involving a large number of engineers and surveyors. I am glad that we are part of this success story of Jopetwil, and congratulate the whole team for their dedicated efforts," said Bijali Nair, regional offshore manager of DNV GL for South East Europe, the Middle East and India.

Saleh Muqattash, CEO of Jopetwil

Ensuring safety for the world's largest industrial plants

IN THE SPACE of just 15 years, HIMA has grown from a small niche provider of safety technology, to a leading global provider of automated safety solutions, with more than 35,000 installed systems supporting some of the world's largest and most important industrial projects.

A family-owned enterprise, HIMA was founded in 1908 and is headquartered in Bruehl, Germany. HIMA's international expansion was driven by Steffen Philipp, who became managing partner in 1999.

"Eventually, we had to decide whether we wanted to grow with our clients or remain a local company," recalls Philipp. "We decided to follow our customers. We established sales and service support points in many countries so we could guarantee the necessary support on site."

Another crucial factor was the increasing safety awareness in the industrial environment, and the establishment of internationally valid standards. This accelerated demand for advanced technology in applications for the chemicals industry, oil and gas industry, power generation, factory automation and machine automation, as well as passenger transport and freight logistics.

"Our systems are used in all of these segments," explains Philipp. "In this regard, every HIMA installation contributes to safety for people, the environment, and industry."

HIMA Group now has 16 subsidiaries and is represented in more than 50 locations in all seven continents worldwide, numbering some of the world's largest enterprises amongst its customers, including BASF, Bayer, BP, Shell, and TOTAL.

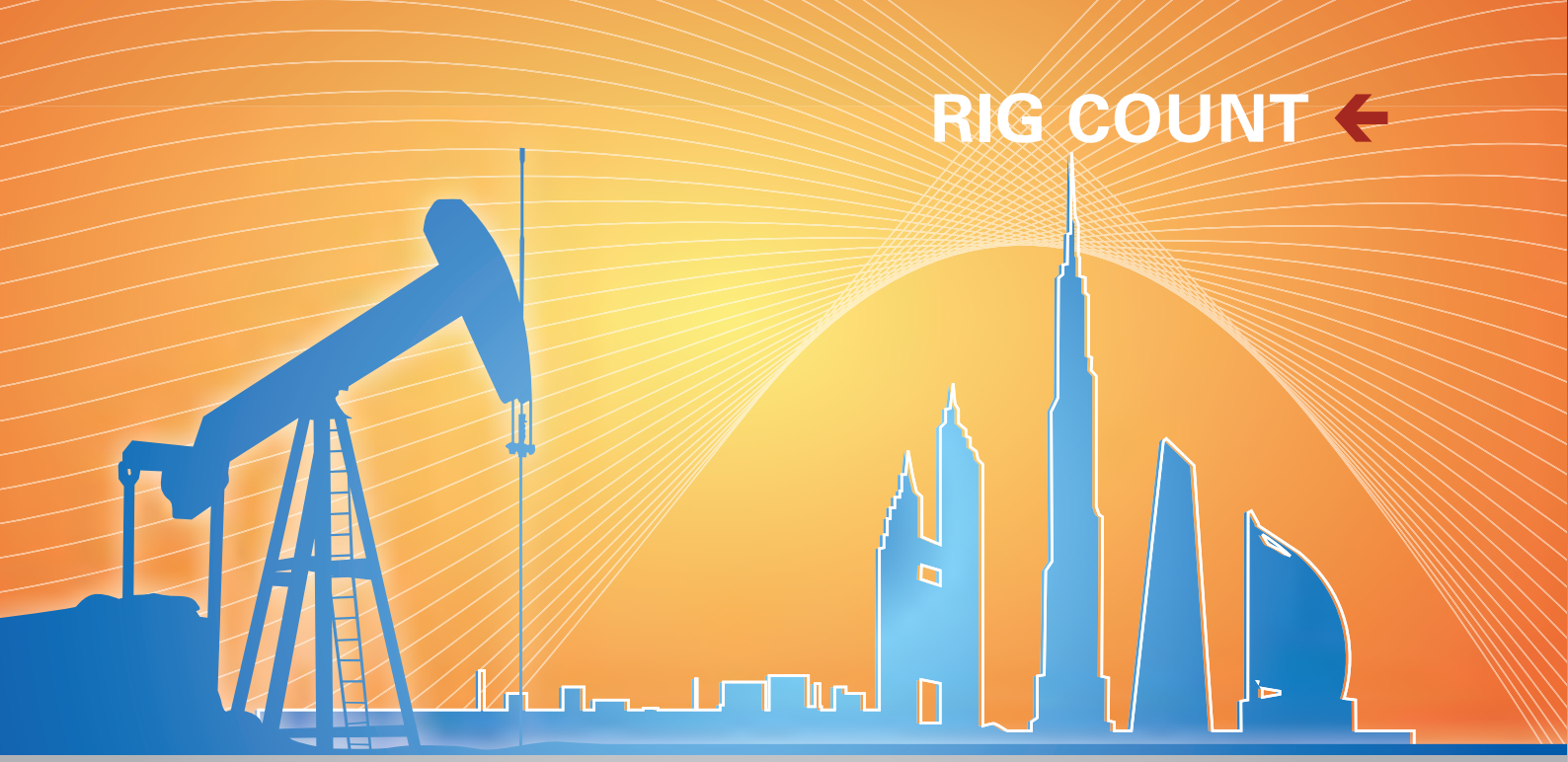
HIMA specialises in solutions for the process industry, including monitoring of pipelines, tank farms, refineries, and incineration plants. Through its steadily growing network of subsidiaries, sales and service centres and representatives, HIMA can handle orders of any size, and is in a position to take on complete projects, as well as subcontracts.

