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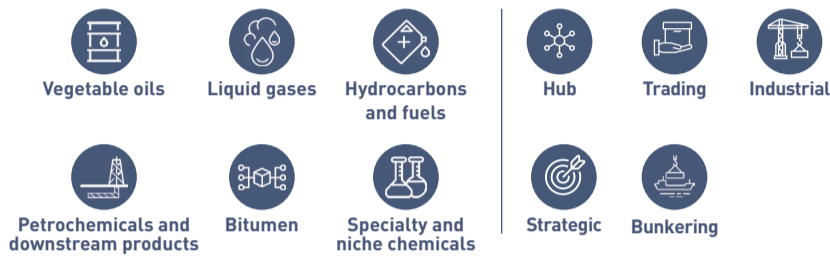


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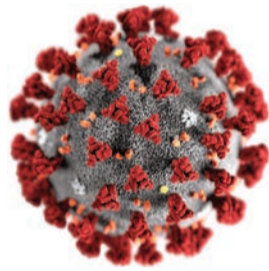


New Liquid Tank Terminal Project in Khalifa Port Abu Dhabi



Ensuring stable hydrogen supply

With hydrogen tipped as the fuel of the future, producers like Air Liquide Arabia are tapping into its potential – Page 20



Equinor case study: key lessons

The Norwegian oil and gas firm has shown impressive handling of infectious disease transmission cases – Page 23



US must lead global response

The US has a big role to play to keep the global pandemic in check – Page 24

Road to oil recovery long, difficult

MANAMA: The global oil industry has gotten itself into a muddle: oil prices hitting an unprecedented negative territory with the situation aided by an oil glut, lack of storage, uncertain long-term demand, and a global pandemic that has suffocated demand.

A 9.7-million bpd production cut agreed to by Opec+ was thought to have been a relief, but its effect will not be felt anytime soon.

Industry leaders like Olivier Le Peuch, CEO of Schlumberger, say Q2 is likely to be the most uncertain and disruptive quarter that the industry has ever seen despite the agreement to cut production.

Other experts such as Elena Nadtochi, Moody's VP – Senior Credit Officer, see exceptionally weak short-term prices to persist until production drops enough to ease the strain on storage facilities already operating at or close to full capacity.

The International Energy Agency's (IEA) predictions aren't positive either. Agency head Fatih Birol sees 2020 shaping up to be "the worst year in the history" of the oil and gas industry. IEA's latest report said overall demand this year is expected to average 9.3 mbpd below 2019's average of 100 mbpd. Global oil demand in April dropped by 29 mbpd.

Clearly, the whole situation has given rise to debates and discussions about the wider short and long-term challenges facing the oil and gas industry, since not only companies are affected but entire countries and populations.

Without a steady flow of petrodollars, governments of these nations could find that addressing the health emergency created by Covid-19 will be even more challenging. Consuming countries could see this as windfall but nations where petrol consumption is heavily taxed at the pump will see state coffers impacted.

But the negative pricing could be a symptom of bigger underlying issues that the industry must address. Arij van Berkel, Lux Research Director of Research, suggests the oil industry to diversify feedstock for downstream so that it can be more robust against price hikes.

Current market conditions have also forced oil companies to announce spending cuts after reporting revenue losses. Upstream spending is expected to fall 20 per cent this year, which means investments will shrink by \$100 billion from 2019 levels.

Thousands of employees have been laid off and furloughed. It is estimated that more than 1 million oilfield service jobs will be lost during this crisis. That's a 20 per cent reduction in industry staff.

Rystad Energy's prognosis of the Covid-19 situation is that the pandemic will be a major factor for 6 to 22 months, and demand will return only after 18 to 24 months. That's a long wait!

Saudi vision stays robust

MANAMA: Saudi Arabia's Vision 2030 puts the non-oil sector at the heart of the country's economic development.

Reducing its reliance on the oil sector is vital for the country's economic diversification.

The pace of reforms in Saudi Arabia has been tremendous and has led to significant progress and positive change in a short period of time. The future of investment in the kingdom is promising.



Vision 2030 (Page 4 - 20)

IN BRIEF

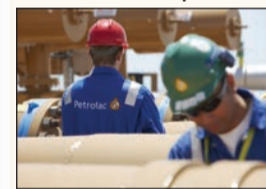
Aramco picks banks for \$10bn Sabc loan



DUBAI: Saudi Aramco has chosen HSBC and Japan's Sumitomo Mitsui Banking Corporation (SMBC) to coordinate talks with other banks for a loan of about \$10 billion the oil giant plans to raise, sources said.

The jumbo financing would help the company back its acquisition of a 70 per cent stake in Saudi Basic Industries Corp (Sabic) from Saudi Arabia's Public Investment Fund, a deal worth almost \$70 billion. Aramco did not comment on the banks choice but said it continues to review its financial options "as part of its normal course of business, while prudently preserving its pristine balance sheet and its resilience."

Adnoc ends \$1.65bn Dalma gas contracts



ABU DHABI: Petrofac has said Abu Dhabi National Oil Company has terminated \$1.65-billion worth of contracts it had awarded to its Emirati unit for the Dalma gas development project in the emirate.

The Dalma Gas Development Project, which was awarded in February, comprised two packages. Petrofac Emirates' portion of the scope of work is valued at \$1.5 billion.

Meanwhile, Petrofac said it was committed to working with Adnoc over the coming weeks to explore alternative options to deliver this project in a way that supports their strategic objectives within the current challenging environment.

Petrofac continues to progress execution of its remaining group backlog of around \$7 billion as planned and is still progressing with tendering for major contracts in Abu Dhabi. However, it anticipates this development may have an impact on the timing of their awards.



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AYTB's top priority is always the safety and well-being of our employees, clients and all stake holders. While closely monitoring the Coronavirus situation and possible impact on our people and business partners, AYTb is proactively implementing preventative measures & top risk mitigation techniques to avoid any business disruption. We're in this together and we'll get through it together.

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Saudi ports modernisation
Mawani signs 30-year deal for \$1.86 billion worth of investments at King Abdulaziz Port in Dammam – Page 11



Production capacity doubled
Inma Steel is localising technology to support the oil, gas, petrochemical and mining sectors in the kingdom – Page 13



Faro measures surfaces to the mm
The new BuildIT Construction software analyses surface flatness, steel structures, piping systems – Page 15

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NO COMPROMISE ON VISION 2030

Saudi Arabia is determined to diversify its economy as enshrined in Vision 2030. Its rise on global development indices is a promising sign the country is moving in the right direction



Logistics and infrastructure policy will play a key role in Saudi Arabia's economic diversification

THE Covid-19 global pandemic will have some economic bearing on Saudi Arabia, which has carried out one of the strictest lockdowns in the region in attempts to contain the disease.

The oil-rich kingdom has swiftly drawn out plans to maintain financial stability. The Saudi Arabian Monetary Authority (SAMA) announced a SR50-billion (\$13.33 billion) program to support the private sector, especially the small and medium enterprises and mitigate any financial impact from the pandemic.

The measures are essential so the country meets its goals outlined in Vision 2030, an ambitious path it set out on in 2016. The leadership's bold foresight then envisioned a country less dependent on oil, economically diversified and transforming into a knowledge economy. Nothing proves that vision more correct than today's oil prices, which have plummeted to new historic lows. For a country, whose bread and butter is oil that can prove devastating.

Saudi Arabia's economy is strongly linked to the revenues generated from its oil sales, which have remained roughly 80 per cent of total government revenues between 2009 and 2018.

But the kingdom is looking for ways to strengthen its non-oil profile to sustain long-term growth. This is also a key objective of the Saudi Vision 2030, which puts the non-oil sector at the heart of the country's economic development. Reducing its reliance on the oil sector is vital for the country's economic diversification.

The vision's key economic goals include increasing the private sector's contribution to gross domestic product (GDP) from 40 to 65 per cent, raising the share of non-oil exports in non-oil GDP from 16 to 50 per cent, and reducing the unemployment rate from 11.6 per cent to 7 per cent by 2030.

It also aims to maximise local content by localising more than \$70 billion of content through programmes such as In-Kingdom Total Value Add (IKTVA) Programme, make economic agents more efficient and increase government revenues by removing domestic energy subsidies and introduce other non-oil revenue items, enabling further government investment. Developing the kingdom's non-oil sector would help it to meet these targets.

According to the Governor of the Saudi Arabian Monetary Authority, Ahmed al-Kholify, monetary, fiscal and structural policies are all geared towards an expansion

of the private non-oil sector GDP over the medium term.

The IKTVA programme has attracted 468 investments from 25 countries with an estimated capital expenditure of \$6.5 billion, resulting in 44 industrial facilities completed to-date, with another 64 facilities under construction.

Saudi Aramco, a key stakeholder in the Vision 2030, has signed 66 memoranda of understanding (MoUs) and strategic and commercial collaborations valued at more than \$21 billion with international partner companies and entities from 11 countries in several industrial and business sectors under its IKTVA Programme.

These investments will contribute to building an integrated Saudi supply chain and bringing new capabilities to the kingdom.

The agreements have been with companies like Hyundai Heavy Industry, Seimens, Aasia Steel, Oilfields Supply Center (OSC), Al-Khorayef Petroleum, Mitsubishi Hitachi Power Systems, Schneider Electric, Honeywell, Advanced Electronic Company (IT), XDM 3D Printing, Shengong New Materials, XINFOO and Saudi Exports Development Authority.

Continued on Page 6



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Yokogawa is supporting KSA Digital Transformation and Innovation Aspiration of Vision 2030.

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HRH Prince Abdulaziz bin Salman bin Abdulaziz, Saudi Minister of Energy, HRH Prince Saud bin Nayef bin Abdulaziz, Governor of the Eastern Region, centre, and other key officials at the 5th IKTVA Forum & Exhibition held in Al Khobar in February

... No compromise on Vision 2030

Continued from Page 4

CLIMBING GLOBAL RANKINGS

Fortunately for Saudi Arabia, Vision 2030 took off to a solid start. Official reports have painted a promising picture of how the goals in the vision are being met.

Recently, the National Transformation Program (NTP) released its annual report, reviewing its most significant achievements by the end of 2019. The programme plays a major role in overcoming the challenges to Vision 2030 goals.

The achievements highlighted in the NTP are categorised into three main principles: achieving governmental operational excellence, improving economic enablers, and enhancing the standards of living, and further spread into eight themes.

Eng Thamir bin Abdullah Al-Sadoun, CEO of NTP, says the Kingdom has achieved numerous successes through the programme, which aimed at removing obstacles to doing business in the country.

He says Saudi Arabia was the world's most improved in the annual ranking of the ease of doing business in 190 countries, according to the 'Doing Business 2020' report issued by the World Bank Group. It climbed to 62nd place, from 92nd last year. In this regard, the country had implemented more than 400 reforms through the National Competitiveness Centre (Tayseer) to serve investors, such as: procedures automation, development of regulations, regulations and policies, and enabling the private sector to achieve economic development.

The Kingdom advanced more than 100 rankings, from 141 in 2018 to 38 in 2019, in the 'Business Start-up' index through the launch of the Comprehensive Service Centers (Meras), which offer easy establishment of companies, electronically in just one hour. Additionally, the country rose to 49th position on the index of the most developed countries in the United Nations Trade and Development Index (UNCTAD).

The NTP through the instrumental role played

by the digital transformation plan has contributed to raising the kingdom to second place among G20 countries for its advancement in the digital arena.

INDUSTRIAL REVOLUTION

As a part of the Vision 2030, Saudi Arabia established the National Industrial Development and Logistics Vision Realisation Program (NIDL) that aims to transform the Kingdom into a leading industrial power and an international logistics platform, while focusing on the 4th Industrial Revolution in a way that will generate ample employment opportunities for Saudi cadres, boost trade balance and maximise local content.

The programme focuses on four key sectors: industry, mining, energy and logistics. The program also designs and provides a range of essential enablers that include developing appropriate systems, providing the required financing, developing infrastructure, industrial lands and private areas, and enhancing research and innovation.

A key player in the NIDL is the Saudi Authority for Industrial Cities and Technology Zones (Modon), which oversees the country's industrial cities. There are 35 industrial cities with over 3,500 factories that are leading Saudi Arabia's transformation to a leading industrial power.

Eng Khalid bin Mohammed Al-Salem, the Director General of Modon, says the authority has become one of the pillars of the Vision 2030 and an enabler of industry.

Modon has launched its new strategy aiming to enable the industrial sector, contribute to the development of local industry, strengthen local and global partnerships to attract local and foreign investments that have the added-value, and to transfer and localize industrial knowledge in the industrial cities.

It also launched a number of new products being provided to its industrial partners, and the number of products increased from only 4 in

2015 to 14 products by the end of 2019, and the industrial sector will witness the positive impact of these products on micro, small, and medium enterprises and will contribute to strengthening supply chain in Saudi Arabia.

Additionally, Modon has been very successful in attracting leading global companies to bring in value-added investments. These include General Electric for manufacturing gas turbines, Isuzu Motors for producing trucks, Ebara Pumps Saudi Arabia, Schlumberger for drilling rigs, and Henkel for chemical industry.

Dammam 2nd Industrial City hosts two industrial factories by Siemens. The first factory, covering 70,000 sq m, manufactures gas turbines, while the second factory produces automatic control panels.

Keen on environmental protection, Modon encourages best practices for sustainable development, such as recycling, fighting desertification, and conservation of natural resources.

