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Oil Review Middle East

Oil · Gas · Petrochemicals

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Boosting the Gulf's downstream industry

- KPC's ambitious plans
- Trends in sectoral oil demand
- The growing need for temporary structures
- Storage tank safety solutions
- Addressing corrosion challenges
- The uses of cryogenic valves

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Editor's note

REFINING AND PETROCHEMICALS activity continues apace in the Middle East to meet global and regional demand and add value to the region's economies. Kuwait's new 650,000 bpd Al Zour refinery, Saudi Aramco and Sabic's oil-to-chemicals plant, ADNOC's Takreer expansion and Oman's Liwa plastics complex are just some of the major projects underway. Total, meanwhile, has just announced a new joint venture with Saudi Aramco for a mega petrochemicals complex. In this issue we report on the establishment of the Gulf Downstream Association, which will act as a platform for sharing knowledge and best practices with a view to promoting the growth and sustainable development of the region's downstream industry (see p20). We also hear from KPC's CEO on the national oil company's expansion plans (p12), look at factors which will impact future sectoral oil demand (p16) and discuss the growing demand for temporary structures (p40), as well as reviewing the latest technology developments.

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➔ Executives' Calendar 2018

APRIL			
16-17	**Kuwait Oil & Gas Summit**	KUWAIT	www.cwckuwait.com
17-19	**MOC 2018**	ALEXANDRIA	www.moc-egypt.com
24-25	**Lebanon International Oil & Gas Summit**	BEIRUT	www.liog-summit.com
29-3 May	**SOGAT 2018**	ABU DHABI	www.sogat.org
30-3 May	**OTC 2018**	HOUSTON	2018.otcnet.org
MAY			
79-10	**RD Petro**	ABU DHABI	www.rdpetro.org
6-9 May	**Iran Int'l Oil, Gas, Refining & Petrochems Exhibition**	TEHRAN	www.iran-oilshow.ir
29-1 June	**Caspian Oil & Gas**	BAKU	www.caspianoilgas.az
OCTOBER			
23-24	**Offshore Energy**	AMSTERDAM	www.offshore-energy.biz
23-25	**GDA Int'l Downstream Conference & Exhibition**	MANAMA	www.gdaconference.org
NOVEMBER			
12-15	**ADIPEC**	ABU DHABI	www.adipec.com
DECEMBER			
5-7	**Basra Oil & Gas**	BASRA	www.basraoilgas.com
11-12	**ME-SPEC**	MANAMA	www.me-spec.org

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

Offshore Technology Conference (OTC) celebrates 50th anniversary

THE OFFSHORE TECHNOLOGY Conference (OTC), which celebrates its 50th edition this year, takes place on 30 April–3 May at NRG Park in Houston, USA. This milestone event brings together global executives, government officials, scientists and engineers, investors, and top buyers to share cutting-edge technology, expertise and products. OTC showcases leading-edge technology for offshore drilling, exploration, production, and environmental protection, and is the world's foremost event for the development of offshore resources.

Discussions at OTC 2017

The event is expected to attract more than 70,000 energy professionals from more than 100 countries, and will feature more than 2,000 exhibiting companies. The technical conference will include 350 technical presentations covering topics from the wellbore to topsides, and everything in between.

Several special events are planned on Monday, 30 April, to celebrate OTC's achievements. Speakers at the opening ceremony include Patrick Pouyanné, chairman and CEO, Total; Ryan Lance, chairman and CEO, ConocoPhillips; Solange da Silva Guedes, chief exploration and production officer, Petrobras; Harry Brekelmans, project and technology director, Royal Dutch Shell; Jeff Miller, president and CEO, Halliburton; and Clay Williams, chairman and CEO, National Oilwell Varco.

Another noteworthy feature is the chairman's Panel on Energy Transformation, to be addressed by Carlos Ghosn, chairman and CEO, Renault-Nissan-Mitsubishi; Eldar Saetre, president and CEO, Statoil; Remi Eriksen, group president and CEO, DNV GL; and Ernest Moniz, MIT professor and former United States Secretary of Energy.

"OTC is celebrating a significant milestone in the life of the conference," Pouyanné said. "For 50 years, OTC has encouraged scientists and engineers to develop innovative technologies that have unleashed the potential of offshore energy sources needed for global growth and progress. I'd like to invite my peers to join me in celebrating this momentous occasion at OTC 2018."

For further information see 2018.otcnet.org.

Attendance at the Middle East's leading geoscience event up seven per cent

A TOTAL OF 4,050 world energy leaders, stakeholders and executives from 53 countries converged in Bahrain for the 13th Middle East Geosciences Conference and Exhibition (GEO 2018) in March for four days of strategic dialogue and business opportunities.

Marking a seven per cent increase in attendance, attendees were welcomed by 76 exhibitors from 19 countries at the world-class exhibition featuring state-of-the-art equipment, technological advancements and innovative services in the oil and gas exploration sector.

The parallel conference programme convened under the theme 'Pushing the Technical Limits: Shaping the Energy Landscape' and featured over 420 expert speakers focusing on geological studies, reservoir challenges, the environment, safety, risk management and innovation.

GEO 2018 was held under the patronage of the Prime Minister of Bahrain His Royal Highness Prince Khalifa bin Salman Al Khalifa, and was officially supported by the Bahrain National Oil and Gas Authority.

Bahrain's Deputy Prime Minister His Highness Shaikh Ali bin Khalifa Al Khalifa performed the official exhibition ceremony on 6 March 2018 at the Bahrain International Exhibition and Convention Centre, accompanied by the Minister of Oil His Excellency Shaikh Mohammed bin Khalifa Al Khalifa.

The conference opened in a special ceremony on 5 March 2018 at the Ritz Carlton hotel. Welcome addresses were delivered by His Excellency Shaikh Mohammed bin Khalifa bin Al Khalifa; global industry kingpin His Excellency Ali Al-Naimi, former Minister of Petroleum and Mineral Resources of Saudi Arabia and Current advisor to the Royal Court; and renowned energy expert and documentary filmmaker Dr. Scott W. Tinker, director, Bureau of Economic Geology University of Texas.

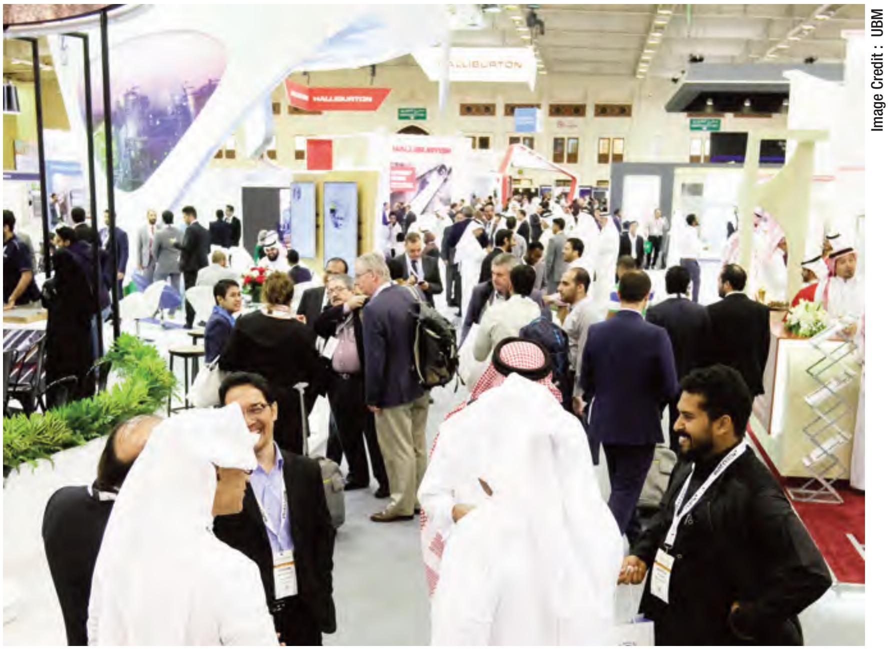


Image Credit : UBM

The busy exhibition floor at GEO 2018

In testing times for the energy sector, Ahmad Al Eidan, GEO 2018 Chairman and Kuwait Oil Company's Drilling & Technology Directorate deputy CEO, declared GEO was a bright spot for the region and the industry alike, and an important opportunity to convene.

"As we are all aware, the oil industry is still going through challenging times and despite a number of attempts to call the bottom of this current cycle there are no clear signs yet when conditions will significantly improve," said Al Eidan.

"The GEO conference and exhibition have always been considered as an inspirational gathering that industry professionals look forward to, to enhance the Middle East's hydrocarbon resource development. The diversity of the audience background and experiences enables a new thought horizon and knowledge sharing that continues to lead a new energy generation," he continued.

GEO 2018 also played host to a five-day programme of activities aimed at nurturing the next generation of geoscience professionals. A total of 19 regional universities participated in a series of workshops, short courses, competitions and conference sessions for students and young professionals.

The next edition of GEO will take place from 16–19 March 2020 at the Bahrain International Exhibition and Convention Centre.

Abu Dhabi launches first ever competitive bid round

ABU DHABI HAS announced its first ever competitive exploration and production bid round. The Abu Dhabi National Oil Company (ADNOC) has announced on behalf of the Supreme Petroleum Council (SPC), the details of the initial round of six oil and gas blocks open for bidding. The blocks, two of which are offshore and four onshore, cover an area of between 2,500 and 6,300 sq km, comprising an area of almost 30,000 sq km in total.

The successful bidders will enter into agreements granting exploration rights and, provided defined targets are achieved in the exploration phase, be granted the opportunity to develop and produce any discoveries with ADNOC, under terms that will be set out in the bidding package.

H.E. Dr Al Jaber, UAE Minister of State and ADNOC Group CEO said, “The launch of these large new licensing blocks is an important step for Abu Dhabi and ADNOC as we develop and apply new strategies to realise the full potential of our resources, maximise value through competitive bidding and accelerate the exploration and development of new commercial opportunities.

“This approach is central to our expanded partnership strategy, which aims to introduce new opportunities as we broaden and diversify our partnership base. In addition, as we begin to expand our downstream portfolio, the new licensing blocks reinforce our long term production growth ambitions and build on our successful legacy as a leading upstream player.”

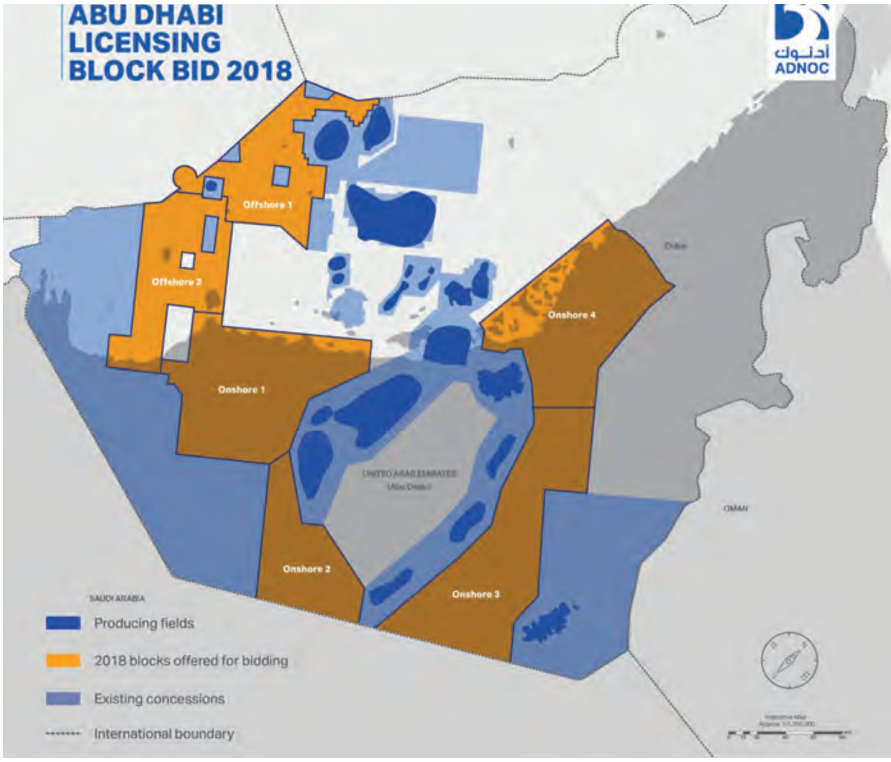


Image Credit : ADNOC

The UAE is the world’s seventh largest oil producer, with around 96 per cent of its reserves within the emirate of Abu Dhabi. Located in one of the world’s largest hydrocarbon super-basins, there remains undiscovered and undeveloped potential in the numerous stacked reservoirs, according to ADNOC. Estimates suggest these new blocks hold multiple billion barrels of oil and multiple trillion cubic feet of natural gas. Some of the blocks already have discoveries, and within the combined area there are 310 targeted reservoirs from 110 prospects and leads. In addition to the country’s conventional oil and gas accumulations, some of the offered blocks also contain significant unconventional resource potential.

ADNOC has established a dedicated website – www.adnoc.ae/Block-Bid – where interested bidders can register to participate, subject to a strict prequalification process. The closing date for the receipt of bids will be in October, after which ADNOC will evaluate the bids, using the criteria set out in the bidding instructions, and the SPC will award the successful bidders. The first bid round is planned to conclude this year.

Bahrain’s new oil discovery could contain more than 80bn bbl

BAHRAIN’S NATIONAL OIL and Gas Authority (NOGA) said it estimates tight oil amounting to at least 80bbo in what has become the country’s largest discovery of oil and gas ever, off Bahrain’s west coast. Bahrain discovered the offshore Khaleej Al Bahrain Basin as it seeks to expand output capacity at its wholly-owned Bahrain Field to 100,000 barrels a day by the end of the decade.

NOGA also confirmed that a separate gas discovery below the Khalij Al-Bahrain Basin could contain reserves of 10-20 tcf.

"Agreement has been reached with Halliburton to commence drilling on two further appraisal wells in 2018, to further evaluate reservoir potential, optimise completions, and initiate long-term production," Bahrain’s Minister of Oil, Shaikh Mohammed bin Khalifa Al Khalifa, said.

"The presence of a layer with moderate conventional reservoir properties on top of an organic-rich source rock creates a unique self-sourcing and trapping system, enhancing production and economic viability," state-owned Bapco’s chief exploration geologist in charge of the discovery, Yahya Al Ansari, said.