Of particular note, the company is supplying the safety systems for Australia's Ichthys gas field. The project includes some of the world's biggest and most advanced offshore facilities, massive onshore processing and an 890 km pipeline to unite them. Once in operation, the complex will produce 8.9 million tons of LNG. HIMA's safety technology is distributed in more than 430 control cabinets throughout the processing complex, making it the largest order in the company's history.

The rail sector also represents a promising market for the company, with customers including engineering and planning firms, transportation companies, and manufacturers of locomotives and other rail vehicles throughout the world.

HIMA Middle East was established in 2001 to serve clients in the region and in Egypt, India, Pakistan, Turkey, Caspian countries and Russia. Through offices in Dubai, Muscat and Doha, and local representation in Kuwait, Saudi Arabia, Turkey and India, HIMA Middle East provides safety solutions in numerous process industries. Customers, which include the ADNOC group of companies and regional NOCs, in addition to other major operators and end-users, rely on HIMA Middle East for modules and complete systems, application engineering, project management and engineering, installation and start-up support, after-sales service and functional safety consulting. HIMA Middle East ranks among Dubai's 100 top-performing SMEs and is ISO 9001:2008 certified.

"We have succeeded in establishing the quality of our products, the specialised know-how of our employees, our service offerings, and an unrivalled reputation among our customers," says Philipp. "This is something we can be proud of."



Middle East & North Africa

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

	THIS MONTH			VARIANCE	LAST MONTH			LAST YEAR		
Country	Land	OffShore	Total	From Last Month	Land	OffShore	Total	Land	OffShore	Total
Middle East										
ABU DHABI	30	18	48	0	31	17	48	25	11	36
DUBAI	0	2	2	0	0	2	2	0	2	2
IRAQ	48	0	48	-1	49	0	49	61	0	61
JORDAN	0	0	0	0	0	0	0	0	0	0
KUWAIT	41	0	41	-2	43	0	43	45	0	45
OMAN	70	0	70	-1	71	0	71	57	0	57
PAKISTAN	24	0	24	3	21	0	21	19	0	19
QATAR	3	3	6	0	2	4	6	2	7	9
SAUDI ARABIA	113	14	127	-1	111	17	128	97	18	115
SUDAN	0	0	0	0	0	0	0	0	0	0
SYRIA	0	0	0	0	0	0	0	0	0	0
YEMEN	0	0	0	0	0	0	0	3	0	3
TOTAL	329	37	366	-2	328	40	368	309	38	347
North Africa										
ALGERIA	54	0	54	2	52	0	52	49	0	49
EGYPT	25	6	31	-4	25	10	35	46	16	52
LIBYA	0	1	1	0	0	1	1	4	3	7
TUNISIA	0	0	0	0	0	0	0	0	3	3
TOTAL	79	7	86	-2	77	11	88	102	9	111