In this regard, Modon has launched the 'Zero Waste' programme to promote environmental sustainability and to reduce manufacturing wastes into zero waste.

To be in line with the Digital Transformation and the 4th Industrial Revolution, Modon in partnership with the Saudi Industrial Development Fund and King Abdulaziz City for Science and Technology (KACST), has launched the National Productivity Program to support factories in achieving the highest averages of production efficiency, and to enable the factories to adopt the technologies of the 4th Industrial Revolution.

Phase 1 of the program that included working with 20 factories was launched in April 2019 in cooperation with General Electric. Phase 2 will be launched in 2020 and will include 40 factories, enabling them to shift toward the IR4.0 technologies.

LOGISTICS & INFRASTRUCTURE

Logistics and infrastructure policy will play a key role in Saudi Arabia's economic diversifi-

cation and reform efforts. Vision 2030 aims at making the country a global player in logistics by enhancing the freight transport sector and associated value chain. The modernisation of ports is key to meeting that objective.

Saudi Arabia's ports are witnessing a qualitative shift in their systems and procedures by launching more advanced services in its ports along the western and eastern coasts.

The Saudi Ports Authority (Mawani) recently signed a \$1.86-billion deal to modernise King Abdulaziz Port in Dammam and increase its capacity to an estimated annual handling capacity of 7.5 million twenty-foot equivalent units (TEUs).

Separately, at Jeddah Islamic Port, a \$1.7 deal will see Red Sea Gate Terminal (RSGT) improve infrastructure, equipment and technology by 2050, with annual container throughput capacity growing to 8 million TEUs.

Eng Saad bin Alkhalb, President of Mawani, says the total expected investments in both the Jeddah Islamic Port and King Abdulaziz Port amount to approximately SR17 billion.

Saudi Ports in February handled 20 million tonnes of cargo, with the total number of exported and imported containers reaching 552,000, an increase of 2.46 per cent, compared to the same period of the previous year.

Modon too has increased the number of zones dedicated for logistics by 60 per cent in 2019, compared to 2018. These zones will enable integrating and interconnecting with import, export, and transportation agencies in the public and private sectors.

Some prominent logistic companies that Modon signed agreements with include Naqel in Arar and Madinah, and Starlinks in Jazan, Tabuk, and other zones.

Moreover, Modon's logistic zone in Jeddah 1st Industrial City has been expanded to be a smart logistics zone having integrated services with LogiPoint Company. This zone covers 120,000 sq m land area.

Onwards to a Brighter Future.

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Schlumberger's facility at Spark ... world-class manufacturing

ON February 24, Schlumberger announced the opening of a world-class manufacturing centre at the King Salman Energy Park (Spark), which supports Saudi Aramco's In-Kingdom Total Value Add (IK-TVA) programme to promote economic growth.

The centre will manufacture well completions technologies including liner hangers and packers and isolation valve technologies, including GROVE and ORBIT ball valves, to help improve the efficiency of oil and gas op-

erations in the kingdom and neighbouring countries.

The first phase of the manufacturing centre, which comprises 105,000 sq m, will create more than 200 new jobs over the next few years and develop a highly skilled manufacturing and supply chain workforce for oil and gas products and services within the region. This is a demonstration of Schlumberger's alignment with the Kingdom's 2030 Vision.

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Jeha ... commitment to IKTVA

the Schlumberger manufacturing centre at the King Salman Energy Park. As the first upstream services company to establish a manufacturing centre at Spark, we are enabling an agile fit-for-basin capability that links research, product development and now manufacturing to the needs of the Saudi market. It is a true demonstration of our commitment to the IKTVA programme by expanding our localisation portfolio bringing our latest technologies to be manufactured in the kingdom," says Ziad Jeha, President, Schlumberger Saudi Arabia and Bahrain.

Schlumberger is the world's leading provider of technology for reservoir characterisation, drilling, production, and processing to the oil and gas industry.

With product sales and services in more than 120 countries and employing approximately 105,000 people representing over 170 nationalities, Schlumberger supplies the industry's most comprehensive range of products and services, from exploration through production, and integrated pore-to-pipeline solutions that optimise hydrocarbon recovery to deliver reservoir performance sustainably.

Schlumberger has executive offices in Paris, Houston, London, and The Hague, and reported revenues of \$32.92 billion in 2019.



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Health of employees, clients prime concern of AYTB

AYTB, one of Saudi Arabia's major industrial contracting services companies, remains vigilant of Covid-19 and has reacted swiftly to the situation by streamlining finances to not only protect the business but also secure the financial wellbeing of its employees, says Mohamed Zain Al-Harbi, AYTB CFO

AYTB in its 40-year history has experienced and mastered many challenges and faced various world economic crises, whether it be the low oil prices in the 80s, the market crashes in early 2006 and 2015, the mortgage crisis in 2008 or others.

The current Covid-19 situation doesn't compare to any previous turmoil or challenge as it has not only affected the economy but has attacked a very precious thing: human health. AYTB strongly believes that the health of AYTB employees, their clients and all stakeholders remain a prime concern.

In this regard, the company has put in place the highest safety standards and created a dedicated committee led by the CEO and senior management that follows daily an action plan and process maps covering all possible risk areas.

From another perspective, well-informed and influential finance leaders, however, anticipate situations well in advance and act promptly to weather down cycles, helping their companies emerge stronger than before.

Remarkably, Saudi-based AYTB is one of those vigilant companies that has reacted swiftly to the situation by streamlining finances to not only protect the business but secure the financial wellbeing of its employees as well.

AYTB's CFO, Mohamed Zain Al-Harbi, is leading the finance charge. For him and his team to be ready for all eventualities including worst-case scenarios, they must develop and play various scenarios to evaluate the impact on liquidity, top and bottom lines and the business in its entirety.

A well-thought-out plan in Covid-19 would take into consideration various tiers and elements, such as creditors, customers, cash flows, and company employees, aided by seamless coordination and communication.

At AYTB, the company's finance team has made liquidity management its primary task. There is an increased focus on the collection of receivables and the conversion of any unbilled performance into receivables. A risk considered here is a possible collection shortage from some smaller clients, who might face financial difficulties due to the global business environment.

In this regard, AYTB has found strong support from its very un-



Al-Harbi ... well-thought-out plan

derstanding clients. This rapport with the clients is the result of AYTB's 40-year history of providing trusted and quality services.

Another vital aspect looked into is the management of the current credit limits with the relationship banks while negotiating additional finance sources in the case of any emergency. AYTB has been deliberating and discussing all possible scenarios here and has been in contact with banks from day one.

It is worth mentioning that various Saudi ministries and authorities have been quick in rolling out significant initiatives to support the private sector. These include support from the Saudi Arabian Monetary Authority (SAMA), Ministry of Finance, General Authority of Zakat and Tax (GAZT), Ministry of Interior, Ministry of Human Resources and Social Development, etc.

These initiatives have meant considerable support for companies. And the result was an immediate impact, which was reflected in the demonstrated support by banks to AYTB and other companies in the market.

Meanwhile, a weekly rolling cash flow forecast was implemented from an early stage. This is important for the finance team to keep the development of liquidity under control. It also allows the team to continually analyse any changes in the client's payment behaviour or additional operating expenditure (OPEX) or urgent supplier payment.

In any challenge linked to a significant crisis, the role of communication is crucial for business success, and the AYTB team understands that very well.

The team has been able to establish communication channels with all business stakeholders to regularly inform them about the business status, and any significant development in operations or financial aspects.

The concerns of employees, suppliers and other partners are taken seriously, and all the possible measures are taken to address them.

As a forward-looking company, AYTB believes every crisis and challenge in life has positive sides as well. "As a company, we look to the current situation in its entirety and are trying to find positive aspects in it. This could include finding operating efficiencies, improving the balance sheet, and learning lessons about certain business lines or segments that the company hasn't entered or might reevaluate in the future. We know for sure that the world after Covid-19 will definitely not be the same as before," says Al-Harbi.

In conclusion, the prevalent times might be very stressful and would require tremendous efforts from the CFO and other senior management leaders. However, they also give them great opportunities to learn more about their own business, a chance to look into their personal development, to reflect and analyse all aspects of their lives (by looking at the bigger picture) and find valuable and missing time for their own families.

To everyone, we at AYTB, a family to trust in the toughest of times, say to you please "stay home, stay safe and save lives".



AYTB's head office

Mawani signs \$1.86bn deals to modernise Dammam port

SAUDI Ports Authority (Mawani) and Saudi Global Ports (SGP) in a virtual ceremony signed a 30-year new build, operate and transfer (BOT) agreement with investments exceeding SR7 billion (\$1.86 billion) for container terminals at King Abdulaziz Port in Dammam.

The ceremony was patronised by Prince Saud bin Nayef bin Abdulaziz, Governor of the Eastern Region and participated by Eng Saleh Al-Jasser, Minister of Transport and Chairman of the Saudi Ports Authority; Khaw Boon Wan, Coordinating Minister for Infrastructure and Minister for Transport of Singapore; Eng Saad bin Alkhalb, President of Mawani; and Eng Abdullah Al-Zamil, Chairman of Saudi Global Ports.

According to the agreement, SGP will embark on a development and modernisation program to transform King Abdulaziz Port into a mega container hub and increase its capacity to an estimated annual handling capacity of 7.5 million twenty-foot equivalent units (TEUs). The project will provide more than 4,000 job opportunities in the port and logistics sector.

It is a part of the continuous developments carried out by Mawani in the Saudi ports.

SGP will invest and develop key infrastructure such as berths and container handling equipment, and will more than double the existing container handling capacity of King Abdulaziz Port in Dammam. The investments will focus on environment-friendly and technologically sophisticated systems, including the adoption of automation to develop a modern Saudi workforce.

Al-Jasser says: "The continuous developments in Saudi ports come in line with the national efforts to achieve goals and pillars of our country's ambitious vision to promote sustainable economic development and raise competitiveness"

He says the agreement enhances logistics, raises the reliability of supply chains, supports local and international trade and contrib-

utes in raising the rank of the Kingdom at the logistics performance index to become among the 25 best countries around the world. The agreement, he adds, also attracts new investments to the national economy, support local content and national industries and increase the national exports and imports that contribute to creating promising investment opportunities.

Alkhalb says the total expected investments in Jeddah Islamic Port and King Abdulaziz Port in Dammam amount to approximately SR17 billion.

Wan says this partnership strengthens the relations and cooperation between Saudi Arabia and Singapore, and indicates a qualitative shift witnessed at Saudi ports in their systems and procedures by launching more advanced services in its ports along the western and eastern coasts.

It is worth noting that King Abdulaziz Port is the largest Saudi port on the Arabian Gulf coast spread over 19 sq km. It has 43 berths and a capacity of 105 million tonnes. It is linked with Riyadh Dry Port by railway, which helps goods from all over the world enter the Eastern and Central Regions of the Kingdom.

The port has modern handling equipment that enables it to handle various types of cargo. It includes two advanced container terminals, one refrigerated cargo terminal, two general cargo ter-



The agreement was signed under the patronage of Prince Saud, top centre

minals, two cement plants: one for exporting black cement and clinker and one for white cement, bulk grain terminal, Iron ore handling terminal, naval vessel manufacture area and gas and oil platform. The port contains a ship repair facility that includes two floating ship docks to accommodate ships up to 215 m long.

Separately, Red Sea Gate Terminal (RSGT) has officially taken over operations in the northern section of Jeddah Islamic Port, significantly expanding its operational capabilities and capacity.

In a 30-year concession agreement signed with Mawani, RSGT will invest \$1.7 billion in infrastructure, equipment and technol-

Continued on Page 12



Together, Towards a
Bright Future for Saudi Youth

SAUDI PETROLEUM SERVICES POLYTECHNIC

Partnering with petroleum, energy and industrial companies to graduate, develop and prepare quality Saudi technical workforce

SPSP was established to meet the needs of the petroleum services industry and to support the process of Saudization in Saudi Arabia. It was founded in 2008 by the Ministry of Energy, Industry and Mineral Resources, the Technical and Vocational Training Corporation, Saudi Arabian Chevron, Saudi Aramco and Aramco Gulf Operations Company. SPSP is a fully independent, not-for-profit entity, which is governed by a Board of Trustees representing the major stakeholders in SPSP.

PROGRAMS & COURSES

By maintaining collaboration with our industry partners, **SPSP** develops its programs and courses to meet the specific needs of the petroleum services industry. The programs have been designed to ensure that all graduates exit with certified and accredited core vocational skills and an understanding of the petroleum services industry.

SPSP technical specialties include: Mechanical, Electrical, Operations, Welding, Pipefitting, Instrumentation, HVAC, Drilling, Rigging, Scaffolding or Crane Operation & Heavy Equipment. **SPSP** also offers courses in the fields of drilling, heavy equipment and health & safety customized to the needs and requirements of Oil & Gas companies across the spectrum in both Upstream and Downstream.

A new program has recently been launched targeting young engineers with less than 5 years of experience from all engineering disciplines. The program (ACT Eng.) is a first phase certified downstream training and development program, established in collaboration with the French Institute of Petroleum (IFP).



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E-mail : info@spsp.edu.sa | Web : www.spsp.edu.sa | Phone : 9200 04939



... Mawani signs deals

Continued from Page 11

ogy by 2050, with annual container throughput capacity growing to 8 million TEUs.