According to a statement released by the Bahrain News Agency, officials expect the resource to be "on production" within five years and benefit the country’s economy.

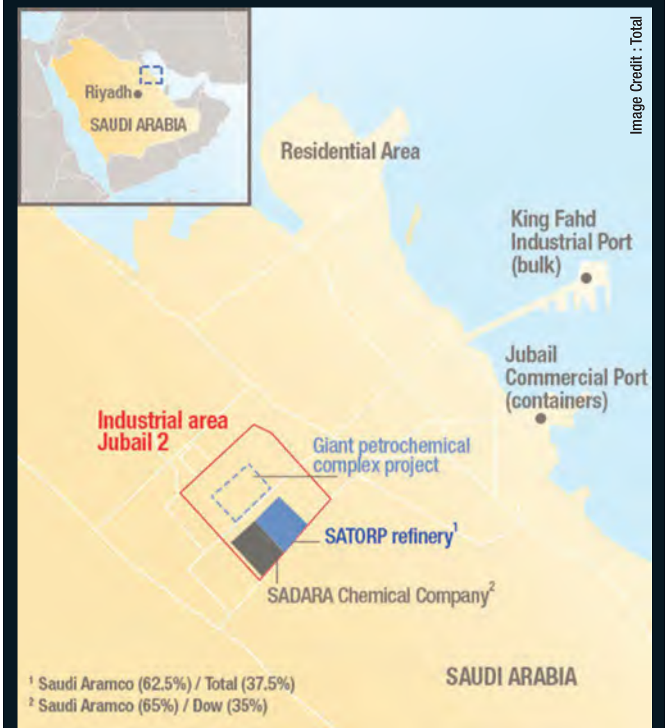
"The discovery breaks new ground for the Bahrain oil and gas industry using established technologies," DeGolyer and MacNaughton senior vice-president, Dr John Hornbrook, said.

"Based on the core analysis carried out on several wells the formation could be classified at the edge of the conventional-unconventional type of plays,” a Schlumberger spokesperson said. Schlumberger performed the first test well drilling on the resource.

While the scale of discoveries is very large, more information is needed to establish how much of the resource is commercially recoverable, comments Tony Quinn, senior analyst at energy consultants Wood Mackenzie. “A tight reservoir means a low recovery factor and only a fraction of the 80+ bn bbl is likely to be recoverable. The oil will also be technically challenging and potentially high cost to develop… .new fiscal terms will be needed to attract suitable partners.”

He added: “Bahrain is facing declining production from its onshore field – despite ambitions to reach 100,000 bpd, it is currently closer to 45,000 bpd. Bahrain also receives 150,000 bpd from the Abu Sa’fah field, which is shared with Saudi Arabia. Bahrain imports crude from Saudi Arabia through a pipeline which is currently being expanded, with crude being supplied to the Sitra refinery. Any new oil production would likely be exported.”

Saudi Aramco and Total to build giant petrochems complex



The location of the project

SAUDI ARAMCO AND Total have signed a memorandum of understanding to build a giant petrochemical complex in Jubail, Saudi Arabia. The complex will be integrated downstream of the 440,000 bpd SATORP refinery, a joint venture between Saudi Aramco (62.5 per cent) and Total (37.5 per cent) in Jubail, in a move designed to fully exploit operational synergies.

The US$5bn complex will comprise a world-size mixed-feed steam cracker (50 per cent ethane and refinery off-gas) with a capacity of 1.5mn tons per year of ethylene and related high-added-value petrochemical units. The cracker will feed other petrochemicals and specialty chemicals. The project will produce more than 2.7mn metric tons of high value chemicals. In total, US$9bn will be invested, creating 8,000 local direct and indirect jobs, says Total. Front-end engineering and design (FEED) is expected to start in the third quarter of 2018.

“Our joint venture SATORP is a remarkably successful model of industry partnership and we are keen to build on this success to further underpin Saudi Aramco’s strategy to expand its capacity in the chemicals sector by 2030,” commented Amin H. Nasser, president and CEO of Saudi Aramco.

“This project illustrates our strategy of maximizing the integration of our large refining and petrochemical platforms and of expanding our petrochemical operations from low-cost feedstock, to take advantage of the fast growing Asian polymer market," commented Patrick Pouyanné, chairman and CEO of Total. “Furthermore, this project will enable us to strengthen our ties with Saudi Aramco, with whom we successfully operate our biggest and most efficient refinery in the world. Finally, it will contribute to the Vision 2030 of the Kingdom by creating 8,000 jobs and bringing in new high-added-value technologies.”

MENA could see almost US$1 trillion in energy investment over the next five years

THE ARAB PETROLEUM Investments Corporation (APICORP) forecasts total energy investment (committed and planned) of US$919bn for the Middle East and North Africa (MENA) region over the next five years in its newly released annual *MENA Energy Investment Outlook.*

The report forecasts that the MENA region will see a number of critical energy projects pushed through over the next five years, despite the uncertain geopolitical backdrop. Around US$345bn has been committed to projects under execution while an additional US$574bn worth of development is planned.

Leading the drive will be Saudi Arabia, which along with the rest of the GCC will invest across the energy value chain. Iran will struggle to attract funds as the threat of re-imposition of sanctions deters foreign investors. Likewise in Iraq, the disputes between federal and regional governments coupled with the uncertain outcome of the upcoming elections continue to make investors wary, even though the security situation is improving. In North Africa, Algeria will also face difficulties with its ambitious plans to increase oil and gas production due to budgetary constraints and political uncertainty. In Egypt, the start-up of Al Zohr gas field is expected to attract considerable investment, particularly in power generation.

Largest projects by budget highlighted in the report (source: MEED Projects) are the Iraq Crude Oil Export Pipeline (US$27,500mn); Saudi Arabia's Yanbu Oil to Chemicals Complex (US$25,000mn); Iraq's South Gas Utilisation Project (US$17,200mn); Kuwait's Al Zour Refinery Project (US$17,000mn); Kuwait's Clean Fuels Project (US$16,285mn); UAE's Upper Zakum Full Field Development (US$16,180mn); Saudi Arabia's Jizan Refinery Project (US$16,165mn); Oman's Khazzan and Makarem Gas Field Development (US$16,000mn); Oman's Duqm Refinery and Petrochemical Complex (US$16,000mn); Iran's North Pars Gas Field Development (US$16,000mn); and the UAE's Hail and Ghasha Sour Gas Development (US$15,000mn).

MENA rig demand forecast to grow

RIG DEMAND IN the Middle East and North Africa (MENA) is expected to grow over the next five years, with the regional capable fleet forecast to increase by 43 units over 2017-2021, according to Westwood's 2018 *World Land Drilling Rig Market Forecast*.

Drilling activity in MENA is forecast to rise over this period, with a return to more robust growth in 2018-2019 as the focus of the region's OPEC producers returns to increasing output, following the implementation of the production adjustments. Key projects expected to contribute to growth in rig demand within the region include Iran's development of oilfields along the border with Iraq, as well as Kuwait's Heavy Oil Project and Jurassic Gas Project.

Westwood comments that the Middle East market is characterised by attractive long-term contracts (three to five years) and higher day rates for medium-high spec rigs, compared to the USA for example, which is characterised by shorter-term contracts and a competitive spot market.

Globally, Westwood forecasts a recovery in the market, led by a return to growth in North American onshore drilling activity, following anticipated upward movement in oil prices and a return of investor confidence in US shale plays. The global number of rigs drilling is forecast to increase at a seven per cent CAGR over the next five years to reach 4,463 units by 2021, following a decline of 44 per cent over 2014-2016. The global capable fleet size is expected to rise by 154 units over this period, with North America accounting for 39 per cent of this growth.

Iran Oil Show to promote opportunities for co-operation

WITH 9.3 PER CENT of the world's oil reserves and 18 per cent of gas reserves, Iran offers huge potential for international investors. Indeed, the country is set to spend more than US$21bn of capital expenditure on oil projects by 2021 to grow production to around 4.9mn bpd, according to GlobalData. While the political uncertainty over the nuclear deal continues to constrain investment, the past year has seen positive developments such as major deals signed with international companies, and the commencement of gas exports to Iraq.

A high level Iranian delegation visiting London in February highlighted the scope for collaboration with international companies, underlining Iran's thirst for technology, knowledge transfer and long-term partnerships, as well as the country's dynamic private sector and the more favourable terms offered to developers under the new IPC model of oil contracts.

The 23rd Iran International Oil, Gas, Refining & Petrochemical Exhibition, to take place in Tehran from 6-9 May, will provide an ideal forum to explore such opportunities. Major international players as well as domestic producers and industrialists will be present, along with prominent officials from the Ministry of Petroleum, NIOC, NIGC, NIPC and NIORDC. The event is expected to attract more than 100,000 trade visitors from some 40 countries and around 2,000 participating companies from 35 nations. The event will feature seven country group pavilions from Germany, France, China, Republic of Korea, Italy, Russia and Turkey.

For further information see the website at http://iran-oilshow.ir/En.

Progressing under the 2040 strategic directions

Nizar N. Al-Adsani, CEO of Kuwait Petroleum Corporation (KPC), outlines the national oil company's projects and plans, in advance of the Kuwait Oil & Gas Summit.

KPC is expanding refining and petrochemicals activity both at home and internationally

Image Credit : zhu digeng/Adobe Stock

How are you looking to achieve your ambition of achieving four million bpd oil production by 2020 and 2.5bn cubic feet per day gas production by 2030?

Meeting Kuwait oil and gas production targets requires successful completion of the development plan in accordance with the 2040 strategic directions that include, but are not limited to, the following major projects:

- Completion of four new gathering centres (GCs 29, 30, 31, 32)
- Completion of four JPFs (Jurassic Gas Production Facilities).
- Commissioning of LFHO (Lower Fars Heavy Oil) 60mn bpd central production facility
- Aggressive drilling programme
- Improve water handling capacities.

In this context we seek to achieve a leading global position in Upstream as an integrated, value-driven enterprise, by maximising the strategic value from oil, realising the potential of gas, growing reserves for a sustainable future, realising value from technology, strengthening our commitment to HSSE, and striving for excellence in performance.

> "We plan to grow domestic refining capacity to two million bpd by 2035"

It is important to highlight that while Kuwait's crude oil production currently comes from onshore fields, plans call for the exploration and development of offshore production capacity.

What priority do you attach to expanding refining and petrochemicals capacity at home and abroad, and what is the rationale behind the focus on Asia?

KPC 2040 strategic directions call for refining and petrochemicals expansion both locally and internationally. We plan to grow domestic refining capacity to two million bpd by 2035 and sustain it until 2040 with complex configurations, while ensuring maximum offtake of domestic heavy oil production and taking into consideration the need to meet local energy demand.

We aim to integrate refining and petrochemical operations domestically and internationally where it adds value, which ensures optimum returns to the state of Kuwait. We also aim to leverage refining and petrochemical businesses to deliver downstream manufacturing opportunities to the private sector.

We will pursue investment opportunities through partnerships as well as alliances that are economically viable, taking into consideration available Kuwaiti hydrocarbon volumes up to 1.3mn bpd per day in 2035.

Asia is the focus for future expansions and investments since it is the centre for growth and promising markets worldwide. Hence, we are targeting Asia to ensure stable sustained outlets for Kuwaiti hydrocarbons.

How important are technology and innovation in enhancing and optimising Kuwait's oil and gas production?

The enhancement and optimisation of Kuwait's oil and gas production have led to a greater focus on new technologies.

Research, technology and innovation excellence are keys to overcome challenges. Collaborating with internal as well as external partners, known for technological transfer as well as successful innovation, will enable KPC to face upstream challenges.

There are several examples of successful implementation of enhanced technologies in our operations, such as Kuwait Digital Fields, an initiative that promotes integration of people, processes, technology and space for collaborative decision-making that will save costs and increase stability of operations.

Another example is the minimisation of water production via relevant down-hole technologies, such as smart wells completion – inflow control devices and inflow control valves – and water shut-off advanced technologies, including sophisticated reservoir monitoring.

I should also highlight the development of comprehensive, high resolution and integrated reservoir models; and EOR technologies, including steam and chemical injection.

These new adopted enhanced technologies are planned and designed to add value – both tangible and in terms of know-how – in the short, medium and long term.

What role do you envisage for international companies in Kuwait's oil and gas development?

Throughout the process of building Kuwait's national oil industry, business relations with the international oil companies, National Oil Companies and oilfield service companies, as well as other industry players, have continued to expand. It is envisaged that IOCs and service companies will play a major role in supporting the implementation of the 2040 strategic directions.

We already have world-class contractors that have been providing services for many years, and we expect such contractors will continue to play an important role in our projects. We have promoted well-established relationships on a win-win basis that have helped us to expand and achieve strategic targets.

Today, KPC has successful strategic joint ventures with various IOCs and NOCs in refining and petrochemicals, such as those in Vietnam and Oman.

What measures have you adopted to attract and retain young Kuwaitis in the oil and gas sector?

We are the only industry in Kuwait that has more than 20,000 employees of whom 85 per cent are Kuwaitis, and will continue to offer jobs as we expand. We strongly believe that our workforce is our most valuable asset, through which we can achieve the optimum returns and be among the leaders in the industry.

We perceive our industry to be a source of inspiration to develop capable, motivated and engaged people, as we grow and strive to be a global, integrated oil and gas leader. We are keen to develop our people to lead at all levels and actively role model company values. Hence, new young Kuwaitis are attracted and encouraged to join the oil sector as a promising and ambitious career.

Retaining young Kuwaitis in the oil sector assures an environment that stimulates innovation and supports continued learning.

> "We strongly believe that our workforce is our most valuable asset"

What are your hopes for the Kuwait Oil & Gas Summit?

The Kuwait Oil & Gas Summit is a platform to bring about industry experience and exchange professional views that will facilitate a better understanding for the future. It can foster investment opportunities and stimulate technological transfer, besides strengthening networks within the industry.

This summit will also provide an opportunity to present plans and projects under the newly-developed 2040 strategic directions. ■

For further information on the Kuwait Oil & Gas Summit, which takes place from 16-17 April in Kuwait, see the website at www.cwckuwait.com.