Source: Baker Hughes

Project Databank

Compiled by Data Media Systems

OIL, GAS AND PETROCHEMICAL PROJECTS - OMAN

Project	City	Facility	Budget ($ US)	Status
BP - Block 61 - Khazzan and Makarem Gas Fields Development	Oman	Gas Field Development	24,000,000,000	Construction
BP - Block 61 - Khazzan Gas Fields Development - Phase 1 - Central Processing Facility	Al Dahirah	Gas Processing	1,200,000,000	Construction
BP - Block 61 - Khazzan Gas Fields Development - Phase 1 - Overview	Al Dahirah	Gas Field Development	15,000,000,000	Construction
BP - Block 61 - Khazzan Gas Fields Development - Phase 1 - Package 1	Al Dahirah	Gas Field Development	1,500,000,000	Construction
BP - Block 61 - Khazzan Gas Fields Development - Phase 1 - Package 2	Al Dahirah	Gas Field Development	130,000,000	Construction
DRPIC - Duqm Refinery & Petrochemical Complex - Duqm Refinery (Overview)	Duqm	Refinery	6,000,000,000	EPC ITB
DRPIC - Duqm Refinery & Petrochemical Complex - Duqm Refinery - Main Process Units	Duqm	Refinery	4,000,000,000	EPC ITB
DRPIC - Duqm Refinery & Petrochemical Complex - Duqm Refinery - Offsites and Utilities	Duqm	Refinery	2,000,000,000	EPC ITB
DRPIC - Duqm Refinery & Petrochemical Complex - Petrochemical Complex	Duqm	Aromatics	4,500,000,000	Feasibility Study
Duqm Petroleum Terminal Company - Duqm Liquid Jetty	Duqm	Oil Storage Terminal	1,000,000,000	EPC ITB
Duqm Petroleum Terminal Company - Duqm Liquid Jetty - Topside Facilities	Duqm	Oil Storage Terminal	250,000,000	EPC ITB
Masdar - Harweel Wind Power Plant	Harweel	Power Plant	125,000,000	EPC ITB
Ministry of Oil & Gas - Iran to Oman Subsea Natural Gas Pipeline	Sohar	Gas	600,000,000	FEED
Oman Gas Company - Murayrat PLS Upgrade	Adam Ad Dakhliya	Gas Processing	100,000,000	Engineering & Procurement
Oman Gas Company - Muscat Gas Network	Muscat	Gas Network	100,000,000	FEED ITB
Oman Gas Company - Saih Nihayda to Duqm Special Economic Zone Gas Pipeline	Duqm	Gas	250,000,000	EPC ITB
Oman Gas Company - Salalah Loopline	Salalah	Gas Pipeline	70,000,000	Engineering & Procurement
Oman Gas Company - Salalah LPG Extraction	Salalah	Liquefied Petroleum Gas (LPG)	100,000,000	FEED
Oman Oil Company - Salalah Ammonia Plant (Luban)	Salalah	Ammonia	750,000,000	EPC ITB
OMPET - Sohar PTA/ PET	Sohar	Purified Teraphtalic Acid (PTA)	850,000,000	EPC ITB
OMPIA - Metaxylene/Purified Isophthalic Acid Plant	Sohar	Purified Teraphtalic Acid (PTA)	500,000,000	FEED
OOCEP - Block 60 Concession - Onshore	Oman	Oil & Gas Field	1,100,000,000	Engineering & Procurement
Orpic - Liwa Plastics Industries Complex (LPIC) - NGL Extraction Units	Sohar	Natural Gas Liquefaction (NGL)	400,000,000	Engineering & Procurement
Orpic - Liwa Plastics Industries Complex (LPIC) - NGL Pipeline	Sohar	Gas	400,000,000	Engineering & Procurement
Orpic - Liwa Plastics Industries Complex (LPIC) - Polyethylene and Polypropylene Units	Sohar	Polyethylene	800,000,000	Engineering & Procurement
Orpic - Liwa Plastics Industries Complex (LPIC) - Steam Cracker	Sohar	Ethylene	2,900,000,000	Engineering & Procurement
Orpic - Liwa Plastics Industries Complex (LPIC) Overview	Sohar	Polyethylene	6,500,000,000	Engineering & Procurement
Orpic - Muscat-Sohar Product Pipeline (MSPP)	Muscat	Oil	320,000,000	Construction
Orpic - Sohar Refinery Improvement Project (SRIP)	Sohar	Refinery	1,500,000,000	Construction
OTTCO - Duqm Refinery - Ras Markaz Crude Oil Terminal Pipeline	Duqm	Oil	250,000,000	FEED
OTTCO - Main Line Oil - Ras Markaz Crude Oil Terminal Pipeline	Duqm	Oil	300,000,000	FEED
OTTCO - Ras Markaz Crude Oil Park - Crude Storage Facility	Duqm	Oil Storage Tanks	80,000,000	EPC ITB
OTTCO - Ras Markaz Crude Oil Park - Export Terminal	Duqm	Oil Storage Terminal	400,000,000	EPC ITB
PDO - Amal Steam Phase 1C Surface Facilities	Amal Oilfield	Gas Field Development	80,000,000	Engineering & Procurement
PDO - Amal Steam Phase 1C-2	Amal Oilfield	Oil Field Development	300,000,000	EPC ITB
PDO - Ghaba North Gas Field Re-Development	Northern Oman	Gas Field Development	250,000,000	Engineering & Procurement
PDO - Khulud Tight Gas Development Project (KLD)	Kauther Field	Gas Field Development	100,000,000	Feasibility Study
PDO - Lekhwair Combined Cycle Power Plant	Lekhwair	Power Plant	400,000,000	EPC ITB
PDO - Rabab-Harweel Integrated Plant (RHIP)	Harweel	Gas Processing	3,000,000,000	Construction
PDO - Saih Nihayda Condensate Stabilization Plant	Saih Nihayda	Gas Treatment Plant	115,000,000	Construction
PDO - SRCPP & SNGP Condensate Recovery Maximisation	Saih Nihayda	Gas Processing	300,000,000	Construction
PDO - Yibal Depletion Compression - Phase 3 (Y3DC)	Yibal	Gas Processing	300,000,000	Construction
PDO - Yibal Khuff Sudair Field Development	Northern Oman	Oil Field Development	3,000,000,000	Construction
PDO - Zauliah Gas Plant Project	Al Wusta	Gas Processing	110,000,000	Construction

Project Databank

Compiled by Data Media Systems

Project Focus

Compiled by Data Media Systems

Project Summary

Project Name	PDO - YIBAL KHUFF SUDAIR FIELD DEVELOPMENT
Name of Client	Petroleum Development Oman (PDO)
Estimated Budget ($ US)	3,000,000,000
Facility Type	Oilfield Development
Status	Construction
Project Start	Q1-2011
End Date	Q1-2019
FEED	PDO - WorleyParsons FEED Office
PMC	Petrofac
Main Contractor	Petrofac Galfar Engineering & Contracting SAOG
Contract Value (US$)	900,000,000
Award Date	Q3-2015

Background

PDO plans to develop Yibal Khuff and Sudair reservoirs at the Yibal field in the north of the country, which are located at depths of around 3,000 metres. Yibal Khuff (YK) is an onshore project consisting of 47 wells and a Central Processing Facility (CPF) to produce the sour gas from YK Sudair Reservoir.