“As we begin operations at the northern part of Jeddah Islamic Port, we are very proud to commemorate this tremendous milestone of the RSGT growth strategy, demonstrating our ongoing and long-standing commitment to expansion, modernization, and world-class terminal services,” says RSGT CEO Jens Floe.

By 2023, the expanded RSGT, covering an area of 1.5 million sq m, will have increased annual container throughput capacity to 5.2 million TEUs.

Already able to accommodate Ultra-Large Container Ships (ULCS) of 20,000 TEU class and above, at the end of the first three-year phase of investment, RSGT will be equipped with 24 Super Post-Panamax quay cranes, 67 Rubber-Tyred Gantry Cranes (RTGs), and will offer 4,900 Reefer plugs.

“This carefully planned programme of growth and investment will firmly establish RSGT as the largest logistics gateway, and the busiest container terminal, in Saudi Arabia, and on the Red Sea,” says Floe.

Red Sea Gate Terminal has already signed an Islamic financing agreement with Banque Saudi Fransi and Al Rajhi Bank for the project.



Kingdom allocates 54 mining sites

SAUDI Arabia has announced key decisions related to the largest allocation process for the country's mining reserve sites, including 54 of them spread over a 4000 sq km area, as part of its efforts to develop this sector under the Vision 2030 programme, reported SPA.

Saudi Minister of Industry and Mineral Resources Bandar bin Ibrahim Al Khorayef said these sites have been distributed in the regions of Riyadh, Makkah, Madinah, Asir, Hail and Najran, where 12 each were allocated to gold ore and copper ore, 9 sites for rare earth elements, 7 for silver ore, 5 for zinc ore, 3 for lead ore, two each for iron ore and quartz ore besides one each for site for tin ore and molybdenum ore.

By identifying these mining sites in various regions of the kingdom, the ministry could achieve a number of goals, including providing the attractive investment environment, providing the data needed by the private sector in this field, and offering opportunities for local and international companies to invest in the utilization of mineral resources, reported SPA.

The Saudi Geological Survey plans to start detailed exploration of the aforementioned mining reservoirs and conduct many detailed studies on it and then make modeling for them and calculate the mineralized sources for each reservoir and site to be presented later as investment opportunities, it added.



RSGT will invest \$1.7 billion in the Jeddah Islamic Port. Inset, Floe



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Quality assurance



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Inma Steel to double production capacity

HAVING recently moved to its new 65,000 sq m facility located in Jubail, Inma Steel is now in the perfect position to capitalise on its extensive experience and expertise by catering to the fast-growing local demand and expanding market.

A subsidiary of Alturki Holding, Inma Steel was first established in 1993 and has over the years built a solid reputation as the leader in custom-built process equipment and maintenance services including equipment installation, mechanical repairs, plant turnaround and shutdown services.

However, now with the new facility set to double its manufacturing capacity and Vision 2030 providing a clear roadmap, the company is looking to further deepen its local footprint.

Speaking about Inma Steel's strategy, the company's Managing Director, Muntaser Kalahji, emphasizes: "We have always believed in localising technology to support the oil, gas, petrochemical and mining sectors in the kingdom.

"Saudi Arabia is a burgeoning economy with all the resources needed to reach its full potential. Also, Vision 2030 has given local companies like Inma Steel the government support they needed to build strategic partnerships and bring the latest technology here. Saudi Aramco IKTVA programme have given an example of how local companies are capable of providing world class products and services."

Furthermore, the company is also focused on increasing local content throughout its supply chain whether it be by way of collaboration; choosing local vendors and partners; or by way of investing in local human resources.

Saudisation is, therefore, not only a cornerstone of Vision 2030 but it is also a belief that Inma Steel lives by, as a way to positively contribute to its community.

"We strongly urge and encourage increased local participation in the labour market of both young Saudi males and females primarily because of our own faith in local talent and its potential to transform the kingdom's future," Kalahji says.

Moreover, in retrospect when analysing the qualities that has helped Inma Steel maintain its position over the past 17 years, Kalahji comments: "In order to move forward successfully, it is important to remember what brought us here and, in this case, our reliability is an asset, for sure. Of all of Inma Steel's values, I believe our emphasis on building trust with our customers has played a major role in ensuring our relationships are positive and thus, long lasting."

This importance assigned to reliability is also reflected in the company's strategy in handling the current Covid-19 crisis. With an Emergency Response Plan in place, Inma has been able to fulfil its commitment to support its customers including Saudi Aramco and Sabic in all their operational needs in terms of manufacturing equipment, providing products as well as maintenance services so as to ensure continuity during the crisis.

Furthermore, this notion of reliability and trust also extends to its own employees as stern precautionary measures were put into place immediately as the coronavirus threat loomed over the kingdom.

"We have procedures and policies in place to ensure we are able to meet our clients' and shareholders' expectations without compromising the safety of our own employees. Thus, the health of our workers is inspected daily, all offices and work-spaces are sanitised

regularly, social distancing is maintained even whilst working, and priority is given to the health and safety of everyone at the Inma Steel premises," Kalahji says.

He further comments: "For us, our promise is sacred. Our promise to provide the very best quality products and services on time for our customers, our promise to preserve the brand and make the best decisions for our shareholders, and our promise to protect the interest of our employees in all aspects. This is how Inma Steel has created a name for itself and this is how we plan on foraging ahead."



Kalahji ... supporting the local energy sector

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Inma Steel's new 65,000 sq m facility in Jubail

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Sulzer fuelling performance with modern BTX extraction method

Sulzer GTC's GT-BTX separation technology enhances processing of aromatic streams leading to improved recovery levels and increased purity, says the company

REFINERIES and petrochemical complexes can maximise their margins and competitiveness by leveraging aromatics byproducts, such as benzene, toluene and xylene (BTX).

When setting up recovery and production lines for these aromatics, businesses can benefit from Sulzer GTC's GT-BTX technology. By selecting this solution for new or existing facilities, companies in the oil and gas sector can intensify their operations, improve their recovery levels from aromatic streams and increase the purity achieved.

The market for consumables used in industrial chemical processes is steadily growing and larger volumes of aromatics are required to support this expansion. As the building blocks to all aromatic derivatives, the global demand for BTX is also increasing. To serve this market with reliable supplies, forward-looking refineries and petrochemical complexes are investing in new or revamped BTX units.

When doing so, businesses need to implement separation equipment that can recover BTX with high purity levels, so that the substances will be accepted by polymer, solvent or additive manufacturers.

High BTX recoveries can be very energy intensive, especially if conducted via liquid-liquid extraction or azeotropic distillation. This can, in turn, compromise any effort to increase profitability or assure a quick return on investment (ROI). However, there are separation techniques that can support businesses make BTX recovery economically sustainable.

In high-purity BTX recovery applications, extractive distillation has proven more effective. This is a vapour-liquid extraction that relies on the addition of a third component – a solvent – to the hydrocarbon feedstock to change the corrected partial vapour pressure, known as relative volatility, of one or more constituents. In this way, the extra chemical promotes the separation between different substances.

Extractive distillation is to be favoured over other alternatives for a number of reasons. The overall mass transfer is generally considerably higher than in azeotropic distillation units with comparable size and footprint.

When compared to liquid-liquid extraction, extractive distillation minimises the risk of fouling within columns and their internals. It also requires considerably lower solvent volumes and



Refineries and petrochemical complexes can benefit from Sulzer GTC's GT-BTX technology

less equipment. In effect, only two distillation columns are required, rather than one extraction column with a downstream distillation unit.

Overall, by adopting extractive distillation systems, businesses can reduce capital costs by 30-40 per cent and benefit from 20-30 per cent lower energy consumption.

An example employing this extraction method is Sulzer GTC's GT-BTX licensed technology. The setup utilises two columns and advanced solvents to recover BTX from refinery, petrochemical or coke oven aromatics streams, such as catalytic reformat, pyrolysis gasoline or coke oven light oil (COLO).

During the GT-BTX process, the hydrocarbon feedstock is first preheated with hot circulating solvent. The mixture then goes through an extractive distillation column, where it is separated into raffinate (non-aromatic hydrocarbon) and aromatics-rich solvents. Finally, the aromatic compounds are stripped in a solvent recovery column and routed to the purification section, in order to fractionate them and produce chemical-grade BTX.

As a result, Sulzer GTC's GT-BTX technology can help refineries benefit from cutting-edge aromatics separation performance while reducing both capital expenditure (capex) and operating expenses (opex). By using this technology, it

is possible to produce larger volumes of higher purity aromatics in a more efficient way. This means that businesses can increase productivity as well as recover non-aromatics that can be used in subsequent processes, optimizing resource utilisation.

UNRIVALLED SOLVENTS OF SEPARATION CHALLENGES

While extractive distillation offers clear advantages, there is a great variability in the processes available, resulting from column design and solvent selection. Therefore, refineries and petrochemical complexes should select mass transfer specialists that can deliver optimal results in both fields.

Sulzer GTC Technology can provide support to its customers in the oil and gas industry by delivering high-quality columns and internals as well as selecting the most suitable solvents. The synergies between this group and Sulzer Chemtech's teams lead to enhanced mass transfer capabilities in licensing process-based plant engineering and technologies.

In this context, the elevated level of expertise has led to the development of state-of-the-art combinations of solvents, known as Tectiv solvent, that substantially enhance extraction per-

formance in GT-BTX units. In addition, they support the optimisation of the facility itself, in terms of stability and mass transfer efficiency.

Furthermore, these co-solvents allow refineries to avoid special feed preparations and handle a wide range of BTX feedstock while delivering substances with purity levels of 99.99 per cent wt. per cent or more at high recoveries rates (99.9 per cent or higher).

SINGLE POINT OF CONTACT FOR TOWER SERVICES

Finally, refineries should choose full-service providers for aromatics recovery projects. By selecting a mass transfer specialist that can provide turnkey projects, installation and start-up activities can be streamlined and the number of subcontractors can be reduced.

By offering complete project support, Sulzer GTC is able to help businesses benefit from GT-BTX units as quickly and efficiently as possible.

Furthermore, the company's Tower Field Services division can carry out planned and emergency repairs, design and implement upgrades on equipment from multiple vendors. In this way, it ultimately delivers continuous support in a timely manner, minimising equipment downtime and optimizing its performance.

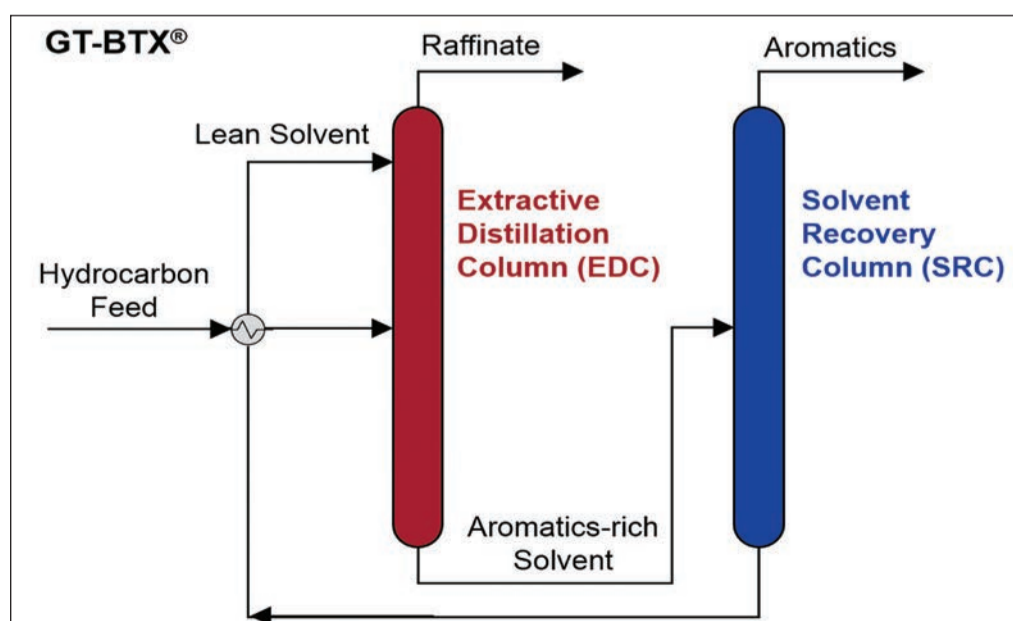
CASE STUDY: GT-BTX FOR REVAMPS

GT-BTX technology is supporting the revamp of a benzene production unit at a leading integrated petrochemical complex specializing in olefins in Eastern Europe.

By leveraging advanced aromatics recovery solutions, the project will turn the facility into one of the most modern of its kind and allow it to act as a hub for processing pyrolysis gasoline (pygas) from multiple locations.

Thanks to this revamp, the plant will be able to produce higher purity benzene and more efficiently, increase product quality while reducing production costs.

In addition, the facility will be able to recover non-aromatics for subsequent processing, thereby increasing overall in-house capabilities. Furthermore, the higher processing capacity will allow the petrochemical complex to gather full range pygas from various facilities for downstream activities.



Solvent	S/F	Relative Volatility (α) n-C7/Benzene
Tectiv® (GT-BTX®)	3.0	2.44
Sulfolane	3.0	2.00
N-methyl pyrrolidone	3.0	1.95
N-fomil morpholine	3.0	1.89
Tri-ethylene glycol	3.0	1.44
Tetra-ethylene glycol	3.0	1.39
Glycol blends (CAROM)	3.0	1.35
No solvent	3.0	0.57

Different Solvent Systems in ED process for Aromatics Recovery

The new BuildIT Construction version not only analyses flatness of surface but also steel structures, piping systems and tanks in real time

Faro software measures surfaces to exact millimetre

IN March, Faro released the latest version of BuildIT Construction, the first fully integrated building lifecycle Quality Control (QC) management tool. The software empowers construction professionals to continuously evaluate projects in real time comparing CAD and BIM designs with reality 3D scan data.