Kuwait facts and figures

Oil reserves, 2017:	101.5bn barrels (seventh largest in the world, 5.9 per cent of world total)
Oil production, 2017:	3.15mn bpd (ninth in the world)
Producing wells, 2016:	1,780
Active rigs, 2016:	58
Crude oil exports, 2016:	2.1mn bpd
Value of oil exports, 2016:	US$46.3bn
Gas reserves, 2017:	1.8 trillion cubic metres
Gas production, 2017:	17.1bn cubic metres
Refinery throughput, 2017:	830,000 bpd
Exports of refined products, 2016:	707,400 bpd

Source: BP, OPEC

Refinery projects make headway

TWO OF THE largest projects currently underway in Kuwait are the 615,000 bpd Al Zour refinery, being developed by KIPIC, which is expected to boost Kuwait's total refinery capacity to 1.4 mn bpd; and the KNPC Clean Fuels Project, which aims to increase the combined daily production of the Mina Al-Ahmadi and Mina Abdulla refineries, while also improving their energy efficiency, reducing CO2 emissions and improving the quality of hydrocarbon production to meet international standards. Both projects are scheduled for completion in 2019.

In an interview with the Arab Times in February, Minister of Oil Bakheet Al-Rashidi commented that the Clean Fuels Project and Al-Zour refinery are strategic projects aimed at protecting the environment and meeting local and global needs, in accordance with the highest standards for petroleum products, as well as "maintaining our markets and securing new markets".

He also stressed the increasing focus on the petrochemicals industry in KPC's strategy, pointing to existing projects in the field of aromatics and olefins inside and outside the country, as well as the existence of many investment opportunities under study.

Jacobs Engineering wins KPC contract

JACOBS ENGINEERING GROUP Inc. has been awarded a contract for a pre-feasibility study, with the option of proceeding to a detailed feasibility study, for Kuwait Petroleum Corporation (KPC) and its subsidiaries. The studies are in support of KPC's strategic directions and downstream long-term plans for the period up to 2040.

Jacobs will evaluate how domestic refining capacity can be best expanded, in a cost-effective way, while providing advantaged feedstocks for integrated petrochemical production. The studies will cover evaluation and optimisation of alternative process configurations, various technical studies, licensor evaluation, cost estimation, financial modelling and risk assessment and management, with a focus on increasing refining capacity and optimum petrochemical integration.

Jacobs Petroleum and Chemicals president Vinayak Pai said, "This new award is an affirmation of our refining, petrochemicals and Oil-to-Chemicals (OTC) expertise and perfectly aligns with our strategy to expand services in the Middle East region."

With more than 40 years operating in the Middle East, Jacobs is planning to increase its presence in Kuwait, with an eye on long-term and continued involvement in the country's upstream, refining and petrochemical industries.

The future of world oil demand

Moin Siddiqi, economist, analyses trends and factors which will impact future sectoral oil demand, such as new regulations and technology developments.

A NUMBER OF FACTORS dictate longer-term prospects for oil consumption. These include climate change, energy efficiency, low-carbon technologies and government policy, as well as the increased competitiveness of renewable energy (especially wind and solar power) across several regions, and social preferences.

Liquid fuels (mostly crude-based) remain the largest source of world energy consumption, followed by natural gas and coal. However, the liquids share of global marketed energy consumption is predicted to drop from one-third in 2016 to 27 per cent by 2040, according to the *BP Energy Outlook* 2018, as steadily rising oil prices induce many end-use sectors – notably transport, industry and buildings – to adopt more energy-efficient technologies and to switch away from oil when feasible in favour of cleaner fuels, chiefly gas and renewables.

> “Future trends indicate a structural decline in world oil demand growth”

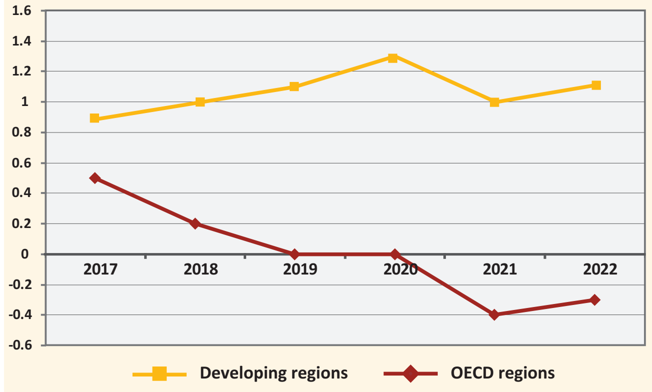
BP envisages world gross domestic product (GDP) to more than double over 2016-2040, driven by robust growth in emerging economies, but energy usage is set to increase by only one-third in the next two decades. This slower demand growth is attributed to continuous decline in energy intensity (energy used per unit of GDP), which is projected to decline from 122 tonnes oil equivalent (toe) per US$mn in 2016 to 77 toe per US$mn by 2040 – representing a 45 per cent drop over the forecast period, on top of a 54 per cent plunge over 1990-2016 (BP data). Most of the reduction occurred in the USA and Western Europe.

Table 1: Sectoral oil demand projections by end-users (mn bpd)

	2016	2020	2025	2030	Growth 2016-30
Sub-sectors					
Transportation	**54.6**	**58.1**	**60.6**	**62.5**	**7.9**
Road	43.0	45.4	46.8	47.7	4.7
Aviation	6.0	6.6	7.2	7.8	1.8
Rail & domestic waterways	1.8	1.9	2.0	2.1	0.3
Marine Bunkers	3.8	4.2	4.7	5.0	1.2
Industry	**25.2**	**26.4**	**27.6**	**28.6**	**3.4**
Petrochemicals	12.6	13.4	14.3	15.0	2.4
Other industry*	12.5	13.0	13.3	13.6	1.1
Residential/Commercial/Agriculture	10.5	10.9	11.4	11.7	1.2
Electricity generation	5.1	5.3	4.8	4.6	-0.5
WORLD TOTAL	**95.4**	**100.7**	**104.3**	**107.4**	**12.0**

****The 'other industry' sector comprises iron and steel, glass and cement production, construction and mining activities***
Source: OPEC World Oil Outlook 2017

Chart 1: Annual oil demand growth in the OECD versus developing economies (mn bpd)



Source: OPEC World Oil Outlook 2017

Note: The bulk of global energy growth will occur in developing regions (led by Asia: China and India), where strong demographics and robust output growth underpin increased fuel consumption. In contrast, demand in OECD regions is expected to plunge due to lower population growth, efficiency drives and more penetration of alternative fuel vehicles

Lacklustre consumption

Future trends indicate a structural decline in world oil demand growth to just 300,000 bpd a year between 2035 and 2040 – down steeply from 1.3mn bpd/year over the period 2016-2020 (OPEC data). The subdued growth of energy consumption is explained by underlying factors: firstly, the global economy, including that of emerging countries, is shifting away from energy-intensive heavy industry, towards less energy-fuelled service and consumer-facing sectors. The pace of China's rapid industrialisation has subsided – as the proportion of the services sector in GDP is now on a rising trend. According to the World Bank, services represented over half of China's GDP in 2016 compared to 40 per cent for industry (including manufacturing).

Secondly, greater energy efficiency, thanks to technological innovations, will curb the use of oil – with cars consuming less fuel per kilometre (km), airplanes burning less fuel per passenger-km and less energy needed for heating in the coming decades.

Finally, oil usage in the transportation sector will be impacted by fuel switching and technologies with more Electric Vehicles (EVs), Fuel Cell Vehicles (FCVs) and Natural Gas Vehicles (NGVs) penetrating the market. BP sees EVs eliminating about 10mn bpd worth of demand, equivalent to one-tenth of the current market.

Continuous improvements on road fuel economy could reduce motor gasoline consumption in OECD countries by five quadrillion British thermal units (Btu) between 2015 and 2040, according to the U.S. Energy Information Administration (EIA). Similarly, the use of LNG in marine vessels should also replace some barrels of oil. In fact, gas (and by-products) are expected to be the fastest-growing source of energy demand – with a whopping five-fold surge in consumption for passenger and freight transportation over 2015-2040, up almost eight quadrillion Btu (EIA data).

Table 2: Medium-term oil demand growth by regions (mn bpd)

	2017	2018	2019	2020	2021	2022	Growth 2017-22
OECD*	**47.2**	**47.5**	**47.6**	**47.5**	**47.1**	**46.8**	**-0.5**
America	24.9	25.1	25.2	25.2	25.0	24.9	0.0
Europe	14.2	14.3	14.3	14.3	14.2	14.0	-0.2
Asia Oceania	8.1	8.1	8.1	8.0	7.9	7.9	-0.2
Developing regions	**44.2**	**45.0**	**46.1**	**47.6**	**48.5**	**49.6**	**5.4**
South America	5.7	5.8	5.9	6.0	6.1	6.1	0.4
Middle East & Africa	3.9	3.9	4.0	4.1	4.2	4.3	0.4
India	4.5	4.6	4.8	5.1	5.3	5.6	1.1
China	12.2	12.6	12.9	13.2	13.4	13.7	1.5
Other Asia	8.7	8.8	9.0	9.4	9.5	9.8	1.1
OPEC 14 members	9.2	9.3	9.5	9.8	9.9	10.1	0.9
Eurasia	**5.4**	**5.6**	**5.6**	**5.7**	**5.8**	**5.9**	**0.5**
of which Russia	3.5	3.5	3.6	3.6	3.6	3.7	0.2
WORLD TOTAL	**96.8**	**98.1**	**99.3**	**100.8**	**101.4**	**102.3**	**5.5**

**The Organisation for Economic Cooperation & Development, representing 35 countries*
Source: OPEC World Oil Outlook 2017

End-use sectors

Fossil fuels have a diverse set of end-users; according to BP, industry, buildings, transport and non-combusted comprised 45, 29, 20 and six per cent of total primary energy consumption respectively in 2016. Three types of refined products are used in the transportation and industrial sectors: light products, middle distillates and residual fuel oil. Motor gasoline, including biofuel additives, remains the largest transportation fuel, but its share of total transportation energy usage could decline from 40 per cent in 2015 to 36 per cent in 2040. In developing regions, transportation energy demand is predicted by the EIA to surge by two-thirds between 2015 and 2040, whereas demand in OECD areas will falter.

Road transportation: Moving people and freight consumed 43mn bpd in 2016 – the largest contributor to global oil demand. OPEC anticipates the road transportation sector to use one-third of every new barrel between 2016 and 2040. However, the future trend indicates a marked differentiation between OECD and non-OECD regions. In the former, tighter fuel efficiency standards, car fleet saturation and growing sales of EVs (projected by BP to reach 320mn by 2040) will limit demand for gasoline and diesel in OECD nations. Conversely, robust demand growth is expected to persist across developing economies with soaring car fleets – thus offsetting efficiency gains and the penetration of EVs.

> “Fossil fuels have a diverse set of end-users”

Over the past two decades, the fuel efficiency of widely used internal combustion engines (ICEs) has increased steadily. This has prompted falls in oil use per vehicle (OPV) and average vehicles miles travelled (VMT), mostly in Europe and America. Furthermore, diesel vehicles are increasingly facing bans in several global cities as part of cleaner fuel policies and reducing traffic congestion. The European Union plans to introduce a law effective post-2020 on heavy-duty vehicles (HDVS), which requires CO_2 emissions from new HDVs to be certified and monitored. China, too, intends to lower CO_2 emissions by 15 per cent by 2020, compared with 2015 levels.

Air travel: According to Airbus, annual traffic – measured in revenue passenger kilometres (RPK) – has risen more than two-fold from 2.5 trillion (tn) RPK in 1995 to 6.5tn RPK in 2015, while jet fuel consumption rose by half over this period. Higher load factors, sophisticated navigation equipment and improved fuel economy have contained fuel demand, which is expected to rise by 600,000 bpd over the medium-term – falling well below 2.4mn bpd for sectoral demand in road transportation (see Table 1). OPEC noted: “The extended use of chlorofluorocarbons (CFCs), as well as new lightweight but resistant metal alloys will also substantially reduce the weight of airplanes in the future.”

Decarbonisation in the aviation industry will also impact future demand. The International Air Transport Association (IATA), representing 280 airlines and four-fifths of total air traffic, aims for yearly improvement in fuel economy of 1.5 per cent from 2009-2020, alongside a cap on net aviation CO_2 emissions (carbon-neutral growth) from 2020 onwards.

Marine vessels: The new International Maritime Organisation (IMO) regulations require shipping companies to lower the maximum permitted sulphur content for marine bunkers from 3.5 to 0.5 per cent (on a weight basis) – effective January 2020 – covering waters outside the Emissions Control Areas, which already enforce a maximum 0.1 per cent fuel sulphur limit. Shipowners will have three options: switch to low sulphur fuels or middle distillates; continue using high sulphur bunker fuels for a limited period after 2020, combined with scrubbing facilities abroad; or switch to LNG, which can achieve nearly the same sulphur oxide (SOx) emissions reduction.

There will be a need for additional refinery runs to provide 1.2mn bpd of blend fuel (0.5 per cent maximum) in 2020, rising to 1.4mn bpd by 2022 (OPEC data). During the mid-2020s, flat sectoral demand, particularly in OECD regions, is likely due to efficiency gains and increased use of LNG. Within developing countries, strong demand for bunker fuel is expected – reflecting buoyant economic and trade activity – as producers become further integrated into global supply chains.

Petrochemicals: The chemicals industry consumes large quantities of crude oil (12.6mn bpd in 2016) as feedstock – other main feedstocks are ethane, propane and naphtha. The two most typical petrochemical classes are olefins (which include ethylene and propylene) and aromatics (including benzene and xylene). Oil refineries produce both substances by fluid catalytic cracking of petroleum fractions. Around three-fifths of global basic petrochemical capacity comprises olefins, while aromatics account for one-third of the total capacity.

According to OPEC estimates, 81mn tonnes of new capacity will be added to current global installed capacity of 434mn tonnes by 2022. The largest additions will come from China (23mn tonnes), the Middle East (18mn tonnes) and North America (14mn tonnes) – chiefly the USA, which will reap the benefits of the shale oil and gas boom, thus enhancing the competitiveness of its chemical sector.

