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Oil Review Middle East

Oil · Gas · Petrochemicals

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Saudi Aramco explores new possibilities

- Middle East downstream outlook
- The push for sustainability
- ADIPEC Virtual review
- Supply chain digitalisation
- Multiphase meters for flow assurance
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Editor's note

AS WE COME to the end of a year of unprecedented challenges, there are signs of oil demand recovery and a return of market confidence with the roll-out of COVID-19 vaccines. We can only hope that 2021 will see a return to normality and a pick-up in oil and gas activity.

With their relatively low cost of production, Middle East NOCs have weathered the COVID-19 storm better than most, Saudi Aramco being a prime example. The company continues to drive forward major projects while adopting a disciplined financial approach in the face of market volatility (see p10).

The energy transition and sustainability were a central theme of ADIPEC Virtual 2020, where the need for the oil and gas industry to address ESG concerns and decarbonise their operations was discussed (p20). Could the industry be doing more? See our article on p26.

It just remains for me to wish our readers and supporters all good wishes for the festive season and a very happy and prosperous New Year.

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Front cover image: Haradh gas plant, courtesy of Saudi Aramco

➔Executives' Calendar, 2021

JANUARY			
20-21	**Oil & Gas IoT Summit**	LISBON	www.oilandgas-iot.com
FEBRUARY			
15-17	**ME-TECH 2021**	VIRTUAL	www.europetro.com/event/357
23-25	**IP Week**	VIRTUAL	www.ipweek.co.uk
MARCH			
8-12	**SPE/IADC Virtual Int'l Drilling Conference & Exhibition**	VIRTUAL	www.drillingconference.org/international
15-18	**NAPEC 2021**	ORAN	www.napec-dz.com
APRIL			
6-7	**UAE HSE Forum 2021**	DUBAI	www.hse-forum.com
JUNE			
14-16	**Middle East Energy**	DUBAI	www.middleeast-energy.com
AUGUST			
16-19	**OTC**	HOUSTON	2021.otcnet.org

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

Rock imaging specialist group looks forward to iRIS-2021

THE INTERNATIONAL ROCK Imaging Summit (iRIS-2020) brought together eighty hydrocarbon and mineral resource rock imaging experts from across the globe, a mix of practitioners and researchers, to hear nearly forty presentations in twelve sessions, over the course of two days. Speakers shared how they have leveraged a selection of different digital imaging technologies to enhance their understanding of rock and fluid flow properties in an effort to derive more reliable values for them.

iRIS-2020 closed with a panel session moderated by Brendon Hall of Enthought. The panel comprised Genolé Tallec of Thermo Fisher Scientific, Marijn Boone of Tescan, Geert Vanhoyland of Bruker, Rob Bradley of Geotek and Alan Butcher of GTK.

Addressing the topic "The Future of Rock Imaging", the panellists agreed that the summit had highlighted the variety of techniques being applied to the challenge of rock imaging. The future will bring an even broader range of imaging technologies as developments in other industries are adapted and applied to the geoscience domain. This will encourage a greater fusion of methods and a greater reliance on advanced computing methods. All agreed that iRIS-2020 had been a great success. "Everyone who sat through the last two days will have learned something new," said Alan Butcher, co-chair of the event. All are already looking forward to iRIS-2021, which will hopefully be a hybrid event: a physical meeting with some virtual sessions.

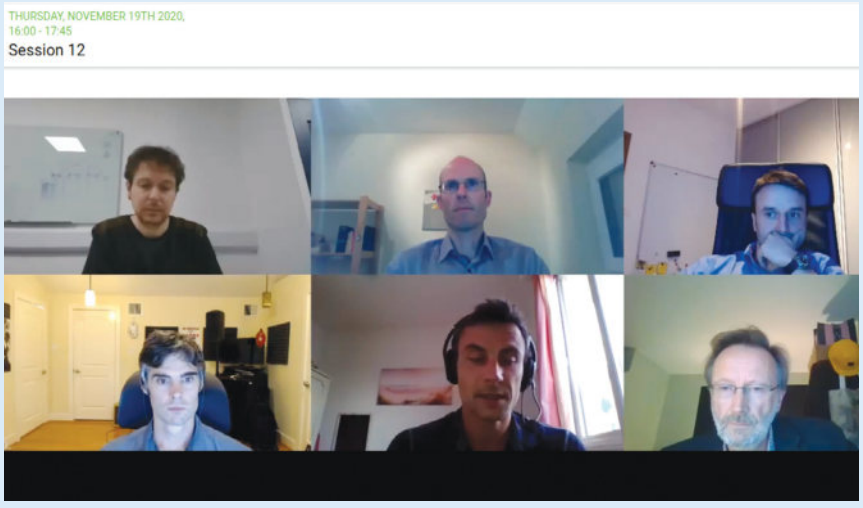

Image credit: Exprobiz FZE

The panel from iRIS-2020 discussed digital imaging technologies.

The inaugural event was held virtually between 17-19 November. The first day of iRIS-2020 was dedicated to a workshop run by Thermo Fisher Scientific, the gold sponsor of iRIS-2020, which was so popular that it was over-subscribed. The other sponsors of iRIS-2020 were Core Laboratories, Tescan, Bruker, Geotek, Zeiss, Enersoft, Imago, Reservoir Rock Technologies, Vidence, Enthought and Core Specialist Services.

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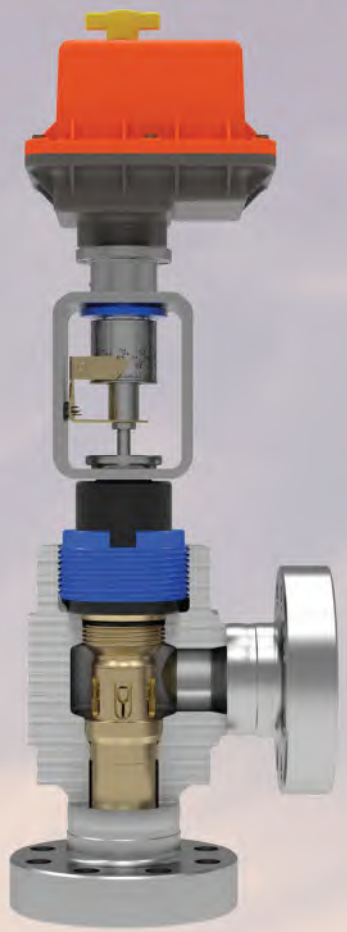

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Aramco expands flagship localisation programme

ARAMCO HAS ANNOUNCED the expansion of its In-Kingdom Total Value Add (IKTVA) programme to increase local content and boost domestic supply chains.

Aramco has signed MoUs with Shell & AMG Recycling BV (AMG) from the Netherlands; Chinese firms Suzhou XDM, Shen Gong, XINFOO and SUPCON; and POSCO from South Korea.

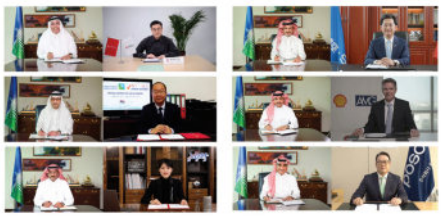

Image credit: Aramco

The MoUs were signed virtually.

These strategic collaborations pave the way for the launch of new businesses across multiple innovative growth sectors, including steel plate manufacturing, industrial 3D printing, digital equipment manufacturing, energy management and control, catalyst manufacturing and recycling, and advanced chip and smart sensor manufacturing.

These new collaborations reflect Aramco's commitment to increasing the company's reliability and operational efficiency, as well as its commitment to further enhancing the Saudi Arabian commercial ecosystem and increasing employment and development opportunities for talented Saudis. Since IKTVA's launch, Aramco's local content index has increased from 35% at the end of 2015 to 56% in 2020.

PDO and Gulf Energy to create 600 job opportunities

PETROLEUM DEVELOPMENT OMAN (PDO) has announced a partnership with integrated oilfield services provider Gulf Energy SAOC (GES) for the creation of 600 job opportunities for Omanis in its product line services in both Oman and abroad.

As part of its long established In-Country Value programme and the continued creation of job opportunities for skilled Omanis, PDO has agreed with GES to employ 150 Omanis every year for the next four years in wells construction, interventions and industrial services. This will help in localising these jobs and provide support in building Omani capabilities to reach their potential in both the local and international arenas.

The Memorandum of Collaboration (MOC) detailing this initiative was signed on 3 December at a ceremony held under the auspices of HE Dr Mohammed bin Hamad Al Rumhy, Minister of Energy and Minerals.

The focus on both creating job opportunities nationally and internationally supports Oman Vision 2040 to shape "a dynamic labour market that is attractive to talent and responsive to demographic, economic, knowledge and technical changes."

Sercel wins seismic equipment contract for Saudi survey

SERCEL HAS WON a major contract to supply land seismic equipment for a 3D mega-crew survey recently awarded to ARGAS in Saudi Arabia. The equipment selected includes a Sercel 508XT seismic acquisition system of over 60,000 channels equipped with strings of SG-10 geophones and a fleet of over 30 Nomad 65 Neo all-terrain vibrator trucks with VE464 advanced vibrator electronics. ARGAS will acquire the long-term survey in a harsh desert environment from the end of Q1 2021 onwards.

Image credit: Sercel

Sercel Nomad 65 Neo vibrator trucks in operation.

This award marks the fifth 508XT system to be deployed on a mega-crew survey in the Middle East in the last five years, strengthening Sercel's already well-established base in the region. With over 75 systems deployed worldwide, the 508XT is the industry's most field-proven acquisition system for all types of challenging land surveys. When combined with Nomad 65 Neo vibrators and the VE464's unique Smart LF function, it is the ideal choice for reaching the highest productivity levels while recording the best broadband seismic data.

Sophie Zurquiyah, CEO, CGG, said, "We are delighted that ARGAS has selected an extensive Sercel product portfolio to equip the mega-crew survey it was recently awarded in Saudi Arabia. As an experienced industrial manufacturer, Sercel is trusted by its customers for its reliability to deliver large volumes of high-performance seismic equipment and for accompanying them on their most challenging surveys with dedicated technical support."

Halliburton and Accenture to accelerate digital supply chain transformation

HALLIBURTON AND ACCENTURE have teamed up to accelerate Halliburton's digital supply chain transformation and support digitalisation within the company's manufacturing function.

Beginning in 2021, Halliburton will launch a new global hub-and-spoke supply chain and manufacturing service model supported by new technologies. This new delivery platform will apply advanced analytics and enhanced business intelligence tools for its support teams to improve service levels and unlock operational benefits. This transformation further supports Halliburton's strategic priority to accelerate digital deployment and integration across the value chain, driving better service for its customers and returns for its shareholders.

Accenture will work with Halliburton to:

- Create real-time supply chain visibility and actionable insights using artificial intelligence and analytics, enabling greater transparency and faster decision-making;
- Accelerate the deployment of new, scalable technology that automates procurement processes, enables touchless invoicing and improves data accuracy;
- Improve process efficiencies and increase productivity, enabling more focus on strategic activities and the ability to scale at lower incremental cost.

"This transformation allows Halliburton to improve service levels and business outcomes by optimising our investments across supply chain and manufacturing infrastructure," said Lawrence Pope, Halliburton executive vice-president of administration and chief human resources officer.

Accenture will leverage its SynOps platform to accelerate Halliburton's digital transformation across its supply chain and manufacturing functions. Accenture will augment its unique capabilities with Halliburton's existing technologies to provide teams with more advanced tools to do their work, enhancing real-time decision-making and actionable insights across supplier performance, demand planning, logistics and inventory management.

"Halliburton's strong digital foundation is critical to making its supply chain and manufacturing functions more responsive, resilient and able to adapt to changing market needs," said Manish Sharma, group chief executive of Accenture Operations.

Dana Gas announces record gas deliveries from Khor Mor Gas Plant in the KRI

Image credit: Adobe Stock

When implemented, the project is expected to add between US$175mn and US$200mn annually to Dana Gas's revenues.

DANA GAS has announced that the production of sales gas from Pearl Petroleum's Khor Mor Gas Plant in the Kurdistan Region of Iraq (KRI) reached a record level of 418 MMscf/d on 18 November 2020.

Dana Gas, which owns a 35% stake in Pearl Petroleum, registered a 6% y-o-y increase in production during Q3 2020 to 32,400 boepd, driven by the completion of a new plant bypass project in August.

"We are very pleased to announce that after a delay in the implementation of the first 250 MMscf/d gas processing train following border closures and travel restrictions resulting from COVID-19, that we anticipate recommencing civil engineering works on location in the next few weeks," said Dr Patrick Allman-Ward, CEO of Dana Gas. "We now expect first gas from the project's first gas processing train in Q1 2023, and we are also examining ways to reduce the schedule further. When implemented, the project is expected to add between US$175mn and US$200mn annually to Dana Gas's revenues."

Total selects Nutanix to power digital transformation

NUTANIX, A SPECIALIST in hybrid and multicloud computing, has announced that Total, one of the largest energy producers in the world, has implemented Nutanix solutions, including Nutanix's hyperconverged infrastructure (HCI) software, AHV, Files, Flow, Prism, and Xi Frame to develop a unified IT environment supporting the majority of their global operations.

Total selected Nutanix to deliver the reliability and performance its users expect, while ensuring the necessary flexibility for the company to adapt to the fast-changing oil and gas industry. Additionally, the company selected Nutanix to support its goal of dramatically minimising its datacentre footprint as part of its environmental initiatives to reduce greenhouse emissions.

"With more than 7,000 applications across their global organisation, Total needed an IT infrastructure that could consistently deliver high performance globally," said Andrew Brinded, vice-president and general manager EMEA Sales at Nutanix. "With Nutanix, Total has the peace of mind of knowing they have a reliable infrastructure that can easily scale to meet the growing needs of the industry."

DNV GL launches recommended practice on quality assurance of oil and gas industry's digital twins

Image credit: DNV GL

Still image from digital twin movie produced by Digital Solutions.

DNV GL HAS published the oil and gas industry's first recommended practice (RP) on how to build and quality-assure digital twins. Developed in collaboration with TechnipFMC, DNVGL-RP-A204: Qualification and assurance of digital twins sets a benchmark for the sector's varying approaches to building and operating the technology. It guides industry professionals through:

- Assessing whether a digital twin will deliver to stakeholders' expectations from the inception of a project
- Establishing confidence in the data and computational models that a digital twin runs on
- Evaluating an organisation's readiness to work with and evolve alongside a digital twin.

There has previously been no commonly agreed methodology for developing and operating digital twins among global oil and gas operators and their supply chains.

The methodology behind DNV GL's new RP has been piloted on 10 projects with companies including Aker BP, Kongsberg Digital and NOV Offshore Cranes.

Oilfield service purchases market forecast to fall

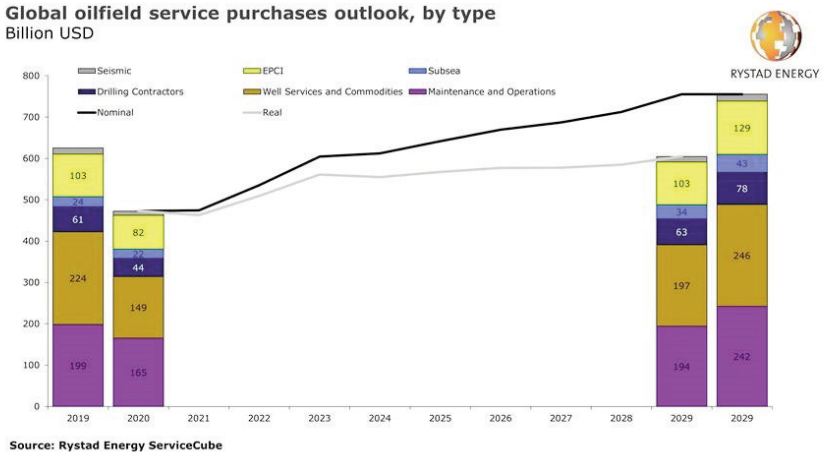

Image Credit: Rystad Energy ServiceCube

Oilfield service purchases are expected to drop to US$473bn and remain flat in 2021.

THE OILFIELD SERVICE (OFS) market is projected to lose a cumulative US$340bn in purchases value over the next eight years, according to a Rystad Energy analysis, as peak oil demand will arrive earlier and at a lower level than previously thought, leading to reduced E&P investments.

The pandemic's impact and the accelerating energy transition has prompted Rystad Energy to revise its peak oil demand forecast to 2028, two years earlier than previously expected, at 102mn bpd, down from previous projections of 106mn bpd.

Oilfield service (OFS) purchases are expected to drop to US$473bn (from US$625bn in 2019) and remain flat in 2021, before beginning a slow recovery. Rystad Energy has predicted that OFS purchases will only return to pre-pandemic levels after 2024, reaching US$642bn in 2025.

Investments are expected to increase by 13% in 2022 (the expectation was previously 17%) and 16% in 2023 (previously 18%). Most of the revisions were driven by shale investments, which were expected to grow by 45% in 2022 but are now pegged at around 30%.

"With a lower need and willingness among E&P companies to invest in oil and gas, capital expenditure across offshore, shale and conventional onshore resources will probably struggle to get back to 2019 levels," said Audun Martinsen, head of energy service research at Rystad Energy.

ADNOC awards contract for expansion of 3D seismic survey

THE ABU DHABI National Oil Company (ADNOC) has announced the award of a contract to BGP, a subsidiary of China National Petroleum Company (CNPC), represented in the UAE by Al Masaood Oil Industry Supplies & Services to further expand the scope of the three-dimensional (3D) onshore and offshore seismic survey underway in the Emirate of Abu Dhabi.

The survey is on track to be completed by 2024.

Image Credit: ADNOC

The contract brings the survey area to 85,000 sq km, with 50% of the award value flowing back into the UAE's economy. The larger scope enables ADNOC to continue their mission in identifying new hydrocarbon resources across Abu Dhabi following the recent discovery of recoverable oil resources and reserves announced by Abu Dhabi's Supreme Petroleum Council.

The seismic survey also supported the discovery of the conventional oil and gas reserves and unconventional gas resources added to ADNOC's portfolio in 2019.

Yaser Saeed Al Mazrouei, ADNOC Upstream executive director, said, "This award builds on the solid progress we are making in executing the world's largest combined 3D seismic survey, which is an important part of our strategy to accelerate the exploration and development of Abu Dhabi's hydrocarbon resources."

Wellpro Group boosts international expansion with entry into the Saudi Arabian oil and gas market

WELLPRO GROUP, THE thru tubing, inflatable packer and well intervention service portfolio provider has signed a long-term agreement with leading Saudi Arabian energy services company i-Energy as part of a full country start up business plan and large-scale commitment. This will involve complete operational asset and field support including Wellpro Group's industry leading downhole tools and best in class service. The expansion will lead to the initial creation of up to 10 jobs in Saudi Arabia.