Project Status

Date	Status
16 Mar 2016	Galfar Engineering & Contracting wins the construction contract for the Central Processing Facility. The contract is valued at US$299 mn.
26 Jan 2016	Around 20 per cent of the detailed engineering is completed. PDO plans to complete all the engineering works before the end of Q2 2017.
14 Jun 2015	Petrofac has been awarded a contract worth US$900 mn. Under the terms of the contract, Petrofac will be providing detailed engineering, and PMC services and procurement for four and a half years.
11 Jun 2015	The FEED study has been completed.
10 Apr 2013	6 contractors have been pre-qualified to bid for the EPC contract.
11 Dec 2012	The basic design has been completed. The FEED study will start on 18 December 2012 and will take 12-18 months to complete. PDO-FEED Office will do the FEED.
15 Feb 2012	PDO invited international contractors to submit prequalification documents for the FEED-Detailed Engineering and Procurement (FEED-EP) contract by 2 March 2012.

Project Scope

Plant design capacity:

- Gas: 6.6 MM sm3/d
- Oil: 4,000m3/d
- Water: 4,000 m3/d

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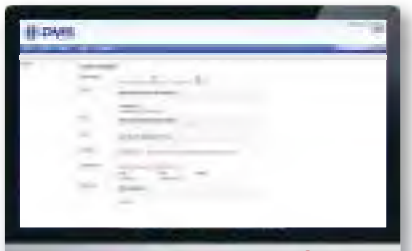
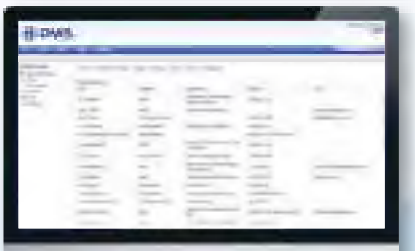
Customizable Dashboard

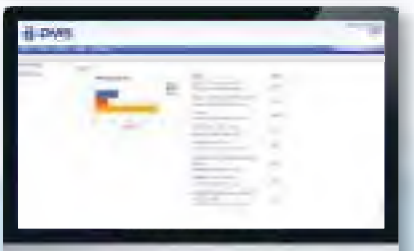
Project Overview



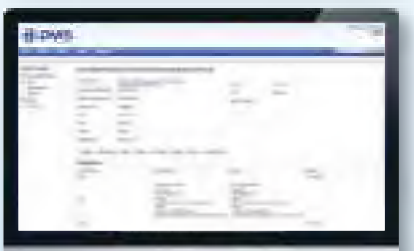
Advanced Search



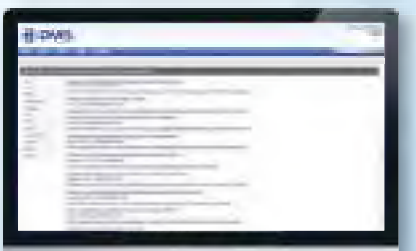
Key Personnel



Market Forecast



Bidders List



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

NEW FEATURES

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

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الأصول الأكثر أماناً
أكثر جدوى من حيث التكلفة

عادة ما تكون أصول حقول النفط البحرية أكثر عرضة لأحوال الطقس القاسية وعوامل مثل التآكل الملحي. وهو ما يُعرض الأجهزة لمستويات غير محدودة من البلى والتلف تتحول من مجرد التدهور البسيط إلى العطل الكامل. والفحص اليدوي المستمر يتسم - دائما - بارتفاع تكلفته، وفي بعض الأحيان يشكل خطورة على المستخدمين المعنيين. واليوم توفر منتجات المراقبة الحل البديل.

وبالإمكان نقل البيانات المرئية، في الوقت الفعلي، بدقة وكفاءة عالية باستخدام نطاقات ترددية منخفضة لتفادي استنزاف الموارد والنفقات غير اللازمة، وذلك باستخدام كاميرات من شأنها العمل في مناطق محصورة ذات إضاءة منخفضة ودرجات حرارة مرتفعة وأيضا منخفضة للغاية. ويتم وضعها في أماكن ملائمة لمراقبة مناطق الحلقات غير الخطرة، وهي مصممة بإتقان لمراقبة المناطق الخطرة بشكل متواصل، والتي ينطوي فحصها في الغالب بصفة منتظمة على صعوبات أو مخاطر.

وبإدماج بث الفيديو مع التحليلات عبر منصة مراقبة وتحكم، يمكن برمجة أي انحراف عن المعلمات المحددة (أو مجموعة مؤشرات التدهور المحتملة) لإطلاق إنذار الحوادث على شاشات المراقبة بداخل غرفة التحكم حتى يتسنى للمستخدمين إجراء التحريات في هذا الشأن. وبفضل تحسين الاتصالات والشبكات القائمة على بروتوكول الإنترنت، أصبح من الممكن مراقبة هذه الطبيعة من قاعدة أرضية تدعم عمليات أكثر سهولة لأصول حقول النفط البحرية.