Some of the major improvements of the new version are the support of levelness and flatness analyses according to TR34/DIN EN 15620 or DIN18202 and the support of both American and metric units for analysis according to ASTM E1155.

HARD CONCRETE - EXPENSIVE REMEDIES

All over the world, analyses are required when pouring concrete floors and ceilings to prove the correct execution of construction work. The protocols supported by BuildIT Construction are used not only in the countries where they are originated but in most countries around the world.

When inspecting small areas, it is possible to measure the fresh concrete for flatness and levelness using walkable auxiliary structures that bridge the fresh area. The measurements are time-consuming; after a grid has been defined, many individual points must be measured manually.

Bridging fresh concrete surfaces with appropriate auxiliary structures is impossible when casting several hundred or even thousands of square meters of industrial floors for factories and warehouses. Until now they could only be measured when the concrete was walkable.

For this purpose, the surface is divided into a grid and the corresponding points are measured with total stations and prisms.

Other methods are the use of spirit level and measuring wedge or walking down the grid with a measuring device that is pulled on wheels behind the person measuring.

The procedures are time-consuming and error-prone, they only record grids or individual points, and the documentation and preparation of the reports is also laborious.

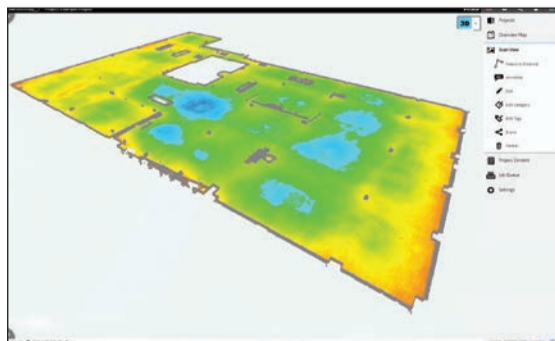
Worst of all, however, measurements can only be taken when the concrete is cured- far too late for corrections. Rework becomes expensive and time-consuming - if it is possible at all.

"You pour a concrete surface and a few minutes later you have recorded the surface in all details to the exact millimetre; without touching it. Then you get a visualisation of the levelness, the inclination, the deviation from your construction model, etc. It enables the contractors to fix the fresh concrete until everything is perfect. That's it," says Udo Haedicke, Product Manager for BuildIT with Faro.

"The documentation and the corresponding protocol are created on the site" he adds.

MAKING MAGIC WITH SCANNER, LAPTOP AND PROJECTOR

What sounds like magic is a workflow that consists of the interaction of a 3D laser scanner with the analysis software, BuildIT Construction.



Result of an analysis, shared as coloured point cloud in SCENE WebShare Cloud

BuildIT Construction can process data from all common 3D scanners, but also point clouds from other sources like mobile mapping systems, drones or photogrammetrically generated point clouds.

The freshly poured concrete surface is captured by the 3D scanner

like the FARO Focus, which sends the data to a laptop or tablet. The measurement and analysis process takes only a few minutes. The range of the device is 70 to 350 m depending on the model. This

Continued on Page 16



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 <p>WELDED PROCESS PIPES Manufactured in accordance with international standards. These products are produced from cold rolls stainless steel coils.</p>	 <p>CRA LINE PIPE In accordance with API 5 LC, corrosion resistance pipes are highly used due to its cost efficiency onshore and offshore for transporting crude oil, petroleum products, natural gas and water. ASP specializes in producing welded CRA inner pipes in all grades, mainly with nickle alloys 625,600,825,800,400, copper alloys and titanium.</p>
 <p>BUTT WELDED FITTINGS & FLANGES Butt weld fittings are manufactured from either tubes, sheets or strip depending on product and dimension.</p>	 <p>ORNAMENTAL DECORATIVE TUBES Stainless steel tubes of hollow tube, round, square or rectangular in shape.</p>

The First Stainless Steel Welded Mill in The Middle East

Armetal Stainless Pipe is a Saudi manufacturer specializing in the manufacture of Stainless Steel & CRA welded pipes.

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In addition, ASP offers a wider range of complementary stainless steel products, as used predominantly in the Oil & Gas, Petrochemical, Desalination, waste water treatment, and construction sectors. ASP success is dependent on total customer satisfaction from R&D to Delivery. The Company recruits highly skilled professional people to produce high pipes and continuous technical service & support for customers.

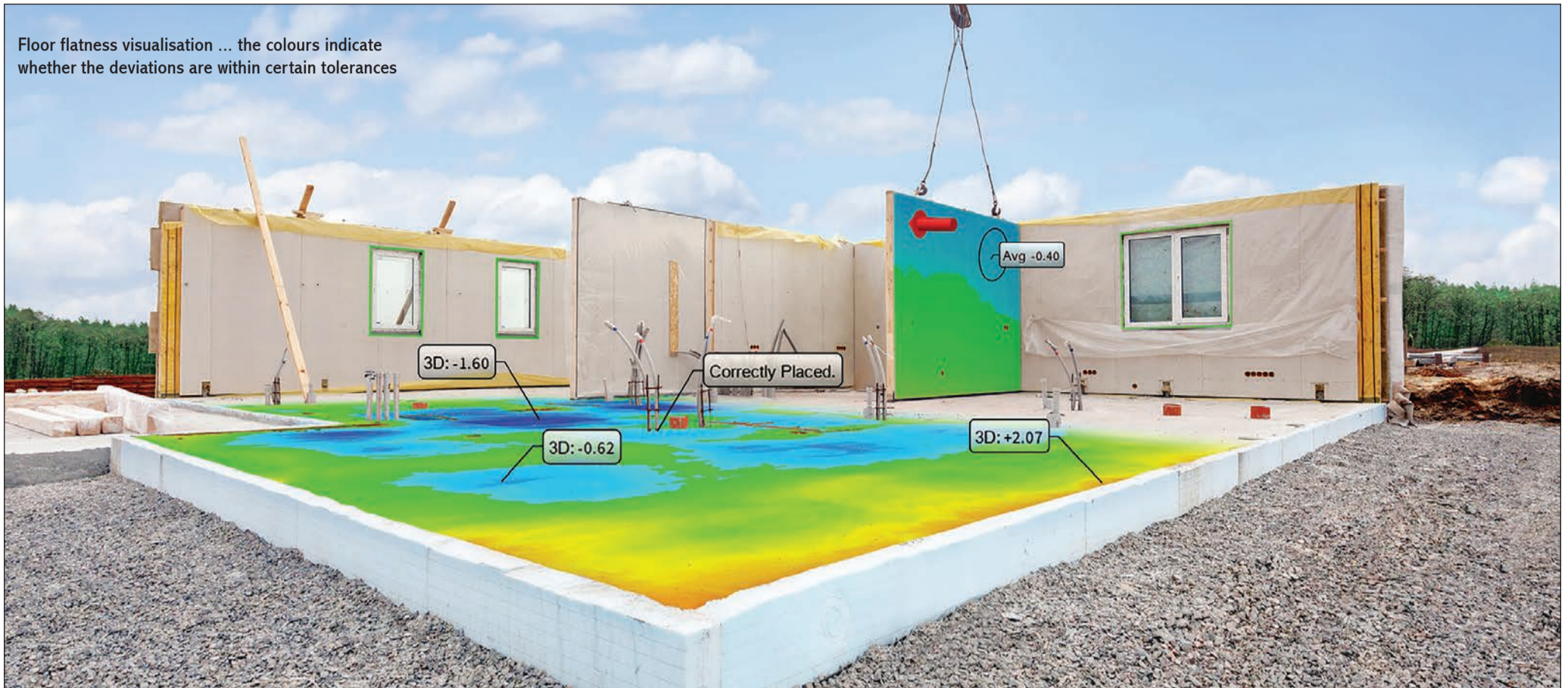


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... Faro software measures to mm

Floor flatness visualisation ... the colours indicate whether the deviations are within certain tolerances



Continued from Page 15 means that large areas can be recorded, also from various scanner locations. BuildIT Construction analyses the data accord-

ing to the selected standard. The results can be visualised in different ways, as coloured areas, as sections, by labels with the measurement and analysis values, as outlines or also by diagrams.

As the process only takes a few minutes, the measurement and analysis can be carried out again immediately after fixing the issue, and the scans can be evaluated and be compared.

floors. The assembly of high racks and machinery, which must stand horizontal over long distances, requires plain and level surfaces.

Unevenness would cause forklift trucks, which move loads at great heights, to swing and inclinations would make trolleys and goods roll more easily. The Faro workflow accompanying the construction not only provides documented reliability but also saves expensive repairs.

On the other hand, BuildIT helps to keep specified slopes, for example, to ensure the drainage of water, or to maintain and repair old floors. Here, too, the levelness analyses detects reliably the areas where the floors have deformed or moved.

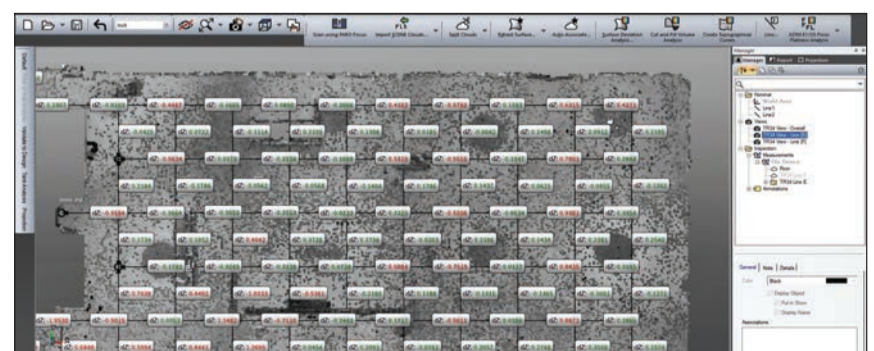
UNIVERSALLY APPLICABILITY

Flatness analysis is only a small part of the BuildIT Construction functionality. BuildIT is universally used for construction supervision. The software not only evaluates point clouds according to various criteria, it is also frequently used to compare CAD and BIM models with reality data or to compare point clouds with each other.

Fields of application are not only quality control during construction, but also the monitoring of buildings, industrial plants, tanks and infrastructure are classical fields of application, as well as the use during the modification of existing buildings and plants.

For these purposes BuildIT Construction has numerous special functions, such as the analysis of steel structures, piping systems and tanks, which makes using the software highly profitable in all AEC industries.

The results of analysis reports can be shared worldwide as colored 3D point clouds with all relevant stakeholders leveraging FARO's cloud service SCENE WebShare Cloud. For more information please visit <http://www.builditsoftware.com/>



Quick detection of areas beyond tolerances ... indicated by the value and highlighted in red

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Sabic aligns efforts with vision

SEVERAL landmark internal decisions in 2019 helped Saudi Basic Industries Corporation (Sabic) emerge as a pioneer in the development of the circular economy – where renewables, resource conservation, waste reduction and recycling contribute to business growth, a recently released report said.

The company continues to invest heavily in Saudi Vision 2030 and has aligned its engagement and collaboration efforts with the vision and with its own goal of creating ‘Chemistry that Matters’.

Sabic’s Sustainability Report 2019 covers performance over the past year and details how sustainability fits into the company’s broader global business strategy.

Titled ‘Toward a Circular Future’, the report builds on the reputation of the company as a global leader in chemicals that embeds sustainable practices not only into its own business, but also into its entire value chain.

“We are driven by concern for plastics in the environment, the search for new ways to reuse and re-purpose materials, and a desire for effective regulations, especially in packaging. These priorities have led to investments in circular product-solutions and our ability to accept chemically recycled feedstock,” says Dr Abdulaziz Saleh Aljarbou, Sabic Chairman.

Yousef Abdullah Al-Benyan, Vice Chairman and CEO, says: “Sabic witnessed excellent progress and we continued to recognise global concerns for creating a more sustainable society. Demand for circular solutions increased this year, as did opportunities for renewable energy and regional climate regulations. We have circular economy strategies that will lead to industry-leading projects in all our global regions.”

Sabic’s impressive and growing range of circular solutions include a chemical recycling mega-project that will turn mixed plastic waste back into the original polymer; a semi-commercial, pre-treatment facility to increase the supply of chemically recycled feedstocks; and the TRUCIRCLE portfolio of circular solutions, which are already helping Sabic’s customers in several key markets to reach their own sustainable goals.

On the circular economy, Sabic has embraced the ground-breaking TRUCIRCLE initiative. Its solutions encompass the company’s circular materials and technologies, including certified circular pol-



Sabic's Home of Innovation Center in Riyadh, Saudi Arabia

ymers from the chemical recycling of mixed plastic waste, certified bio-based renewable polymers, mechanical recycled products, and design for recyclability.

Sabic is determined to increase the amount of circular and certified products it processes in Europe to 200 kilotons by 2025, in line with an EU Commission pledge.

Building on this pledge, Sabic will set a target in 2020 for global circular and certified products by 2030.