Image Credit: Wellpro Group

Mark Fraser, Wellpro Group's Middle East region manager.

Mark Fraser, Wellpro Group's Middle East region manager, commented, "Our agreement with i-Energy provides the ideal platform for us to showcase the benefits we can bring to the Saudi Arabian thru tubing, inflatable and intervention market by supplying safe, cost effective solutions and services coupled with innovative cutting edge technology."

The expansion into Saudi Arabia marks the latest milestone in Wellpro Group's ambitious international growth plans. For almost two years, the company has been fully operational in the Middle East with a regional workshop in Dubai, and is growing its presence in the Asian market.

Earlier this year, Wellpro Group announced a collaborative agreement with Inflatable Packers International, to enhance its existing portfolio of products and services initially in the Middle East with full exclusivity in Saudi Arabia.

"Having already established a strong foothold in the Middle East, expansion into Saudi Arabia was a logical next step for us. We've identified significant opportunities in the Kingdom for our quality products, and believe our vastly experienced personnel will be able to save our clients valuable time and money in solving their most complex thru tubing, inflatable and intervention challenges," said Wellpro Group CEO Jim Thomson.

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The Aramco advantage

Saudi Aramco remains a beacon of stability in a time of uncertainty, says Martin Clark.

Chemicals is an increasing focus for Saudi Aramco.

Image Credit: Saudi Aramco

SAUDI ARABIA'S STATE-OWNED oil company, Saudi Aramco, remains every bit the world's energy powerhouse, despite difficulties facing the oil and gas industry and current volatile macro-economic climate.

The oil giant has moved to replenish its finances this year with multi-billion dollar bond and loan deals, as it seeks to navigate these unsettled times. But, on the ground, it continues to churn out millions of barrels of oil and gas from the desert kingdom each and every day – around 12mn bpd, in fact. Moreover, there are plans to up production capacity to 13mn bpd, according to its president and chief executive, Amin H Nasser.

With its low production costs and vast oil deposits – Saudi Arabia holds almost 20% of the world's proven reserves – Aramco thinks it can undercut any competitors and be the last man standing as lower prices make it unviable for rivals.

While the world's economy may have taken a battering in 2020, Aramco's strategists see continued demand as and when any recovery kicks in.

> "Speculation about an imminent peak in oil demand is not consistent with the realities of consumption."

"We expect oil demand growth to continue in the long term, driven by rising populations and economic growth," Aramco said in a statement to Reuters recently.

"Fuels and petrochemicals will support demand growth…speculation about an imminent peak in oil demand is simply not consistent with the realities of oil consumption."

Change in the air

Given its low-cost production base, Aramco maintains a distinct competitive advantage, but, at the same time, there is no doubt change is in the air. That includes consolidation of some of its sprawling, disparate branches and subsidiaries, as well as a shift to energy alternatives, from natural gas to renewables.

The push to involve more local businesses in Saudi Arabia's strategic energy sector also continues at pace.

Unveiling the group's third quarter results in November, Nasser confirmed the US$69bn integration with petrochemicals giant SABIC, a "transformational" move building strength and scale simultaneously.

"Our resilience is supported by our unique scale, low upstream carbon intensity and low production costs," he said. "As the global economic and social landscape evolves, these strengths and our continued drive to lower GHG [greenhouse gas] emissions mean we

are well positioned to support the energy needs of the global economic recovery."

Indeed, Aramco reported a record historic single-day natural gas production of 10.7 bscfd on 6 August 2020, from both conventional and unconventional fields. It reflects the country's massive gas investments of recent years as part of plans to offset crude oil dependency.

According to Aramco figures, total average hydrocarbon production in the first nine months of 2020 reached 12.4mn bpd of oil equivalent (boe), of which 9.2mn bpd was crude oil.

Projects and investments

Aramco's resolve can be seen in the field, where it continues to invest in its vast oil and gas infrastructure, which has been propping up world energy demand for decades. It

> "The company has become far stricter with its capital spending."

Saudisation remains a priority for Saudi Aramco.

Image Credit: Saudi Aramco

recently awarded contracts to eight companies for various oil and gas brownfield and plant upgrade projects.

These all include a special emphasis on improving Saudisation, with a minimum commitment to use 39% local content and supply chains in the first instance, rising to 60% within six years. The long-term agreements are with leading oil services firms, including Technip, Snamprogetti and Hyundai Engineering and Construction.

An important initiative being progressed is the King Salman Energy Park, known as 'SPARK', in the city of Dammam in the Eastern Province.

The project, initiated in 2018, will become "a 21st century ecosystem for the energy sector", according to developers, serving as a hub for businesses in the liquids, chemicals, metals, manufacturing and related industries. It is hoped that the park will play a central role in the evolution of the kingdom's energy sector in the decades to come. The first phase of the development is set for completion in 2021.

SPARK is now attracting industrial investors across the upstream, downstream, petrochemicals, power, water and wastewater sectors, who will benefit from a dry port and logistics zone among other incentives.

> "There is a belief that the "worst is behind us" following the pandemic."

The park is also designed to nurture small and medium-sized enterprises and stimulate innovation and entrepreneurship in the energy sector, another key strand of Saudi Arabia's diversification drive.

But it is clearly not business as usual after the devastating consequences of government-instigated lockdowns in the wake of the COVID-19 outbreak. Aramco has been forced to delay two large expansion projects at the Marjan and Berri complexes because of the impacts of the virus and its knock-on effects on the global economy, according to GlobalData analysis. The company has also become far stricter with its capital spending, with its half-yearly outlay in 2020 roughly 15% lower than 2019, a trend that is expected to continue into next year.

Cautious optimism

It has been a momentous and unforgettable year, for many reasons, a mere 12 months or so on from Aramco's landmark US$29bn initial public offering (IPO) on the Saudi stock exchange. Much has changed since then, and while no one could have predicted the events of 2020, there is a sense of some optimism at the tail end of the year.

Crucially, there is a belief that the "worst is behind us" following the pandemic and its adverse effects on the energy industry, according to remarks by Nasser at a Riyadh awards ceremony in December.

Nasser also suggested that the global energy transition – now well underway – will be gradual, with conventional and new energy sources running in parallel "for many decades to come".

If that is the case, it places Aramco in an enviable position, as it builds out its business across the energy chain, from crude oil and natural gas, into chemicals and renewables.

The oil giant also boasts total refining capacity of more than five million bpd, and is helping to develop cleaner and more sophisticated fuels for an ever-more discerning market.

Whatever the future holds in 2021, Aramco's broad shoulders will be ready to bear the weight once more to keep the world's energy markets ticking over. ■

Aramco seeks to expand global footprint in chemicals

ARAMCO PRESIDENT AND CEO Amin Nasser expressed his belief in a bright future for the chemical and petroleum industries at a virtual event where he was presented The Chemists' Club 2020 Kavaler Award, sponsored by ICIS, which celebrates success in the chemical industry. Nasser commented on the challenges of 2020 and his expectation that petrochemicals will represent over half of the growth in global oil demand over the next decade.

With the US$69bn acquisition of SABIC in June and investments in oil-to-chemicals technology, Aramco has positioned itself for downstream growth. "Although we are seeing a number of companies announcing global refinery rationalisations or shutdowns – in Europe, the US and at some scale in Asia – we still see opportunities in certain geographies," said Nasser.

"We expect that more than half the world's new refining capacity that will come on stream in the next 8-10 years will be in Asia, and 70-80% of that will be focused mainly on plastics," he added.

Nasser called Aramco's acquisition of SABIC earlier this year "transformational", enabling Aramco to deliver on its chemical strategy. "If you combine our upstream strength and refining capacity of more than 5mn bpd with SABIC's chemicals asset base and global presence, it has made us one of the top global chemical players," said Nasser.

Amin H. Nasser, president and CEO, Saudi Aramco

As for further mergers and acquisitions, Aramco remains focused on the integration of SABIC while keeping an eye out for future deals. "We are not ruling out any good opportunities that come our way in the future, and we continue to evaluate a number of opportunities in major growth markets like China and India as part of our long-term strategy," said Nasser.

On the transition towards renewable energy, Nasser recognises that new energy sources will play an important role in creating a sustainable energy future.

"However, we also believe that the global energy transition will be gradual. COVID-19 has prompted a lot of debate and discussion that the sun has set on the oil and gas industry – that oil demand has peaked or that this is close to happening. But in my view, the reality is that conventional and new energy sources will run in parallel for many decades to come," said Nasser.

Seeing a strong future for Aramco, Nasser said, "We remain firm on our long-term forecasts on creating value through growth and investment." Although the drop in oil demand in April 2020 created the worst month for the oil industry, Nasser sees "light at the end of the tunnel" and predicts good recovery of markets in the second half of 2021. "The oil and gas industry has a key role to play in the road to lower emissions. In the future, oil will be produced with much lower emissions and I see a bright future for the petroleum industry."

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Contributing to Saudi Arabia's Vision 2030 objectives

From its Siemens Dammam Energy Hub (SDEH), one of the most advanced gas turbine production facilities in the Middle East, Siemens Energy is executing projects with advanced technologies as part of the company's long-term partnership and commitment to the Kingdom of Saudi Arabia and its people. Oil Review Middle East spoke to Arja Talakar, senior VP, Industrial Applications Products, Siemens Energy, on the company's activities in the Kingdom.

SAUDI ARABIA'S VISION 2030 is the blueprint of a visionary economic and social transformation which started in 2016. With the goal to diversify the economy, the development of gas resources and the transition to cleaner fuels are among the key objections of this vision. Several large gas development projects are underway to meet the growing domestic demand in an efficient, sustainable, and environmentally conscious way.

It is certainly providing opportunities for Siemens Energy, which was awarded a contract in late July to provide several compressor trains for Saudi Aramco's Hawiyah Unayzah Gas Reservoir Storage (HUGRS) project, the first underground natural gas storage project in the Kingdom.

The project includes a plant with a 1,500 MMSCFD gas injection facility which will inject surplus pipeline gas into depleted gas fields in the winter months, and a 2,000 MMSCFD withdrawal facility enabling gas to be withdrawn when needed to meet high demand in the summer, thus fulfilling cyclical energy demand.

The project builds on the supply of compressor trains for other Saudi Aramco projects, including the new Fadhili gas plant and the Hawiyah gas expansion project.

"We have a history of providing highly reliable compression solutions to oil and gas and petrochemicals customers, especially in the Middle East and Saudi Arabia, bringing together the finest global players. We have a huge installed fleet in various projects throughout the Kingdom," explains Talakar. "As for our recent success, I think it goes back to what we stand for; focusing on what matters to our customers and understanding the key requirements of the project, working closely with them to come up with a custom-made solution."

> "Vision 2030 aims to build up local capabilities and technical knowledge and create highly skilled jobs."

He adds that Siemens Energy is proud to be building the units for HUGRS at its SDEH, one of the most advanced gas turbine and compression production facilities in the Middle East region, with a dedicated local workforce, in line with the company's commitment to Saudi Aramco's In-Kingdom Total Value Add (IKTVA) programme and the ambitious localisation initiatives formulated by the leadership of the Kingdom, under Saudi Arabia's Vision 2030.

"Here, we've been putting a lot of focus on developing talent, adding digital capabilities for remote monitoring, and ensuring the reliable operation of our solutions," says Talakar.

Commitment to IKTVA

Siemens Energy's commitment to localisation goes back a long way and reflects the company's mission to serve the societies in which it operates.

"Saudi Arabia has a large young population, with two-thirds of the citizens being below 34. Vision 2030, therefore, aims to build up local capabilities and technical knowledge and create high skilled jobs, especially for young people," says Talakar. "We started this journey very early on with Saudi Aramco, and in 2011 we built the SDEH. Since then, 11 advanced and highly efficient gas turbines have left the factory. In addition, we have been consolidating our capabilities at the SDEH and building a series of gas compression solutions. Together with our partners from Saudi Aramco we have been putting together clear development and investment plans, as outlined in our five-year IKTVA implementation roadmap, with the objective to further increase the local value add.

Image Credit : Siemens Energy

Arja Talakar, senior VP of Industrial Applications Products, Siemens Energy.

"That is very important for us, because we are highly committed to the countries we are active in, and take pride in working together with Saudi Aramco and the ministries, to understand what the real requirements of the country are and strategically work together." This approach has resulted in large projects where the company is working together with Saudi Aramco, he adds.

He notes that Siemens Energy's leadership team has been engaged with the IKTVA programme since its launch in 2015, and that the launch provided avenues to significantly accelerate the company's localisation drive.

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"It's not only about hiring, it's about the amount of value created within the country, in terms of jobs, in terms of training, in terms of the supply chain. It is a very comprehensive concept and sets clear metrics, defined jointly between Saudi Aramco and its partners.

"We have been working on quite a few areas with Saudi Aramco, defining an ambitious, clear localisation plan. A lot is being done in the field of talent development, where we have been training some 500 Saudi Arabian youth in various fields."

Saudi Arabia's first ever "Made in the KSA" gas turbine was built by local talent at the SDEH. "That was the culmination of an initiative that started several years ago with Saudi Aramco and the Saudi Petroleum Services Polytechnic (SPSP), where we trained young talent at our sister sites in Germany and USA to become gas turbine experts," adds Talakar.

"We went on to work with other institutions, such as Effat University in Jeddah, the first university in Saudi Arabia, offering engineering and science courses for female students," says Talakar. "We've been introducing the most advanced digital technologies to the young population for their sustainable education. Through the MiSK Foundation, a unique and highly regarded institute in the development of science and technology among youth, we started a dedicated programme with a handful of students initially, who participated in internal internships in Germany, which has now expanded to take a large number of students to six different locations – China, South Africa, Germany, UK, USA and Singapore. It is seen as a benchmark programme for technology exchange."

"It's our mission to serve society and that is the driver of these initiatives in line with Vision 2030."

Focusing on emissions reduction

Turning to compressor technology trends, Talakar comments, "Globally, the most important trend setting the tone for any activity in this field is emissions reduction. We have people working on solutions and improving our products to take the waste out of processes, such as reducing leakage in the processing of methane gas or compressing CO_2 for sequestration. Another example is the capturing of flare gas, with flaring still happening in upstream oil and gas operations in many countries, as well as in many chemical processes. We are applying technologies to capture this flare gas to increase operational efficiency and reduce operational costs, thereby making a great contribution to reducing CO_2 emissions and supporting sustainable environmental development. With the progression towards more carbon-neutral economies, we have been at the forefront in making sure our gas turbines are burning hydrogen or gas below particular weights, thereby reducing emissions."

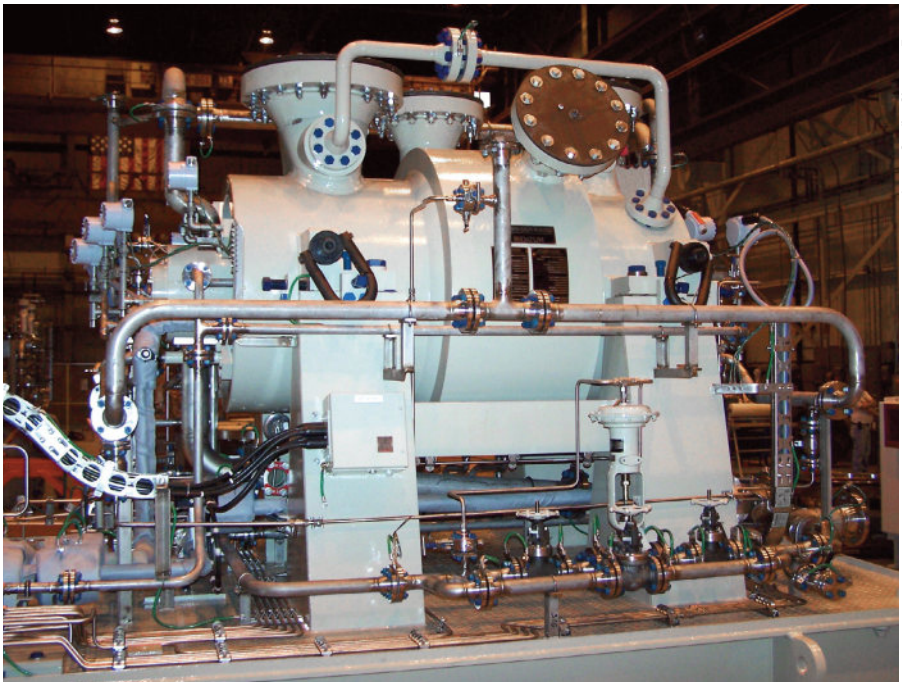

Image Credit: Siemens Energy

DATUM compressors, such as the one above, offer maximum performance for all pressure and flow.

Siemens Energy is a leader in deploying hydrogen, which is now coming to the forefront as an environment-friendly industrial fuel. "We have gas turbines that can burn 100% hydrogen, most of our advanced gas turbines burn a double-digit percentage of hydrogen, and we are working to ensure the entire portfolio is capable of doing so," he says, adding that the process of burning hydrogen is different to burning methane. "While burning methane is a continuous combustion process, burning hydrogen is a series of explosions, so we need to make sure we have the material in place which can sustainably withstand these pressures."

"And let us not forget the topic of digitalisation. We have seen with COVID-19 that in the area of remote inspection testing and acceptance, there are real opportunities, and with robust industrial digital platforms, a lot can be achieved to drive up efficiency and ensure availability."

So in these times of uncertainty, how does Talakar view future prospects for Siemens Energy in Saudi Arabia, and how is the pandemic affecting operations?

> "We have been working on quite a few areas with Saudi Aramco, defining an ambitious, clear localisation plan."

Talakar takes the view that Saudi Aramco has proven to be very resilient in weathering market volatility and short-term cycles, such as when the oil price dropped to a low of US$26/bbl in January 2016, and is unlikely to be diverted from its long-term plans and the Kingdom's Vision 2030 objectives.

"The COVID-19 crisis has, of course, had a tremendous impact on the markets globally. Nevertheless, Saudi Arabia's Vision 2030 is something which is being sustained when it comes to clean energies and switching to gas. It has recently been announced that two new gas fields have been found, expansion projects are well underway, and we will see more projects in this direction coming our way. These are long-term plans that are in place, and Saudi Arabia and Saudi Aramco have shown they have the leadership in place to weather these short-term cycles and events."

As for the operational impact, the company's teams have been collaborating internationally from an early stage to put procedures in place to ensure all its manufacturing facilities are working well, Talakar adds.

"I have to say that all of our facilities have lived up to expectations, ensuring the highest standards of health and safety are in place while maintaining production without any major delays," he says.

"We are committed to doing whatever it takes to live up to the demanding requirements of this industry, and we are proud to have demonstrated our ability to deliver to our customers despite the pandemic," he concludes. ■

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Supply chain digitalisation to meet the new standards

Supply chain digital transformation will create long-term changes to how projects are run, say crew transfer specialists Reflex Marine.