Table 3: Long-term oil demand by refined products (mn bpd)

	2016	2020	2025	2030	2035	Growth 2016-35
Light products	**41.9**	**44.9**	**46.8**	**48.2**	**49.5**	**7.6**
Ethane/LPG	10.7	11.3	12.1	12.6	13.2	2.5
Naphtha	6.1	6.5	7.0	7.4	8.0	1.9
Gasoline	25.1	27.0	27.8	28.1	28.3	3.2
Middle distillates	**35.5**	**37.7**	**39.1**	**40.5**	**41.6**	**6.1**
Jet/kerosene	7.0	7.5	8.1	8.7	9.3	2.3
Gasoil/diesel	28.5	30.2	31.0	31.8	32.3	3.8
Heavy products	**18.0**	**18.2**	**18.5**	**18.7**	**18.6**	**0.6**
Residual fuel	7.0	6.9	7.0	7.0	6.9	-0.1
Other products *	10.9	11.3	11.5	11.7	11.7	0.8
WORLD TOTAL	**95.4**	**100.8**	**104.4**	**107.4**	**109.7**	**14.3**

**Including bitumen, lubricants, waxes, still gas, coke and sulphur*
Source: OPEC World Oil Outlook 2017

Some mega-projects are underway in the Middle East, notably the joint venture by Saudi Aramco and Saudi Basic Industries Corp (SABIC) to build an 'Oil-to-Chemicals' plant in Yanbu, at a cost of US$20bn. The proposed facility, integrated with the existing 240,000 bpd refinery at Yanbu, could be operational in 2025, processing around 400,000 bpd of super-light crude into nine million tonnes annually of chemicals (mostly ethylene, propylene, benzene, toluene and xylene) and 200,000 bpd of diesel. In Kuwait, the US$10bn 'Olefins-three' complex (currently at planning stages) will add 1.4mn tonnes of ethylene and other products after the completion of a 615,000 bpd refinery at Al Zour (the region's largest). Oman is also building an US$6.5bn Liwa Plastics Industries Complex.

> "The use of liquids in the power sector is declining"

Globally, sectoral demand is projected to increase by 2.4mn bpd over 2016-2030 – with growth heavily concentrated in OPEC Middle East Gulf countries, followed by emerging Asia and China. By contrast, a broadly flat sectoral demand is projected for OECD regions (except the USA).

Electricity generation: The use of liquids in the power sector is declining in both OECD and developing regions, thanks to strong competition from alternative sources. The mix of fuels used to generate electricity is shifting markedly, with renewable energy capturing a higher share of total world generation – rising from seven per cent today to around a quarter by 2040 (BP data). "Indeed, the continuing rapid growth of renewables is leading to the most diversified fuel mix ever seen," said BP CEO Bob Dudley. The EIA also predicts average increases of 2.8 per cent/year from 2015 to 2040 for renewables. After renewable energy sources (wind and solar power), natural gas and nuclear power are the next fastest-growing sources of energy used to generate electricity.

Looking ahead, the transport sector continues to dominate world oil demand. Energy used to move people and goods by road, air, water and rail will rely mostly on petroleum, despite the growing penetration of natural gas and electricity. By region, OPEC believes all of the growth in oil consumption will derive from developing economies, with China and India combined accounting for three-quarters of world growth between 2016 and 2040. ■

A common voice for the Gulf downstream industry

Collaboration, investment and people development are key for sustainable downstream growth, says Mohammed G. Al Mutairi, chairman, Gulf Downstream Association (GDA), and CEO of Kuwait National Petroleum Company (KNPC).

OIL REVIEW MIDDLE East caught up with Mohammed G. Al Mutairi on the sidelines of the Association's official inauguration held on March 14 in Manama, Bahrain.

"First of all, let me share that we are happy to have officially inaugurated the Gulf Downstream Association, hosted by Bahrain," said Al Mutairi. "We are really grateful to His Excellency Shaikh Mohammed Bin Khalifa Al Khalifa, Minister of Oil, Kingdom of Bahrain, for his tremendous support from the beginning of the idea up to the establishment of the GDA. We also appreciate the support of His Excellency Bakheet Al-Rashidi, Oil Minister, State of Kuwait."

During the panel discussion which followed the inauguration, two points featured prominently; the increase in technological capabilities of the downstream companies and enhanced collaboration within the industry and outside it.

"Regarding building capability, the GDA was established to support the strategic directives of the oil companies in the GCC countries, and based on that we are exchanging a lot of expertise, good ideas and best practices between us," commented Al Mutairi. "Saudi Aramco, KIPIC, KNPC, ADNOC and BAPCO all have major investments in building capabilities, whether through project expansion or people development. When we talk expansion, we have Kuwait's Clean Fuel Project, which will increase the conversion of the Mina Abdullah and Mina Al-Ahmadi refineries and increase processing capacity up to 800,000 bpd. Kuwait Integrated Petroleum Industries Company (KIPIC), a new subsidiary of the Kuwait Petroleum Corporation (KPC) is also building a new largescale 650,000 bpd refinery. We have similar expansion in Saudi Aramco where Jazan Refinery is a good example. I could also highlight ADNOC's Takreer expansion and BAPCO's expansion of its existing refinery, which has just started. So, each country is investing in major expansion to move the downstream industry forward."

> "We are exchanging a lot of expertise, good ideas and best practices between us"

Mohammed G. Al Mutairi (left), spoke to Oil Review Middle East at the inauguration of the GDA

A GDA industry survey with Boston Consulting Group in August 2017 predicted that the refining market will remain volatile in the medium term due to demand side uncertainties. How does GDA plan to cope with this uncertainty?

"The downstream industry is a volatile market and depends mainly on upstream oil prices," said Al Mutairi. "It is certainly a challenge to sustain growth and business and also to produce high quality products to meet high expectations and standards. All these challenges will definitely keep the refining downstream market under a lot of focus. When you talk about demand, we foresee an increase in demand in the future. This is a challenge, but with our focus on expansion and improvement, reliability and efficiency, we will definitely meet this challenging growth of demand.

"In Kuwait, we have invested in many projects to maintain growth in the industry; the new refinery, a mega project currently under construction, has an investment close to US$18bn. There will be many other projects, upstream and downstream in the future, so there is quite a big capital investment in Kuwait, and there are similar projects in Saudi Arabia, the UAE and Bahrain."

The GDA's objective is to make this region a hub of refining and petrochemicals. What is the biggest challenge Al Mutairi sees in pursuing this goal?

"The most challenging aspect is market instability, and this is something we are dealing with. To mitigate market instability, we are reacting as per our plan and strategic initiative. The second challenge is people development. This is an industry that is growing and needs a lot of talent. People development is an area that we are investing in, to bring more young engineers and talented staff into the industry." ■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Gulf Downstream Association officially launched in Bahrain

THE GULF DOWNSTREAM Association (GDA), committed to the sustainable growth of the downstream Industry, was officially launched in Manama, Bahrain on 14 March 2018.

The event was inaugurated by His Excellency Shaikh Mohammed bin Khalifa Al Khalifa, Minister of Oil, Kingdom of Bahrain, in the presence of His Excellency Bakheet Al-Rashidi, Minister of Oil, Kuwait and other high-profile guests and representatives from the GDA.

The GDA, whose founding members include national oil companies of the Gulf – Saudi Aramco, Kuwait Petroleum International (KPI), Bahrain Petroleum Company (BAPCO), Kuwait National Petroleum Company (KNPC) and Abu Dhabi National Oil Company (ADNOC) – aims to connect and support downstream companies, providing a forum to address challenges and share experiences, knowledge and best practices for the downstream business to grow and improve performance.

Speaking at the inauguration, HE Shaikh Mohammed bin Khalifa Al Khalifa expressed his support for the Association to achieve its objectives of enhancing cooperation in the oil and gas market. He also underlined the importance of the exchange of expertise and learning from each other.

HE Bakheet Al-Rashidi stated, "GDA's focus is not limited to oil and refining but also trading, supply-chain, logistics, suppliers, consultants, academic and media institutions."

The panel discussion 'Opportunities Facing the Downstream Industry and the Role of the GDA', drew diverse views from the panelists, Nizar Al-Adsani, CEO, Kuwait Petroleum Corporation, Abdulaziz Al-Jadaimi, senior VP Downstream, Saudi Aramco and Dr. Peter Bartlett, CEO of BAPCO.

The discussion centered on exploration of new technologies for industry applications, establishment of 'best-in-class' standards and processes, setting up of discussion board on downstream-related topics, promotion of local talent and publishing of white papers, technical articles and case studies for tailored solutions, among others.

Ministers and officials at the inauguration of the Gulf Downstream Association

Image Credit : ME3 Events

To attain Association goals, GDA has already established several technical committees, consisting of subject matter experts in various technical streams, drawn from the founding member organisations and global consulting firms with expertise in the downstream industry.

The International Gulf Downstream Association Conference and Exhibition will be hosted from 23-25 October 2018, at Bahrain's International Exhibition & Convention Centre, with the theme 'Towards a competitive downstream through innovation, collaboration and technology'. www.gdaconference.org

Storage tank
safety solutions

Volkan Gudelek, ERGIL, Turkey discusses the safety and environmental challenges for storage tank operators and how to tackle them.

RECENT EXPLOSION TRAGEDIES have brought into focus the importance of engineering and building standards for storage tanks and industrial plants.

Conditions such as corrosion, age deterioration, natural disasters, lightning strike, and in some locations, seismic motions are the most common reasons for oil storage tank damage, and these causes may lead to small or large tank failures or accidents, with tragic consequences. Oil storage tanks can deteriorate in the course of time due to rust, fatigue or cracks. Tanks located near the seashore and saltwater are subjected to extreme environmental conditions and high levels of humidity, and loads of continuous charging and discharging add to the wear.

Damage can lead to the leakage of hazardous material, fire and environmental damage. The question is, how to tackle these safety and environmental risks? It may not be possible to abolish the safety risk completely, but it is possible to minimise it by using specially configured tank equipment. It is scientifically proven that storage tank equipment, in particular flame arresters and storage tank valves, allows tank operators to minimise the risk in storage tank refineries where tanks contain hazardous, flammable, and explosive chemicals and petrochemicals.


Image Credit : ERGIL

Recent incidents prove that specially configured tank equipment such as the pressure / vacuum relief valve with flame arrester minimises the risk to almost zero in storage tank refineries.

> “Damage can lead to the leakage of hazardous material, fire and environmental threat”

The solutions and methods to protect and save the assets and environment of tank operators are many. However, tank operators should make sure they choose those that maximise safety and efficency and minimise the risk by addressing universal standards.

ERGIL Storagetech™ has taken the necessary action in terms of appropriate standards of designing, building and supplying storage tanks and tank equipment to protect tank operators, their assets and the environment.

In September 2017 a rare lightning strike hit a storage tank in an above ground storage tank refinery in Columbia. A supervisor later discovered that the combination of a pressure / vacuum relief valve with flame arrester prevented a large accident by blocking the fire passage through the line through its flame arrestor device.

“Using this combined technology prevents the ignition sources that may occur outside of the tank from interacting with the released gas during the breathing of the tank, and also blocks the transmission of deflagration flame and the passage of heat into the tank,” says Mahmut Tunaz, design engineer at ERGIL Turkey.

Technologically advanced solution for the protection of storage tanks and the environment

The Äager brand Storagetech™ combination of pressure / vacuum relief valve with flame arrester, is a technologically advanced and environment friendly device, and was developed with the dedication and extensive

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experience of the ERGIL team. It provides protection, efficiency and emission control for storage tanks.

The combination of pressure / vacuum relief valve and flame arrester can be categorised into different types. However, the pressure / vacuum relief valve with integrated end-of-line flame arrester is considered the most effective combination, ensuring ultimate protection against damage through over-pressurisation and implosion due to vacuum conditions, and preventing any external flame entering the tank with its flame arrester winding system.

> "This combined technology is maintenance friendly"

In the closed position, the pressure relief pallet and diaphragm assembly are held tightly against a seal to prevent the loss of vapour to the atmosphere. The opening set-point is selectable from a range between 1 and 28.1 W.C. (2.5 and 70 mbar), and the valve will reseal when the tank returns to a safe pressure.


Image Credit : ERGIL

The Äager brand Storagetech™ pressure / vacuum relief valve with flame arrester

The Äager brand Storagetech™ pressure / vacuum relief valve with integrated flame arrester is ATEX and ISO approved. Ensured performance for all relief and explosion circumstances that may occur according to the design case pressure drop is determined on international certifications flow test rig according to API 2000 7th Edition requirements for the combined device. It includes an optimised weather hood for severe weather conditions, and installation of electrical heating is available for standard design. This combined technology is maintenance friendly and provides no loss of vapour or explosion mitigation effect for routine inspection of the flame arrester. Ten per cent overpressure advanced technology reduces vapour emission to a minimum, and it also has very low leak rates to reduce explosion risk and ensure compliance with environmental requirements.

This special combined technology will meet tank operators' safety and environmental requirements when receiving periodic maintenance. As a result, it is favoured by many tank operators. ■

Middle East's oil and gas companies need to address cyber risk

CYBER SECURITY BREACHES in the Middle East are widespread and frequently undetected, with 30 per cent of the region's attacks targeting operational technology (OT), according to a new study by Siemens and Ponemon Institute.

The study, which examines the region's oil and gas sector, reveals that while firms have begun to invest in protecting their assets from cyber threats, more needs to be done to increase awareness and the deployment rate of technology if they are to secure their operating environments.

Until recently, cyber attacks have generally targeted Information Technology (IT) environments, but with the acceleration of digitalisation and the convergence of IT and Operational Technology (OT), the region is now seeing a rising number of attacks aimed at the OT environment.

The report investigates the readiness of the Middle East's oil and gas sector to identify and protect against cyber threats. It also assesses what measures need to be taken to close the gaps, surveying around 200 individuals in the Middle East who are responsible for overseeing cyber security risk within their organisations.

"The convergence of IT and OT has become a key opportunity for attackers to infiltrate an organisation's critical infrastructure, disrupting physical devices or operational processes," said Leo Simonovich, vice-president and global head, Industrial Cyber at Siemens Energy. "Industrial cybersecurity has become the new risk frontier, and the risk has increased from low single digits to more than 30 per cent today in just a few years. It's been exponential growth and advance, both in terms of frequency and impact. The impact of a cyber attack on operational technology (OT) is more devastating than on IT, because it can affect safety and reliability, potentially with catastrophic consequences.

"Firms quickly need to assign dedicated ownership of OT cyber, gain visibility into their assets, demand purpose-built solutions and partner with experts who have real domain expertise."

The report found some 60 per cent of respondents believe the cyber risk to OT to be greater than IT, and in 75 per cent of cases those questioned had experienced at least one security compromise resulting in confidential information loss or operational disruption in the OT environment in the last 12 months.

The study also revealed that despite awareness of rising OT cyber risk, budgets for OT cyber services and solutions have not kept up with the threat. At present, oil and gas organisations in the Middle East dedicate only a third, on average, of their total cyber security budget to securing the OT environment. This suggests that organisations are not aligning their cyber investments with where they are most vulnerable, and highlights the urgency of addressing OT cyber security.