غير أن متابعة تدهور الأجهزة ليست هي الطريقة الوحيدة لاستخدام المراقبة في تحسين السلامة وخفض التكاليف. على سبيل المثال، من خلال جمع مجموعات البيانات من الأنظمة العديدة، تقل الفترة المطلوبة للكشف عن التسريب المشتبه به والاستجابة له بدرجة كبيرة.

وبوسع محطات الكاميرات الحرارية الكشف عن التسريبات بتحديد الاختلافات في درجة الحرارة وقوة الإشعاع الحراري بين النفط والماء. وبسبب قابلية التوصيل الحراري التي يتسم بها النفط بوجه عام، سوف يصبح أكثر سخونةً من المياه المحيطة به أثناء اليوم بامتصاص الحرارة بسرعة أكبر. ويضمن إدماج الفيديو الحراري مع أنظمة مراقبة العمليات الأخرى إطلاق الإنذارات الناجمة عن أية مؤشرات على التسريب ومساعدة المُشغلين على فحص أجهزة العمليات الأقرب إلى التسريب المحتمل. وهذا يتيح سرعة رد الفعل للحيلولة دون وقوع أية مشكلات على صعيدي الحماية والبيئة، كما يضمن تقليل الخسائر المالية إلى الحد الأدنى، والتي قد تنجم عن فقدان المنتج والغرامات التنظيمية.

من المنتظر تزايد عدد الناقلات والمنشآت العائمة للغاز الطبيعي المسال

ينطبق المبدأ نفسه على مجالات مثل مراقبة التوجه والخزانات وخطوط الأنابيب. ويتيح الاكتشاف المبكر للون الشعلات الباهت أو الأجزاء الساخنة في الأجهزة، تدخل طاقم الصيانة قبل أن تتحول أوجه القصور في العمليات إلى مشكلات واسعة النطاق. وهي إمكانية تحظى بالتقدير الكبير في قطاع يهدف إلى المحافظة على هامش الربح الصافي.

المراقبة والقرصنة

لا تزال القرصنة مشكلةً تؤرق العالم في حقول النفط البحرية، وبينما تقع أغلب حوادث القرصنة في العالم في جنوب شرق آسيا، تظل معدلات الخطر عالية في الشرق الأوسط. ربما لا يتسنى لمُشغلي أصول حقول النفط البحرية - الثابتة أو العائمة - منع حدوث الهجمات المادية، غير أنه يمكنهم الاستعانة بحلول إدارة أمنية متكاملة للكشف عن التهديدات والتعامل معها في وقت مبكر.

فهناك توجه متزايد نحو استخدام الرادار والكاميرات (الثابتة والمتحركة القابلة للتقريب والحرارية ومتعددة الأطياف)، وأنظمة التحديد التلقائي، وأنظمة المعلومات، وعرض المخططات الإلكترونية التي يتم إدماجها باستخدام حلول تحكم ومراقبة مفتوحة على المنصات. وهذا يسهّل وضع حدود محيطة افتراضية تستدعي الكشف وتحديد الموقع الفوري في عملية شبيهة بتلك المستخدمة على السفن إذا تم اختراق هذه الحدود، إلى جانب الاستجابة التلقائية للحوادث، والتي تشمل توجيه التعليمات لنداءات الاستغاثة أو عمليات الإخلاء.

وفي حالة تسلل دخلاء إلى الأصول، يكون من الممكن للطاقم المتواجد في مكان مُحَصَّن (منطقة آمنة محددة) نقل لقطات كاميرات المراقبة أو التواصل عبر VSAT مع «القوات الصديقة» مثل الشرطة أو حرس الحدود وما إلى ذلك، وموالاتها - أولا بأول - بما يجري كلما اتضحت الأمور.

ويتم حاليا استخدام تكنولوجيا المراقبة من جانب القائمين على صناعة حقول النفط البحرية بهذه الطريقة لحماية أصول البنية التحتية العالمية المهمة في مجال النفط والغاز. ومن المزمع أن يتواصل هذا التوجه دون أدنى شك.

استخدام أنظمة مراقبة متكاملة يمكن أن يؤدي إلى كفاءة في التشغيل والتكاليف

توظيـــف التكنولوجيا في منـــاخ حـرج من حيث التكلفة

في هذا المقال، يقدم جون ماكاي، من شركة حلول المراقبة العالمية ynectics ، نظرة عامة على توجهات تكنولوجيا المراقبة الحالية لحقول النفط البحرية ذات الصلة بسوق الشرق الأوسط.

دخلت صناعة النفط والغاز العالمية مرحلة من فائض المعروض تخيم عليها الاضطرابات. فالأسعار غير المستقرة والموازنات المقيدة تطل برأسها كتحديات طويلة الأجل، وليس مجرد عقبات قصيرة المدى. ولا شك، والحال كذلك، أن المشغلين في حاجة إلى عبور هذه المرحلة الحرجة بتعزيز الكفاءة التشغيلية، وهو هدف يدفع العديدين نحو الابتكار من خلال تبني التكنولوجيات التي تساعد على الإنتاج، وتقلل من الطلب على الموارد.

لهذا السبب، لا يجوز لمشغلي حقول النفط البحرية في الشرق الأوسط أن يقللوا من شأن الكفاءات التشغيلية الممكنة – ومن ثم كفاءات التكلفة – التي يمكن تحقيقها باستخدام حلول المراقبة الملائمة بالطريقة الصحيحة.