FROM OIL AND gas to renewables, aviation to marine, analogue to digital – every year brings about changes which aim to increase flexibility to the end-users and help us work smarter, rather than longer. The purpose of digitalisation is to streamline processes, eliminate human error, minimise mistakes and ultimately offer a better and more responsive service to the customer. Supply chain and operations' digital transformations will create long-term changes to how projects are run.

Digitalisation of offshore operations comes in the form of digital twins, remote testing and inspections and introducing new technologies. Increased used of digitalisation and automation will reduce crewing requirements for offshore facilities, particularly for new builds and new industries which can take advantage of it without expensive re-fittings. In the supply chain, digitalisation is the transition towards an integrated sequence of planning and production solutions, creating more visibility across the supply stream for operators and end-users.

Reflex Marine, experts in offshore crew and cargo solutions, have long recognised that digitalisation will lead the future of offshore projects. Ensuring they stay ahead of the game has helped them better respond to the industry's evolving needs. The latest crew transfer carriers developed by Reflex Marine are ideally suited for low-volume transfers, which will be the norm in offshore wind and other transition industries. They allow for reduced costs with still the highest safety standards and contingency capacity maintained.

Reflex Marine's experts have also introduced additional services to support clients during the integration of equipment into the operations and the supply chain. Seamless integration of new personnel transfer units into operational procedures reduces downtime of the project and ensures the transition is efficient for all departments. In the current pandemic-torn world, Reflex Marine offer training sessions online, covering various modules from operational procedures to inspection and maintenance of their units, too.

FROG-XT4 – one of Reflex Marine's low volume crew transfer carriers returning on to a support vessel.

Image Credit: Reflex Marine

> "Marine crew transfer by crane is becoming more popular among those considering sustainable and cost-efficient solutions."

Additional services offered include scheduled consignment of regular replacement parts and further assistance to streamline procedures and save costs across the supply chain. Reflex Marine's team will help you assess the specific project requirements, introduce the inspection and maintenance scheduling into your internal systems and arrange scheduled deliveries in line with your other deliveries to further minimise cost and deliver the parts just when they are needed.

Marine crew transfer by crane is becoming increasingly more popular among those considering sustainable and cost-efficient solutions. Reflex Marine remains one of the few manufacturers and service providers which offers best-in-class products and support meeting the new industry needs. ■

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Strategies for the post-COVID recovery

His Excellency Dr. Sultan Ahmed Al Jaber, UAE Minister of Industry and Advanced Technology and Group CEO of the Abu Dhabi National Oil Company (ADNOC) called on the oil and gas industry to unite in driving the post-COVID recovery during his opening keynote address of ADIPEC Virtual 2020.

HE DR. AL Jaber emphasised the importance of the oil and gas industry in enabling economic development in the post-COVID recovery by ensuring a steady and reliable supply of energy to power growth. He highlighted the resilience of oil demand and stressed the need for the industry to balance caution with optimism, ensure business continuity and not lose sight of the long-term as we face the realities of a world turned inside out by the pandemic.

"For a start, we know the world will still need oil and gas when all of this is done. Even at the height of the lockdowns of March and April the world still consumed 75 million barrels of oil per day. In fact, by our estimates, oil demand fell below 90 million barrels of oil per day for only 12 weeks. So, we know the world still needs oil and gas. That is a fact," said HE Dr. Al Jaber.

He added that the months ahead will be challenging and oil demand may fluctuate, but the long-term fundamentals of the industry remain intact.

"We expect that oil demand will grow to over 105 million barrels per day by 2030, and continue to supply over half the world's energy needs for many decades to come. At the same time, the petrochemicals sector will continue to grow at a healthy pace through and beyond 2050, in line with a steadily expanding global middle class. These are long-term positive trends and they highlight the central role that our industry can and should play in a post-COVID recovery," remarked HE Dr. Al Jaber.

HE Dr. Al Jaber added that despite the current challenges, there is an opportunity for the industry to examine how it can be more agile and reduce costs. He referenced the transformation ADNOC started four years ago which is centred on driving down costs and unlocking value across its portfolio and said he sees an opportunity to accelerate the progress by leveraging technology.

"For example, take the way we have doubled down on embedding the latest digital technologies throughout our operations. We have saved more than US$1bn in the last four years by leveraging big data through our Panorama command center. We have captured an additional US$2bn by adopting digital drilling. And, together with the artificial intelligence specialists G42, we've formed AIQ – a company specially formed to develop efficient AI solutions for the energy industry."

Image Credit : ADNOC

Global energy leaders discussed strategies for the post-COVID recovery and long-term resilience at a CEO roundtable on the sidelines of ADIPEC Virtual.

There are also opportunities to maximise value in this tough environment and ADNOC is taking advantage of the United Arab Emirates (UAE) and Abu Dhabi's status as a trusted, business-friendly environment to complete several landmark transactions. The oil and gas industry has brighter days ahead and there is even more value to be captured, according to HE Dr. Al Jaber.

> "There is an opportunity for the industry to examine how it can be more agile."

He explained how ADNOC's move into trading will capture more value from every barrel it produces, and how ADNOC is focusing on unlocking value from the downstream as it delivers on its downstream expansion strategy it launched in 2018. HE Dr. Al Jaber said ADNOC's approach is to invest today to strengthen its position tomorrow by enhancing the UAE's industrial base and increasing in-country value to the country, adding that ADNOC's downstream expansion presents great opportunities for partners.

Concluding his remarks, HE Dr. Al Jaber pointed out there is an opportunity for the oil and gas industry to mitigate the effects of climate change and ensure the industry's resilience by increasing carbon efficiency. He stressed every player has a role to play in enabling this goal. While ADNOC is already one of the least carbon-intensive producers in the industry, it is not resting on this position,

according to HE Dr. Al Jaber.

"In the next ten years, we will reduce our greenhouse gas intensity by a further 25%. We will expand our carbon capture programme so that it stores five million tonnes of CO_2 every single year. And importantly, we will explore the potential of new fuels, such as hydrogen.

"We will do all of this because there is one more thing we know for sure. We know that when the COVID-19 pandemic fades into memory the world will still need oil and gas and will want that oil and gas to be as low carbon as possible," said HE Dr. Al Jaber.

'Halo effect' of energy partnerships

According to Dr. Fatih Birol, executive director of the International Energy Agency (IEA), as the global oil and gas industry continues to experience rapid transformation, energy partnerships could have a "halo effect on political and diplomatic areas" across the world. "In terms of global energy demand, we expect to see a decline this year of around 5%. To put this into context, this year's decline is seven times larger than the decline following the 2008/9 financial crisis," Birol said in an ADIPEC session.

> "It will be a continuous effort to clean up our act."

However, he said that the IEA has identified increasing investment in clean energy technologies, which is on track to reach US$40bn this year and is changing the face of geopolitics in the energy sector.

"The one that is critical is carbon capture, utilisation and storage, which provides a very good bridge between energy realities and climate imperatives," said Dr. Birol.

Focus on decarbonisation

Decarbonisation and environment protection were a strong theme at the virtual event. How can the industry continue to drive efficiency, reaffirm its social licence to operate and connect with the investment world, at this challenging time of low oil prices and low demand?

In a panel session addressing this subject, Abdulmunim Saif Al Kindi, executive director ADNOC PT&CS directorate said it will be a continuous effort to "clean up our act."

Lorenzo Simonelli, chairman and CEO Baker Hughes, commented, "It's important we as an industry own the narrative around the importance of gas and the role it can play in the short term to bring down carbon footprint and help the journey to net zero.

"Add to that detection, monitoring, carbon capture and hydrogen and there are a number of steps companies can take. Even though it is a difficult time for the industry, there are ways of moving down the path to net zero that are economically viable. Remote operations decrease the carbon footprint, and the demanning process can result in increased productivity and efficiency. We can look at integrated capabilities, taking out silos, interfaces between different operators and different suppliers – and there is low hanging fruit from stopping flaring and increasing efficiency of equipment. Decarbonisation is possible for the industry, and it's also vital when you look at the growth of energy needs around the world." ■

ADIPEC took place virtually from 9-12 November, hosting more than 70 ministers, CEOs and global oil and gas business leaders as speakers.

Diplomacy and transformations in the geopolitics of energy

During an ADIPEC Virtual 2020 session, Frank Fannon, assistant secretary, Bureau of Energy Resources, US Department of State, gave a keynote speech on diplomacy and transformations in the geopolitics of energy.

THE KEYNOTE FOCUSED on the theme that the transformation of centres of energy production and consumption has helped to redesign the geopolitics of energy. This year's pandemic has affected global economies and shifted oil markets for the near future, reinforcing how international collaboration is key to ensure the resilience and stability of energy markets.

"COVID-19 has thrown the world upside down and it is critically important that we move forward," said Fannon. The situation has created new opportunities, and the transformation of the global energy map is showing how geopolitics of energy is getting shaped, how new supply and demand patterns affect statecraft and meeting calls for cleaner energy, as well as present both opportunities and challenges.

According to Fannon, energy represents an important factor in foreign policy. The relatively recent growth of US oil and gas production has materially transformed energy geopolitics in multiple ways. "From 2007-2019, US oil production increased more than 240%. This production afforded the USA greater foreign policy room to manoeuvre states that use their energy from our objectives and partnership with other producing nations, including the UAE."

"Energy partnerships can have a huge effect on other political or diplomatic areas. We've seen a similar effect with respect to US natural gas production. In 2016, when the USA started exporting LNG, we were the 15th biggest exporter in the world. Since then, three years later in 2019, the USA was the third largest LNG exporter and we've shipped gas to almost 40 countries. As in the case of oil, US natural gas offers countries new options and indeed the foundation of a market.

"Countries are increasingly choosing to have greater diversity of supply. The USA has joined Europe's ambition to have greater energy diversity. Today, US LNG exports are helping nations to achieve that ambition. For example, over the last two years, the state department has assisted Croatia's plans to build an LNG terminal at Krk Island last month and the commercial operation is expected to start in January 2021. In Greece, we've supported the expansion of an existing gas infrastructure and the construction of a new LNG terminal."

Countries are increasingly choosing to have greater diversity of supply.

Image Credit : Adobe Stock

Recognising that these partnerships can foster peace, stability and share progress, the USA has committed to energy diversity and energy partnerships. Fannon cited the example of the UAE's energy technology discussions with Israel. He stated that although Israel and Lebanon are in discussions over their disputed maritime boundaries, eastern Mediterranean gas may soon flow through Greece and into the wider Balkan region.

"We see optimism and are developing regional energy markets. This drive toward regional energy markets is not particular to the Middle East and Southern Europe. It's a global phenomenon. The Indo-Pacific region will drive most of the world's energy demand growth through 2040, requiring trillions of dollars of investment. We are helping countries in the region to build free, fair and transparent energy markets, as well as develop their indigenous energy resources through Asia EDGE initiative. We've dedicated more than US$140mn in technical assistance to support energy security, diversification, access and trade across the Indo-Pacific region. We're working with Thailand and Vietnam where a major gas deal was just announced to strengthen gas sector governance. These new energy markets are a positive development that can improve geopolitical stability and promote a more prosperous world.

> "COVID-19 has thrown the world upside down and it is critically important that we move forward."

"However, we recognise that there are still nations that require continued support from like-minded nations. The calls for cleaner forms of energy, environment, social and governance, activism and investment are affecting the geopolitical landscape as well. In fact, investment in conventional energy has dropped more than 20% this year, while renewable investment has increased 6%," he added. ■

Setting the pace for global changes

Ekaterina Kalinenko, project director, Euro Petroleum Consultants DMCC, assesses the outlook for the Middle East downstream industry.

THE DOWNSTREAM OIL industry in the Middle East is at a crossroads. While 2020 will be remembered as a pivotal year, there were already trends in place before COVID-19 that were set to reshape the industry. When the impact of the pandemic is analysed retrospectively, let say in 2030, perhaps it will be seen more as a catalyst that accelerated change that would have happened anyway. Lower oil prices had already brought new fiscal frameworks and stronger investment discipline. The reckoning that global carbon policies would eventually cause "peak demand" was an ever-present undercurrent. Concerns related to long-term demand for fuels were key to the focus on petrochemicals integration that has characterised the investment strategies of Middle Eastern NOCs in recent years.

Image Credit: Philip Lange/Shutterstock

The Middle East downstream industry is at a crossroads.

Overview of the industry

In petrochemicals, a wave of new projects is springing up. Even with conventional refineries, many new builds are targeting at least 25-30% petrochemical yields, compared to 5-15% historically, with global plastics demand set to increase three to four times faster than gasoline demand. Refiners have started reconfiguring their output to change fluid catalytic cracker yields to maximise distillate production for low sulfur bunker fuels ahead of the IMO's 2020 regulation on sulphur emissions, resulting in less feedstock into the cracker units that will mean a tighter feedstock naphtha market. The automotive industry faced challenging years in 2019 and 2020, with European and Asian demand for new vehicles dropping significantly.

The first and perhaps most significant implication would be that with growth rates only a little above annual capacity creep, there will be less need for new builds. Most new investments will either replace existing assets or will need to displace others. For example, the new crackers in North America will target Asian markets and compete with exports from Middle East producers. The latter's exports to Europe may increase as a result, increasing pressure on European petrochemical players in the medium term. More broadly across the industry, companies could be forced to restructure in almost all parts of the world, and we foresee players trying to attain greater economies of scale through new waves of M&A. The only major exceptions might be India – where all indicators suggest that the local growth is going to continue, albeit from a low base – and China.

> "Most new investments will either replace existing assets or will need to displace others."

The Middle East is the largest polypropylene (PP) exporter in the world globally, with more than 40% of its volumes going into Asia. Middle East PP producers face a difficult time as Asia ramps up supply. China's growing self-sufficiency for PP which presently stands at over 80%, will lead to the country's reduced import requirement for the material.

Middle East polyethylene (PE) producers are facing a challenging year ahead, with more US and Chinese capacity coming online amid slowing global demand. The global supply surplus is likely to extend its influence over PE prices everywhere, including in the Middle East. The growing use of discounting as a means of attracting business has become

increasingly prevalent, suggesting that 2020 may remain a buyer's market. The population in the GCC is not generally growing, so demand for finished consumer goods within the region remains on the same level.

Processors, who used to hold stocks for a month are today not keen to hold inventories for more than 15-20 days, fearing future price reductions, which means purchased volumes are almost halved. Middle Eastern sellers may be prompted to divert volumes to markets such as Europe.

Integrated refining and petrochemical plants in Asia are, therefore, a key plank in Middle Eastern NOCs' strategies to secure long-term offtake opportunities for their crude. For Asian NOC partners, a refining deal with a Middle Eastern NOC helps fund new capacity and guarantees access to crude as countries ramp up efforts to go green. As well as the quest for sustainability, dealing with plastic waste is also high up on the GCC's priority list. A number of renewable energy projects are expected, with many countries in the region embracing ambitious clean energy targets to free up more hydrocarbons for export and stay ahead of market shifts in response to climate change concerns. The increased focus on sustainability is also expected to impact on PE demand and trade in the region.

What's next?

COVID-19 has brought a new collapse of oil prices. It has also added momentum to the global effort towards the energy transition, because the economic stimuli of developed countries are being directed towards "Green New Deals". The rationale for vertical integration into petrochemicals is now stronger for oil producers, or perhaps more urgent given market uncertainty. The key issue is the funding of projects at lower oil prices. This should bring more discipline and sharper prioritisation of projects. Expect more emphasis on brownfield projects, less on expansion of refining capacity and much less "greenfield" activity. We think this is something that would have happened without the pandemic, even though some forecasts were perhaps anchored to historical trends. Stronger adherence to rational planning should bring a smaller pipeline of higher quality projects, perhaps more likely to come to fruition. As companies focus more on shareholders' returns, a moderate amount of rationalisation would not be impossible. However, governments remain shareholders and stakeholders of primary importance. Some divestments are also possible. An example of this are recent announcements of infrastructure carve-outs.

The issue of competitive advantage

The implementation of investment strategies based on refinery-petrochemicals integration will face the usual problem of defining projects with competitive advantage. As liquid feedstocks can be moved to global markets at low cost, Middle Eastern sites do not find it easy to outcompete equivalent plants in Asia that operate closer to demand centres. The Middle East has historically enjoyed low energy costs, but this advantage has been eroded by a combination of lower subsidies at home and lower energy prices in international markets.

In broad terms, business strategies can be classified between those that focus on differentiated products and those that focus on being a low-cost producer. The first option does not exist for commodity type products. In the absence of feed or energy cost advantages, scale is the key factor for Middle East producers to achieve low unit costs. Help here comes in the form of technology developments, which have enabled single-train ethylene crackers in excess of 1,500kta of capacity and single-train paraxylene plants in excess of 2,000kta, making it possible for new plants to become larger scale than the incumbents. New plants are also more energy efficient. The other strategic issue for the Middle Eastern downstream is that its Asian competitors enjoy lower operating costs and lower construction costs for comparable facilities. Some of the gap is due to differences in labour rates and is difficult to address. However, to the extent gaps can be attributed to operating practices, they should be addressed.

> "The rationale for vertical integration into petrochemicals is now stronger for oil producers."

Synergies and integration

Synergies between refineries and petrochemicals are important, particularly for refineries that produce large amounts of off-gases rich in ethane and ethylene. Scale here matters a lot, as demonstrated by the Reliance refinery, which has enough off-gases to supply a world-scale ethylene unit. Only very large refineries have enough off-gases to replicate this concept. Concepts referred to as "crude-to-chemicals" seek to achieve stronger synergies through deeper integration. Configurations that achieve deeper integration by cracking gasoil are not truly innovative, as they represent a different way for a refinery to feed a petrochemical complex using existing technology. Real innovation would be the creation of concepts, technology or levels of integration that are possible by seeing the integrated refinery-petrochemicals complex as a single entity. A notable example of this is the development of very high severity fluid catalytic crackers, (FCCs), where the main products are olefins and not gasoline.

We especially support the idea of driving towards a circular economy concept (CEE). The CCE cycle has four main pillars: reduce (energy efficiency, low-carbon fuels); reuse (including CO2-EOR); recycle (we mentioned use of secondary plastics, use of carbon in synthetic fuels, fertilisers/urea, methanol, polymers and other chemicals); remove (carbon capture utilisation and storage). A good example is Ras Tanura Saudi Aramco Refinery Margin Enhancement; the plant is being gradually developed via the Clean Fuel project (+50% margin improvement), and going forward will become a full conversion refinery (60-90% margin increase). Advanced companies aiming to create a portfolio of hydrocarbon sources will combine traditional fuels with recycling – utilising available options along the value chain, i.e. mechanical, chemical and thermal recycling and renewables.