The report outlines six key principles which underlie the most effective OT cyber programmes, beginning with assigning and empowering dedicated ownership for OT cyber security. Organisations must overcome the fear of connectivity and gain continuous visibility into their OT assets, and the operating environment needs to be secured all the way to the edge. Analytics should be leveraged in order to make smarter, faster decisions, and organisations should demand purpose-built OT cyber solutions. Lastly, it is crucial to partner with OT cyber security experts with real domain expertise.

Peak performance at **low temperatures**

Demand for cryogenic valves is increasing as cryogenic processes are becoming more important, with the booming LNG sector a major factor driving growth.

CRYOGENIC VALVES DEFY even the lowest temperatures, a strength which makes them essential not only for the pharmaceutical and food industry. The booming LNG sector is also driving growth.

"Yes, there is a trend towards cryogenic valves," confirms René Speckmaier, product manager, Goetze KG Armaturen. For the consumption of technical gases is rising annually. This includes oxygen, nitrogen, and argon, as well as the inert gases xenon and krypton. Separating air into its single elements is only economically viable using a thermal separation process, with cryogenic valves an important component of low-temperature air separation.

Image Credit : BP

The LNG market is growing

Hydrogen-based mobility, medical engineering, as well as the global demand for energy and food, are driving the demand for cryogenic process components. "Cryogenics and the necessary valves can be found in nearly all sectors," explains Olaf Schulenberg, technical director, Goetze KG Armaturen.

A trend in the use of cryogenic valves is cryogenic machining: to reduce tool wear through very high process temperatures, for instance in the energy sector, automobile manufacturing and aviation.

Demanding requirements

Valves for cryogenic processes face great challenges. They have to resist temperatures of up to -200°C, handling inert gases, oxygen and LNG. LNG has a temperature of -163°C . Most valves are therefore designed for temperatures of -200°C.

Special temperatures require special materials, for example stainless alloyed and high-alloyed steels, nickel-based alloys, copper and copper-based alloys such as bronze and brass. "These materials show high enough ductile values and do not tend towards embrittlement," emphasises Schulenberg.

Optimum design is a matter of course for valve manufacturers and end users. Depending on the valve, nominal diameters range from DN6 to DN300, and larger. Pressure can range between 0.2 bar to 500 bar, and above. The application decides the dimensions. "For storage of cryogenically liquefied gases the valve is designed for a maximum of 40 bar pressure, for carbon dioxide also up to 80 bar, and LNG even higher," comments Schulenberg.

Errors in valve design can have grave consequences. "The increasing level of standardisation of systems for cryogenic gases means that precise design of pressure-relief systems is vital, particularly in view of the potential effects of an incorrectly designed safety valve or a supply line of inadequate dimensions," emphasises valve manufacturer Herose. Costs can be horrendous, should an unscheduled replacement campaign become necessary as a result of an incorrectly dimensioned valve.

Various types of valves are required for cryogenic processes, including isolation valves and control valves with manual actuators, pneumatic and electrical actuators – as well as poppet valves, butterfly valves, ball valves and slide valves. Safety valves, pressure-relief valves, check valves, filter and pressure regulators are also used.

LNG – the market of the future

Cryogenic valves are in great demand, and LNG is their future – as many experts agree. Worldwide capacity amounted to around 275 million tonnes in 2015. A further 65 million tonnes will be added by 2018. Demand "is set to grow at twice the rate of gas demand, at four to five per cent a year between 2015 and 2030," foresees Maarten Wetselaar, integrated gas and new energies director, Shell. China and India were the buyers with the highest growth, increasing imports by 11.9 million tonnes in 2016, and will continue to drive demand.

Six new importing countries have furthermore contributed to LNG demand: Colombia, Egypt, Jamaica, Jordan, Pakistan and Poland. The number of LNG importing countries has grown to 35, compared to ten at the turn of the century. Shell therefore sees additional investments have to be made, in order to meet growing demand, most of which is set to come from Asia, after 2020. In China, a government target has been set for gas to make up 15 per cent of the country's energy mix by 2030, up from five per cent in 2015. Manufacturers of high-quality cryogenic valves will find a lucrative market in Asia.

The attractions of LNG include the fact that its volume is 600 times smaller compared to natural gas, in its gaseous state. This allows it to be transported and stored far more efficiently. And it is versatile: LNG can be used as a raw material and as a source of energy, as well as a fuel for ships and trucks.

In addition, LNG is far more environmentally friendly than other fossil fuels – for instance when fuelling ships. "LNG contains neither sulphur nor heavy metals and reduces CO emissions by 20 to 30 per cent and NOX emissions (nitrogen monoxide and nitrogen dioxide) by approximately 90 per cent compared to fuel oil," reports valve manufacturer Herose. "The future belongs to the construction of LNG-operated ships." Trucks are also increasingly using LNG as fuel; in Europe more than 900 LNG-operated trucks are in service.

Herose has recognised the potential of LNG and is one of the leading suppliers in the LNG market. This includes certified small scale valves with approval according to ISO 10479 for fire-safe design. After all, safety first is the motto here.

Requirements for LNG valves are high. "Trailers for cryogenic liquefied natural gas are exposed to frequent filling, transportation and unloading at the destination under extreme conditions," explains Herose. For LNG storage, service life and performance are just as important as absolute safety and reliability. High-performance valves are also required for fuelling LNG. This is proof of the high requirements cryogenic valves must fulfil. ■

Valve World Expo, the world's leading trade fair for industrial valves, will be held in Düsseldorf from 27 – 29 November 2018 at Düsseldorf Fairgrounds. www.valveworldexpo.com

The Graco Xtreme XL paint sprayer is for single-component protective coatings. This is a powerhouse for high-volume protective coating projects. Users can use multiple guns and spray up to 6.7 gallons per minute.

Image Credit : Graco

The King continues to rule

Graco Inc's new airless sprayers are built to handle the toughest protective coatings and corrosion control applications.

ON 6 MARCH 2018, US-based Graco Inc launched a training workshop in Dubai for its Middle East distributors to launch the King industrial airless spray unit. The Graco King is Graco's flagship pneumatic airless paint sprayer.

Speaking about the legacy of the King, Peter Bloem, sales supervisor EMEA, high performance coating and foam, said that the King is a brand in itself. "Within the protective coatings market sector, contractors and painters do not ask for an airless sprayer, they ask for a King. We have achieved this through product success and innovative engineering."

The new King comes in three models: XL3400, XL6500 or XL10000.

The King sprayers are built to handle the toughest protective coatings and corrosion control applications. Their design ensures superior performance, even in oily, hot, cold, dirty and wet air environments – be it the Middle East or Siberia.

So what makes the new King superior?

The first King sprayer was launched in 1956 and since then there have been improvements on the model. The new King features:

A new styling: The new King looks different from the previous NXT Xtreme. The valve is mounted on the side. This is to increase the efficiency of the sprayer.

Easy maintenance: The King is designed for simple maintenance, with a removable valve cover and easy access to poppet valves. A factory installed accessory box contains common items that every applicator should have on the job site. It includes throat seal liquid, air filter element, tool for poppet and air valve, pump filter cap O-rings, pump filter element, spare tip and gun filter. The box also includes storage space for the Graco XTR™ Spray Gun.

70 per cent less chance of icing: Thermally isolated poppets (on XL3400 and XL6500 models) are insulated from motor castings that can often drop below freezing temperatures. The newly designed poppets and external pilot lines virtually eliminate pilot valve freezing that can result in an instant stop. The components are easily accessed for service or replacement if needed.

New improved poppet valve: Graco has completely redesigned the poppets on the new King sprayer so that they are of a higher quality, much more reliable and provide better sealing. There is no internal sealing that cannot be visually inspected. The passages are also much larger making them more reliable and easier to service, troubleshoot and replace.

Customer feedback for a smoother changeover and no pressure drops has been incorporated in the King. Compared to NXT™ motors, a 145 per cent higher intake/exhaust capacity in the air valve leads to a faster, smoother changeover, eliminating those annoying minor blemishes in the finish.

Improved sealing and strength: Packing plays a critical role in optimising spray performance by sealing pressure and holding material inside the pump. The tighter the seal, the better the performance. This is ensured with King sprayers because they incorporate seven throat packings instead of five.

Multi-gun capabilities: Graco's powerful new King air motor lets users use multiple guns with almost no perceivable pulsation. A new manifold has been designed to simplify the installation of multiple guns. With more powerful and efficient changeovers, the ability to spray with up to six guns is now a reality.


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NRG Center, OTC 2018

Trusted, robust pump: The King airless sprayer incorporates the MaxLife® pump Lowers, which is designed for robustness and reliability in the most demanding jobs. It lasts up to six times longer than its predecessor.

Some typical applications include:

- Applying primers and enamels to tanks.
- Renovating a building after a major fire by spraying highly viscous, high solid epoxy paint.
- Post sand blasting, applying two-component surface-tolerant epoxy coatings to iron and steel structures.
- Coating pipelines with two-component surface-tolerant epoxy coatings.
- In the automotive industry, dispensing a medium viscosity protective coating to a single operator to apply manually on specific parts of a car's body.
- Spraying a two-component amine cured, fast drying, high solid, high build epoxy coating to steel structures, tanks and pipelines.
- Applying a two-component, solvent-free, chemically-resistant epoxy resin to provide corrosion protection to sanitary floors.

Image Credit : Graco

Peter Bloem, sales supervisor EMEA, high performance coating and foam, Graco

Leader in the Middle East

The Middle East is the largest oil producer and the second largest gas producer in the world. It is, therefore, natural for Graco to have a footprint in the region, with a substantial market share in the pneumatic airless market. Graco and its products have been present in the region for 37 years. Graco's industrial products and services are sold today via 12 dedicated and authorised distributors. The details of Graco's business partners in The GCC can be found on Graco's "Where-to-Buy" website link. Prestigious clientele include painting contracts with Saudi Aramco and Dubai DryDocks to name a few.

With a sales and support office in Dubai, Graco's Belgium headquarters supports the European, Middle East and Africa markets. Bloem says, "You can rely on our business partners' local support for products and services. The scope of our distribution network enables Graco products to be delivered on time despite the distance. Our dealers, who have been with us for 37 years, keep Graco products, spares and accessory within their local inventory to serve our local markets. Training our distributors and their technicians is important to ensure our end user customers enjoy the full Graco experience."

Affordability, reliability as well as quality are other factors making the King the market leader.

Image Credit : Graco

The King pneumatic airless paint sprayer

Imitation is the sincerest form of flattery

The King airless sprayer is the most copied product of its kind in the world of sprayers. This, Bloem states, is flattering, but Graco is putting in all efforts to make it less attractive for paint contractors to buy a substandard, poorly constructed copy of the King. Contractors are led to believe they are buying cheap Far Eastern copies of the King by unscrupulous traders. The reality is that the real Graco King is more affordable then perceived. With the new King, counterfeiting will be nearly impossible due to the components engineered in the construction of this sprayer. Graco does not just separate itself in price from counterfeit products, but also in technology.

> "Affordability, reliability as well as quality are other factors making the King the market leader."

Re-engineered and clearly identifiable packing kits, piston rods and components used in the new King also safeguard its distribution partners so that they do not face competition from smaller traders selling a copied Graco product. The benefits for brand-loyal end users insisting in fitting their King airless sprayers is obvious.

Retrofitting

Graco's clients have, over the years, invested a lot of money in spare parts, and Graco ensures that the parts do not become obsolete. When Graco engineers were designing the new King, they retained some of the original design so that the previous model can be used and clients do not feel they have wasted money on an earlier version.

In a price sensitive market like the Middle East, Graco understands that a new product is directly linked to increased cost but this may also deter clients to try it. This is why Graco is offering the new King at the price of the previous version. "We do not want people to change their CAPEX to use our new product. So the upgrade is a bonus."

King airless sprayers are available in versions that can be driven by both compressed air and electricity. ■

Addressing pipeline **challenges**

Richard Edwin, regional sales manager at GPT, a leading manufacturer of critical pipeline sealing and electrical isolation products, discusses prospects for the company in the Middle East.

Image Credit: GPT

GPT, a division of EnPro Industries, is a leading manufacturer of critical pipeline sealing and electrical isolation products

What are the main challenges faced by pipeline operators in the Middle East, and how is GPT helping to address them?

Corrosion continues to remain the number one challenge faced by pipeline operators in the Middle East due to the harsh conditions. As a result, workers are constantly responsible for monitoring and replacing whole piping systems.

Another challenge that pipeline operators face is reduction of stress and load on the system. For example, a customer of ours was tasked with increasing the overall life expectancy of plants and reducing the number of shutdown cycles.

The third key challenge that many face is sour gas, also known as H_2S. The Middle Eastern region has the highest sour content fields in the world, which leads to a significant number of ongoing developments to tap into these fields. The major focus has shifted to sulphur recovery in order to heighten revenue from the sales of the by-product. GPT has been and continues to be the leader in pipeline isolation. As conditions in pipelines have changed over the years, GPT engineers have been committed to developing isolation products that not only isolate, but also are fire safe, handle higher pressures, are easier to install, and can handle the increased concentrations of sour gas and steam.

How important are innovation and technology in developing solutions to pipeline challenges, and how do you promote innovation, research and development at GPT?

Innovation and technology are the only solutions when developing answers to pipeline challenges. Constant improvements are a critical process, and the reliability and integrity of these pipelines are essential for a sustainable business model.

Innovation is the differentiator that sets GPT apart from many other companies today.

> “Innovation is the differentiator that sets GPT apart from many other companies today”

Research and development at GPT is driven by collaboration with our customers as well as a company-driven belief to always develop better products to protect, connect and seal oil and gas pipelines. For example, while creating our most recent products, we sent surveys to hundreds of engineers in the industry with hopes of receiving a better understanding of their needs and wants. We listened to their feedback and transformed our products to meet their requirements and improve their ability to effectively complete their daily tasks. GPT has more than 9,200 sq. ft. (855 sq. metres) of both laboratory testing and functional testing capability. New materials and designs are constantly put through testing that will help identify potential new products that could benefit pipeline owners in ways that have never been explored. In addition to internal testing, GPT is highly active in externally testing new designs and materials to many test standards (both industry and corporate standards) to ensure new products are able to meet the requirements put in place by pipeline owners.

What are your plans for developing your product range; are you looking to launch any new products?