In Saudi Arabia, Sabic is enabling the government to fulfill the waste-management enables objectives of Saudi Vision 2030, including commitments to reduce landfill waste and increase collection and recycling.

The Sustainability Report highlights how Sabic works with – and is sometimes a driving force behind – international organisations that are contributing to a sustainable world and helping to tackle some of the biggest challenges facing the industry and the planet.

With climate resilience being central to Sabic’s climate and efficiency goals, the company continuously improves energy efficiency, targeting to reduce the intensity of its energy and greenhouse-gas emissions by 25 per cent from 2010 to 2025.

The company also aims to reduce the carbon footprint of its prod-

ucts and supply chain, while advancing the deployment of renewable energy.

Realising that it is the future, Sabic is actively transitioning to renewable energy. Its plans to install 4 gigawatts (GW) of wind and solar energy capacity by 2025 and 12 GW by 2030.

Sabic strives to maximise resource efficiency and minimise environmental impact. Last year, its global headquarters in Riyadh achieved carbon neutrality by offsetting greenhouse-gas emissions. The company continues to make progress on its goals to reduce material-loss intensity by 50 per cent and water intensity by 25 per cent from 2010 to 2025.

It is committed to reducing emissions from flaring by 65 per cent, and also reduce hazardous and non-hazardous waste to below 2010 levels, as a percentage, all by 2025.

As part of its contribution to Saudi Vision 2030, Sabic uses local materials and services where reasonably possible, and reduce its reliance on imports, by supporting capable local manufacturers and stimulating employment for the local workforce. In addition, its local sourcing strategy utilises shorter transportation routes, enables a flexible logistics strategy, and lowers carbon emission from inbound logistics.

Sabic believes that cultivating human capital plays a major role in its success. It continues to develop best human resources practices in Saudi Arabia and prepare young Saudis for the emerging labour market by advancing their skills and potential.

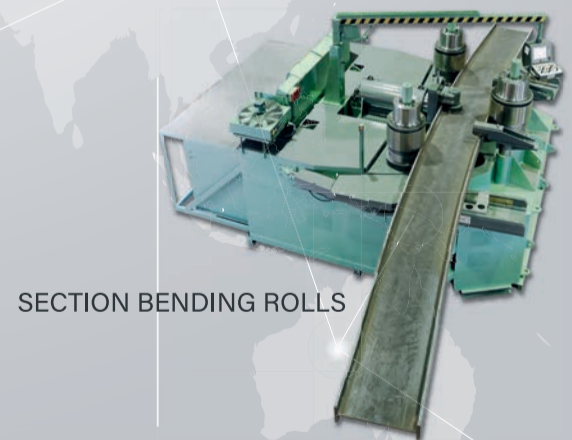
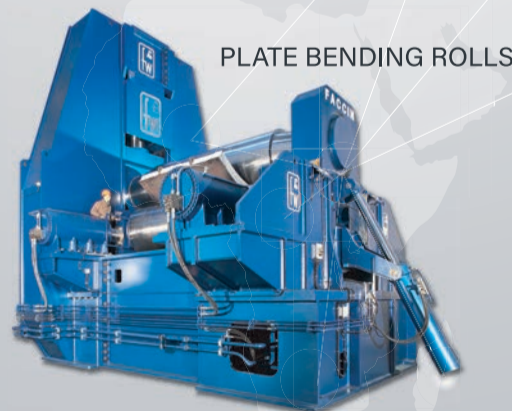
Furthermore, Sabic also seeks to help communities across the globe by investing in social and environmental initiatives that benefit people and the planet, while supporting sustainable business development at a global scale

The company’s corporate social responsibility (CSR) initiatives focus on four strategic priority areas: science and technology education, environmental protection, health and wellness, and water and sustainable agriculture, contributing to Saudi Vision 2030 and 10 of the UN’s Sustainable Development Goals.

In 2019, Sabic invested more than \$15.6 million into CSR initiatives that meet these criteria – 185 programmes in 103 cities and 22 countries. Some 2,531 Sabic volunteers contributed a combined 10,874 hours, benefiting more than 340,000 people worldwide.

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Committed to Vision 2030

Companies in Saudi Arabia have set out goals in line with the Kingdom's ambitious Vision 2030 that include manufacturing locally through IKTVA initiatives, streamlining logistics and supply chains, decreasing emissions, rolling out training programmes for Saudis, and increasing Saudisation in their workforce

رؤية
VISION
2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA



Alkhorayef Petroleum

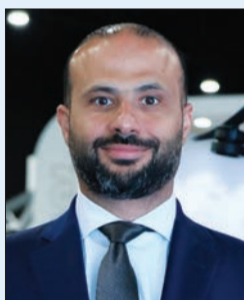
At Alkhorayef we are proud to be 'made in Saudi' and we are fully committed to the ambitious goals set out in Vision 2030.

For over 35 years, we have provided electrical submersible pumps (ESPs) to the oil and gas and water industries from our headquarters in Dammam. We have grown to become a diversified oil service company with Artificial Lift, Cased Hole Wireline and Production Facilities divisions and export to 11 countries across the Middle East, Latin America, Africa and Asia.

At Alkhorayef we are 'Always Advancing' and have been investing in sourcing and developing the finest Saudi talent at every level. We have implemented a career development program to nurture the next generation of leaders and we champion female nationals in a range of HR, financial, commercial and technical roles, most recently in the motor manufacturing, where a female team hand wind all Alkhorayef motors.

We are also constantly working, in step with the IKTVA program, to enhance the local supply chain and expand our in-country Research and Engineering (R&E) capabilities, doing all we can to develop local competencies and keep our profits in-Kingdom. We too have ambitious goals and embracing Vision 2030 is a key strategy in realising our aggressive international expansion plans.

— Rayyan Mofty, Vice-President Middle East



Baker Hughes

Baker Hughes has more than 80 years of presence and partnerships in Saudi Arabia, and we continue to build on our presence as an energy technology company adding value to our partners. We're contributing to the Saudi Vision 2030 through technology development, talent growth and localisation of our products and services to strengthen our footprint; as well as deliver focused solutions to address customer and industry challenges.

When it comes to the way we work, we are reducing the carbon intensity of our operations, applying proven low-carbon technologies to help our customers meet their environmental goals, and

innovate for the future of the energy industry.

We are also collaborating with our customers to utilise these technologies and explore new industries to tap into. Our non-metallic joint venture with Saudi Aramco is a great example of how we are transferring knowledge and utilising non-metallic materials to help reduce emissions, contribute to better efficiency and reliability. It also has the potential to apply this expertise into other industries, supporting the diversification of Saudi's economy.

Lastly, our focus on additive manufacturing and digitisation of our everyday operations will be a game changer for the industry and support better outcomes for the customers.

— Zaher Ibrahim, Vice-President, Saudi Arabia, North Gulf & East Mediterranean



Endress+Hauser- Saudi Arabia

Saudi Arabia's Vision 2030 is a solid road map for the Kingdom's future, challenging the traditional observes and striving to create a new norm.

It is proposed to be a transformational procedure that in the long term will have a great impact on the nation's economy, culture and society.

In my opinion, the principle driver of the vision is that Saudi Arabia has vast potential to develop its non-oil economy and focusing on downstream activities would bring in some of the expected results.

Keeping this in mind, Endress+Hauser took a big step forward back in 2018 and invested \$4 million in building a state-of-the-art calibration and training center in Jubail, drawing on our intrinsic strengths to support the strategic objectives of Saudi Vision 2030.

This premise can cater to the calibration and training requirements of not only Saudi Arabia but also extend the competence to the requirements of the entire region, and is the first and only vendor managed gravimetric calibration facility in the region.

The high quality and globally recognised trainings offered to fresh Saudi engineers and students facilitate in increasing local engineering technical competence which will further aid the Saudization drive.

Endress+Hauser continues to practice equal opportunities at workplace and diversification of workforce, encourage sustainability and safety, and is committed to the Saudi Vision 2030 in more ways than one.

— Mohamed Abdellah, Managing Director



Applus+ Middle East & Africa

Applus+ in Saudi Arabia is proud to be involved in the Vision 2030 plan through a number of projects and initiatives. We are committed to creating over 200 job opportunities for Saudi nationals over a five-year period, and have developed and implemented a comprehensive training programme for Saudi youth.

We are developing a capacity building programme for employees of the Ministry of Environment, Water and Agriculture, and training young Saudi civil engineers at the Ministry of Transport.

Applus+ is also actively working with the Ministry of Municipalities and Rural Affairs to develop quality assurance systems to improve the cleaning services in the cities. We train inspectors from the Waste Management and Cleaning Departments of the Kingdom's municipalities.

Additionally, Applus+ has helped more than 130 Saudi trainee engineers to qualify as Aramco-approved Technical Specialists and Quality Inspectors.

Applus+ is working on major infrastructure and transportation projects, including the Riyadh Metro Project. We are fully committed to and compliant with IKTVA stipulations and have successfully increased our IKTVA score from 27 per cent in 2018 to 42 per cent in 2019, according to 3rd party IKTVA audits.

— Brian Dawes, Executive Vice-President



Total Safety

Total Safety fully supports Vision 2030 and the related In-Kingdom Total Value Add (IKTVA) and Saudisation programmes. We are teaming up with schools and

universities to have more Saudi nationals working for us and have a very active hiring programme. Our business grows steadily, so we are always looking for high potential Saudi employees.

Employees get a full internal training programme to learn all aspects of our integrated safety solutions that we offer to our customers. Whether it is in business support, sales, administration or operations, we guide our employees to be successful in their job and provide sustainable learning to grow.

— Peter van der Sluijs,
General Manager MEA



S.A. TALKE

The Kingdom of Saudi Arabia is undergoing unprecedented transformation due to Vision 2030 led by His Royal Highness Prince Mohammed Bin Salman. The speed and depth of this change is truly amazing.

We can clearly feel the positive impact on the ground. Mega infrastructures are being built, downstream industries and manufacturing development have picked up speed, and digitalisation of government support services is now at its best.

Saudi Arabia is encouraging and supporting private investment as part of its diversification programme.

Certainly, logistics plays a major role in the economic success of countries. It is the delivery vehicles of goods and services internally and an enabler of international trade.

And Prince Mohammed has placed high emphasis on this critical industry.

We are witnessing several state-of-the-art logistics parks being developed, network connectivity is being brought up to international standards, and major road and rail are all taking shape now. This will play a major part in improving the logistics sector.

S.A. TALKE supports and participates in achieving Vision 2030. We are focusing on attracting and training Saudis in our field and increase their participation in every aspect of our business.

We have further diversified by creating employment opportunities for ladies—a successful venture which we would like to expand in the future.

On the investment aspect, we have committed to develop a 300,000 sq m logistics park in Jubail. This will include temperature control warehouse space, specialised DG storage and ambient storage space. This major investment cements our confidence in vision 2030 and our ongoing support of the local economy.

Saudi Arabia has opened its doors to the world and is still rapidly changing. I am confident that the future ahead is bright, and this transformation will turn Saudi into a global economic powerhouse in its own right.

— Makhoulf Benzahia, Managing Director



NOV Completion & Production Solutions

The Kingdom of Saudi Arabia is a key player in the oil and gas sector in the region and the world. The country provides a healthy investment atmosphere associated with its leveraged geographical positioning.

NOV has for decades dictated its investments and local manufacturing capabilities for the upstream industry. In the past few years, several incentive programs have emerged, including but not limited to Saudi Vision 2030, which provided a platform of incentivized growth in local manufacturing and a base of young local professionals.

Our manufacturing capabilities in Saudi Arabia have reached out to leverage most of the drilling and production echo system, whereas our investments in Saudi Arabia have grown over \$250 million representing a 150 per cent increase from 2015 to the present day. As such, these manufacturing capabilities are the Aramco-NOV JV for rig manufacturing, downhole drilling tools and bits, surface production and processing packages, choke valves and non-metallic spoolable fiberglass pipe.

The investments have leveraged the development of Saudi local suppliers and most importantly the development of the female and male pool of talent. Hence, development and training programs have been put in place and are applied and upgraded continuously.

We can proudly say today that NOV has doubled the number of Saudi local hiring in three years to reach above 50 per cent Saudization ratio.

Our further future short-, medium- and long-term outlook to Saudi Arabia is clearly headed towards more investments in local manufacturing capabilities and the target goal is to achieve over 70 per cent localization.

— Rami Bakir, Vice-President Operations Middle East & North Africa



Halliburton

Halliburton stands firm in its commitment to the Saudi 2030 Vision through ongoing efforts to increase workforce nationalisation, local content sourcing, and employee development. In the last year, we attained our first workforce nationalisation target of 70 per cent, commenced in-house manufacturing of downhole assemblies and developed 42 local vendors to supply parts and

completed products for our operations in the Kingdom and around the world.

Our in-country technology team also engineered innovative new solutions for the Saudi market enabling us to move away from some imported products.

Additionally, we are excited to open the new Halliburton Chemical Manufacturing Reaction Plant in Saudi Arabia in the coming months. Upon the facility's completion, we will be able to begin local manufacturing of specialty chemicals that will help our customers maximise production from the reservoir to refinery and more. It is our largest capital investment ever in chemicals manufacturing and is an excellent example of our commitment to the Saudi 2030 Vision.

— Scott Regimbald, Vice-President, Saudi Arabia



GSCCO

Gulf Stevedoring Contracting Company (GSCCO), a subsidiary of the GulfTainer Group of companies, has been operating in Saudi Arabia for 35 years.