Trends

The downstream industry continues to be impacted by the globalisation and integration of the world economy. Factors influencing world petrochemicals include:

- Economies of scale: world-scale plants built in recent years are substantially larger than those built more than two decades ago. As a result, smaller, older, and less efficient units are being shut down, expanded, or, in some cases, retrofitted to produce different chemical products.
- Price of crude oil: petrochemical markets are impacted during sharp price fluctuations, creating a cloud of uncertainty in upstream and downstream investments.
- Environment: increasing concerns over fossil fuel supply and consumption, with respect to their impact on health and the environment, have led to the passage of legislation globally that will affect chemical and energy production and processing for the foreseeable future.
- Technology: Manufacturing processes introduced in recent years have resulted in raw material replacement, shifts in the ratio of coproduct(s) produced, and cost. This has led to a supply/demand imbalance, particularly for smaller downstream petrochemical derivatives. In addition, growing environmental concerns have expedited the development and commercialisation of renewably-derived chemical products.
- Shale gas development, especially in the USA.
- Economic growth and demand: the overall expansion of the population and an increase in individual purchasing power has resulted in an increase in demand for finished goods and greater consumption of energy in China, India and Latin America.

Major GCC refining & petrochemicals projects

Project	Location	Facility	Budget	Status
Bapco Modernisation Program (BMP)	Sitra, Bahrain	Refinery upgrade - increase capacity from 267,000 bpd to 380,000 bpd and enhance product slate	US$6bn	Construction
KIPIC - Al-Zour Petrochemicals Complex - Petrochemicals plant	Al-Zour, Kuwait	Annual capacity of 2,761 KTPA of aromatics & polypropylene and 1,700 KTPA of gasoline.	US$7.8bn	FEED
KIPIC- Al-Zour New Refinery	Al-Zour Kuwait	615,000 bpd refinery - high value products and fuel oil	US$19bn	Construction
DRPIC - Duqm Refinery	Duqm, Oman	230,000 bpd refinery producing diesel, jet fuel, naphtha, LPG	US$6bn	Construction
Salalah Refinery Project Salalah Free Zone/ Salahah Refinery LLC	Salalah, Oman	150,000 bpd refinery	US$2.5bn	Announced
Shumoookh Investment & Services- Sur Refinery & Petrochems Complex	Sur, Oman	300,000 bpd refinery & petrochemicals	US$10bn	Announced
Pan Asia - Jizan City for Basic & Downstream Industries Petrochems Plant	Jizan, Saudi Arabia	Petrochemical and chemical fibre integrated plant - Purified Terephthalic Acid (PTA), Polyethylene Terephthalate (PET) and downstream chemical fibre products	US3.8bn	Construction
Petro-Rabigh Refinery & Petrochems Complex Expansion Saudi Arabia	Rabigh,	Expansion of refinery and petrochemicals complex	US$5bn	Construction
Sabic-Saudi Aramco Crude Oil to Petrochemicals (COTC) Complex	Yanbu, Saudi Arabia	COTC - fully integrated petrochemicals complex	US$20bn	Feasibility study - reassessment
Saudi Aramco Ras Tanura Refinery	Ras Tanura, Saudi Arabia	Refinery upgrade and clean fuels project to produce Euro-5 specification fuels	US$2bn	Construction
SATORP Amiral Petrochemicals Complex	Jubail, Saudi Arabia	Petrochemicals plant - mixed-feed cracker (50% ethane and refinery off-gases) with a production capacity of 1.5 million metric tons per year of ethylene and related high-added-value petrochemicals	US$9bn	FEED
ADNOC - Borealis (Borouge) Borouge 4 Complex	Ruwais, Abu Dhabi	Petrochemicals plant - mixed-feed cracker will have an overall capacity to produce 3.3mn tonnes a year (t/y) of olefins and aromatics, including 1.8 million t/y of ethylene	US$4.5bn	FEED
ADNOC Refining - Gasoline and Aromatics Gas Expansion Project (GAP)	Ruwais, Abu Dhabi	Expansion of gasoline and aromatics facility, adding 4.2 million tonnes per year (mtpa) of gasoline and 1.6 mtpa of aromatics	US$2.5bn	EPC ITB
ADNOC Refining - Ruwais Complex Upgrade	Ruwais, Abu Dhabi	Petrochemicals plant	US$45bn	Pre-FEED
ADNOC- Crude Flexibility Project	Ruwais, Abu Dhabi	Upgrade refining capabilities of Ruwais refinery to process up to 420,000 barrels per stream day (BPSD) of heavier and sour grades of crude oil	US$3.5bn	Construction

Source: DMS; company websites

As a general statement, strategies for chemical companies may become simultaneously simpler and more challenging. They may become simpler because the imperatives of productivity improvement and functional excellence – in other words, executing a chemical-business model better than most competitors in the field – will be even more obvious than today. Without this excellence, companies will lack the financial strength and the credibility to lead in a game that will include a lot of M&A. Strategy development, however, will also become much more difficult: it will be much more challenging to identify the remaining opportunities for growth that exceeds GDP and to develop approaches to capture those opportunities in a value-generating way.

Finally, recycled polymers are expected to gain an increasing foothold, especially in more developed economies, as global brands embrace sustainability under growing pressure from consumers, the media and environmental policy. Even though unfavourable economics in the recycled plastics markets are expected to continue in the first half of 2020, media and consumer pressure should boost demand globally. Forecasts say global recycled plastics volumes will reach nearly 20 million mt in 2020, or 8% of total virgin demand. This is up from just under 18 million mt in 2019, or 7% of total virgin demand.

> “Strategies for chemical companies may become simultaneously simpler and more challenging.”

With new demand outlets emerging In Southeast Asia, methanol demand is expected to be steady to firm in 2020 as Thailand targets a 10% blend of biodiesel into its gasoil pool in its transport sector from 7% currently mandated, also known as B7. Indonesia and Malaysia also aim to increase their biodiesel blending in their transport sector by 10% next year.

Ultimately, most sellers prefer to send methanol to the more lucrative Chinese market where import volumes are eight million mt/year.

Specialty chemicals may play an even larger role in sustainable development in the future. Specialty chemicals are sold on the basis of performance or function, not chemical composition. Products that include "green" specialty chemicals can tap into consumer interest in the environment and bio-based ingredients. ■

Is the oil and gas industry's drive for **sustainability enough?**

Despite the economic impact of COVID-19, environmental targets continue to be pursued across the globe, but a new report by DNV GL suggests the industry needs to do more. Robert Daniels reports.

AMID THE ECONOMIC turmoil caused by COVID-19, concerns were raised that companies and international directives would step back from their emission reduction commitments in order to protect their threatened financial assets. But at the Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC) Virtual 2020, attendees were exposed to discussions on sustainability and environmental targets more than ever before in the event's history. As was noted by speakers such as Neal Anderson, president of Wood Mackenzie, the drive towards the energy transition had actually accelerated over 2020. China has recently announced a 2060 carbon neutral target, the change of administration in the US will likely see the country adopt a more climate friendly stance, and public opinion, especially within Europe, appears to be increasingly concerned with climate change, according to Anderson.

This public desire has prompted companies to continue the crusade of energy transition so that it is being driven not just by country initiatives, but corporations as well. The Oil & Gas Climate Initiative (OGCI), whose members produce more than one fifth of global oil, has seen 50% of its member companies make significant announcements towards carbon net zero targets, and is committed to investing US$1bn in the development of low emissions technologies over the next 10 years.

Arthur Hanna, strategic advisor for ADIPEC, commented, "This year has accelerated the agenda. We would not have discussed this so much at ADIPEC two years ago. The consumer is looking for clean reliable energy resources; the industry now needs to deliver. This needs to be embedded from the top and work its way down, I have never seen CEOs talk about customer and consumer interests in the way they have done."

Natural gas and LNG

A separate ADIPEC panel also praised the gas industry for its commitment to carbon reduction before highlighting the role of natural gas and LNG as a key transitional fuel which will be pivotal in shortening the step towards sustainability over the next 20-30 years. It was noted that where other sectors suffered from the shock of COVID-19, the gas and LNG market remained resilient with continued rapid growth expected over the next five years, due partly to its environmental benefits. LNG alone has the potential to reduce emissions by 1 gigatonne by 2050 in place of fossil fuels. China and other coal-heavy markets could make the switch to gas and LNG in order to meet their carbon footprint initiatives but Meg Gentle, president and CEO of Tellurian, pointed out that it is India leading the way in this sector. The country has committed US$60bn to its LNG industry so that by 2025 it has the potential to produce 70-100mn tonnes of LNG per year; currently global production is 350mn tonnes.

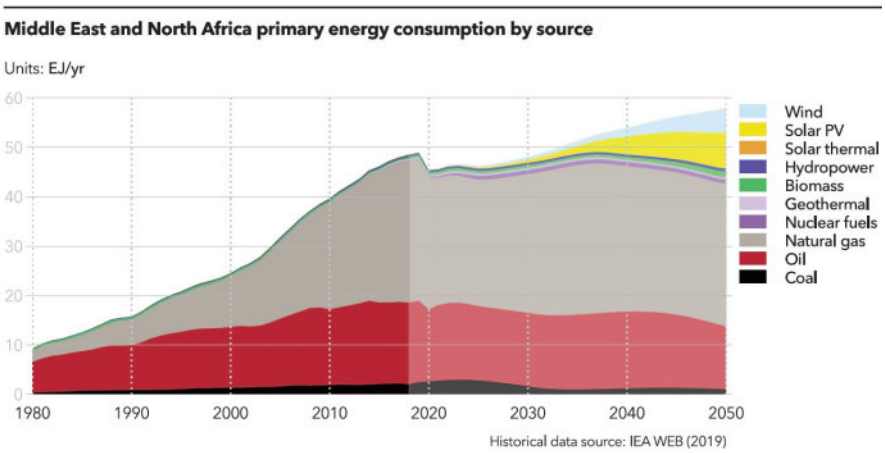

Image Credit : DNV GL

Natural gas has been recognised as a key fuel as the world transitions to renewable energy sources.

> "The consumer is looking for clean reliable energy resources; the industry now needs to deliver."

Carbon Capture, Utilisation and Storage and other methods of emissions reduction

Companies across the oil and gas industry have identified natural gas as key to its emissions targets, alongside another strategy that is becoming increasingly popular: carbon capture, utilisation and storage (CCUS). According to the IEA, the combined CO2 capture of existing facilities is 40mn tonnes per year, but this could triple if 16 proposed projects in Australia, China, Korea, the Middle East, and New Zealand were to proceed. ADNOC has announced its CCUS plans to expand its CO2 capture capacity, currently at 800,00 tonnes per year thanks to the Al Reyadah facility, to five million tonnes per year after signing a strategic framework agreement with Total. Meanwhile ARAMCO have successfully launched the world's first shipment of blue ammonia (routed to Japan)

with 50 tonnes of associated CO2 emissions successfully captured.

A DNV GL report, entitled *'Energy Transition Outlook 2020'* has suggested that besides CCUS the main industry-led initiatives to decarbonise oil and gas operations are: platform electrification with global installed offshore wind capacity set to increase from 23GW in 2018 to 1,269GW in 2050; a reduction in flaring and venting where new methane emissions abatement technologies could reduce these emissions by 75%; and methane leak detection, with new satellite improvements now revealing methane leak hotspots around the world. BP, for example, has committed to install methane measurement at all its existing major oil and gas processing sites by 2023 and then drive a 50% reduction in methane intensity of its operations.

> "Climate change and ambitions to reduce it are outpacing action."

Image Credit : DNV GL

Liv Hovem, CEO of DNV GL.

Sobering conclusion

The DNV GL report commended these efforts and predicted that fossil energy expenditure, which represented more than 80% of world energy expenditure in 2018, will decline from US$3.2 trillion to US$1.95 trillion in 2050, with non-fossil energy expenditure rising from US$0.4 trillion in 2018 to US$1.49 trillion in 2050. Nevertheless, despite this encouraging statistic and industry commitments to net zero operations, the report gave a sobering prediction that the energy transition is still not moving fast enough to meet the COP-21 Paris Agreement targets. By 2050, fossil fuels will still account for 54% of primary energy supply (although this will have fallen from 80%) and just 13% of natural gas is expected to be decarbonised, with only 12% of the world's energy emissions captured by CCUS.

Liv Hovem, CEO of DNV GL oil and gas, commented, "We see the sector increasingly putting the energy transition at the centre of its agenda, but climate change and ambitions to reduce it are outpacing action. The industry needs to prepare for an energy system that does not accept the release of carbon emissions." ■

Bringing advanced solutions and **services to the Middle East**

Lamor's mission to provide environmental services has led from oil spill recovery to water treatment and waste management.

Lamor offers a wide range of services to protect the environment.

Image Credit: Lamor

FOUNDED IN FINLAND in 1982, Lamor began business as a family-owned shipyard. Their philosophy is to develop and provide the best environmental services in their drive for a cleaner world.

A key moment in their history was when they developed the brush skimmer to recover oil from maritime spills. The elegantly simple technology is still in use today, as Lamor has a presence in 104 countries and meets the needs of about 40% of the global oil spill response (OSR) market.

Cleaning oil

Lamor develops comprehensive OSR products and services in close partnership with their customers. The company offers tier 1 equipment rental, tier 2 standby centres and up to tier 3 emergency response, as well as training and consultancy. Lamor believes in international cooperation and has worked in the Middle East for years with the oil majors in the region.

Lamor is a total solution provider with the equipment and knowledge of cleaning oil spills in a variety of environments from onshore to offshore. They have a full range of cleaning equipment for beaches, harbours, nearshore and offshore, such as oil booms, skimmers, personal protection equipment and designated oil spill recovery workboats. For offshore spills they provide solutions such as large capacity floating skimmers and integrated advanced vessel systems.

Managing waste

Lamor also provides waste management services, including the treatment and disposal of both hazardous and non-hazardous waste. Lamor is also able to help design, construct and operate MARPOL-accredited port waste reception facilities. They can help consult, plan and train staff to meet customers' needs.

As the company notes, the very concept of 'waste' is slowly disappearing as the circular economy begins to take root around the globe. Lamor can help find the value in waste with their material recovery and recycling services. As an example, Lamor has partnered with a start-up to collect plastic in rivers and to convert it into fuel. This helps Lamor's waste management services evolve into offering even more value to clients.

Treating water

Earth might be 70% water, but water is one of the planet's most precious resources. Lamor offers considerable water treatment services for municipal and industrial uses. Company specialists are able to build bespoke solutions to fit what the customer needs. Cost efficiency is of prime importance, and through Lamor's global network they are able to manufacture products locally.

Lamor offers reverse osmosis systems, which can be used for salt removal applications, an important solution for places where fresh water is at a premium. Lamor also offers containerised wastewater solutions for remote locations. The solution is popular for offshore usage, remote villages and for ports.

Although the head office is still based in Finland, Lamor has always believed a local presence is critical to best serving customers. They have partnered with local experts as well as opening companies in regions where they operate. Lamor has several companies in the Middle East, which are based in Oman and Istanbul, Turkey. ■

For further information, go to lamor.com.

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The role of multiphase measurement in flow assurance

Zak Latif, technical lead at TÜV SÜD National Engineering Laboratory, discusses how multiphase meters can assist with identifying and mitigating flow assurance risks.

FLOW ASSURANCE REMAINS a major challenge in subsea/multiphase hydrocarbon production, comprising of the formation of hydrates, waxes, scaling, slugging, chemical deposits, erosion, and corrosion. Failure to swiftly identify and effectively mitigate these problems can result in serious damage to equipment, which, in turn, can have catastrophic consequences in terms of safety, production, and reduced revenue. A focus on flow assurance is therefore necessary, utilising expertise to mitigate or avoid such phenomena.

Increased digitalisation in the industry has delivered an improved understanding of reservoir behaviour; however, a sound understanding of multiphase flows and fluid behaviours is also fundamental. During production, different multiphase flow regimes can form where the oil, gas and water phase fractions differ, depending on the flow conditions and pipe configurations.

Figure 1 shows some of the different flow regimes, which can cause severe flow assurance challenges. With this knowledge, the industry is trending towards the use of multiphase meters, due to the advantages that this technology can offer; such as reduced capital and operational expenditure, increased capability to monitor individual wells in real time, reduction in the need for test separators and their subsequent maintenance, and minimal loss of production through well shutdowns required for testing.

Slug flow (colloquially known as "slugging"), is one of the multiphase flow regimes that can result in major operational problems for the oil and gas industry – causing equipment and pipeline fatigue and failure, due to the fluctuating pressure, forces and mechanical loads, as well as the potential for damage to downstream/surface processing facilities. In the worst cases, this can result in potential loss of containment, which can be difficult to identify on a subsea level, therefore presenting significant environmental implications.

Identifying and controlling slug flow can therefore improve production rates and overall system reliability and performance. However, the conditions to generate slugging depend on the pressure, gas-liquid volume fractions, fluid velocities, and pipe configuration. Also, the frequency of liquid slugs can significantly vary (from sub-second to an hour, or more), making detection difficult, as mentioned. Even in single phase flows, pressure surges from rapid changes in fluid velocity can cause unbalanced loads within pipeline systems, leading to fatigue over time.

> "Failure to swiftly identify and mitigate these problems can result in serious damage to equipment."

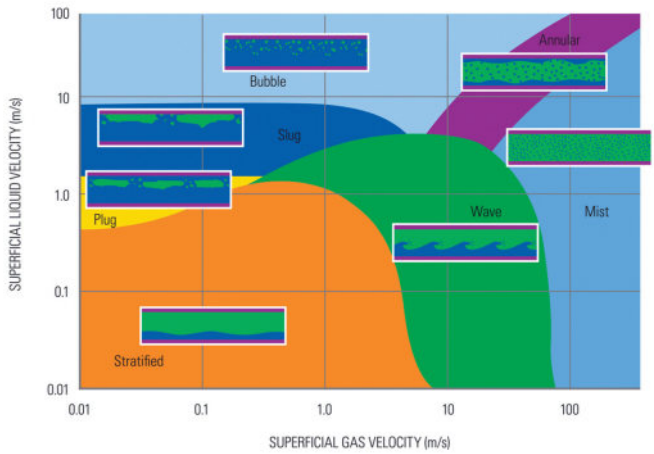

Image Credit : TÜV SÜD National Engineering Laboratory.

Figure 1: Multiphase flow regime map for horizontal flow.

Prediction of multiphase flow regimes is therefore critical for mitigating the potential issues that can arise from slug flow; however, this is extremely difficult. While there are general flow regime maps available, these only give an indication of likely flow structure, and are usually based on specific conditions (pressure, temperature, and superficial velocities) – they cannot be easily extrapolated.