GPT will be launching EVOLUTION™ – the next generation in FIK gasketing in April 2018. Conditions are changing and it's estimated that 40 per cent of the world's gas reserves are sour, with CO2 and/or H2S content within these wells averaging 10 per cent or more. In addition, emissions and compliance are becoming stricter. Traditional gaskets and traditional materials are not always up to the challenge. The fully encapsulated EVOLUTION™ gasket is. It can be hydro-tested while being kept in the pipeline with nearly no loss in isolation properties. EVOLUTION™ also delivers impermeable performance needed to prepare any flange for the increased risk of chemical attack from enhanced recovery methods. Under harsh conditions, gaskets made from GRE may lead to chemical attack, blowout, thermal attack, hydrolysis and increased emissions – all of which can have serious consequences. EVOLUTION™ is different. Its revolutionary materials and construction provide industry-leading resistance to chemical attack, leakage and flange corrosion, as well as unprecedented levels of fire safety.


Image Credit: GPT:

Richard Edwin, regional sales manager, GPT

How do you view the Middle East market and the prospects for developing your business in the region?

There is significant growth potential for GPT in the Middle East region. The scale of investments in upstream, midstream, and downstream segments is massive, with increasing demand for petroleum products as well as natural gas in nearly every country. Changes in regional demographics are causing individual countries to develop and/or increase their own oil and gas infrastructure, so that they can tap into local supplies and build self-contained economies of scale. This is in addition to the continued need for oil and gas exports from the Middle East region to other parts of the world. From an isolation viewpoint, we know from experience that the Middle East market is extremely concerned with utilising products that extend the pipeline lifecycle and minimise installation issues. A product that is non-permeable, chemically resistant and easy to install; such as the new EVOLUTION™ gasket, will help develop our business in the region while helping the Middle East achieve its goals. ■

Innovative product portfolio from Rittal Middle East

RITTAL MIDDLE EAST (subsidiary of Rittal GmbH & Co. KG), a leading system supplier for industrial enclosures, power distribution, climate control, IT infrastructure and software & services, showcased its innovative product portfolio at Middle East Electricity 2018 (MEE 2018), which took place in March in Dubai.

The highlights of this year's presentation included:


Image Credit : Rittal Middle East

Bharat B. Mahajan, sales manager – Middle East, Industrial & Electrical Products (IE) at Rittal Middle East FZE

- World first – BLUE E+ cooling solutions with up to 75 per cent energy savings. Based on the success of the BLUE E+ cooling units with energy savings of up to 70 per cent, this technology and its components are being used in industrial chillers for the first time. The new units are equipped with DC inverter and microchannel technology, have an output range of 1 to 6kw and impress with their high temperature accuracy of +/- 0.5K.
- The all-new TS 8 enclosures and variants, which come with more benefits
- Integrated solutions with Rittal enclosures on Ri4Power platform.

According to Bharat B. Mahajan, sales manager – Middle East, Industrial & Electrical Products (IE), Rittal Middle East FZE, "Everything showcased at MEE illustrated Rittal's promise – 'Our Expertise – Your Benefit'."

'Embracing Standards, Empowering the Industry' was a key message to the audience and visitors, who were able to view the industrial and electrical portfolio from Rittal Middle East, namely AE enclosures, CM enclosures, TS-8 enclosures, stainless steel enclosures, EX enclosures, RiLine components complying to global standards and certifications and Innovation Ri4Power (Form-4, type tested MCCs acc. to IEC 947), SE enclosures, and cooling units with 'Blue-E+' technology.

World's first digital rig

NOBLE CORPORATION IS partnering with GE on the world's first digital drilling vessel – an innovative step forward to unlocking the potential of digital offshore marine operations.

With the Digital Rig℠ solution, powered by Predix Platform, Noble is aiming to expand data-driven operations support, while gaining visibility into drilling inefficiencies. Through this digital industrial technology, Noble has connected all targeted control systems, including the drilling control network, the power management system, and the dynamic positioning system on the Noble Globetrotter I vessel.

Data is collected through individual sensors and control systems, harmonised and centralised on the vessel before transmitting in near real-time to GE's Industrial Performance & Reliability Center for predictive analytics.

Noble is also leveraging GE's digital twin technology– combining data models from a digital replica of a physical asset along with advanced analytics to detect anomalies, and offering early warning signs to equipment operators, who can then mitigate a problem before it strikes. This enables personnel both on board the vessel and onshore to gain a holistic view of the entire vessel's health status and the real-time performance of each piece of equipment onboard.

The technology has already shown promising results, capturing major anomalies, and producing alerts to inform about potential failures up to two months before they would occur. GE and Noble are targeting to achieve up to a 20 per cent reduction in operational expenditures on targeted equipment. And, by leveraging digital twin technology and predictive analytics, Noble's offshore personnel can now focus their resources on maintenance activities that are most needed – ultimately reducing unplanned downtime, improving revenue and generating significant maintenance cost savings.

The data backbone implemented on this drilling vessel will open the door to transforming three additional rigs in the coming months, and ultimately all of Noble's high specification fleet, paving the way towards unprecedented autonomous drilling and asset performance improvements.

Transforming oil and gas operations **through GPUs**

The oil and gas industry can benefit enormously from the latest graphics processing unit (GPU) technology, says Joe Eaton.

TRADITIONAL INTERPRETATION METHODS are increasingly challenged by the volume of data, fewer experts in the industry and slow compute, which can no longer keep up with the demand. Over the years, many companies have become constrained by the compute power, memory bandwidth, and the amount of power and cooling that is needed to run their technical operations.

The speed and accuracy of seismic interpretation are critical in the exploration workflow. Multi-GPU and multi-node GPU technology boosts throughput for visualisation and heavy computation. This improves calculation of 3D seismic trace attributes and visual analysis of complex regional basins right at the interpreter's desk.

The high compute power, massively paralleled processors and high-speed memory of GPUs allow oil and gas companies to visualise and analyse petabytes of well location data in milliseconds; implement advanced algorithms to locate faults in underground structures; and use deep learning training on raw seismic trace data to accelerate exploration and discover faults in geology.

The result is dramatically reduced model processing cycle times and sharper images of region-of-interest datasets. This can lead to more effective lease bidding, higher service revenues and, ultimately, greater chances of striking oil.

Well operators can visualise and analyse massive volumes and high cardinality of sensor data. Real-time analytics and alerts allow them to predict which piece of equipment might fail, which similar gear might do the same, and

> “The result is dramatically reduced model processing cycle times”

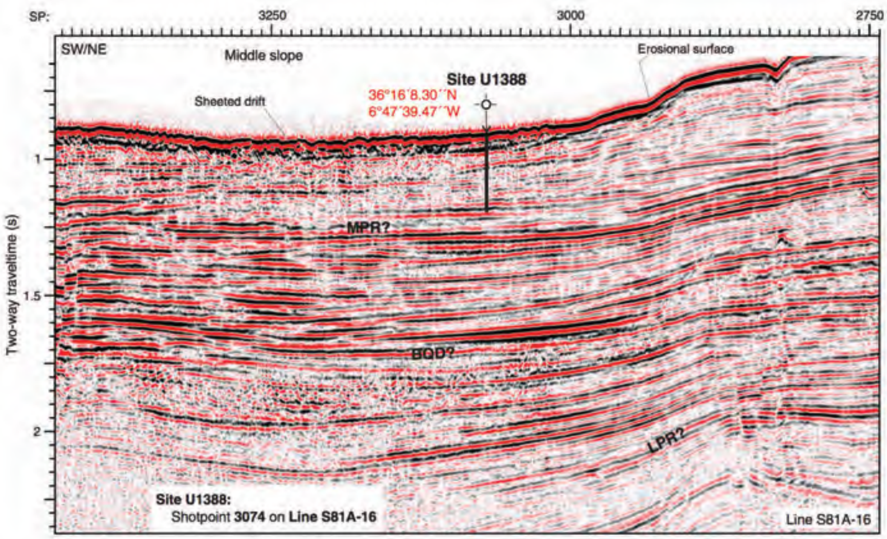


Image Credit : Integrated Ocean Drilling Programme/Wikimedia Commons

The speed and accuracy of seismic interpretation are critical in the exploration workflow

well loss of circulation in drilling. MapD, a GPU-accelerated database and platform, allows operators to identify regions of high activities to predict better bid prices.

Oil and gas companies also use machine learning algorithms to determine the best way to save money and adjust operations as conditions change. For example, if multiple submersible pumps fail without prediction or warning, the downtime would cost oil and gas companies millions of dollars a day.

Another example is oil and gas companies that take small samples of rock to extrapolate the value of the huge volumes within the reservoirs underneath. Without the prediction capability, there are huge risks with human errors. Machine learning techniques are more repeatable and reliable than human interpretation.

By running simulation of the core and matching that to the data collected, oil and gas companies can train the machine learning models to predict the behaviour of the fluids of the core sample. This is very computational intensive, and that is where GPUs come in.

To determine where to drill, oil and gas companies rely on seismic imaging, a tool that uses microphone arrays to image the surface rock layers and other geological features. GPUs help companies like Chevron turn these large volumes of seismic data images into 3D maps to improve the accuracy of reservoir predictions, and mitigate the risk associated with expensive drilling and production activities.

Other companies are using deep learning to train models to predict and improve the efficiency and safety of hydraulic fracturing. The fracking process can cost tens of millions of dollars. Companies want to quickly find effective fracture recipes for each shale region. Deep learning helps oil and gas companies learn how to fracture a given field as efficiently as possible, by suggesting effective spacings, proppants and pressure patterns for each well. ■

This is an abridged version of an article from Nvidia. To read the full article, log on to https://blogs.nvidia.com/blog

Kärcher Center Sedana Abu Dhabi opens

Image Credit: Kärcher

The opening of the Kärcher Center Sedana Abu Dhabi

GERMANY'S KÄRCHER HAS opened the Kärcher Center Sedana Abu Dhabi store as it further expands its presence in the Middle East.

The company, which makes high pressure cleaners, vacuum cleaners and steam cleaners, said the opening of the store was attended by HE Goetz Lingenthal, Germany's Ambassador to the UAE, Richard Nouira, managing director of Kärcher Middle East, Karim Daniel, operation manager of Sedana Trading, Christian May, managing director Retail Channels at Karcher Group, and Axel Stolz, executive vice president, sales export, Karcher Group.

Sedana Trading and Kärcher's partnership began in 1978 when it first introduced hot high pressure washers in UAE.

Since then, Kärcher has grown its presence in the region, by opening its Middle East headquarters in Dubai in 1998 and expanding its footprint in other Middle East countries.

"The opening of the flagship Kärcher Center Sedana Abu Dhabi, is testament to how fruitful our partnership is with Sedana," explained Richard Nouira, managing director, Kärcher Middle East.

"Together we saw a need for the flagship store, and we are really pleased to have achieved this vision. The Kärcher Centre Sedana Abu Dhabi is a one-stop store for machines, accessories, detergents, service, and for learning how to tackle the cleaning needs in the region," Karim Daniel, operation manager, Sedana Trading, said.

Schlumberger introduces instrumented docking perforating gun system

OILFIELD SERVICES COMPANY Schlumberger has introduced the Tempo instrumented docking perforating gun system.

Schlumberger said the combination of a plug-in gun design with real-time advanced downhole measurements enables and monitors the well's dynamic underbalance to create clean perforations that boost reservoir productivity.

The Tempo system has the flexibility to accommodate most perforating gun sizes and shaped charges. The simplified arming process increases safety and reliability by eliminating the variability introduced by wellsite crimping and wiring, which are the primary causes of misruns and misfires.

The company said that the system is being deployed in Egypt, Oman, Kuwait, Algeria and Ecuador.

"The Tempo system delivers a major step in improving wellsite safety and operational efficiency as well as providing real-time measurements in perforating operations," said Djamel Idri, president, Wireline, Schlumberger.

The growing need for **temporary structures**

Edward Gallagher, managing director (Middle East, Russia and Central Asia) at Losberger De Boer, discusses trends in the demand for temporary structures in the Middle East oil and gas markets.

THE NEEDS OF oil and gas sites are uniquely dynamic, changing from the first moments of set up on the site to the time of decommissioning. This has led us as a company to deliver everything from early-stage housing and accommodation, through to inauguration celebration venues, site offices, annual maintenance and shutdown support facilities as well as site logistics/storage hubs. Both temporary and semi-permanent buildings are in demand throughout the life-cycle, and are particularly suitable as they require minimal/no foundations, are rapidly deployable and moveable, yet long lasting. Our European made structures are designed to BS EN 13782 standards and last comfortably for more than10 years, even with the tough remote site conditions in this industry and in the harsh climate of the Middle East.

As technology has moved on, we have developed and are now able to deploy much more than standard "tents". There is still some demand on site for that kind of simple structure when we talk about mess halls, storage and maintenance facilities, so of course we still stock that kind of product. However, forward-thinking oil and gas main companies, as well as service providers, are now using rapid deployment, higher specification structures from our range to fulfill other long-term needs such as offices, training centres, logistics and storage hubs or accommodation. Given the remote locations of many sites as well as the aforementioned changing needs, we continue to see increasing demand for the semi-permanent solutions we can offer, as well as the shorter-term temporary buildings.

While we have had continued success in some locations, in other areas where plants hit inaugurations and milestones, Losberger De Boer has deployed some very high-end hospitality and turnkey venues for hosting such events – some remaining as visitor centres. Alongside the success, recent times have seen some challenges, and keeping a site running and delivering efficiently has only become more important as the price of oil has fallen, so our clients have been looking for innovations to help support them getting the most from their operations.


A Losberger De Boer temporary structure

Image Credit: Losberger De Boer

As a result, an increasing number of oil and gas sector clients are requesting bespoke mega-doors to be installed to facilitate the movement of specialist large machinery and plant in and out for storage and maintenance. Furthermore, we have been delivering temperature-controlled warehouse/logistics hubs to give better efficiency via centralised on-site storage, and we have even been asked to completely tailor our structures to be installed over the top of equipment so that it can continue to operate in all weather and environmental conditions.

In addition to events related to oil and gas, the core business requirement for temporary structures is in the provision of temporary accommodation for scheduled shutdown works. These are routinely administered on a plant for preventative maintenance and usually occur every 12 to 18 months.