الأنظمة المتكاملة

يعتبر ظهور المراقبة القائمة على بروتوكول الإنترنت، الفرصة الأكثر أهمية للقطاع في هذا الشأن، إذ تتيح حدوث الاندماج المتكامل بين الفيديو ومجموعة كبيرة من الأنظمة الحيوية التابعة لأطراف ثالثة؛ مثل التحكم في الوصول، والتحكم في العمليات، والكشف الكيميائي، والاستجابة في حالات الطوارئ، بل وحتى الرادار. والفائدة المباشرة من وراء ذلك أن الأمر يستغرق عددا أقل من الأشخاص، ووقتا أقل لمراقبة الأنظمة عند توحيدها – وبالتالي القدرة على إدارتها – في بيئة واحدة للقيادة والمراقبة. غير أن الميزة الأكثر فائدة للسوق المعنية بالتكاليف هي التحليل الدقيق للبيانات الذي يوفره هذا المستوى من التكامل.

فبيانات مثل التغيرات في درجات الحرارة أو الضوضاء أو أداء الأجهزة والوقوف على أوجه القصور وتحركات المستخدمين غير المعتادة، يمكن مراقبتها بسهولة وإحالتها، على نحو متواصل، عبر نظام إدارة أمنية واحد لتحديد المشكلات قبل تفاقمها. كما يمكن أيضا تهيئة النظام نفسه لتوفير البث المرئي عالي الوضوح (من أقرب محطات كاميرا) وإتاحة الاستجابة/التحقيق في الحوادث تلقائيا على الشاشة أثناء سير العمل لرفع مستوى الكفاءة. وبهذه الطريقة، يتيح دعم مراقبة الموقع سرعة الاستجابة للتهديدات، ويمكنه في النهاية منع تفاقم الحوادث التي ربما تشكل خطورة على البشر والأماكن والأرباح.

مضاعفة الأصول الحالية

وبطبيعة الحال، بينما يغلب استخدام الأنظمة القائمة على بروتوكول الإنترنت عالية الوضوح للمراقبة داخل المنشآت الحديثة في الشرق الأوسط، لايزال هناك عددٌ هائلٌ من الكاميرات التناظرية يستخدم في المراقبة. وإزاء حجم بعض المواقع، إلى جانب القيود المفروضة على الموازنة، يتعذر الاستبدال واسع النطاق للكاميرات التناظرية، مع ضرورة الأخذ في الاعتبار سعي العديد من المُشغلين إلى تطوير أصولهم الحالية قبل الاستثمار في المشروعات الجديدة، وضمان عمل المرافق القديمة والجديدة معا على نحو متكامل. وينطبق هذا، بوجه خاص، على دول مثل قطر والمملكة العربية السعودية، حيث يكون التوسع في المشروعات بسبب تاريخ المنشأة الطويل هو الأمر الأكثر شيوعا.

ومن بين المميزات الكبرى لأنظمة المراقبة الحديثة، التي تتسم بإمكانية التشغيل المتبادل من حيث جدوى التكلفة وسهولة الاستخدام، هو قدرتها على توظيف المنتجات القديمة، مثل الكاميرات التناظرية القائمة بالفعل، والبنية التحتية الخاصة بها، وتوصيلها بالتكنولوجيا الحديثة، وتوحيدها في نظام يوفر جميع مزايا التحكم الرقمي، أي أنه نظام هجين.

هذا يُحدث فارقاً كبيراً على رقم الاستثمارات الكلي لتحديث المشروع (على سبيل المثال استقدام منصات حفر جديدة أو بنية تحتية لوجستية مُحسنة) حيث إنها تغني عن الحاجة إلى التخلص من المرافق القديمة وإحلالها بأخرى جديدة. فمع أنظمة التشغيل المتبادل، يمكن استقدام محطات الكاميرات الجديدة هذه بسرعة وسهولة، وجعلها تعمل جنبا إلى جنب مع الكاميرات القائمة بالفعل، والبث في نظام رقمي واحد للتحكم والمراقبة.

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إينـــوك للـــزيوت تؤكـد على التـزامهـا بالتميـــز

حصل مصنع إينوك للزيوت والشحوم (ELOMP)، الذي يعد جزءاً من قطاع أعمال التسويق لشركة نفط الإمارات الوطنية (إينوك)، على ثلاث شهادات عالمية في الجودة والصحة والسلامة، ليؤكد بذلك ريادته في صناعة الزيوت والشحوم في المنطقة.

وكان مصنع إينوك للزيوت والشحوم (ELOMP) في جبل علي قد حصل على شهادة الأيزو 9001:2008 لنظام إدارة الجودة وشهادة الأيزو 14001:2004 لنظام إدارة البيئة وشهادة الأيزو 18001:2007 لنظام إدارة الصحة والسلامة المهنية، وهي جميعا تعتبر من الشهادات القياسية العالمية المرموقة التي تعكس التزام المصنع بتقديم أعلى مستويات المنتجات والخدمات لعملائه.