Subsea risks

The offshore industry is now exploring fields in deeper and more remote water, necessitating the use of longer subsea tiebacks. This has made mitigating flow assurance issues more costly and challenging, due to the reduced accessibility and distances involved. Flow assurance strategies and new techniques which can cost-effectively predict and prevent these issues are therefore becoming more essential – especially when oil prices are at an all-time low – to ensure maximum extraction, production, and transportation efficiency to guarantee optimised recovery and revenue.

Multiphase meters can assist with identifying and mitigating flow assurance risks. For example, subsea multiphase meters can immediately detect water breakthrough and the quantity flowing – this enables the rapid mitigation of hydrate formation and can also be used to determine the correct dosing of expensive hydrate and corrosion inhibitors. Some multiphase meters also incorporate salinity probes, used to improve the accuracy of the meter and provide real-time information on the type of water present for improved reservoir management.


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Image Credit : TÜV SÜD National Engineering Laboratory,

Image Credit : TÜV SÜD National Engineering Laboratory,

Figure 2: Sand erosion marks on a Venturi flow meter. Figure 3: CFD simulation of the erosion of a valve

Figure 3: CFD simulation of the erosion of a valve.

Tomography-type devices will, in the future, form part of a suite of tools used to guarantee subsea flow assurance. They are currently being developed for topside and subsea applications to determine the flow regimes and enable more effective management and design of production systems to reduce the problems typically faced when dealing with multiphase flows.

> “Multiphase flow metering technologies can characterise flow regimes at the wellhead and quickly detect slugging.”

Erosion challenges

Production is often escalated by increasing the well choke size, leading to a significantly larger pressure drawdown at reservoir level. Over time, this may cause reservoir weakening of the near wellbore area, leading to the production of unwanted solids. The maximum critical flow before sand production occurs in the well will also change over time – if these changes are not monitored and accounted for, significant issues stemming from erosion (such as equipment failure) become increasingly likely.

Erosion of completion and surface components is a huge issue for flow assurance, as the move to deeper and more complex fields results in more substantial sand ingress. However, the detection (and control) of the amount of sand in fluids is difficult, especially for subsea applications. The risks of erosion, its effect on flow metering, and the considerations to be made when designing pipelines and selecting components, can be successfully investigated using Computational Fluid Dynamics (CFD) modelling.

Overcoming the challenges

Flow assurance issues can impact the integrity of equipment, lead to serious damage, and completely stop production. Operators are therefore keen to use reliable equipment and techniques to predict, prevent and manage these risks. However, the majority of testing facilities operate at low pressure and do not represent realistic field conditions, thus validation and R&D potential is limited for multiphase flow. It is, therefore, essential that there are large-scale high-pressure multiphase flow facilities available, with the capability to recreate actual subsea flow conditions to realistically test multiphase meters, tomography devices and other components (such as compact separators, pumps, and jet mixers). This will ensure safety, reliability and improve confidence in flow assurance techniques and strategies.

While flow assurance remains a major challenge in subsea and multiphase production, the effective monitoring and early detection of problems will allow the appropriate considerations to be made for production control and risk mitigation. Multiphase flow metering technologies offer the distinct advantage of being able to characterise flow regimes at the wellhead and quickly detect slugging (which is conventionally the most difficult flow to accurately measure). Many multiphase meters also benefit from having tomography-type capabilities, allowing operators a real-time picture of what is going on in their pipeline. To better manage the flow assurance challenges associated with subsea exploration, industry is therefore increasingly recognising the benefits of multiphase meters and incorporating the technology into their systems. ■

TÜV SÜD National Engineering Laboratory, www.tuvsud.com/en-gb/nel, is a world-class provider of technical consultancy, research, testing and programme management services. Part of the TÜV SÜD Group, it is also a global centre of excellence for flow measurement and fluid flow systems and is the UK's Designated Institute for Flow Measurement.

Selecting reservoir interpretation solutions

Derek Crombie, VP Sub-surface Software Development, Lloyd's Register, discusses the main factors which need to be considered when selecting petrophysics analysis software.

THE OPPORTUNITY FOR sub-surface optimisation in reservoir production is a significant one. So much so, that in a 2017 report, McKinsey analysts estimated that an analytical approach to production could improve the global average for underground recovery by 10%. That is the equivalent of unlocking an extra one trillion boe.

The potential to dramatically improve exploration and production outcomes is substantial. It is also increasingly necessary at a time when resource capture strategies are placing greater emphasis on getting more from existing fields and pushing for faster returns with shorter investment cycles. As the industry moves away from the giant fields of the past, with a "maximise peak capacity at all costs" development strategy, towards smaller fields and phased activity, the data-driven, analytical approach has never been more appropriate. To make all this happen, E&P firms need the right petrophysical analysis tools, both to understand the potential of a new well or basin, and to optimise production from existing reservoirs.

When choosing the petrophysics analysis software that will actually deliver real benefits to the business – from the reservoir all the way up to the boardroom – the geoscience team need to answer the following five questions:

1. Does this solution offer real value for money?

A simple price comparison is not enough, and neither is a simple 'tick box' comparison of functionality. The efficiency of the workflows is fundamental to the productivity of the team, so instead of asking 'can this software do xyz?' you should be asking 'how effectively does this software do xyz?'.

To really add value to the organisation, your solution should also deliver advanced functionality as standard. It should be able to work on live well data and enable the geologists, petrophysicists and engineers to combine their understanding and refine their analyses in real time.

2. Does it make it easy to do the right things?

In the early hours of the morning, when operators and investors want to know both the quality and the quantity of their hydrocarbon in their potential new well, they want to know it immediately. That means you need software that is not only accurate and precise, but intuitive, and easy to use, in what is often a highly stressful environment, and as immune to human error as possible. No software delivers value if it takes too long or is riddled with human input errors.

> "E&P is facing an unpredictable future of energy transition, changing public opinion and new cost pressures."

Choose solutions that come with pre-built roadmaps to speed up formation evaluation and geomechanics. Make sure it is compatible with a wide range of file formats and can accept and work on all data types without harmonisation. A straightforward user interface, with menus of pre-entered formulae and strong visualisation and plotting tools are essential for that midnight analysis, as are touch-screen enabled raw data editing, depth shifting and filtering functions. By deploying visual data interpretations and using interactive parameters within each zone to test input changes, you get faster, more consistent results. If these are not quite what you need, then your chosen solution should have intuitive coding tools to build your own bespoke applications.

3. Is it independent and interoperable?

There is something tempting about software that is optimised for a single measuring device or family of devices. It intuitively feels that if hardware and software are designed to work together, it may get the best results. But that is not the case here. When both components come from the same vendor, you can end up with confirmation bias in the results: the software confirms that the hardware is 'correct', and the hardware doesn't deliver the measurements that challenge the software.

4. Does it offer surety of insight?

The best reservoir and petrophysical analysis tools are developed by those who work in the field, who have sat on the stressful end of that 3am demand for an interpretation, and who can encapsulate that experience into the product. These are the providers who can make the link between what is going on in the reservoir and what it means for the E&P business as a whole. Those specialist providers will have a decades-old – even centuries-old – content library of data and experience that only adds to the richness and quality of their output, and the confidence that operators can have in their insights. Moreover, the values and principles that ground them shine through in their approach and interaction with customers.

5. Is it future proof?

This is perhaps the most important question of all. The point at which technology meets oil and gas exploration is continuously moving, because both sides of that relationship are in a period of mutually interdependent and rapid change. Just as neural networks, machine learning algorithms and AI are on the cusp of delivering predictive models that improve as they absorb more data, E&P is facing an unpredictable future of energy transition, changing public opinion and new cost pressures.

How this will play out is a known unknown. But investing in the right software ensures that while you remain rooted in experience, you and your organisation can innovate for the future. ■

Advancing the digital transformation

The digital transformation in the oil and gas sector is accelerating, says Dr Tariq Aslam, head of MEA, AVEVA.

To what extent has the pandemic accelerated digital transformation in the MENA region?

The pandemic has significantly shifted global narratives, urging organisations and businesses to adjust their priorities. The same holds true for the MENA region too. It has paved the way for even greater digital transformation as businesses shift operations and reinvent themselves to cope with new social distancing measures, restrictions on movements, increased remote working and supply chain interruptions.

COVID-19 has forced organisations to consider how they can expedite their digital transformation while still operating. They are opting for cloud, digital twin, Artificial Intelligence (AI) and automation technologies to address the complexities of today's challenging macro-economic environment. With unified data and analytics, companies are empowered with better information, which means they can make more informed decisions to optimise operations for the new environment in which they are operating.

Organisations across industry sectors are embracing innovative digital platforms to facilitate a way of working that keeps both people connected and agile, and more importantly, safe. Digital capabilities are increasingly acting as a barometer for economic resilience in this 'new normal', and the industries that will thrive post this crisis, are those that can digitalise completely.

With the macro-economic disruption continuing into 2021, it is critical now more than ever for companies to think creatively and utilise these innovative technologies to address the business challenges presented by this unprecedented uncertainty. Cloud and AI will play a transformative role in helping organisations drive successful business outcomes.

Image Credit: AVEVA

Dr Tariq Aslam, head of MEA, AVEVA.

What do you think are the main growth areas for Fourth Industrial Revolution technologies in the oil and gas sector?

We are in a time of significant change as the industrial sector undergoes a disruptive phase, primarily led by Industry 4.0. Every aspect of the value chain is expected to undergo transformation, and the industry will experience a creative destruction and expansion of traditional business models. As businesses continue to go digital, the oil and gas sector is also increasingly embracing emerging technologies for smarter, more efficient operations. Oil and gas producers are using Industrial IoT (IIoT), big data, advanced visualisation and AI to integrate and maximise return across asset and operation value chains.

Oil and Gas 4.0 is an era where digital technologies are driving economic growth. The industry is all set to benefit from AI, which has the capability to transform all aspects of the hydrocarbon value chain. With the use of Internet of Things (IoT), and the increasing volume of data, companies can magnify their capabilities, integrating the latest technologies. This will further drive innovation in the oil and gas sector, improving efficiency and allowing better reach to customers through digitalisation. According to researchers, it is estimated that the market for IoT in oil and gas alone worldwide could reach US$39.4bn by 2023.

Asset performance management (APM), which is now being adopted by the energy sector, has the ability to connect data and systems across business, allowing professionals to make faster decisions aided by AI and virtual guidance. To fully utilise APM, data can be shared across operations, management and customers. At AVEVA, we term this as APM 4.0, where businesses can utilise a set of cyber-physical systems including the IIoT, cloud computing, big data analytics, predictive analytics leveraging AI and machine learning, mobility, and augmented and virtual reality.

In addition, technologies such as process optimisation with a digital twin, cloud computing and digital planning and operations have a profound effect on the oil and gas business.

To what extent are sustainability and environment protection coming to the fore in digital transformation programmes?

Industrial organisations are innovating using technology to maintain

business continuity and drive better supply chain and production planning. This is turning challenges into opportunities to increase productivity and profitability, especially when it comes to improving supply chain inefficiencies and driving sustainability initiatives.

Digital twin, AI and cloud are improving collaboration and accelerating autonomous projects across the globe. To enable digital resiliency and long-term sustainability, organisations need to bring together the connected workforce with cloud, big data and edge capabilities.

AVEVA continues to work towards a sustainable future with our employees, our customers and our shareholders. We aspire to a world where economic growth supports environmental sustainability with better living standards for the communities where we and our customers operate. AVEVA's purpose, values and strategy create long term value for our customers, employees and shareholders.

Industrial technology has a key role to play in realising a sustainable future. AVEVA will continue to support the evolution of the marketplace, helping our industrial customers achieve their sustainability objectives and ensuring sustainability in our own operations.

How is AVEVA helping oil and gas companies to reduce costs, optimise processes and achieve full visibility across their operations? Are there any examples you would like to highlight?

AVEVA is helping customers in the energy sector digitise to unlock sustainability. We work with our customers and harness the power of our ecosystem to deliver solutions and expertise to optimise engineering, operations and performance. Our solutions transform opportunity into business value. We use collaborative innovation to empower people and industries to thrive.

Our Unified Operations Center is the command-and-control solution for operators in different industry sectors. Working side-by-side with leading companies in different sectors, AVEVA has turned best practices into templated solutions that are repeatable, scalable and adaptable, enabling fast implementation and return on investment. Organisations such as Abu Dhabi National Oil Company (ADNOC), who had pioneered early versions of this tailored approach, have realised reductions in project implementation times by as much as 60% over the more time-intensive process of integrating bespoke solutions.

> "Organisations need to bring together the connected workforce with cloud, big data and edge capabilities."

Image Credit: Shutterstock

The oil and gas sector is embracing new technologies to maximise returns across the value chain.

We help organisations optimise their operations safely and profitably across their global value chain. Our end-to-end value chain optimisation helps oil and gas companies redefine their processes, enable deeper collaboration, reduce value leaks, sustain productivity and innovation, and ultimately make better and more robust decisions quicker across their operations lifecycle. By combining cloud technology and digital twin innovations with analytics, AVEVA enables value chain optimisation across our customers' operations.

Our comprehensive portfolio of Industrial Performance solutions, including Supply Chain Performance, Production Performance, and Asset Performance Management (APM) software, combined with AVEVA's deep domain expertise, have led to proven success with energy customers across the globe. With our APM solution, oil and gas organisations can forge a path towards zero unplanned downtime with a risk-based asset performance strategy that accurately predicts potential problems and prescribes solutions through analysis and simulation to sustain productivity and innovation, and ultimately make better and faster decisions.

Our AI predictive maintenance helps oil and gas to detect inefficiencies and to predict and proactively manage maintenance, thus ensuring increased uptime with lower emissions. AVEVA's technology aids in both the scaling up and scaling down of supply, using AI simulation to understand how existing resources may be used more effectively and proposing new solutions previously invisible to human engineers through Intelligent Asset Search.

Given the global pandemic, Cloud has become critical right now, and AVEVA is working across our customers to expedite their use of the technology. New technologies such as AI enable four key areas to mitigate business and operational risk, improve workforce safety and efficiency, and forge a more reliable and secure enterprise – the four Ps: Predictive, Performance, Prescriptive and Prognostic. ■

The challenges faced by the future of digitalisation

An oil and gas panel at the Automation Fair at Home event tackled energy transition and digitalisation challenges.

DIGITAL TRANSFORMATION MAY be one of the few saving graces that can help oil and gas producers cope with their roller-coaster, rapidly transitioning and COVID-19-impacted markets. However, as with any big shift, it is easier said than done.

The Oil & Gas Industry Forum, part of the Automation Fair at Home event, played virtual host to five industry experts to explore these issues and consider possible solutions.

"The pace of transition in the energy industries is accelerating, but there's also a lot of demand destruction now, which has a long-term feel that makes it different than previous events," said Fred Wasden, Shell veteran and managing member at OptilytiX, a consultancy focused on accelerating asset value realisation through data analytics and technology implementation for the energy industry.

> "The pace of transition in the energy industries is accelerating."

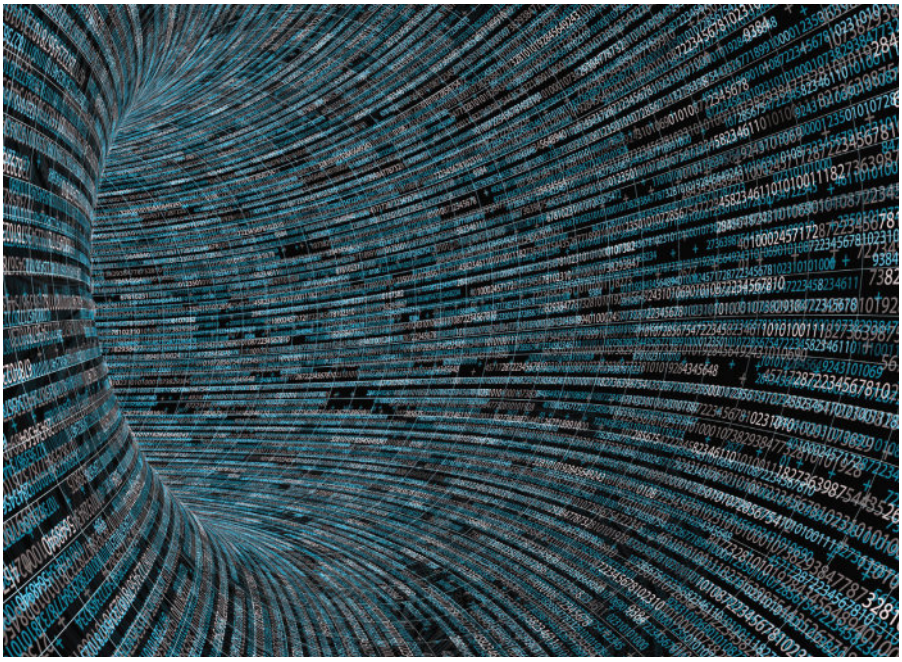

Image Credit : Adobe Stock

Digitalisation may be the key to the oil and gas industry's post-COVID-19 recovery.

"The second trend is an overwhelming surge of digital technologies by process industry users, which are being adopted after being risk-tested in other industries. We're also facing a big challenge in recruiting and retaining staff. It's an exciting time, but it's a lot of change all at once."

Downturn leads to refocusing

Pal Roach, industry consultant, Oil & Gas, Rockwell Automation, added, "The present situation with COVID-19 is similar to past downturns. Much of the initial 30% dip in demand has been recovered, but we're still down 5-7%, and most estimates are that it will be slow to come back because so many more people are working at home. At the same time, even though demand for aviation fuel has collapsed, diesel fuel is up because there are so many Amazon and other trucks driving through neighbourhoods. Some estimates are that demand will remain down 5-6% for 20 years, and some refineries will have to close. Others indicate the refining industry may grow 20% by 2040, but this will still be only a 1% increase per year.

"This is all impacted by the fact that refining is a unique business, which has little or no influence over the cost of its materials or the products it produces, and also has to deal with many regulations and safety requirements. The challenge is to optimise feedstocks and operations, and seek better performance and maintenance. The service side of refining took a big hit in 2014 due to pricing pressures on operators, causing some providers to exit the industry and refocus."

Chetan Desai, vice president of digital technologies at oilfield equipment and services supplier Schlumberger, explained that these challenges are causing the company's upstream and midstream clients to sharpen their focus on portfolio management.

"Especially in the past six weeks, we're seeing supply and demand imbalances, and efficiency and cost concerns, which are leading to an increased focus on total value creation, closer integration with service providers to scale up quality, and delivering greater value to asset operators. They're also focusing more sharply on existing operations, instead of exploring for new ones on the frontier."

Need to lead in new directions

To address these epic challenges, the panellists reported that new levels of leadership will be required across the oil and gas sector.

"This really begins with a vision for success that addresses profit and safety, of course, but also acknowledges that greenhouse gas intensity has become a front-and-centre metric, too," said Wasden. "This means many leaders will have to adopt broader visions

than they have in the past, and bring their priorities into balance.