Challenges

There are a number of challenges associated with providing temporary structures in the region. The climate is clearly a factor. Our latest line of insulated buildings work effectively in response to this: while a fraction more expensive to rent in the first instance, they cut generator fuel bills by up to 40 per cent, which anyone familiar with running AC and other services off generator power for any significant time will tell you, saves a substantial amount of money.

Secondly, the industry demands, rightly, extremely high standards of safety and security. Our structures are engineered and are constructed in line with BS EN 13782, we are also certified ISO 9001 (quality) and ISO 14001 (environmental), yet many providers do not meet any recognised standards with regard to their structures, nor a high standard of safety in their construction approach.

However, across other sectors, one of the main challenges in the Middle East is that

many other customer groups do not at fully understand or value the importance of these elements, thus ultimately risking safety during construction, as well as the safety of the building itself.

It was great for the Losberger De Boer Middle East team to be recognised with two awards in the past 12 months – both as 'Best Temporary Structures Provider – Middle East' in the UAE Business Awards 2018 and as 'Top Services Provider' in the FinanceME Business Vision awards 2017 – both for an innovation of design to meet a specific customer need. While Losberger De Boer has over 400,000 sq m of temporary structure stocking materials across 70 systemised building products, the company excels, I believe, in adapting those products to meet very specific customer needs. Additionally, the team really delivers on partnership with our customers, understanding their business and technical needs and then in taking our core product and evolving it to totally solve that specific challenge.

Across all sectors, Losberger De Boer Middle East continues on the same growth trajectory of around 30 per cent per year. I believe we have developed an ideal middle-ground solution of insulated, semi-permanent structures which last 10 plus years, which for all intents and purposes look and feel like permanent buildings, but which can be built in a matter of weeks instead of years. Government bodies which are investing in new projects, including new cities, and companies from a huge range of sectors, are wanting to take advantage of the ability to rapidly deploy, grow and even be able to relocate those facilities later as their projects change and evolve.

The Middle East is uniquely dynamic and forward thinking, and with the UAE continuing to push ahead and develop, and Saudi Arabia making the great commitments to growth embodied in the Public Investment Fund and Vision 2030, this region is prepared to accept the latest construction technology and use it to its advantage. ■

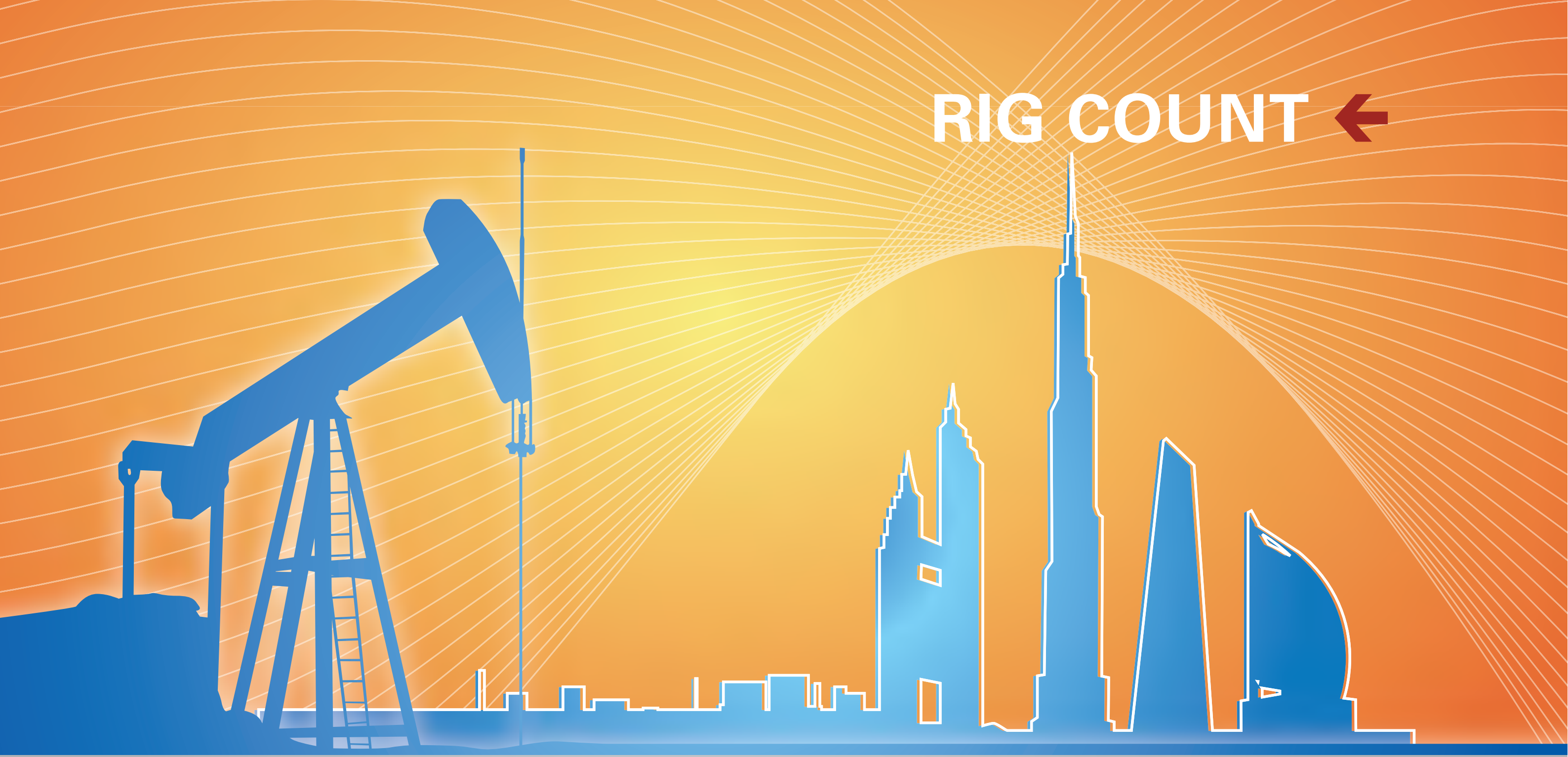
Bin Quraya adds to its crane rental fleet

SAUDI ARABIAN HEAVY equipment rental company Bin Quraya has taken delivery of 10 40m Genie® Xtra Capacity™ (XC™) boom lifts, with the needs of its customer Saudi Aramco in mind. The machines were supplied by Saudi Arabian-based authorised Genie distributors, Middle East Development Co. Ltd. (Medco).

For Saudi Aramco's steel erectors, electricians, welders, pipe and millwright fitters, whose work involves the use of heavy tools and materials, these heavier capacity machines will provide the ability to work more efficiently and productively.

The Genie SX-125 XC boom features a dual envelope design offering an unrestricted platform capacity of 300 kg and a restricted capacity of 454 kg. "Offering a third more capacity than standard, our Genie XC booms combine the latest new generation Genie technologies to raise more people, more tools and more materials to increase productivity, and make work in applications that require higher capacities faster and easier," said Gary Cooke, Genie regional sales manager, Terex AWP, for the Middle East at Terex Equipment Middle East LLC.

Headquartered in Dhahran, Bin Quraya Group offers one of the largest crane fleets in the MENA region. Its activities include the rental of a broad range of heavy equipment.



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	39	12	51	0	38	13	51	32	16	48
DUBAI	0	2	2	0	0	2	2	0	2	2
IRAQ	60	0	60	2	58	0	58	43	0	43
JORDAN	0	0	0	0	0	0	0	0	0	0
KUWAIT	54	0	54	0	54	0	54	54	0	54
OMAN	54	0	54	0	54	0	54	55	2	57
PAKISTAN	24	0	24	-2	26	0	26	20	0	20
QATAR	3	6	9	0	3	6	9	5	6	11
SAUDI ARABIA	95	18	113	-4	103	14	117	106	13	119
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	0	0	0
TOTAL	329	38	367	-4	336	35	371	315	39	354
North Africa										
ALGERIA	55	0	55	2	53	0	53	51	0	51
EGYPT	22	5	27	6	18	3	21	24	6	30
LIBYA	0	1	1	0	0	1	1	0	1	1
TUNISIA	2	0	2	2	0	0	0	1	0	1
TOTAL	79	6	85	10	71	4	75	76	7	83

Source: Baker Hughes

المعزز للنفط على النطاق التجاري. وهي تشمل الاستخلاص باستخدام المواد الكيميائية، وحقن الغاز القابل للمزج (MGI) والتطبيقات الحرارية. وفي الوقت ذاته، تواصل الشركة حاليا تطوير تقنيات مبتكرة لاستخلاص النفط، والتي قد تساهم في اكتشاف موارد الهيدروكربونات الصعبة. ويتم ذلك من خلال سلسلة من برامج الاختبارات المعملية والميدانية المخصصة.

• ما هي، في رأيكما، أبرز الخطوات المتقدمة والإنجازات التي حققتها شركة تنمية نفط عمان على صعيد الاستخلاص المعزز للنفط؟

•• تأتي شركة تنمية نفط عمان في طليعة الشركات على مستوى المنطقة، بل والعالم، التي تُنفذ أربع عمليات مختلفة للاستخلاص المعزز للنفط على المستوى التجاري في الحقل بأكمله. وتشمل المشاريع حقن الغاز القابل للمزج، وحقن البخار، والصرف بواسطة الجاذبية بمساعدة البخار، والحقن بالبوليمر. وتبرهن هذه المشاريع على قدرة شركة تنمية نفط عمان على تنفيذ العديد من عمليات الاستخلاص المعقدة بنجاح، والتغلب على التحديات العديدة خلال فترة زمنية قصيرة. وهنا تجدر الإشارة ـ بشكل خاص ـ إلى مشروع حقن البخار في حقل «أمل غرب»، إذ يعد أول حقل في العالم تُوظَّف فيه أحد مصادر الطاقة المتجددة (الطاقة الشمسية) للمساعدة في توليد البخار المطلوب للحقن.

• ما هي أكبر التحديات التي واجهتكم في تنفيذ مشاريع الاستخلاص المعزز للنفط، وكيف تغلبتم عليها؟

•• واجهنا اثنين من التحديات الرئيسية عند إجراء عمليات الاستخلاص المعزز للنفط. الأول متعلق بندرة المهارات المتخصصة المطلوبة لعمليات الاستخلاص المعزز للنفط خلال تدفق القيمة لهذه العمليات. أما الثاني فيرتبط بالبيئة التجارية واستمرارنا في إجراء هذه العمليات في ظل تراجع الأسعار مع التركيز على التكلفة.

وللتغلب على نقص المهارات المتخصصة، أنشأت شركة تنمية نفط عمان قسما للاستخلاص المعزز للنفط، وعيَّنت به نخبة من الخبراء العمانيين والدوليين الذين يتعاونون معا لتطوير التقنيات التي تعمل على الكشف عن مكامن الهيدروكربونات في المستقبل. وفضلا عن ذلك، عقدت شركة تنمية نفط عمان عددا من التحالفات الإستراتيجية والمشاريع المشتركة على مستوى الصناعة، مع العديد من المؤسسات في مختلف أنحاء العالم حتى نتمكن من الوصول إلى المهارات المتخصصة المطلوبة لدعم موظفينا في إطار حرصنا على تنمية قدراتهم.

أما عن التحديات التجارية، فقد قسمنا محفظة مشاريع النفط الثقيل إلى ثلاثة قطاعات. ويتكون القطاع الأول من الحقول التي يمكن تكرار بعض عمليات الاستخلاص المعزز للنفط المثبتة بسهولة فيها من خلال التنفيذ الكامل داخل الحقل؛ مثل الغمر بالبخار وتصريف الغاز-النفط بواسطة الجاذبية بمساعدة الحرارة، والغمر بالبوليمر. ويتيح ذلك لعمان المُضي قُدمًا في تنفيذ المشاريع على مراحل، مما يقلل من تعرضها للمخاطر، ويعجل التدفق النقدي وزيادة الإنتاج.

ويضم القطاع الثاني الحقول التي تبعد خطوات بسيطة عن التقنيات المثبتة للاستخلاص المعزز للنفط؛ مثل أنواع النفط الثقيل التي يتم استخراجُها عبر الغمر بالبوليمر، أو الخزانات منخفضة النفاذية. وتتطلب تلك العمليات بعض التجريب، غير أنها لا تزال تتم داخل الأصول ضمن عملية الاستخلاص المعزز للنفط، وتستخدم أنظمة المنشآت السطحية القياسية التي لا تتطلب تحديثا كبيرا أو تحسينا لنظام الإنتاج/الحقن السطحي.

أما القطاع الثالث، فيضم الخزانات التي لا تُستخدم فيها أية عمليات مثبتة للاستخلاص المعزز للنفط ولا تزال في الإطار البحثي. ويمكن عرض هذه الحقول على شركات يتسنى لنا التعاون معها في استثمار الخزانات باستخدام أفكار مبتكرة لاستخلاص النفط و/أو إجراء التجارب المعملية من أجل اختبار التقنيات المختلفة على المستوى المعملي لتحديد آليات الاستخلاص الجديدة. فمن المعلوم أن تطور التقنية واكتمالها يستغرق بعض الوقت.

• ما هي الخطط المستقبلية لشركة تنمية نفط عمان، والتي تبشر بمستقبل واعد في تطوير مجال الاستخلاص المعزز للنفط؟

•• تجري شركة تنمية نفط عمان بحوثا على تقنيات الاستخلاص المعزز للنفط المجدية من حيث التكلفة، حتى يكون بوسعنا مواصلة تطبيق الاستخلاص المعزز للنفط بأكثر الطرق كفاءة وفاعلية من حيث التكلفة. وهذا يعني استخدام أنواع أخرى من الكيماويات التي تقتصر الآن على الكيماويات التقليدية والتركيز على مضاعفة التدفق النقدي. وبالإضافة إلى ذلك، نواصل استكشاف التقنيات التي توفر تركيبات كيميائية للمناطق المستهدفة من خلال استخدام الكيماويات التحويلية لتحسين احتكاك الكيماويات بسوائل الخزان.

هذا، وندرس أيضا استخدام أنواع البوليمرات البديلة التي قد تناسب درجات الحرارة والملوحة المرتفعة، إلى جانب العمل المستمر على استخدام المذيبات كوسيلة لزيادة الإنتاج. ويأتي العديد من هذه المجالات في طليعة الابتكارات، غير أنها لا تزال في طور الاختبارات المعملية. ومع ذلك تم إنجاز الكثير من الأعمال التحضيرية حتى يكون بإمكاننا تطبيق التقنية عندما تصبح البيئة التجارية مواتية ومؤهلة لذلك. ونظرا لتنوع الخزانات التي تشتمل عليها المحفظة الاستثمارية لشركة تنمية نفط عمان، فلن يتم اعتماد أسلوب واحد. ونعتقد أنه يجب علينا توفير عدد من الأساليب المجدية من الناحية التجارية لضمان استخلاص أكبر قدر ممكن من النفط من خزانات الهيدروكربونات التي يصعب استخلاص النفط منها.