During this time, the company has operated 20 port and logistics concessions across the Kingdom and moved over 35 million containers, leading the development and economic growth of the Kingdom.

With the announcement of His Majesty's 2030 Vision and under the National Development

Logistics Program, the company is further investing in port and logistic operations to handle increased volume of containers, vehicles, bulk and project cargo, supporting the oil and gas and manufacturing industries in the Eastern Province and Yanbu.

Through GulfTainer's Momentum Logistics and GSCCO, we are able to provide an end-to-end supply chain service solution offering trucking, customs clearance, port operations, yard storage, distribution, and document management.

The GulfTainer Group of companies is providing its assets and experience to deliver the 2030 Vision, making Saudi Arabia the primary logistics hub of the region, and enabling it to take its rightful place at the heart of the world's supply chain.

— Jason French, Managing Director



LogiPoint

LogiPoint is an award-winning developer and operator of Bonded and Re-Export Zones and Logistics Parks in the Kingdom. The company has a rich history of over 20 years of bringing innovation, efficiency and operational excellence to the Saudi Arabian logistics sector and continues to play an important role in attracting international investment into the Kingdom's supply chain and logistics market.

LogiPoint has evolved into a unique platform for local and international collaboration in the field of logistics and supply chain management and is thus playing an active role in transforming the Kingdom into an international multimodal logistics hub in line with Vision 2030.

LogiPoint works extensively with the industry stakeholders including regulatory bodies, logistics and 3PL companies, importers, exporters as well as traders to continuously anticipate and address the needs of the market.

With an eye on the objectives laid out in Vision 2030, LogiPoint is developing the logistics infrastructure of the future through its many Logistics Parks and Zones across the Kingdom, while also highlighting the highly lucrative business opportunities in the Kingdom to the international logistics market.

— Farooq Shaikh, CEO

ALAR ensures stable hydrogen supply

With hydrogen tipped as the fuel of the future, producers like Air Liquide Arabia are tapping into its potential to play a key role in a clean, secure and affordable energy for tomorrow

AIR Liquide Arabia (ALAR) is Saudi Arabia's leading hydrogen partner, with the infrastructure, capabilities and experience to deliver on its promises on innovative gas solutions and efficiencies and help Saudi Arabia to sustain its energy leadership.

Formed in 2007 as a joint venture between Air Liquide and TAQA (Air Liquide is majority shareholder with 65 per cent shares), ALAR was the first company to introduce hydrogen networks in the kingdom. Today it runs an unrivalled hydrogen pipeline infrastructure stretching a total length of 37 km and having a total hydrogen transport capacity of over 500,000 Normal cu m per hour each on both coasts. It boasts operations in Jubail, Yanbu and Qurayyah.

ALAR uses cutting edge technology to produce, store and help customers in Saudi Arabia use hydrogen in the most efficient way possible, resulting in feedstock savings of 20 per cent and the recovery of underutilised hydrogen from off gases that saves 20 per cent of carbon dioxide (CO₂) emissions.

"We are a partner to the Kingdom in achieving Vision 2030. Our hydrogen infrastructure and industrial gas solutions and technologies have delivered strong performance and value to all our stakeholders in the Kingdom over the last decade," ALAR Olivier Randet, Vice-President, Middle East and India Cluster - Air Liquide, tells Abdulaziz Khattak of *OGN*.

But what is it about hydrogen that makes it seem like a favourite element.

Well, for one, hydrogen plays an important role in the oil and gas industry, particularly during the refining process. Refineries use hydrogen to process crude oil into refined fuels such as gasoline and diesel, and for removing contaminants such as sulphur, which helps prevent acid rain.

Hydrogen is also used in the petrochemical industry for the conversion of various basic feedstocks into intermediate and final products. In the polysilicon industry, manufacturing facilities require large amounts of hydrogen to react with trichlorosilane gas to produce silicon.

But Hydrogen is also dubbed as the fuel of the future and can play a critical role in lowering carbon emissions globally. The Hydrogen Council recently suggested that hydrogen could meet 18 per cent of the world's energy demand by 2050, and contribute 20 per cent of the abatement required to limit global warming to 2 deg C while creating a \$2.5-trillion market that would create 30 million jobs.

Randet says hydrogen is critical to a clean, secure and affordable energy future and has huge potential to lower CO₂ emissions



Randet ... partner to Saudi Arabia's Vision 2030

across sectors in the Kingdom and the Middle East in general, including long-haul transport and chemicals.

Technologies can enable hydrogen to produce, store, move and use energy in different ways. Hydrogen can also store energy from renewables, which is a space that is gaining traction in the region. This is true for the southern hemisphere, where the exposure of the sun allows to produce greater energy from renewables and therefore potentially opening up export opportunities, Randet says.

In a shifting energy landscape and the transition to a circular carbon economy, Hydrogen's role is seen as crucial.

INFRASTRUCTURE IN YANBU

ALAR's hydrogen infrastructure in Yanbu consists of a global scale hydrogen production site of 340,000 Normal cu m per hour production capacity, which is connected to its 16-km hydrogen pipeline network.

As part of a long-term agreement, ALAR supplies hydrogen to the Yasref refinery in Yanbu. A joint venture between Saudi Ara-

mco and Sinopec, the refinery uses 400,000 bpd of Arabian heavy crude oil to produce premium transportation fuels. Made up of two global-scale hydrogen production units and one purification unit, ALAR's hydrogen production site is located within the YAS-REF refinery premises.

ALAR is also supplying hydrogen through its pipeline network to other leading refineries and large industries within the Yanbu basin.

JUBAIL PIPELINE NETWORK

ALAR's pipeline network in Jubail industrial basin spans over 21 km, and has a hydrogen transportation capacity of over 200,000 Normal cu m per hour, connecting sources of hydrogen to industries that need it in Jubail I and II.

Through this network, ALAR provides hydrogen not only to large industries, but also to SMEs in industries such as petrochemicals, polysilicone and glass thus supporting the development of the downstream sector in Jubail and the country.

In Jubail, ALAR is focused on hydrogen recovery, utilising what already exists — since hydrogen can be a byproduct of other industrial processes — to meet customer demand and contributing to the creation of a circular economy around hydrogen.

Speaking of hydrogen recovery, ALAR's cryogenic process, which involves cooling and condensing feedstock, allows to recover 97 per cent of hydrogen that would otherwise be wasted, resulting in significant cost benefits and efficiencies for clients.

COMMITMENT TO VISION 2030

ALAR's disciplined approach to investment, and its development of hydrogen production and recovery allow it to help optimise the Kingdom's natural resources, reduce its CO₂ footprint and contribute to a low carbon society, all contributing to Vision 2030.

As an early investor in the Kingdom, Randet says ALAR will keep developing its infrastructure to supply growing hydrogen needs and contribute to the development of Saudi Arabia's industrial sector.

Its pipeline networks are also significantly contributing to Saudi Arabia's downstream investments and localisation drive.

To help Saudi talent learn and grow, ALAR offers learning and development programmes in addition to partnering with renowned universities aim at developing national talent and helping them flourish in their careers.

"Our IKTVA score of 62 per cent and Saudisation rate of 60 per cent with an annual increase of 5 per cent is a testament to our efforts. In fact, we are the only company among our competitors to have an IKTVA score," says Randet.



ALAR's hydrogen production site in Yanbu



An ALAR SMR unit in Yanbu



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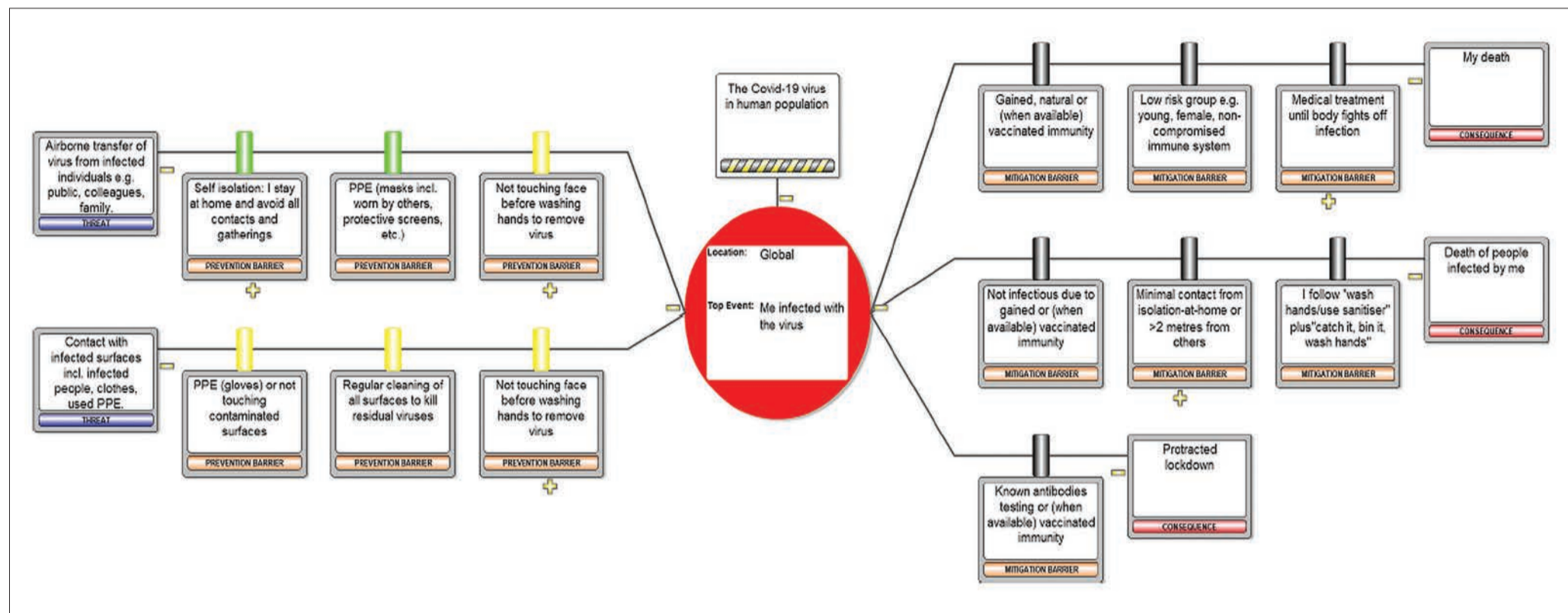
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Energy sector expertise can help fight global pandemic

The bow tie method addresses major accident events and key barriers and safeguards used to manage these. Applying the same approach across other industries could prove incredibly beneficial



A bow tie model developed for Covid-19 visualises the role of organisations in the pandemic

THE oil and gas industry has been managing infectious diseases for over 40 years and has incredible knowledge that can be applied to help the ongoing Covid-19 pandemic in other sectors, writes Abdulaziz Khattak for *OGN*.

In the current global situation, where the Covid-19 pandemic has swept countries, a risk management methodology more commonly applied on oil and gas platforms can help make sense of the global pandemic and the efforts to stop it.

A highly effective methodology used in the energy sector to manage risks is the 'bow tie' model.

This analytical model has been in use for over 30 years in both the upstream and the downstream process industries, as well as other major hazard industries, and is known to have helped save lives on oil platforms, at petroleum refineries and on offshore wind farms.

A bow tie model is a risk diagram that shows how various threats can lead to a loss of control of a hazard and allow it to develop into a number of undesired consequences. The model is a summary of the controls (barriers and safeguards) that organisations rely on to protect against threats, whatever the causal mechanisms involved. The aim is enhanced communication of how major hazards are controlled.

Mark Scanlon, Head of HSE Good Practice at the Energy Institute (EI), defines bow tie as a "visual aid that identifies threats (represented as the left-hand bow of the tie) that could potentially cause a hazard (the knot) and, further, the consequences (the right-hand bow) that could result".

"In between are barriers aimed at avoiding the hazard becoming a reality, or mitigating its consequences. However, the strength of these barriers can be reinforced or undermined by degradation factors," he explains.

BOW TIE FOR COVID-19

EI in collaboration with bow tie specialists from a number of organisations including the ABS Group, BP, HU-tech and Center for Chemical Process Safety (CCPS) has developed a specific model that visualises the role of organisations in the pandemic.

And although Covid-19 differs from conventional workplace hazards represented in bow ties, like the processing of hydrocarbons containing hydrogen sulfide or working at height, but applying the same approach is incredibly powerful, Scanlon says.

He explains: "The bow tie methodology illustrates how threats can act on hazards leading to a loss of control, which may result in catastrophic consequences. In the bow tie diagram, prevention barriers are located on the left side and mitigation barriers are

located on the right side. A well-drawn bow tie clearly shows all barriers that can prevent the top event, the loss of control, from occurring or mitigate the consequences."

There are only two threats (left-hand side) leading you to catching Covid-19: airborne transfer of the virus, or direct contact with infected surfaces or people. To stop this from happening, there are prevention barriers.

In case of airborne transfer of the virus, the prevention barriers are:

- Self-isolation.
- Use of masks/protective screens (PPE).
- Washing hands before touching face.

And in the case of direct contact with infected surfaces/persons, the prevention barriers include:

- Wearing gloves (PPE) or avoid touching contaminated surfaces.
- Regular cleaning of surfaces.
- Washing hands before touching face.

The consequences (right-hand side of the bow) are only three and all are serious. These could lead to death of the infected person; death of someone he/she infects; or a protracted lockdown.