"Previously, leaders might talk about 'people, planet and profit', but the focus was still mostly profit," he continued. "Now, they're going to have to deliver on all fronts. Fortunately, there are ways for oil and gas leaders and their organisations to do it. For example, just as we use the Waze app to navigate our commutes, we've tried equivalent software that can help with operating oil and gas fields, and they can deliver some significant benefits. For many leaders, the focus has been less on inventing new applications, and more on adapting existing software to their processes."

Aligning with digitalisation

Because so many potentially useful technologies are emerging so quickly, Andy Weatherhead, chief technology officer at Sensia, reported that many of these technologies and their architectures are converging.

"For example, cybersecurity capabilities are getting baked into many products, which is making them pervasive," he said. "Many applications are becoming increasingly virtualised at the same time that they're participating in open-source software communities like the Open Process Automation Forum (OPAF), or beginning to use fit-for-purpose sensors or self-organising wireless components."

Desai added that one way to organise today's ever-shifting technology deluge is to ask "to what end?" and concentrate only on those that can solve specific problems.

"The real problems are change management and adoption, and how to package and deliver solutions to users," explained Desai. "Digitalisation can affect all the pieces in the full, cradle-to-grave lifecycle of many hydrocarbon assets, so we have to focus on the ones that can uplift performance across those lifecycles."

Roach cautioned these shifts are not easy for process applications because they're so firmly based in physical settings.

"Many process assets cost US$100mn to US$250mn or more, and are so complex that it's hard to develop digital representations, or build models of them that can indicate when they need support or maintenance," said Roach. "Digital twins of physical equipment are also costly up front, but once users have them, they can start to follow their physical counterparts for better performance of engineering, maintenance and support tasks. This is likely where most of the benefits will occur."

Dave Hedge, solution architect at ExxonMobil Information Technology, reported there are three main phases of digital transformation – initial data collection, taking and learning, and applying it back in the field – and that COVID-19 has accelerated all of these initiatives.

"It's amazing what digital transformation can do, but the question suddenly became 'how can we get everyone on board?' So, we need to get back to deciding on a common vision about what we need digitalisation to do based on extracting value from our processes."

The importance of the cultural aspect

The panelists unanimously agreed that a critical ingredient of digital transformation is encouraging cultural acceptance by operators, technicians, engineers, managers and other end users.

"The process operations landscape is still all about people," added Desai. "These staffers are demanding access to digitalised tools and retraining for machine learning (ML) and artificial intelligence (AI), and their companies will need digital dexterity to make it happen. Leaders will have to ask if their organisations are agile enough and open to these changes. We all need to get proficient at using them. It's no longer enough to just be good: digital technology is needed to attract talent. Users running US$20-50mn assets have FitBits on their wrists checking their heart rates, and they want the same technologies for their operations."

> "The process operations landscape is still all about people."

Hedge reported that recent graduates coming into the process industries have skills like Python programming, and want to use them to improve process industry applications, but they still need acceptance from veterans and managers to help the field move forward. "Upstream, midstream and downstream users are looking more closely at the data moving across their companies," added Hedge. "They want to 'see the molecules' moving from production to customers. All that data, from their premises and platforms, is coming in waves, and digitalisation can help organise it.

"This also is why it's time to invest in digitalisation. Fast return in investment is always needed, but users can get some quick wins with digitalisation, and use them as a foundation for transitioning to a new world. We just need to make a few initial steps to get started. These are businesses that still need to make money, and digitalisation can add to those bottom lines." ■

Digitalisation has encouraged several new technologies that could revolutionise the oil and gas sector.

Image Credit: Johannes Plenio/Pexels

A trusted partner for energy projects

Further diversification and international expansion are on the cards for Alfanar, one of the largest conglomerates in Saudi Arabia with a long history of involvement in the oil and gas sector.

WITH A STRONG local and global presence, Riyadh-based Alfanar is primarily engaged in the manufacturing of a wide range of low, medium and high voltage electrical construction products for the oil and gas, energy and other construction segments, EPC solutions for conventional and renewable power plants, LPG storage, allied engineering services and design engineering.

Alfanar is proud to be a trusted partner for various mega infrastructure projects in energy as a manufacturer of products, developer of projects, EPC and technical engineering solutions.

Through its specialised oil and gas services arm, Alfanar provides EPC solutions for downstream projects in the region, and through various subsidiaries provides project development, EPC, products and specialised services such as testing and commissioning, refurbishment and asset lifecycle maintenance, all of which are compliant with Saudi Aramco standards.

Recent oil and gas projects include the GASCO Riyadh Terminal expansion project, where it is providing an LSTK solution to add five LPG bullets, each with a capacity of 4,000 cu m. The scope consists of supply of materials, detailed engineering, fabrication, construction, installation, testing, pre-commissioning and commissioning assistance of mechanical, piping, civil and structural, electrical and instrumentation works.

Alfanar has recently completed major works at the new Khurais Central Processing Facilities & GOSP to raise capacity, as well as constructing 1,600 residential units to house 2,200 employees working at the Khurais Crude Increment project. The project has achieved a Project Quality Index (PQI) of 98.1%, which is one of the highest ratings to be achieved in the industry.

Alfanar's local manufacturing facilities are based at Alfanar Industrial City in Riyadh, which houses more than 14 state of the art factories engaged in R&D and technology innovation for manufacturing LV and MV electrical products and building system products.

As a partner in one of the Kingdom's most strategic projects, the Smart Meter Project, Alfanar will install five million meters across the Eastern and Central regions of Saudi Arabia in a very challenging time frame.

Facing the challenges

EPC projects pose many challenges, the company says, particularly with brownfield projects wherein stringent measures must be adopted to ensure zero to minimal disruption, ensuring continued production at the plant. The company overcomes these by implementing a proper planning and scheduling process along with the inclusion of the concerned client teams. Time constraints are also a challenge.

Image Credit: Alfanar

Jamal Wadi, CEO, Alfanar Construction.

In common with many other companies, Alfanar has faced multiple challenges as a result of the COVID-19 pandemic. However a comprehensive pandemic response procedure has enabled it to navigate the storm.

"We have a very positive and optimistic outlook on both the local and international market," says Mr. Jamal Wadi, CEO, Alfanar Construction. "The current situation is a temporary hitch, which most of our businesses have overcome by adapting innovative and technology-driven ways to work and excel."

Indeed, the company has ambitious expansion plans for the future. It is developing and investing in renewable energy projects, and actively developing its portfolio in other segments including oil and gas, water, education, healthcare and digital infrastructure. The expansion and diversification are supported by the EPC business's entry into new markets such as India, Spain, UAE and Bahrain. ■

Image Credit: Shutterstock

Alfanar is engaged in a number of major oil and gas projects in Saudi Arabia.

Solutions partner for the complete **asset life cycle**

Riyadh-based Alfanar Engineering Services is looking forward to further expansion, both at home and abroad.

ALFANAR ENGINEERING SERVICES, a specialised division of Alfanar, is seeking to expand its operations, despite the challenges posed by COVID-19.

Providing comprehensive maintenance and operational services and solutions to varied industries including oil and gas, power, water and heavy industries, the company considers itself a one-stop shop for the complete asset life cycle. Services include electrical installations, testing and commissioning, repairing and rewinding services of static and rotating equipment, calibration services, advanced technical training and comprehensive O&M solutions. The company has no less than 942 projects under its belt, including including testing and commissioning of critical installations, field services, operations and maintenance. A stringent commitment to quality and timely delivery has made it a trusted and long-standing partner for companies such as Saudi Aramco, Saudi Electricity Co., Sabic and Saline Water Corporation Co., and it runs the only approved manufacturing facility for preformed coils by Saudi Aramco in the Kingdom.

Mr. Amer Al Ajmi, Vice President – Sales & Marketing, Alfanar Construction, said that the company's top priority is helping to address the critical challenges faced by its clients, particularly in the oil and gas industry, such as getting equipment maintained on time and with minimum downtime, or ensuring the performance and operation of a new facility.

He added that whereas in the past, shutdowns had to be planned months in advance so as to allow the equipment to be shipped overseas for maintenance, "now, with a capability to repair and rewind static and rotary equipment such as transformers up to 200MVA, motors up to 27,000HP and generators up to 1,200MW, the maintenance departments of our clients have these solutions on their doorsteps."

The company's commitment to its clients is also reflected through the advanced technical training in asset management it offers to equip the young generation with the skills needed in their day to day work life as engineers and technicians, as well as occasional free training for fresh graduates on a wide range of technical topics.

Image Credit: Alfanar

Amer Al Ajmi, Vice President – Sales & Marketing, Alfanar Construction.

Image Credit: Alfanar

A priority of Alfanar Engineering Services is helping its clients to address their critical challenges.

While the impact of the pandemic has hampered activities, Alfanar Engineering Services has been able to maintain full operations and uninterrupted support for its clients' maintenance requirements, further cementing client relationships.

Alfanar Engineering Services continues to expand its global footprint throughout the GCC, Iraq and Jordan. The company is providing testing and commissioning and technical training services to clients in the UAE, and plans to set up workshops in multiple countries including Abu Dhabi and Iraq. This is in addition to manufacturing LT motors at its facilities in the Eastern Province of Saudi Arabia. ■

CORTEC launches new Hydra Balance Choke and Panel System

CORTEC HAS LAUNCHED its new CX-HB3.0 Hydra-Balance Choke and Panel System, which offers drilling operations an increased level of value and functionality within Managed Pressure Drilling (MPD), Underbalanced Drilling (UBD) and other drilling set point applications.

The system, which is API 6A and NACE MR0175 compliant, is a hydraulic dual choke unit and can be controlled via a compact remote panel that can be installed in close proximity to the driller. This new system has been designed to provide higher levels of accuracy, ease of use and field-friendly serviceability. The initial run of production units will be available in the first quarter of 2021 with negotiable rental package options.


Image Credit: CORTEC

The contol panel for the new CX-HB3.0 system.

The CX-HB3.0 system features a main HPU/HMI control panel with remote HMI panel integration and offers a set point accuracy of +/- 25 or less PSI, operating pressure range up to 2,500 PSI, while maintaining a compact footprint that maximises weight and space savings.

Petrofac and Intoware to develop workflow automation software

PETROFAC HAS SIGNED a three-year partnership with Intoware to deploy workflow automation software specifically tailored to the requirements of the oil and gas industry. The WorkfloPlus Oil and Gas software has been designed to automatically generate digital workflows, schedules and reports for users, eliminating the traditional manual preparation required.


Image Credit: Adobe Stock

The new system will save time and money without compromising safety.

Steve Johnson, vice-president of digital for Petrofac's Engineering and Production Services business, commented, "By bringing together our operations and engineering know-how with WorkfloPlus Oil and Gas, we are demonstrating our ability to unlock significant value for our clients and the industry as a whole. The tool empowers teams to work faster and more efficiently, ultimately saving asset owners time and money without comprising safety."

Oxford Flow valve achieves fugitive emissions breakthrough

OXFORD FLOW, THE flow control equipment specialist for oil, gas, water and industrial process industries, has announced that its ES axial flow isolation valve for the oil, gas and petrochemical sectors has excelled in fugitive emissions testing – offering a viable option to eliminate fugitive emissions from valves in critical processes.

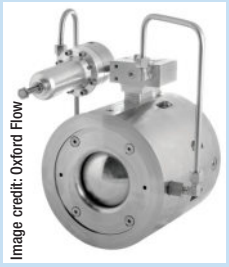
Image credit: Oxford Flow

The Oxford Flow ES axial flow isolation valve.

ISO 15848-1 testing, performed at the Score Cowdenbeath laboratory, Scotland, demonstrated the ES valve had a leakage rate of 100x less than allowed by level AH C03, which is currently the highest ISO performance level for isolation valves. It is notable that most valve manufacturers test in Class B, which allows 10x more leakage than Class A.

Using helium as a test medium, the results indicated that helium levels around the valve and hydraulics were not exceeding those normally found in the atmosphere. Unlike traditional valve designs that utilise a mechanical drive train, the ES valve does not have an external stem and is instead operated by an integral hydraulic power unit, significantly enhancing the long-term mechanical integrity and reliability of the valve and eliminating maintenance costs related to stem packing. Ideal for severe service applications, the valve provides repeatable tight shutoff across a wide range of processes.

Neil Poxon, CEO at Oxford Flow said, "This is another breakthrough for the ES valve, which has fundamentally transformed valve performance. As the industry continues decarbonisation, we believe that every area of operations should be scrutinised. If you have thousands of valves leaking at a facility, you can imagine the cumulative impact of upgrading your valves on emissions. The ES is already undergoing field trials with operators in the North Sea, and we hope to able to share the results of these very soon."

Gardner Denver HPS introduces hammerless frac suction cover

GARDNER DENVER HIGH Pressure Solutions (HPS), the global provider of high-pressure pumps, parts and services, has launched its new hammerless frac suction cover retainer to improve safety on the jobsite.


Image credit: Gardner Denver HPS

The new suction cover retainer.

Designed for applications up to 17,850 psi, the hammerless frac suction cover retainer holds a pump's valve cover in place during pumping operations. Traditionally, valve cover retainers are installed and tightened with a sledgehammer, which risks injury to workers. The hammerless frac suction cover retainer allows for the installation and loading of the joint without the use of hammers. This is accomplished by the creation of push-off force via six jackscrews, which are torqued to generate joint closure force.

Chris Degginger, director of engineering, Gardner Denver HPS, said, "The hammerless frac suction cover retainer has the ability to generate far more joint closure force than a normal, hammer-style retainer. This helps prevent loosening when pumping at high pressures and improves safety for onsite personnel. The high preload generated by our hammerless frac suction cover retainer also increases the fatigue life of the fluid end threads, boosting productivity and reliability for the user."

Innovation, COVID-19 and the future for Rittal Middle East

SPEAKING TO *OIL Review Middle East*, Bharat Mahajan, sales manager at Rittal Middle East, discussed the latest in business, operations and innovation for Rittal Middle East, and assessed the outlook for the company in the wake of the COVID-19 pandemic.

When asked about the current market trends and their effect on Rittal products, Bharat Mahajan remarked, "Rittal is a world renowned and recognised brand, appreciated for its quality and innovation designs always meeting the needs of the growing standards throughout the years since its incorporation in year 1961.

"Oil and gas sectors have been fuelling the economic trends in the region and largely affecting the worldwide markets as well. We have witnessed growing demands from the sectors and Rittal has been in line and supporting the sector with the latest innovation products including the new addition of the VX25 large enclosures series, small and compact enclosures AX/KX and enhanced climate control Blue e+ industry cooling units. Rittal Automation systems offer an enhanced value chain."

Bharat Mahajan outlined the latest innovations from Rittal and what they mean to the company.

Discussing the latest solutions for the oil and gas sector that Rittal is promoting in the region, Mahajan said, "Rittal has launched the new large enclosure system, VX25, and enhanced Blue e+ cooling solutions, also the new small enclosures series, the AX and KX series, catered to the demands of the the various key verticals and markets in the Middle East region.

"Customer intimacy has been a pivotal factor focused in this current situation and we are happy to get closer to our customers across the entire region."

On the importance of innovation to Rittal, Mahajan commented, "Innovation leads the way, always. Rittal has been a consistently recognised innovation leader since its foundation in 1961 and this attribute continues to date with the launch of its latest portfolio on enclosures, power distribution, climate control offerings, value chain and more that we have in the making. Our expertise equals your benefit. Our new developments deliver your benefits, carefully tailored to your specific needs."

Mahajan concluded with an observation on the disruption to business and operations caused by the COVID-19 pandemic."Challenges are nothing new to any economy or markets, the current pandemic is one such challenge. 'Weathering the storm' stands out as a key quality in a situation such as this, and Rittal will continue to remain strong, positive and successful."

Saving lives and money with the new LBPV system from Weir Oil & Gas

WEIR OIL & GAS has announced the availability of the new Weir Latch Back Pressure Valve (LBPV) Drill-Thru System available with Weir's Unitized Lock-Ring (ULR) Wellhead and S-29 Lock-Ring Wellhead. The system provides greater efficiencies and a safer operating environment for drill-thru operations while the operator is drilling for 4.5 inch or 5.5 inch liner string.

The LBPV Drive-Thru system reduces human error and expenses

Instead of a conventional thread profile, which can get damaged while running the drill bit through the wellhead, the new system uses a proprietary latch design eliminating the threat of damage to the BPV and potential pressure integrity issues protecting personnel and equipment. The non-productive time cost for traditional BPV operations can be more than US$100,000, but the Weir LBPV System reduces human error and expenses, resulting in immediate improvements in reliability.

"Our LBPV System addresses some of the greatest challenges drilling engineers face," said Paul Coppinger, president of Weir Oil & Gas. "We engineered our LBPV Drill-Thru System to take the entire drilling operation into account. The latch technology enables drilling crews to improve overall well design cost and well performance by allowing them to drill deeper and more efficiently, reduce NPT and mitigate the possibility of a catastrophic pressure event."

With a pressure rating of 15,000 psi the Weir LBPV System can be easily installed using a dry rod lubricator or high-tier hydraulic lubricator to set the plug into place. It provides operators with the confidence of knowing that the latch will hinge every time, even if wear is present. The LBPV system also offers easy retrievability and replaceability.

Olympus launches IPLEX GAir long videoscope for inspection of complex piping systems

THE INTERIOR OF pipelines that carry hazardous material are inspected for corrosion and other defects using videoscopes. Long, complex piping is especially difficult to navigate and inspect because of complex bends and potential obstructions.

Enabling fast, easy and accurate long-distance inspections, the IPLEX GAir long videoscope solution provides manoeuvrability for up to 30m with high-quality and wide-view images to make complex pipe inspections fast and efficient.

To reach the inspection target quickly, the videoscope's unique guide head enables it to slide easily through pipe joints while pneumatic articulation provides fine control, even when the 30m insertion tube is fully extended. To enable easy inspection, a gravity sensor automatically rotates the onscreen image regardless of the scope's orientation, while the insertion length indicator tracks how far the videoscope has been extended.

The videoscope's advanced image sensor, ultra-bright LED illumination and image processing software provide clear wide-view images that enable users to see more in a single view. For an even wider view, an optional 220-degree fish-eye optical tip adaptor is available to show both the pipe's side wall and forward view at the same time.

For dangerous or hazardous inspections, such as inside nuclear power plants, users can set up the videoscope and control it from a safer location up to 100m away. The videoscope's touch screen can be detached from the main unit and positioned up to 5m, while wireless capabilities make it easy to share screen images with colleagues.

Designed with pneumatic articulation and advancd tools that ease the challenges of long-distance pipe inspections, the IPLEX GAir videoscope offers flexible manoeuvrability with bright, high quality wide-view images to locate and identify defects from afar.