جنيد غلام (يسار) ورفعت المجيني

تنمية نفط عمان: الشركة الرائدة عالمياً في الاستخلاص المعزز للنفط

في الحوار التالي، يتحدث كلٌّ من جنيد غلام، مدير مركز تطوير الحقول بشركة تنمية نفط عمان، ورفعت المجيني، قائد محفظة استثمارات الاستخلاص المعزز للنفط، حول أنشطة الاستخلاص المعزز للنفط التي تنفذها الشركة. وهما يقولان إن شركة تنمية نفط عمان تجري بحوثاً على تقنيات الاستخلاص المعزز للنفط المجدية من حيث الكلفة، وذلك حتى يمكن للشركة مواصلة تطبيق الاستخلاص المعزز للنفط بأكثر الطرق كفاءة وفاعلية من حيث التكلفة. كما أن الشركة تستخدم تقنيات متنوعة في هذا المجال. وإلى نص الحوار:

• ما هي أهمية الاستخلاص المعزز للنفط في قطاع النفط والغاز العماني ومساهمته في تحقيق أهداف الإنتاج؟

•• على الرغم من البيئة الاقتصادية المليئة بالتحديات، تواصل شركة تنمية نفط عمان مساعيها لتعزيز المشاركة المستقبلية للاستخلاص المعزز للنفط في إنتاج النفط، مع التركيز على التكلفة. ومع حلول عام ٢٠٢٥، من المتوقع أن تمثل مشاريع الاستخلاص المعزز للنفط، التي تقيمها شركة تنمية نفط عمان، أكثر من ٢٣ في المائة من إنتاج الشركة. وتعكف الشركة حاليا على تشغيل مجموعة من مشاريع الاستخلاص

السيبرانية للتكنولوجيا التشغيلية. فيجب على المؤسسات التغلب على المخاوف التي تعتريها من الاتصالات، والتمكن من المراقبة المستمرة لأصول التكنولوجيا التشغيلية لديها، كما تتجلى الحاجة لتأمين البيئة التشغيلية برمتها. ويجب تعزيز الدراسات التحليلية التي تمنح القدرة على اتخاذ قرارات أسرع وأكثر ذكاء، بل ويتعين على المؤسسات السعي للحصول على حلول سيبرانية مخصصة للتكنولوجيا التشغيلية. ومن الضروري أيضا عقد الشراكات مع خبراء الحماية السيبرانية للتكنولوجيا التشغيلية من ذوي الخبرات الفعلية في هذا المجال.

تشهد المنطقة هجمات متزايدة تستهدف التكنولوجيا التشغيلية

أدنوك توقع اتفاقيتي امتياز مع مؤسسة البترول الوطنية الصينية

حصلت مؤسسة البترول الوطنية الصينية (سي إن بي سي)، ثالث أكبر شركات النفط في العالم، على امتيازات في اثنين من الحقول البحرية في أبوظبي عقب توقيع اتفاقيتين مع شركة بترول أبوظبي الوطنية (أدنوك). وقد حصلت مؤسسة البترول الوطنية الصينية (سي إن بي سي)، بموجب بنود الاتفاقيتين من خلال شركة «بتروتشاينا» التابعة لها، على نسبة ١٠في المائة في امتياز «أم الشيف ونصر»، و١٠ في المائة في امتياز «زاكوم السفلي» البحريين.

وقدمت مؤسسة البترول الوطنية الصينية رسم مشاركة ٥٧٥ مليون دولار أمريكي في امتياز «أم الشيف ونصر» ورسم مشاركة ٦٠٠ مليون دولار أمريكي في امتياز «زاكوم السفلي». وسوف تتولى إدارتهما «أدنوك البحرية» بالنيابة عن جميع الشركاء. وبهذه المناسبة، قال دكتور سلطان أحمد الجابر، الرئيس التنفيذي لأدنوك ومجموعة شركاتها، إن مد جسور التعاون مع مؤسسة البترول الوطنية الصينية من شأنه تقوية وتعزيز العلاقات الإستراتيجية والاقتصادية بين دولة الإمارات

مراسم التوقيع

والصين، والتي تعد ثاني أكبر اقتصاد في العالم. وأضاف: «يعد التعاون في مجال الطاقة ملمحا مهما في علاقة دولة الإمارات بجمهورية الصين الشعبية، التي تعد أكبر مستورد للنفط عالميا، وإحدى أهم الأسواق التي تشهد إقبالا عن منتجاتنا البترولية والبتروكيماوية. وتعتبر هذه الاتفاقيات معلما جديدا في شراكة أدنوك المزدهرة مع شركة «سي إن بي سي»، كما أنها تمثل منصة مهمة يمكننا من خلالها استكشاف فرص أخرى في المستقبل». ويمتاز مكمن «أم الشيف» للغاز البحري بغطاء غازي ضخم هو الأكبر على مستوى المنطقة ويعد غنيا بالمكثفات. ويشمل الغطاء الغازي حلقة نفطية تبلغ طاقتها الإنتاجية من النفط الخام، إلى جانب حقل نصر، ٤٦٠ ألف برميل يوميا. وتخطط أدنوك لإنتاج ٥٠٠ مليون قدم مكعب يوميا من الغطاء الغازي في «أم الشيف» للمساهمة في تلبية الطلب المحلي المتنامي على الطاقة في أبوظبي.

ومن الجدير بالذكر أن مؤسسة البترول الوطنية الصينية ستنضم إلى شركاء امتياز «أم الشيف ونصر»، الذي يضم «إيني» (١٠ في المائة) و«توتال» (٢٠ في المائة)، كما ستنضم إلى شركاء امتياز «زاكوم السفلي»، إلى جانب ائتلاف الشركات الذي تقوده شركة النفط والغاز الطبيعي الهندية «فيديش» (١٠ في المائة)، وشركة «إنبكس» (١٠ في المائة) و«إيني» (٥ في المائة) وتوتال (٥ في المائة). هذا وتحتفظ أدنوك بحصة الأغلبية التي تبلغ ٦٠ في المائة في الامتيازين.

مفكرة رجال الأعمال 2018

أبريل/نيسان
١٧ ـ ١٨ ...... القمة الكويتية للنفط والغاز ...... الكويت
١٧ ـ ١٩ ...... مؤتمر ومعرض حوض البحر المتوسط للنفط والغاز ـ MOC ...... الإسكندرية
٢٩ ـ ٥/٣ ...... مؤتمر ومعرض التكنولوجيا المتقدمة للنفط الحامض والغاز ـ سوجات ...... أبوظبي
٣٠ ـ ٥/٣ ...... مؤتمر تكنولوجيا حقول النفط والغاز البحرية ـ OTC ...... هوستون
مايو/أيار
٦ ـ ٩ ...... معرض إيران للنفط والغاز والتكرير والبتروكيماويات ...... طهران

حوالي تريليون دولار استثمارات الطاقة في المنطقة خلال السنوات الخمس المقبلة


يتوقع التقرير أن تشهد المنطقة تنفيذ عدد من مشاريع الطاقة الحيوية على مدى السنوات الخمس المقبلة

تشير توقعات الشركة العربية للاستثمارات البترولية (أبيكورب) إلى أن الاستثمارات الكلية في الطاقة، المُلتزم بها والمخطط لها، تصل إلى ٩١٩ مليار دولار أمريكي في منطقة الشرق الأوسط وشمال أفريقيا خلال السنوات الخمس المقبلة، حسبما ورد في تقريرها السنوي الخاص بتوقعات الاستثمار في قطاع الطاقة في الشرق الأوسط وشمال أفريقيا.

ويتوقع التقرير أن تشهد المنطقة تنفيذ عدد من مشاريع الطاقة الحيوية على مدى السنوات الخمس المقبلة، على الرغم مما تمر به المنطقة من تحديات جيوسياسية. فقد تم تخصيص ما يقرب من ٣٤٥ مليار دولار أمريكي لمشاريع قيد التنفيذ، بالإضافة إلى ٥٧٤ مليار دولار أمريكي لمشاريع مخطط لها، على أن يتولى القطاع الخاص إقامة جملة من الاستثمارات المخطط لها. وتمثل حصة المملكة العربية السعودية والإمارات العربية المتحدة ٣٨ في المائة من الاستثمارات المخطط لها، وذلك بواقع ١٤٩ مليار دولار أمريكي و٧٢ مليار دولار أمريكي على التوالي. ويأتي ذلك في إطار سعيهما نحو تعزيز برامج التنقيب والإنتاج في قطاع النفط والغاز. وبالنسبة لمصر، ينصب التركيز الرئيسي على زيادة إنتاج الغاز وسد الاحتياجات المتزايدة للطاقة. وتبلغ الاستثمارات المخطط لها في الدولة ٧٢ مليار دولار أمريكي، يستحوذ قطاع الطاقة على أكثر من ٥٠ في المائة من قيمتها الإجمالية. أما عن الكويت، فيبلغ حجم الاستثمارات في المشاريع المخطط لها، خلال الفترة نفسها، ٥٩ مليار دولار أمريكي، يتوجه أكثر من ٥٠ في المائة منها إلى قطاع النفط. إذ تهدف الدولة إلى زيادة إنتاج النفط ليصل إلى أربعة ملايين برميل يوميا خلال الأعوام الخمسة المقبلة. هذا بينما بلغت قيمة المشاريع المخطط لها في الجزائر نحو ٥٨ مليار دولار أمريكي، يتوجه جزءٌ كبيرٌ منها إلى تطوير برامج التنقيب والإنتاج في إطار تطوير حقل حاسي مسعود. وستركز الدولة على الاستثمار في عمليات التنقيب والإنتاج في قطاع النفط والغاز للوصول إلى هدفها المتمثل في زيادة الإنتاج بنسبة ٢٠ في المائة. في حين يُتوقع أن يؤثر انخفاض الاحتياطيات المالية، والضغوط المتعارضة على العائد، على مساعي الجزائر لتنفيذ خططها الطموح الرامية إلى تعزيز قدرات الإنتاج لديها.

ومن المتوقع أيضا أن يشهد قطاع النفط والغاز في إيران استثمارات كبرى مخططٌ لها تُقدر بنحو ٦٧ مليار دولار أمريكي. وفي العراق ٤٧ مليار دولار أمريكي خلال الفترة المقبلة. وتمثل الاستثمارات في قطاع النفط ٢٧ مليار دولار أمريكي في حقلي «زبير»، الذي تديره شركة «إيني، » و«حلفايا» الذي تتولى شركة «بتروتشاينا» تطويره، وهما اثنان من أكبر مشاريع تطوير عمليات التنقيب والإنتاج في الدولة. ومع ذلك، فإن التوقعات لهاتين الدولتين تعتبر أقل وضوحا، مع درجة أعلى من المخاطر السياسية.

ويورد التقرير أن «العام ٢٠١٧ قد شهد بالتأكيد عدة تحسينات واستعادة لقدر من التوازن في المنطقة». ويضيف «إن حكومات دول مجلس التعاون الخليجي قد أعلنت عن رصد ميزانيات كبيرة في أعقاب ترشيد الإنفاق خلال السنوات الماضية، وذلك بسبب انخفاض عوائد النفط. وسوف تعطي الأولوية للاستثمارات الحرجة في قطاعات الطاقة».

دراسة جديدة تلقي الضوء على المخاطر السيبرانية التي تهدد التكنولوجيا التشغيلية

كشفت دراسة جديدة، أعدتها شركة سيمنز بالتعاون مع معهد «بونيمون» عن انتشار حدوث اختراقات متكررة لم يتم الكشف عنها في منطقة الشرق الأوسط. وتستهدف ٣٠ في المائة من هذه الهجمات على المنطقة التكنولوجيا التشغيلية. وأوضحت الدراسة، المختصة بقطاع النفط والغاز في المنطقة، أنه رغم استثمار الشركات في حماية أصولها من التهديدات السيبرانية، فإنها لا تزال بحاجة إلى بذل المزيد من الجهود لزيادة الوعي، ومعدل نشر التكنولوجيا، إذا ما أرادت تأمين بيئاتها التشغيلية.

ومع التعجيل بالتحول الرقمي وزيادة التقارب بين تكنولوجيا المعلومات والتكنولوجيا التشغيلية، تشهد المنطقة الآن ارتفاع وتيرة الهجمات التي تستهدف بيئات التكنولوجيا التشغيلية. وقال ليو سيمونوفيتش، نائب الرئيس والمدير العالمي للأمن السيبراني الصناعي في شركة سيمنز: «إن المهاجمين قد استغلوا التقارب بين تكنولوجيا المعلومات والتكنولوجيا التشغيلية لاختراق البنية التحتية الحيوية للمؤسسات، وتخريب الأجهزة المادية أو العمليات التشغيلية».

وأضاف: «نعلم أن الهجمات تتكرر بوتيرة أعلى، وقد أصبحت متطورة للغاية، وينبغي على الشركات تعيين ملكية مخصصة توفر الحماية السيبرانية للتكنولوجيا التشغيلية. هذا إلى جانب امتلاك القدرة على مراقبة أصولها، فضلا عن الاستعانة بحلول مخصصة لأغراض معينة، وعقد الشراكات مع خبراء يتمتعون بخبرات فعلية في هذا المجال».

وكشف التقرير أن ما يقرب من ٦٠ في المائة من المشاركين يعتقدون أن المخاطر السيبرانية، التي تتعرض لها التكنولوجيا التشغيلية، تفوق تلك التي تتعرض لها تكنولوجيا المعلومات. وفي ٧٥ في المائة من الحالات، تعرض الخاضعون للاستجواب لتهديد أمني واحد على الأقل، نجم عنه فقدان معلومات سرية أو مقاطعة التشغيل في بيئة التكنولوجيا التشغيلية خلال الأشهر الاثني عشر الماضية.

وقد حدد التقرير ستة مبادئ رئيسية تشكل الأساس لأغلب برامج الحماية السيبرانية للتكنولوجيا التشغيلية عالية الكفاءة، وهي تبدأ بتعيين وتمكين الملكية المخصصة للحماية

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