Once someone is infected, there are mitigation barriers in place to try and prevent either of the three consequences.

So, to prevent the infected person's death, the mitigation barriers include:

- Gained, natural or vaccinated immunity.
- Low risk group (young, female, non-compromised immune system).
- Medical treatment until body fights off infection.

To prevent the second consequence, that is, infected person infecting others, the mitigation barriers could be:

- Not infectious due to gained or vaccinated immunity.
- Minimal contact (isolation at home or 2 m from others).
- Wash hands/use sanitizer.

Meanwhile, in a protracted lockdown consequence, the mitigation barrier is known antibodies testing or vaccinated immunity.

HOW BARRIERS FAIL

A perfect physical separation will stop all infections. But things degrade this perfection. So there is governmental guidance (or controls) to try and minimise the holes developing in the barriers. If these controls work perfectly then the barrier will continue to work.

So the self-isolation barrier, which physically separates the uninfected person from infected people, can fail due to two main

degradation factors: the need to travel to buy food and to work; and unwilling to stay at home.

To control the first, you should avoid crowded public transport, work remotely, and use deliverables, neighbours for groceries; while controls for the second include peer/social pressure and intervention; and regulation, guidance and enforcement.

PPE (masks and screens) as an effective barrier can degrade due to unavailability, people not knowing how to use them, etc. People aren't all perfect at not touching their own faces, so the controls are: remembering and following public messages and being reminded by others; wearing masks to prevent you from touching your own face; following advice to wash hands often and for 20 seconds each time.

For mitigation barriers, the medical treatment barrier is affected by many possible degradation factors that are unrelated to Covid-19 (so not relevant for this bowtie) but specifically by medical staff not being able to return to work after being infected with Covid-19. This needs the control of the tests for antibodies:

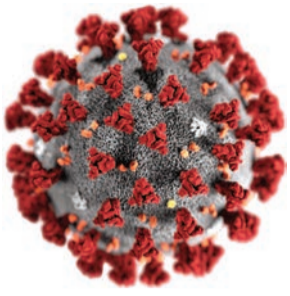
And if we particularly focus on a key barrier of us keeping 2 m away from others to avoid infecting them, the degradation factors include:

- Infected people not following government advice: The controls here could include police intervention and fines
- The need to travel to buy food and to work: Controls include minimise trips and avoid crowded public transport; work remotely; and use deliverables, neighbors for groceries.
- A person is infected and doesn't realise it, so he doesn't minimise contacts: The controls include testing, testing, testing; contact tracing and quarantining of infected persons; awareness of symptoms, such as high temperature and dry cough.

Notes:

- This bow tie is based primarily upon the directives and guidance from the UK Government and the Centers for Disease Control and Prevention (CDC) of the US. In all cases you should follow the directives and guidance from your own government and health institutions around the world. The knowledge and understanding of Covid-19 is increasing and the most recent directives and guidance should always be followed. Update to this bowtie can be found on <https://www.energyinst.org/>
- CCPS and Energy Institute have also developed a concept book, entitled 'Bow Ties in Risk Management: A Concept Book for Process Safety', to better define the bow tie analysis method and to show best practice ideas.

The Norwegian oil and gas firm has shown impressive handling of infectious disease transmission cases and has shared deep company insights in disease management with the industry



Equinor case study: What the industry can learn

THE oil and gas industry is extremely wary of infectious disease transmission. The stakes are always high in the industry, which has for decades been managing outbreaks by having in place strong control measures whether onshore or offshore, writes Abdulaziz Khattak for *OGN*.

It was no surprise then that the reaction to the Covid-19 situation was extremely prompt and the industry immediately began organising itself even before a health emergency was declared.

All companies in the sector promptly activated crisis management and operators started sharing best practices amongst themselves.

The IOGP-IEPCA Health Committee convened over the issue for the first time in January and started sharing experiences throughout the sector. This gave the sector a good start to respond to the crisis.

Past events, such as the Ebola outbreak in 2014-15, had taught the sector how a health event if not promptly managed could become a crisis of a much bigger scale. The sector also learned that a key component of business continuity response was collaboration and partnership.

A case study everyone in the industry can learn a lot from is Norwegian oil and gas company Equinor's response to a Sapovirus outbreak in 2018 on one of its installations.

In the Society of Petroleum Engineers' (SPE) first Live Panel Session on 'HSE and Covid-19', Dr Fredrik Jervell, Leading Adviser Medical Services, Equinor, recounted the outbreak and laid out some important principles the company employed to control the situation besides having managed to keep all installations operational. Also cited was a solitary case of Covid-19 offshore.

Jervell, who is a specialist in occupational medicine, has been leading the Covid-19 crisis management for Equinor. He is also on the joint health committee for the International Association of Oil & Gas Producers (IOGP).

Equinor has a 40-year experience in health and safety, and managing infectious diseases offshore is nothing new for it.

Jervell said Covid-19 was novel, but not unknown to doctors, adding that the principles for its management were the same (as for other infectious diseases). These include:

- Prevent the infection from coming offshore.
- Contain it when it does.
- Safely medevac the afflicted staff.

Equinor has developed its own bowtie model, works hard on social distancing, does a lot of testing, and frequently quarantines and sanitises when there is a case.

SAPOVIRUS OUTBREAK 2018

The incident happened on one of Equinor's larger offshore installation during turnaround where 462 people were housed. The index event was a person vomiting in a common toilet on May 12 and then failing to self-quarantine. Four days later, on May 16, 15 people were found vomiting and having diarrhea in the cabins.

It was quickly identified as an outbreak and containment measures were introduced. Everything was shut down, the cleaning frequency increased, and testing for the virus was started.

Sapovirus is a relative of Norovirus and causes gastroenteritis mainly diarrhea. It's important to know that the normal test procedure in Norway is only for Norovirus. So the diagnosis in this case was missed.



The Martin Linge installation

The agent wasn't identified (as a Sapovirus) until May 20 when there was a new resurgence of the outbreak and up to 17 cases were recorded in a single day.

Jervell said that knowledge was very important since isolation for a Sapovirus patients is 48 hours instead of 24 hours as for a Norovirus. Additionally, the incubation and quarantine period for a Sapovirus is longer than Norovirus as well.

"That knowledge was used to strengthen the quarantine and containment measures, and we managed to break the outbreak over the following week," he added.

By June 8, the outbreak was over, and the containment measures were ended.

In retrospect, Jervell said the main factor for the outbreak was underreporting of symptoms. "The incident happened during turnaround when there are many contractors and subcontractors (offshore), who fear losing money if they don't show up for work. So they simply didn't report the symptoms and subsequently failed to self-isolate. That consequence of the incident was that it led to a delay of turnaround by three days and which made a considerable impact for Equinor," he explained.

COVID-19 MANAGEMENT

So far Equinor has reported one positive case (at the time of going to press) after testing 19 suspected cases on the Norwegian Continental Shelf.

According to details, the infected Equinor employee on the Martin Linge installation had returned from Austria and travelled offshore on March 4. After developing symptoms, he reported to a medic on March 9. This was followed by his isolation in his cabin, and contact tracing was started. Some 35 close contacts were quarantined, including most of the management team on the installation.

At the time, the platform was undergoing construction and the total number of persons on board was 776, including 2 floatels. This posed a big challenge.

The individual was tested and his sample flown to an onshore hospital. It took two days to get the result, which was confirmed positive

for SARS-CoV2. The patient and one more contact were medevaced onshore.

The incident management team has already been mobilised and it was decided to demobilise non-essential staff, which numbered 650, by helicopter. The floatels were returned onshore as well.

Further testing of six close contacts with symptoms were done, but all turned out negative.

Remobilising of crew was initiated two weeks later after the entire installation was sanitised.

Jervell said measures taken during Covid-19 are similar to those taken during the 2018 Sapovirus outbreak (or any infectious disease outbreak for that matter). These include isolation, quarantining close contacts, maintaining safe operations, demobilizing non-essentials, and regaining control to remobilise.

An important basic rule is strict observance of distancing. As such gyms and common rooms are closed, meal times are staggered (no buffets served, workers work, eat and straightaway go to cabins, all meetings are by video/distance, and there is regular disinfection (several times a day).

Manning is also reduced to operational levels and a lot of non-critical maintenance is delayed. Further precautions include reducing number of passengers per flight to 12 from the usual 18 so as to maintain distancing and reduce possibilities of transmission.

People are very well aware that if they show symptoms, they need to self-isolate and call the medic and not show up for work.

As per Equinor's management, a Covid-19 case is put into three categories:

- High probability: The case has a contact history and shows typical symptoms. He is isolated and tested, and all close contacts are quarantined.
- Medium probability: The case has no contact history and shows less typical symptoms. He is isolated and tested. Close contacts are asked to self-monitor but allowed to work.
- Low probability: The case has no contact history and shows atypical symptoms. The case is isolated until well (+1 day). Close contacts are not tested but are traced incase the situation develops.

Equinor has also created its own bow tie model. As figure 1 shows, the likelihood-reducing measures are on the left-hand side, consequences-reducing measures on the right, and the index event is in the centre.

The likelihood-reducing measures include first involving the local public medical infrastructure to reduce the likelihood or prevalence of the disease in the population; sick leave policy so that sick people don't show up for work; travel restrictions to reduce likelihood of employees getting infected; employee awareness; and a travel/contact quarantine policy. Access control is the final barrier but it's hard to screen for infection.

The consequence-reducing measures are employed to prevent further cases. Here social distancing and sanitation measures are undertaken; and close contacts are identified and quarantined. To reduce disturbance of operations, employee confidence needs to be increased. People need to be and feel safe so as to focus on their safety critical work rather than the disease.

Jervell said these measures are active on all Equinor installations and the results are that they haven't had large disruptions of operations yet.

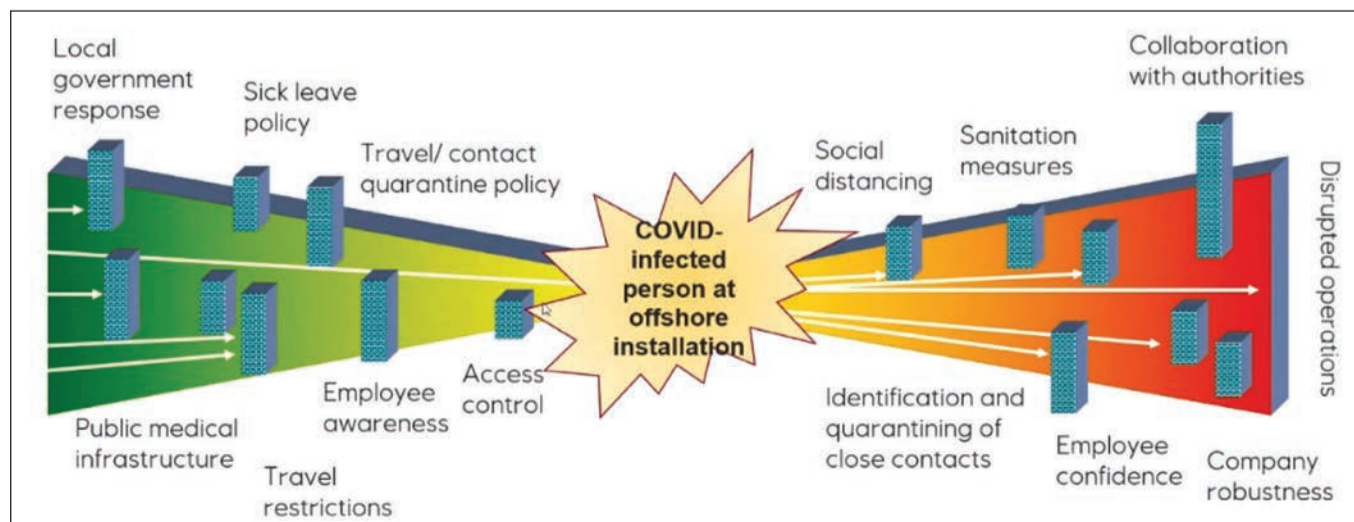


Figure 1 ... Equinor's bow tie model



Distancing is key to disease management at Equinor

US must lead response to perils of Covid-19, oil crisis

The US, China, Russia, EU, Japan, Saudi Arabia and global institutions like WB and IMF have a big role to play to keep the global pandemic and oil glut from producing long-term damage, writes Roudi Baroudi, CEO of Energy and Environment Holding

IT took a global pandemic that has grounded airlines, idled factories, and kept billions of people indoors, but prices for some oil futures contracts have gone into negative territory for the first time ever.

Ever think about that? Not since Colonel Drake struck oil – with commercially viable methods – in Pennsylvania in 1859, has a producer had to pay customers to take crude off their hands.

Together, oil and gas still supply approximately 60 per cent of the world's energy, and that is not to mention its myriad other uses in modern industry. So what to do when a demand slump of unprecedented size and speed has brought so low the world's most ubiquitous commodity, one still required by so many people?

First, it is crucial to recall how we got here, specifically the fact that the Covid-19 crisis was not the only factor. Keep in mind that for weeks, the gathering collapse of demand coincided with a massive flow of oversupply as Russia and Saudi Arabia refused to agree on production cuts, choosing instead to battle for market share going forward.

Eventually they and other producers reached a new entente, but this was too little, too late: the effect of the virus had so destabilised the markets that even zero was no longer a floor in the minds of spooked investors.