Silixa's fibre-optic sensing-based monitoring solution for carbon capture and storage

SILIXA HAS ANNOUNCED the launch of Carina CarbonSecure, its distributed acoustic sensing (DAS) based solution for continuous or on-demand monitoring of all stages of carbon capture and storage (CCS) operations. The new solution offers offshore and on-land operators the necessary monitoring measures with a reduced cost and environmental impact of their CCS facilities. The solution enables operators to provide the assurance to regulators and communities necessary to expand CCS adoption worldwide.

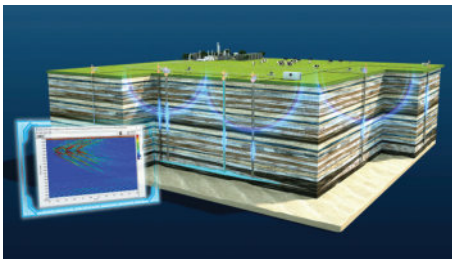

Image Credit: Silixa

Carina CarbonSecure delivers safety, sustainability and substantial cost savings.

Glynn Williams, CEO at Silixa, said, "Studies from both the IPCC and the IEA recommend a renewed focus on CCS as the only proven technology that can be deployed at the scale needed to achieve essential climate goals. That is why we are launching Carina CarbonSecure: to enable the low-cost, reliable, and exceptionally accurate monitoring capability that is crucial to the take-up of CCS."

Siemens Energy, ProFlex pair up to provide IoT-based pipeline leak detection

SIEMENS ENERGY HAS partnered with Houston-based ProFlex Technologies to provide spontaneous leak detection services for pipeline operators. As part of the agreement, Siemens Energy gains exclusive access to ProFlex Technologies' digital Pipe-Safe advanced leak detection technology. The technology, combined with Siemens Energy's Internet of Things (IoT) system, will enable operators to reduce the environmental risk associated with operating their infrastructure by minimising unplanned releases of product into the ecosystem.

The solution leverages remote pressure monitoring and complex data processing algorithms to rapidly detect and localise pipeline leaks within +/-20 feet of their location. It is particularly relevant for companies that operate ageing infrastructure, enabling detection of small leaks in pressurised lines transporting virtually any type of liquid or gas medium (e.g., natural gas, crude oil, water, petrochemicals, etc.). Specific applications include long-distance oil and gas transmission lines (i.e., multi-node systems); production gathering networks at well sites; and offshore production risers.

New air sensor to make chemical plants safer

CHEMICAL PLANTS CAN become safer places to work with a reduced risk of injury, chronic respiratory ailments or even death, thanks to a new air sensor being developed to detect toxic and explosive solvents using photonics.

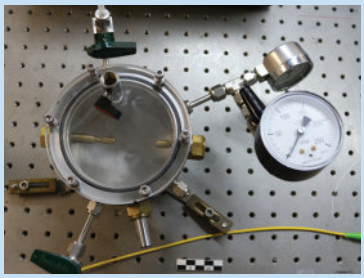

Image Credit: ACTPHAST 4R

Prototype of the new air sensor.

Scientists from the University of Navarra in Pamplona, Spain have teamed up with the EU photonics innovation hub ACTPHAST 4R to develop a demonstrator for their breakthrough optical sensing technology that detects lethal chemicals that are both dangerous to inhale and highly explosive.

No technology currently exists to perform a real-time, automatic check in fuel tanks for volatile organic compounds (VOCs) – chemicals that evaporate quickly at room temperature. Technologies that are generally used to monitor these chemicals currently use electronic sensors that need to be heated past 150 degrees.

Emptying giant tanks filled with alcohols, ketones, aldehydes, chloroform, and dichloromethane, chemical plant staff have to ensure no traces of vapour or liquid remain. Having to climb inside these giant tanks, workers are under constant threat of causing an explosion from friction or static electricity.

This new detector uses optical fibres – the cables that carry vast amounts of data via the Internet – to monitor air quality, with no electrical or flammable components as part of the device.

OleumTech introduces two new flow totalizers

OLEUMTECH, A LEADING provider of industrial automation and IoT solutions, has announced the release of two new flow totalizer models to its H Series line of hardwired instrumentation.

In addition to the existing wireless flow totalizer version available in the OTC Platform, OleumTech now offers a standalone local read version and an RS485 Modbus version in its H Series platform, providing customers with the perfect option, regardless of their preference for local or remote flow measurement information.

OleumTech Flow totalizers easily connect to third-party turbine flow meters and deliver highly accurate measurement of flow rates and accumulated volume.

Users can effortlessly configure the devices using the push-button LCD interface while also gaining instant access to flow data that includes instantaneous flow rates, today's totals, yesterday's totals, and other critical data points.

Image Credit: OleumTech

The H Series flow totalizers are available to order now.

"We are excited to add these two new flow totalizers to our growing portfolio of hardwired instrumentation. These H Series flow totalizers are feature-rich, highly stable, accurate, and offer a price point unrivaled by our competitors. I am proud of our world class design and development team at OleumTech as our innovation continues to deliver throughout these very challenging market conditions," said Vrej Isa, COO.

The HS1000-FT1 (local read) and HW5000-FT1 (RS485 Modbus) flow totalizers are Intrinsically Safe and certified for use in Class I, Division 1 (Zone 0) hazardous locations.

Common product features include:

- Works with third-party turbine flow meters
- Provides local reading of flow data
- Instantaneous rate
- Self-contained, rugged design
- Installs in minutes.

Project Databank

Compiled by Data Media Systems

OIL, GAS & PETROCHEMICAL PROJECTS, SAUDI ARABIA

Project	City	Facility	Budget (U$)	Status
Advanced Polyolefins Company - Propane Dehydrogenation (PDH) and Polypropylene (PP) Complex	Jubail	Polypropylene	1,800,000,000	FEED
Al-Khafji Joint Operations (KJO) - Dorra Gas Field Development - Overview	Eastern Region	Gas Field Development	3,000,000,000	Feasibility Study
Aramco - Hawiyah Unayzah Gas Storage Pipeline	Hawiyah	Gas Pipeline	300,000,000	EPC ITB
Aramco - Ras Tanura Refinery - Sulphur Recovery Units Upgrade	Ras Tanura	Sulphur Recovery	200,000,000	EPC ITB
Basic Chemical Industries Company (BCI) - Chlorine Derivatives Plant	Jubail	Chlor Alkali	138,662,077	Construction
Dow - Polymers Production Facility	Jubail	Polymers	100,000,000	Feasibility Study
Farabi Petrochemicals Company - Yanbu Linear Alkyl Benzene (LAB) Plant	Yanbu	Linear Alkyl	450,000,000 Benzene (LAB)	Commissioning
Ibn Sina - Methanol Plant Upgrade Procurement	Jubail	Methanol	250,000,000	Engineering &
Ineos - Amiral Petrochemical Complex - Acrylonitrile Plant	Jubail	Acrylic Acid	665,000,000	FEED
Ineos - Amiral Petrochemical Complex - Linear Alpha Olefin (LAO) Plant	Jubail	Alpha Olefins	665,000,000	FEED
Ineos - Amiral Petrochemical Complex - Poly Alpha Olefin PAO) Plant	Jubail	Alpha Olefins	665,000,000	FEED
INOCHEM - Soda Ash and Calcium Chloride Complex	Ras Al Khair	Detergents	300,000,000	Construction
JUPC - Ethylene Oxide/Ethylene Glycol (EO/EG) Plant III	Jubail	Ethylene Oxide	700,000,000	Construction
MISA - Unibio - Edhafat - BioProtein Facility	Various	Gas Processing	200,000,000	Project Announced
NIGC - Jubail GAS Phase 9	Jubail	Industrial Gas Production	900,000,000	Construction
Pan Asia - Jizan City for Basic & Downstream Industries - Petrochemical & Chemical Fiber Integrated Project - Overview	Jizan	Petrochemical Plant	3,800,000,000	Construction
Petro Rabigh Refinery & Petrochemical Complex Expansion - Phase 2 - Clean Fuel Package	Rabigh	Naptha	950,000,000	Construction
Petro Rabigh Refinery & Petrochemical Complex Expansion - Phase 2 - Overview	Rabigh	Ethane Cracker	5,000,000,000	Construction
Petrokemya - Jubail - Olefins 1 Plant Expansion	Jubail	Alpha Olefins	80,000,000	FEED
Royal Commission for Jubail & Yanbu - KeroTech Industries - Kerosene Plant	Jubail	Kerosene	166,000,000	Project Announced
Sabic - PK Cluster	Jubail	Petrochemical Plant Industrial City	500,000,000	FEED
Sabic - Saudi Aramco - Yanbu Crude Oil To Chemicals (COTC) Complex	Yanbu	Petrochemical Plant	20,000,000,000	Feasibility Study
SAMREF - Hydrogen Addition Residue Project (SHARP)	Yanbu	Hydrogen		FEED
SASREF - Jubail Refinery Modernization and Expansion	Jubail	Petroleum Oil Refinery	360,000,000	Construction
SATORP - Debottlenecking Train 2	Jubail	Petroleum Oil Refinery	200,000,000	Construction
Saudi Aramco - Abqaiq Oil Plant Revamp	Abqaiq	Oil Production	1,000,000,000	Pre-FEED
Saudi Aramco - Annual Onshore Maintain Potential Programme	Eastern Region	Maintenance	5,000,000,000	Construction
Saudi Aramco - Arab Heavy Pipeline to Yanbu Crude Oil Terminal	Various	Oil Pipeline	250,000,000	Construction
Saudi Aramco - Berri Oilfield Expansion - Gas Oil Separation Plant Expansion	Berri	GOSP	1,700,000,000	Engineering & Procurement
Saudi Aramco - Berri Oilfield Expansion - Offshore Pipeline Replacement	Berri	Offshore Oil Pipeline	400,000,000	Construction
Saudi Aramco - Berri Oilfield Expansion - Overview	Berri	Oil Field Development	6,000,000,000	Construction
Saudi Aramco - Berri Oilfield Expansion - Water Injection System Expansion	Berri	Water Injection	200,000,000	Construction
Saudi Aramco - Dammam Oilfield Redevelopment Procurement	Dammam	Oil Production	1,000,000,000	Engineering &
Saudi Aramco - Fadhili Gas Plant - Downstream Packages	Eastern Region	Gas Processing	650,000,000	Commissioning
Saudi Aramco - Fadhili Gas Plant - Overview	Eastern Region	Gas Treatment Plant	6,600,000,000	Construction
Saudi Aramco - Gas Storage Facilities	Various	Gas Storage Tanks	1,000,000,000	Project Announced
Saudi Aramco - Haradh Gas Increment Program - Freeflow Pipelines	Haradh	Flowlines	470,000,000	Construction
Saudi Aramco - Haradh Gas Increment Program - North Haradh Field Gas Compression Facilities	Haradh	Gas Compression	1,200,000,000	Construction
Saudi Aramco - Haradh Gas Increment Program - Overview	Haradh	Gas Compression	1,200,000,000	Construction
Saudi Aramco - Haradh Gas Increment Program - Satellite Gas Compression Facilities	Haradh	Gas Compression	1,200,000,000	Construction

Project	City	Facility	Budget (U$)	Status
Saudi Aramco - Haradh Gas Increment Program - South Haradh Field Gas Compression Facilities	Haradh	Gas Compression	1,200,000,000	Construction
Saudi Aramco - Hawiyah Gas Plant Expansion	Hawiyah	Gas Processing	1,200,000,000	Construction
Saudi Aramco - Hawiyah Unayzah Gas Reservoir Storage	Hawiyah	Gas Storage Tanks	1,700,000,000	Construction
Saudi Aramco - Jizan Export Refinery - Overview	Jizan	Petroleum Oil Refinery	2,100,000,000	Commissioning
Saudi Aramco - Liquefied Natural Gas (LNG) Receiving Terminal	Jeddah	Liquefied Natural Gas (LNG)	200,000,000	Feasibility Study
Saudi Aramco - Marjan Field Expansion - Interlinked Pipeline Installation	Marjan	Pipeline	600,000,000	Construction
Saudi Aramco - Marjan Field Expansion - Overview	Marjan	Oil & Gas Field	16,000,000,000	Construction
Saudi Aramco - Marjan Field Expansion - Package 1 - Gas-Oil Separation Plant (GOSP-4)	Marjan	GOSP	5,000,000,000	Construction
Saudi Aramco - Marjan Field Expansion - Package 10 - Gas Treatment and Sulphur Recovery Facilities	Marjan	Gas Treatment Plant	1,200,000,000	Engineering & Procurement
Saudi Aramco - Marjan Field Expansion - Package 11 - Natural Gas-to-Liquids (NGL) Recovery and Fractionation Facilities	Marjan	Natural Gas Liquefaction (NGL)	1,000,000,000	Engineering & Procurement
Saudi Aramco - Marjan Field Expansion - Package 2 - Offshore Facilities Utilities and Associated Facilities	Marjan	Oil Field Development	400,000,000	Engineering & Procurement
Saudi Aramco - Marjan Field Expansion - Package 3 - Offshore Water Injection Platforms	Marjan	Water Injection	5,000,000,000	Construction
Saudi Aramco - Marjan Field Expansion - Package 4 - Offshore Gas Facilities and Pipelines	Marjan	Gas Field Development	1,500,000,000	Construction
Saudi Aramco - Marjan Field Expansion - Package 5 - Onshore Water Injection Facilities	Marjan	Water Injection	400,000,000	Engineering & Procurement
Saudi Aramco - Marjan Field Expansion - Package 6 - Tanajib Onshore Oil Facilities	Marjan	Gas Compression	1,500,000,000	Construction
Saudi Aramco - Marjan Field Expansion - Package 9 - Inlet Storage and Compression Facilities	Marjan	Gas Compression	1,000,000,000	Engineering & Procurement
Saudi Aramco - Marjan, Berri, Zuluf and Safaniyah Expansion - Overview	Eastern Region	Oil & Gas Field	7,000,000,000	Construction
Saudi Aramco - Master Gas System Expansion (MGSE) - Overview	Various	Non Associated Gas	4,050,000,000	Construction
Saudi Aramco - Master Gas System Expansion (MGSE) - Phase 2	Western Region	Gas Pipeline	830,000,000	Construction
Saudi Aramco - Master Gas System Expansion (MGSE) - Phase 2	Central Region	Gas Pipeline	367,000,000	Construction
Saudi Aramco - Master Gas System Expansion (MGSE) - Phase 2	Eastern Region	Gas Pipeline	374,000,000	Construction
Saudi Aramco - Offshore Maintain Potential Programme - (Program)	Eastern Region	Oil & Gas Field	7,000,000,000	Construction
Saudi Aramco - Ras Tanura Pipeline	Ras Tanura	Oil Pipeline	270,000,000	Commissioning
Saudi Aramco - Ras Tanura Refinery - Clean Fuels Project	Ras Tanura	Petroleum Oil Refinery	2,000,000,000	Construction
Saudi Aramco - Ras Tanura Refinery - Residue Facility Upgrade	Ras Tanura	Hydrocracker	500,000,000	FEED ITB
Saudi Aramco - Safaniya Debottleneck Onshore Plant	Safaniyah	Oil Production	800,000,000	Engineering & Procurement
Saudi Aramco - Safaniyah Oil Field Expansion - Overview	Safaniyah	Offshore Platform	1,500,000,000	Construction
Saudi Aramco - Total - Amiral Petrochemical Complex - Overview	Jubail	Petrochemical Plant	9,000,000,000	FEED
Saudi Aramco - Unconventional Gas Program - Jafurah Gas Plant	Al Jafurah	Gas Compression	1,500,000,000	EPC ITB
Saudi Aramco - Unconventional Gas Program - Jafurah Gas Plant - Export Pipelines	Al Jafurah	Gas Pipeline	500,000,000	EPC ITB
Saudi Aramco - Unconventional Gas Program - Jafurah Gas Plant - Gas Processing Facility Package	Al Jafurah	Gas Processing	500,000,000	EPC ITB
Saudi Aramco - Unconventional Gas Program - Jafurah Gas Plant - Overview	Al Jafurah	Gas Processing	2,500,000,000	EPC ITB
Saudi Aramco - Unconventional Gas Program - Jafurah Gas Plant - Pipeline and Well Tie-ins	Al Jafurah	Gas Pipeline	500,000,000	EPC ITB
Saudi Aramco - Unconventional Gas Program - South Ghawar Development - Gas Separation Plant	South Ghawar	Gas Treatment Plant	700,000,000	Engineering & Procurement
Saudi Aramco - Unconventional Gas Program - South Ghawar Field Development - Overview	South Ghawar	Gas Field Development	2,200,000,000	Engineering & Procurement
Saudi Aramco - Unconventional Gas Program - South Ghawar Field Development - Pipeline Transmission Installation	South Ghawar	Gas Pipeline	500,000,000	Engineering & Procurement
Saudi Aramco - Unconventional Gas Program - South Ghawar Field Development - Tie-in Installation	South Ghawar	Gas Field Development	500,000,000	Engineering & Procurement
Saudi Aramco - Unconventional Gas Program - Tight Gas Production	Turaif	Gas Field Development	3,500,000,000	Construction
Saudi Aramco - Uthmaniya & Shedgum New Compression Plants	Uthmaniyah	Gas Compression	2,500,000,000	EPC ITB
Saudi Aramco - Yanbu to North Jeddah NGL Pipeline	Yanbu	Gas Pipeline	600,000,000	Construction
Saudi Aramco - Zuluf Oilfield Expansion - Processing Facilities	Zuluf	FPF (Field Processing Facility)	1,300,000,000	Project Announced
Saudi Aramco - Zuluf Oilfield Expansion - Utilities	Zuluf	Offsites & Utilities	1,300,000,000	Project Announced
Saudi Aramco - Zuluf Oilfield Expansion - Water Treatment	Zuluf	Water Injection	1,300,000,000	Project Announced
Saudi Aramco - Zuluf Oilfield Expansion - Overview	Zuluf	Oilfield Development	1,700,000,000	Engineering & Procurement
Saudi Aramco - Zuluf Oilfield Expansion - Water Injection	Zuluf	Oilfield Development	1,000,000,000	Project Announced
Saudi Aramco - Zuluf Oilfield Expansion - Package 4	Zuluf	Oilfield Development	1,000,000,000	Project Announced
Saudi Aramco - Zuluf Oilfield Expansion - Package 5	Zuluf	Oilfield Development	1,000,000,000	Project Announced

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Project Summary

Name of Client and Project	SAUDI ARAMCO - Saudi Arabian Oil Company - Hawiyah Unayzah Gas Reservoir Storage
Revised Budget (US$)	1,950,000,000
Facility Type	Gas Storage Tanks
Status	Construction
Location	Hawiyah
Project Start	Q1-2019
End Date	Q4-2023
FEED	Worley
Main Contractor	Samsung Engineering Company
Contract Value (US$)	1,850,000,000
Award Date	Q1-2020

Background

The purpose of the proposed Hawiyah Unayzah Gas Reservoir Storage Project, the first of its kind for Saudi Aramco, is to provide the necessary facilities to store off-peak surplus sales gas via injection into the Hawiyah Unayzah reservoir during the low-demand season for reproduction back into the Master Gas System (MGS) during high demand, thereby maximising the gas plant's utilisation.