لحظة تقديم الاعتمادات

في هذا السياق، قال سيف حميد الفلاسي، الرئيس التنفيذي لمجموعة إينوك: «تقوم إينوك للزيوت والشحوم بخدمة العملاء في قطاعات السيارات والنقل البحري والصناعات، من خلال طاقة إنتاجية تبلغ ٣٠٠ ألف طن متري سنويا في مصنعيها بجبل علي والفجيرة. وبحكم امتلاكنا لقاعدة عملاء واسعة ومتعددة الثقافات، نحرص دوما على ضمان مطابقة منتجاتنا لأعلى المعايير». وحصولنا على هذه الشهادات يثبت أن منتجات وعمليات إينوك تلتزم بأعلى المعايير العالمية في الجودة والصحة والسلامة».

هذه الشهادات تؤكد على ريادة مصنع إينوك للزيوت والشحوم في جبل علي في صناعة الزيوت والشحوم، بعد النجاح الذي حققه المصنع الرئيسي في الفجيرة، حسب الشركة.

ومن جانبه، قال محمد صادق، مدير التسويق في إينوك للزيوت: «لقد نجحنا في (إينوك للزيوت) في تحقيق حضورٍ كبيرٍ في السوق عن طريق توفير أنواع مبتكرة ومتميزة من منتجات الزيوت والشحوم المصممة لتعزيز كفاءة المركبات وقوة تحملها وتحسين أدائها. ومن خلال أسلوبنا المتكامل في المزج والتحليل والتعبئة، تنتج إينوك للزيوت مجموعة كبيرة من الزيوت بشكل مستقل، وتلبي احتياجات العملاء في أكثر من ٦٠ دولة في منطقة الشرق الأوسط وأفريقيا وجنوب شرق آسيا وشبه القارة الهندية».

يجدر بالذكر أن مصنع إينوك للزيوت والشحوم في جبل علي لديه منشأة للتصنيع تبلغ مساحتها ٥ آلاف متر مربع تقع في المنطقة الحرة بجبل علي. ويمكن زيادة طاقتها الإنتاجية من ٢٥ ألف طن متري إلى ٥٠ ألف طن متري، من خلال رفع الكفاءات التشغيلية.

سـابـك تبدأ التشـغيل التجريبي لمصنـع كيميـا

أعلنت الشركة السعودية للصناعات الأساسية (سابك) أنها بدأت التشغيل التجريبي لمصنع المطاط لشركة الجبيل للبتروكيماويات (كيميا) بتكلفة بلغت ٣,٤ مليار دولار أمريكي. وقد بدأ التشغيل التجريبي بوحدتي الكربون الأسود والمرافق بالمصنع، حسب بيان الشركة.

علما بأن (كيميا) مشروعٌ مشتركٌ مناصفةً بين سابك وإكسون العربية للكيماويات التابعة لإكسون موبيل الأمريكية، وهي شريكة في عدد من مشروعات الصناعات التحويلية في المملكة العربية السعودية.

وبعد التشغيل الكامل، من المتوقع أن يوفر مصنع المطاط ما يزيد على ٤٠٠ ألف طن متري سنويا من المطاط، والبوليمرات الحرارية، والكربون الأسود لخدمة الأسواق المحلية والعالمية الناشئة في آسيا والشرق الأوسط.


سوف يوفر المصنع أكثر من ٤٠٠ ألف طن متري من المطاط في العام

مفكرة رجال الاعمال

أبريل / نيسان

١٩ ـ ٢١ ـ مؤتمر ومعرض أوفشور البحر المتوسط ـ الإسكندرية

مايو / أيار

٨ ـ ١٠ ـ معرض أبوظبي الدولي للصناعات التحويلية ـ أبوظبي

١٥ ـ ١٦ ـ معرض إيران للنفط والسكك الحديدية والموانئ ـ طهران

٢٣ ـ ٢٥ ـ مؤتمر النفط العراقي ـ لندن

يونيو / حزيران

١ ـ ٤ ـ معرض بحـر قـزوين للنفط والغاز ـ باكو

مزيد من التعاون بين بريتش بتروليوم ومؤسسة البترول الكويتية

وقعت شركة بريتش بتروليوم ومؤسسة البترول الكويتية على اتفاقية إطارية لبحث الفرص الممكنة للاستثمار والتعاون في مشروعات النفط والغاز والتجارة والبتروكيماويات في المستقبل، بحسب بريتش بتروليوم. وقد وقع الاتفاقية كلٌ من بوب دادلي، الرئيس التنفيذي لشركة بريتش بتروليوم، ونزار محمد العدساني، الرئيس التنفيذي لمؤسسة البترول الكويتية. وترى بريتش بتروليوم أن الاتفاقية تمهد الطريق لكلتا الشركتين لإقامة الاستثمارات المشتركة، والتعاون في مشروعات النفط والغاز في الكويت والدول الأخرى. وصرح دادلي قائلاً :«يعود التزام بريتش بتروليوم تجاه الكويت إلى مشاركتنا في اكتشاف حقل النفط العملاق (برقان) في ثلاثينيات القرن الماضي، وهانحن اليوم نسعى لإطالة الفترة العمرية للحقل». وأضاف:«نتطلع للعمل مع مؤسسة البترول الكويتية لمساعدة الكويتيين على استغلال كافة الإمكانات المتاحة من موارد النفط والغاز بالدولة، واستكشاف الفرص الجديدة على الصعيد العالمي».