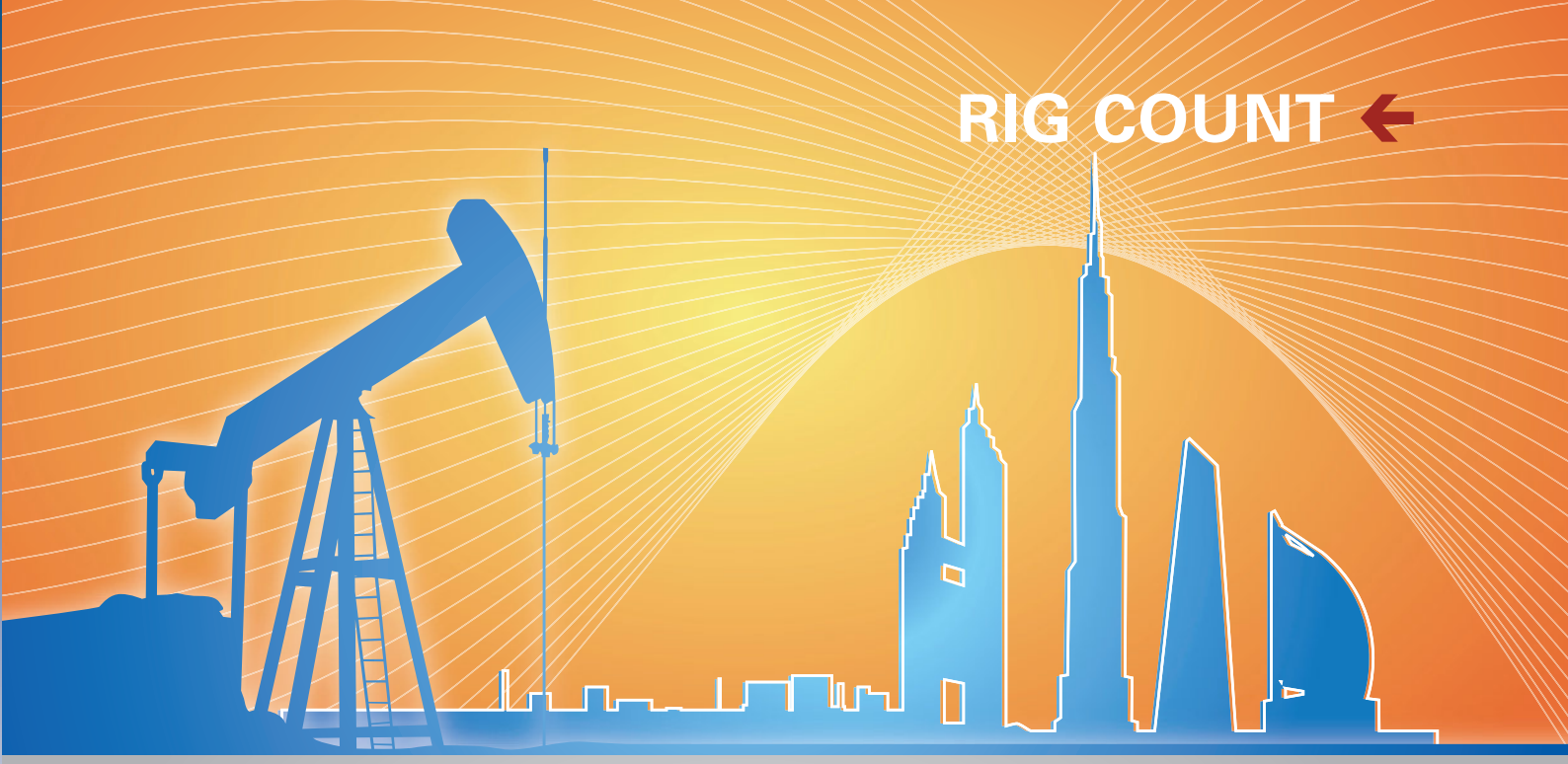
Project Status

Date	Status
Nov 2020	Trevi has completed its post soil improvement contract and has submitted the final report to Saudi Aramco.
Oct 2020	Samsung Engineering has processed all orders for the project and is expected to complete construction work in two to three years.
Jul 2020	Siemens Energy has won a contract to supply 20 compressor systems to the gas reservoir project.
Jul 2020	Aramco is undertaking a project to build a pipeline that will transport gas from the under-execution Hawiyah Unayzah Gas Reservoir Storage facility to the kingdom's Master Gas System (MGS).
Feb 2020	AES Arabia has been awarded by Samsung Engineering a subcontract for the design, engineering, supply and fabrication of RO & STP packages.
Jan 2020	Samsung Engineering officially signs the EPC contract for the gas reservoir storage project. The expected completion of the project is in Q4 2023.
Oct 2019	Hyundai Electric & Energy Systems Co. will supply 24 230kv transformers for the gas reservoir storage. The contract value is US$23mn.
Feb 2019	Saudi Aramco has proposed the Hawiyah Unayzah Gas Reservoir Storage project which will provide the necessary facilities to store off-peak surplus sales gas via injection into the Hawiyah Unayzah reservoir.

Project Scope

The project scope involves the construction of a gas injection facility which includes:

- A design compression facility with an injection capacity of 1,500 million standard cubic feet per day (MMSCFD)
- A design reproduction facility for reproducing 2,000 MMSCFD of gas during peak consumption
- Major equipment
- Booster compressors
- Injection compressors
- Reproduction compressors
- American Petroleum Institute (API) pumps and their drivers
- A 380-kilovolt (kV) and 230-kV Bulk Supply Point (BSP) substation
- 752.5-Mega Volt Amp (MVA) power transformers and other 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.

	NOVEMBER 2020			VARIANCE	OCTOBER 2020		
Country	Land	OffShore	Total	From Oct. 2020	Land	OffShore	Total
Middle East							
ABU DHABI	29	12	41	+1	30	10	40
DUBAI	0	0	0	0	0	0	0
IRAQ	27	0	27	0	27	0	27
JORDAN	0	0	0	0	0	0	0
KUWAIT	31	0	31	+2	29	0	29
OMAN	36	0	36	-2	38	0	38
PAKISTAN	13	0	13	+2	11	0	11
QATAR	2	7	9	+3	1	5	6
SAUDI ARABIA	54	6	60	-10	60	10	70
SUDAN	0	0	0	0	0	0	0
SYRIA	0	0	0	0	0	0	0
YEMEN	1	0	1	0	1	0	1
TOTAL	193	25	218	-4	197	25	222
North Africa							
ALGERIA	29	0	29	+5	24	0	24
EGYPT	14	3	17	-4	18	3	21
LIBYA	12	0	12	+4	8	0	8
TUNISIA	0	1	1	-1	1	1	2
TOTAL	55	4	59	+4	51	4	55

Source: Baker Hughes

التنفيذيين من توجيه العمليات بشكل فعال ومراقبة تقدم الموظفين.

في حين أن الأمر نفسه ينطبق على صناعة النفط، فقد قطع بعض المديرين التنفيذيين خطوة أخرى إلى الأمام لسد مشكلات التباعد باستخدام أحدث التطورات الرقمية. فعلى سبيل المثال، شجعت جائحة كوفيد 19- العديد من المديرين التنفيذيين لشركات النفط على تسريع استخدام شركاتهم لتقنيات الحفر والتكسير عن بُعد. وقد أدى ذلك إلى استمرار تشغيل آبار النفط والموظفين على مدار الساعة. كما ساعد اعتماد عمليات التفتيش الرقمية في الصيانة والتصنيع شركات النفط على البقاء على المسار الصحيح واتخاذ قرارات أسرع، فيما يتعلق بالمشاريع الحالية والمستقبلية.

الاستفادة من الشراكات المحلية

مع قيام عدد كبير من موظفي الصناعة، بما في ذلك عمال منصات البترول والمصافي وخطوط الأنابيب بالانتقال من أماكنهم، فمن الأهمية بمكان أن يستفيد المسؤولون التنفيذيون في الشركة من شبكاتهم وشراكاتهم المحلية لضمان المساعدة والمشاركة على الأرض. ففي نهاية المطاف، ستكون الشركات التي تأتي في المقدمة هي تلك التي تظل مرنة وتتأقلم مع الوضع سريع التطور. لهذا ستحتاج إلى نموذج أعمال معدل، وربما معاد اختراعه، يكون مرنا بدرجة كافية في الأوقات الجديدة. فإذا لم يعد ممثلو دولتك المعتادون متاحين، ففكر في إنشاء فرق جديدة أو الاستفادة من شبكات المواهب المحلية وإعادة توزيع المسؤوليات وفقا لذلك.

تميل الفرق أيضا إلى الازدهار عندما تكون مشتركة في الموقع، لذا فإن نقل الموظفين لتشكيل فرق جديدة في مكان قريب منهم يمكن أن يساعد كذلك في تعزيز الإنتاجية والروح المعنوية للشركة بشكل كبير. ومن

بوريس إيفانوف

المهم أن تتذكر أن هذه الفرق يمكن أن تظل مرنة، ومع تغير مشهد سوق الطاقة، يمكن تعديلها لتلائم الأولويات الفورية للشركة.

تعزيز الشفافية والموثوقية

على الرغم من أن الأولوية القصوى للمؤسسات - أثناء الجائحة - تتمثل في سلامة ورفاهية قوتها العاملة، فإنه يجب على الشركات معالجة كيفية أداء الوظائف الحاسمة ومراقبة العمليات باستمرار. فسيحتاج القادة الفاعلون إلى التأكد من أن موظفيهم يشعرون بالأمان والتقدير. كما يرغب الموظفون أن يكون قادتهم جديرين بالثقة ورحيمين ومستقرين ومتفائلين. ليس عليك أن تكون في المبنى لتكون مرئيا ولإظهار حضور قيادي قوي!

ستساعد الشفافية، لا سيما في خضم التدفق المستمر لأخبار الصناعة، في طمأنة الموظفين بشأن موقعهم فيما يتعلق بالشركة والدور الذي يمكن أن يلعبوه في مستقبلها. فبدلا من المراوغة، حان الوقت الآن للقادة للتقدم وتغليب روح الصدق بشأن أولويات الشركة، والواقعية بشأن التحديات المقبلة وتغيير السلوكيات والعمليات عند الضرورة.

تأتي إدارة أي شركة من المنزل مع تحدياتها الفريدة الخاصة بها، وسيحتاج القادة إلى الالتزام بتنقلات هيكلية جريئة وتبني طرق جديدة في التفكير للتكيف بنجاح مع عصر كوفيد الجديد. كما يمكن أن يكون للإجراءات المتخذة الآن تأثيرٌ فوريٌ على استمرارية الشركة وكيف يمكن لها أن تنتعش بنجاح من الانكماش العالمي. كما يمكن أن يساعد تحليل تأثير الأعمال على سلسلة الأنشطة والوظائف، جنبا إلى جنب مع أوجه الاعتماد المتبادل (مثل الأفراد، والعمليات، والتكنولوجيا، والبيانات، والمرافق، والأطراف الخارجية) في إبلاغ استراتيجيات التخفيف المحتملة.

ومن الأهمية بمكان ألا يغفل المدراء التنفيذيون أساسيات الإدارة الجيدة. على سبيل المثال، الاتصال والتواصل بشكل فعال مع كل من الموظفين وأصحاب المصلحة في الصناعة، والحفاظ على الشفافية والانفتاح في خضم الاضطرابات الحالية والتعرّف على نقاط القوة الفردية والجماعية لدى الموظفين.

رحلة العمل المستقبلية

بينما تركز الشركات على دعم الموظفين والعملاء والموردين، واستقرار الإيرادات وإعادة تشكيل أعمالهم لتتماشى مع الوضع الحالي، سيحتاج القادة إلى تقييم فرص النمو وتحسين مرونة شركاتهم. وسيتعين عليهم - بعد ذلك - تحويل انتباههم بسرعة إلى الفترة التالية.

ومع ظهور بوادر انتعاش اقتصادي لا يمكن التنبؤ به في الأفق، ستزداد المنافسة والفرص الجديدة. ومع ذلك، ستتحول ممارسات الأعمال وعقليات القيادة وسلوك الشركات إلى عصر جديد، حيث تعيد الصناعات اختراع نفسها وإعادة تحديد هدفها. وستكون المرونة، والخفة، والتفكير المستنير، والعمل الجريء أمورا بالغة الأهمية في عصر الفرص الجديد هذا، حيث يعيد النظام البيئي للنفط والغاز تشكيل قواعد النظام الطبيعي التالي.

مفكـرة الفعـاليات 2021

فبراير/شباط			
15 ـ 17	منتدى الشرق الأوسط للتكرير والبتروكيماويات ـ ME-TECH 2021	افتراضي	www.europetroleum/event/357
أبريل/نيسان			
6 ـ 7	منتدى الإمارات للصحة والسلامة والبيئة 2021	دبي	www.hse-forum.com
أغسطس/آب			
16 ـ 19	مؤتمر تقنية حقول النفط البحرية ـ OTC 2021	هوستون	http://2021.otcnet.org
سبتمبر/أيلول			
13 ـ 15	معرض عُمان للبترول والطاقة	مسقط	www.omanpetroleumandenergyshow.com

الجائحة فرضت علينا طرقاً جديدةً في العمل

كيف تدير شركة نفط من المنزل؟

في المقال التالي، يتحدث بوريـــس إيفانـــوف، مؤسس شركة «جي بي بي جلوبال ريسورسيس بي في» عن التحول المفاجئ والواسع النطاق نحو العمـــل عن بُعد، مما يعني القيادة والإدارة بطرق جديدة. وهو هنا يقدم بعض النصائح لقادة الأعمال، بعد أن تسببت جائحة كوفيد 19- في واحدة من أكثر الفترات تقلبا على الإطلاق لأسواق الطاقة. إذ تقلص الطلب العالمي على النفط إلى ما يقرب من الثلث مع بقاء الملايين في منازلهم وسط إجراءات الإغلاق وحظر السفر. ونتيجة لذلك، أُغلقت حقول النفط، وامتلأت صهاريج التخزين في وقت قياسي، وتحولت الأسعار الأمريكية إلى مستوى سلبي مؤقتا للمرة الأولى في التاريخ، وشرعت شركات النفط في خوض حرب أسعار لمحاولة الحصول على ميزة تنافسية في السوق.

يمكن أن يكون للوباء عواقب وخيمة في المناطق والدول المتضررة، مما يجعل الوصول إليها غير ممكن لفترة طويلة من الزمن. لذا، فإن إدارة شركة نفط، وهو نوع من الأعمال التي تتطلب عادة عددا كبيرا من العمال على الأرض وبالقرب من الآخرين، ليس بالأمر السهل. فقبل الوباء، كان العديد من منتجي النفط حريصين على عدم الابتعاد عن وسائل الحفر التقليدية مع المتخصصين في الموقع. وبين عشية وضحاها، لزمت القوى العاملة بأكملها منازلها، وكان على إدارة العمليات أن تتكيف لضمان التشغيل الآمن للأصول النفطية.

كان التحول المفاجئ والواسع النطاق إلى العمل عن بُعد يعني القيادة والإدارة بطرق جديدة. لذا، وبينما تبدأ هذه الصناعة في تقييم إحدى أكثر الفترات اضطرابا في التاريخ، ما هي الدروس الأساسية لإدارة شركة نفط من المنزل؟

التواصل والاتصال

إن إدارة شركة عالمية تدير عمليات تشغيل منتشرة عبر بلدان متعددة، يمثل تحديا في أفضل الأوقات، لا سيما عندما تضطر إلى التنقل في مناطق زمنية متعددة وبين حواجز لغوية كبيرة. ونظرا لأن الموظفين يعملون أيضا عن بُعد، وبالتالي يتم فصلهم عن المحور المركزي للشركة، فمن الضروري أن تشكّل حواراً مستمراً ومفتوحاً. وإذا كان القادة يحتاجون إلى الاستجابة بسرعة ومعالجة الواقع، يجب عليهم أن يعترفوا بالحقائق الجديدة الصعبة على الأرض، ويجب أن تكون رواياتهم صادقة وبسيطة ومباشرة. وأسلوب الاتصال هو جوهر هذا الأمر.

وعلى الرغم من أن تطوير مسارات اتصال واضحة كان دائما ذا أهمية قصوى للقادة، فقد انتقل هذا الأمر الآن إلى أبعد من مجرد توصيل قرارات الشركة ومساراتها على نطاق أوسع، بل إلى عملية يشارك فيها القادة والإدارة العليا بنشاط مع أعضاء الفريق بشكل مباشر وعلى أساس منتظم. ويكمن السر هنا في تمكين أعضاء الفريق وتقديم الدعم وسط حالة عدم اليقين المستمرة في السوق، مع تجنب مخاطر الإدارة التفصيلية.

لا تنطبق هذه العملية على الموظفين فقط. حيث تعتمد شركات النفط الناجحة أيضا بشكل كبير على تطوير علاقات عمل قوية مع اللاعبين الرئيسيين في الصناعة بما في ذلك الحكومات، وشركات الإقراض الخاصة وغير المصرفية، ومؤسسات تمويل التنمية، ومنظمات المجتمع المدني المحلية. فعلى مدى الأشهر الستة الماضية، أصبح من الأهمية بمكان أن يصبح المسؤولون التنفيذيون في قطاع النفط أكثر تركيزا على التواصل والمشاركة مع أصحاب المصلحة هؤلاء، في غياب التفاعل الشخصي.

استيعاب الثورة الرقمية

حتى قبل كوفيد 19-، واجهت العديد من المنظمات تحديات كبيرة في مجال تكنولوجيا المعلومات. والآن، تدفع جائحة كوفيد 19- الشركات إلى العمل بسرعة بطرق جديدة، ويتم اختبار تكنولوجيا المعلومات بشكل لم يسبق له مثيل. كما استفاد القادة في جميع الصناعات من تبني التقنيات المناسبة وسط التحول العالمي للعمل من المنزل. من مكالمات على برنامج Zoom ومحادثات Microsoft Team إلى جداول البيانات المشتركة وحلول التخزين السحابي، حيث مكنت هذه الأدوات المديرين

المحتويات

القسم العربي

ملخص محتويات القسم الإنجليزي:

تقارير خاصة: تقرير عن أرامكو السعودية، تقرير عن معرض أديبك.

استطلاعات: الاستدامة وحماية البيئة، إدارة تسرب النفط.

تقنيات: حقول النفط الرقمية، التحكم في آبار النفط، ضمان التدفق، إدارة الأصول.

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