وإلى جانب تحسين معدلات استرداد النفط والغاز من قاعدة الموارد الحالية بالكويت، تشمل الاتفاقية أيضا الاتجاه لبحث فرص الاستثمار المشترك في اكتشاف حقول النفط والغاز في المستقبل بداخل الكويت وبمناطق أخرى في العالم. وتشمل عناصر الاتفاقية الأخرى صفقات التجارة المستقبلية في النفط والغاز، كما تشمل أيضا المتاجرة في الغاز المسال والمشروعات ذات الصلة.

وبدوره، قال دافيد نيكولاس، رئيس المكتب الصحفي بمجموعة بريتش بتروليوم: «وقّعنا اتفاقية إطارية أساسية مع مؤسسة البترول الكويتية حيث تربطنا علاقة تمتد

بريتش بتروليوم عملت في قطاع النفط والغاز الكويتي منذ زمن طويل

منذ سنوات عديدة بالكويت. وسوف نواصل العمل المشترك [مع مؤسسة البترول الكويتية] لاكتشاف المزيد من الفرص الجديدة والعالمية».

وبموجب الاتفاقية، يتم أيضا بحث فرص التعاون والاستثمار - عالميا - في مشروعات قطاع النقل وخطوط الأنابيب والبتروكيماويات، ويشمل ذلك إمكانية توظيف تكنولوجيا الباراكزيلين المملوكة لشركة بريتش بتروليوم كجزء من مشروعات البتروكيماويات التابعة لمؤسسة البترول الكويتية.

طائرة بدون طيار تقوم بفحص أحد التجهيزات العائمة

لويدز ريجستر تصدر توجيهات باستخدام الطائرات بدون طيار

أصدرت لويدز ريجستر المرحلة الأولى من مذكراتها التوجيهية للطائرات بدون طيار وأنظمة الطيران الآلي (UAS)، والتي من شأنها منح المشغّلين في قطاعات الطاقة والصناعات البحرية الثقة في استخدام أنظمة الطيران الآلي لإجراء عمليات الاستطلاع لحقول النفط البحرية والبرية، وعمليات الفحص أثناء الخدمة، حسبما ذكرت الشركة.

وقال نيال ماكولام، مدير تكنولوجيا المعلومات بشركة لويدز ريجستر: «نقوم بتطوير هذه المذكرات التوجيهية لتوفير معالجة متسقة للمخاطر عند استخدام أنظمة الطيران الآلي والطائرات بدون طيار، وذلك لاعتبارات تشغيلية عملية متعلقة باللوائح والمستخدمين، والجودة والسلامة، والأجهزة والبرمجيات والعمليات».

ويتم التحكم في أنظمة الطيران الآلي عن بُعد أو بشكل مستقل، لتقليل الحاجة لإرسال المستخدمين إلى البيئات المحفوفة بالمخاطر والتحديات. وهي توفر بديلاً فعالًا للطرق التقليدية لتقييم وفحص التشغيل أثناء الخدمة، وخاصةً البُنى والأصول على ارتفاعات كبيرة، والمواقع التي يصعب الوصول إليها والبيئات الخطرة. وتتبنى شركات كبرى، مثل شِل وميرسك للحفر ضمن شركات أخرى، هذه التكنولوجيا المبتكرة. وقد أجرت ميرسك للحفر وشركاؤها عددا من الدراسات التجريبية بالتعاون مع لويدز ريجستر لتقييم قدرات أنظمة الطيران الآلي للاستكشاف على ارتفاعات كبيرة وفي مناطق صعبة. وسيجري تحديث المذكرات التوجيهية، التي تصدرها لويدز ريجستر، بصفة منتظمة لتوفير أحدث المعلومات العملية في موضوعات مثل الطريقة الأمثل لاستخدام أنظمة الطيران الآلي لفحص المناطق المحصورة، وهو أمر متعلق بتطبيقات الطاقة والتطبيقات البحرية على وجه الخصوص، حيث تكون الاستطلاعات عالية الجودة مطلوبة. وفي هذا السياق، صرح كريس تشانج، رئيس البحوث الإستراتيجية بشركة لويدز ريجستر، بقوله: «لقد كان من شأن التطورات السريعة في مجال الأجهزة والبرمجيات، والتي تشمل الاستقرار في الجو وأدوات التخطيط لما قبل الطيران وتكنولوجيا الكشف عن العوائق وتفاديها، تحويل هذه الطائرات الصغيرة إلى أدوات عمل مجدية». وأضاف: «إلى جانب التطبيقات الخاضعة للتجربة والاختبار، مثل الفحص الآمن لأصول مداخن الشعلات والبنى التحتية الخارجية الحيوية الأخرى، نتعاون أيضا مع رواد الصناعة للتمكن من فحص الأجزاء السفلية لبُنى حقول النفط البحرية والسفن البحرية والأماكن المحصورة مثل صهاريج التخزين. ومع تحسين الإمكانات، نعتقد أن أنظمة الطيران الآلي ستتمكن مستقبلاً من اتباع مسارات طيران محددة مسبقا بشكل مستقل، مما يتيح دقة أكبر عند القياس، وجمع المزيد من البيانات الملائمة، مع فحص عملية جمع البيانات في وقت فعلي».

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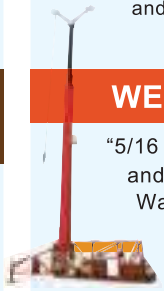

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