The basics are as follows. Until Covid-19 shut down whole sectors in the global economy, the world had been consuming approximately 100 million barrels of oil per day (mbpd). By mid-April, that figure had dropped to something in the order of 80 mbpd. The imbalance quickly filled up tank farms, and some analysts believe that as much as 160 million barrels of oil are currently being stored in tankers at sea but with nowhere to go because there are far fewer customers.

Airlines have slashed their schedules by 90 per cent or more. Refiners can't sell their output and have stored up all the crude they can. Inevitably, oil-producing companies have had to shut down their wells, and dozens of refineries have had to suspend operations as well since they could no longer dispose of oil and related products.

There is no question that the heaviest damage has been sustained in the US. There, the shale oil business had been so successful that the country had become the world's largest crude producer, managing not only to satisfy 90 per cent of its own demand from domestic sources, but also to compete with Russia and Saudi Arabia, among others, for customers overseas.

The industry was always vulnerable, however, because of higher production costs, so when prices started to slide, its producers – most of them relatively small companies with little capacity to ride out rough patches – were the first to fail. And they will continue to do so, in their hundreds, for the next several months.

Consider the impact of all this. Oil is unlike any other commodity in that a safe, affordable, and continuous supply of it is perhaps the single-most far-reaching factor of modern life for families businesses, organisations, and almost 200 countries around the globe.

Of course, renewables and other alternative sources have made great strides in recent years, and one or more of these technologies will be the future, but for now, and hydrocarbons in general – and oil in particular – are still the prime determinants of success or failure.

At the same time, the fact that the oil crisis is having such a concentrated effect in the US is a double-whammy because that country – a great power in a class by itself – is such a reliable bellwether for global economic health.

Even as China's meteoric rise over the past couple of decades has made it the world's second largest economy, with nominal GDP about \$14 trillion for 2019, the US economy remains far away the world's heftiest at about \$21 trillion. For this reason, when Americans stop buying, everyone, everywhere, loses sales – of everything.

And now, in just a few short weeks, more than 26 million of them have filed for unemployment



Baroudi ... collective action

benefits. Jobs are being shed in record numbers elsewhere, too, including Europe, Asia, meaning less capacity for anyone else to compensate for the evaporation of US demand – for everything.

As though all this were not enough, the World Health Organisation (WHO) has now warned that with parts of East Africa and South Asia already stalked by crop failures due to locust infestation and severe drought, respectively, the Covid-19 crisis could exacerbate food shortages and lead to famines of 'biblical proportions'. Billions of people around the world could soon find themselves facing malnutrition, with many millions threatened by actual starvation.

The worst thing about these overlapping crises is that each is virtually unprecedented in its own right, never mind its juxtaposition with other so-called 'black swans'. This makes them less susceptible to remedies than more commonplace problems and, therefore, almost certain to require more than simply waiting for the markets to correct themselves. By the time that happens we could be in the middle of an historic human catastrophe.

So how do we keep the combination of global epidemic and global oil glut, which has already inflicted a period of unprecedented stress, from producing long-term damage that yields to even more human and economic losses? How do we get the world's most important economic engines – especially the US, China, and Europe – to get global commerce moving again? In a word, unity – of the sort that brings all humankind together for collective action.



Covid-19 has forced several companies to shut down their wells, and refineries to suspend operations

Even if we do everything right, it will take months at least, and possibly a year or more, to stabilise the situation. Even assuming that a vaccine is developed that stanches the toll in human lives, the damage done to some of the world's most important economies will not be repaired overnight. Until stability and confidence are restored, the whole world will be a fragile place in which rumours and/or tensions can wreak socioeconomic havoc on millions or even billions of people.

In short, recovery depends on sincere dialogue, full cooperation, and genuine transparency. We are all in this together now, so the best way out is to collaborate on an exit strategy that saves time, money, and – most important of all – human lives.

The biggest responsibility falls on the biggest players, namely the US, China, and Russia, along with the EU, Japan, and multi-lateral institutions like the World Bank and the International Monetary Fund.

Given its unusually large role in the oil business, Saudi Arabia also has a role to play in any attempt to restore economic stability. Going forward, each of these countries and entities will need to make – and keep – commitments about what it will and will not do. Only then can the necessary confidence and stability be rebuilt around the world.

Exceptional challenges call for exceptional remedies, and this definitely qualifies. Already we have seen a virtual meeting at

Whatever one's worldview, few will question the need for Washington to play a global leadership role, as it has on multiple occasions over the past several decades. History shows that when it does so early in the game (for example, the 2008-2009 economic meltdown), the damage can be limited

which several global leaders pledge to work together on a vaccine, but the US was notable by its absence.

For the broader purpose of steering a way out of the global economic morass, it is essential that Washington be present and accounted for.

My own suggestion is an emergency (again, probably virtual) meeting of the G20 at the earliest available date, which probably means the first part of May. Not a moment should be wasted in preparing a realistic agenda that measures up to the enormity of the tasks at hand.

Never before has the entire world faced common challenges of such deadly and pernicious qualities, but nor have we ever had so much capacity to work together. Our choice, then, is clear: make use of the later or be undone by the former. To quote the quintessential American, Benjamin Franklin, "we must, indeed, all hang together, or most assuredly we shall all hang separately".

Whatever one's worldview, few will question the need for Washington to play a global leadership role, as it has on multiple occasions over the past several decades. History shows that when it does so early in the game (for example, the 2008-2009 economic meltdown), the damage can be limited. It also demonstrates that when US involvement is delayed (see World War II), the scale of losses – human, financial, even civilizational – can be unimaginable.

Roudi Baroudi is CEO of Energy and Environment Holding, an independent consultancy based in Doha.

CRUDE OIL PRODUCTION, SELECTED GULF PRODUCERS

(1,000 bpd)	2018	2019	3Q19	4Q19	1Q20	Jan 20	Feb 20	Mar 20	Mar/Feb
Iran, I.R.	3,553	2,356	2,189	2,113	2,056	2,082	2,070	2,018	-52
Iraq	4,550	4,680	4,752	4,633	4,565	4,508	4,604	4,585	-20
Kuwait	2,745	2,687	2,655	2,688	2,727	2,668	2,670	2,840	170
Libya	951	1,097	1,103	1,163	349	793	147	93	-54
Nigeria	1,718	1,786	1,842	1,777	1,800	1,760	1,788	1,853	65
Saudi Arabia	10,311	9,770	9,452	9,846	9,826	9,739	9,671	10,058	388
UAE	2,986	3,094	3,096	3,135	3,189	3,042	3,065	3,451	386
Total OPEC	31,344	29,338	28,862	29,096	28,264	28,360	27,790	28,612	821

Projects delay to hit future oil supply

LONDON: Global oil supplies may be 6 per cent less than expected by 2030 because of delays to investments by energy companies in response to falling crude prices due to the coronavirus crisis, data from energy analysts at Rystad showed.

Oil and gas companies across the world have slashed investment budgets, exiting projects or delaying bringing them onstream to counter a fall in crude prices to record lows due to a supply glut as the coronavirus outbreak destroyed demand.

Delayed final investment decisions (FID) for projects which take years to come on stream are already expected to shrink global supply of oil and gas by 5.6 per cent by 2025, with the majority of the revisions coming from shale oil, mostly found in the United States, Rystad said.

Continental Resources, the largest oil producer in North Dakota has halted most of its production in the US state and notified some customers it would not supply



crude after prices dived into negative territory this week, people familiar with the matter said.

All this leaves the global oil and gas supply on track to drop off by 6.3 per cent by 2030 compared with what was expected before the price crash, the Rystad data showed.

It estimates that \$195 billion worth of non-shale projects are being delayed, most of which are gas and gas condensate field developments. Geographically the biggest slump is in the Middle East in that group.

Excluding the North American shale sector, energy analysts at Wood Mackenzie (Woodmac) reckon only about 10-15 large upstream projects have a "reasonable chance" of receiving a final investment green light this year, a level last seen during the post-2014 oil price crash.

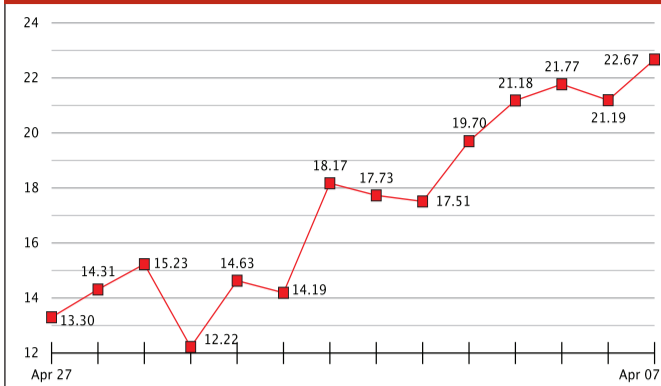
That compares with around 50 projects tapping reserves of over 50 million barrels of oil equivalent each which had been pencilled in for a final investment decision this year before oil prices plummeted, according to Woodmac.

Liquefied natural gas (LNG) projects are also suffering.

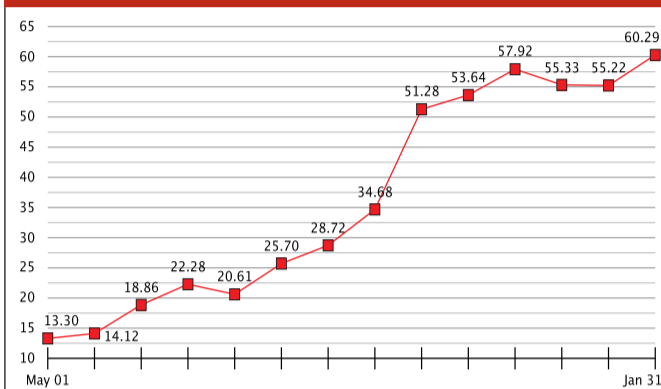
"2020 was also set to be the record high year for LNG developments. The price crash and dip in global LNG demand delays FID of 7 LNG plants globally," Rystad analysts said in their report.

Royal Dutch Shell even went so far as to completely exit its major Lake Charles LNG in the United States.

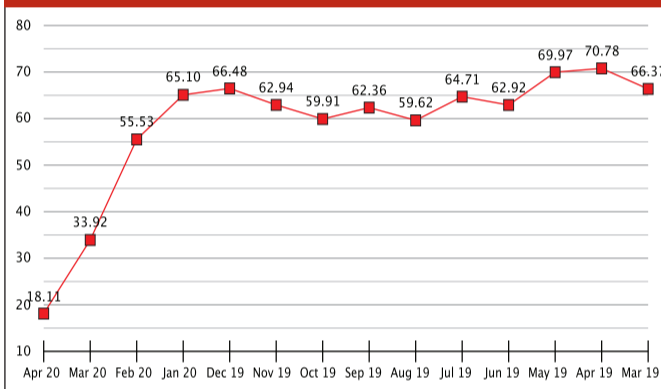
DAILY OPEC BASKET PRICE



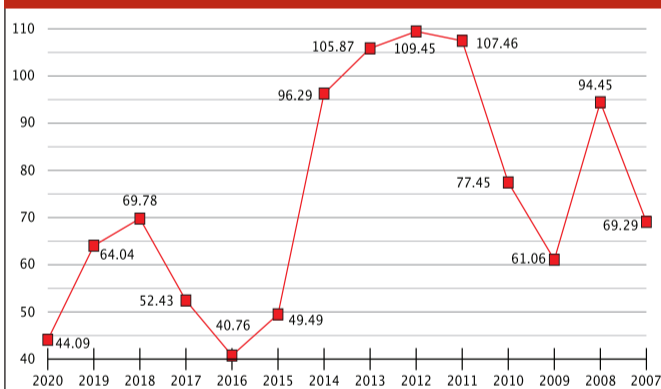
WEEKLY OPEC BASKET PRICE *



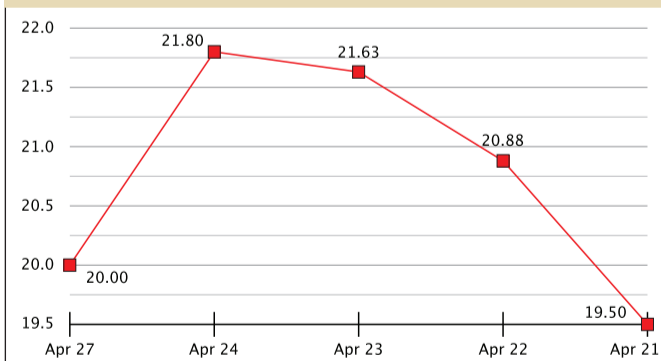
MONTHLY OPEC BASKET PRICE



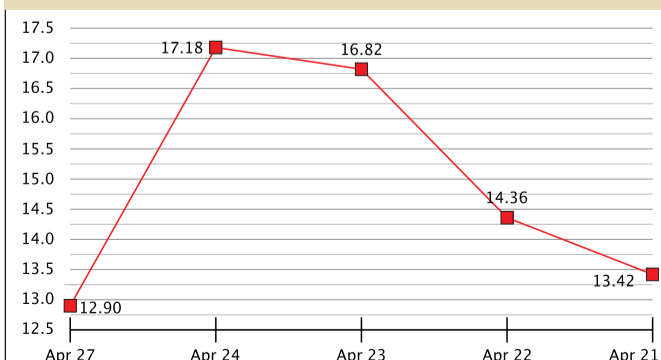
YEARLY OPEC BASKET PRICE *



IPE BRENT PRICES *



NYMEX PRICES *

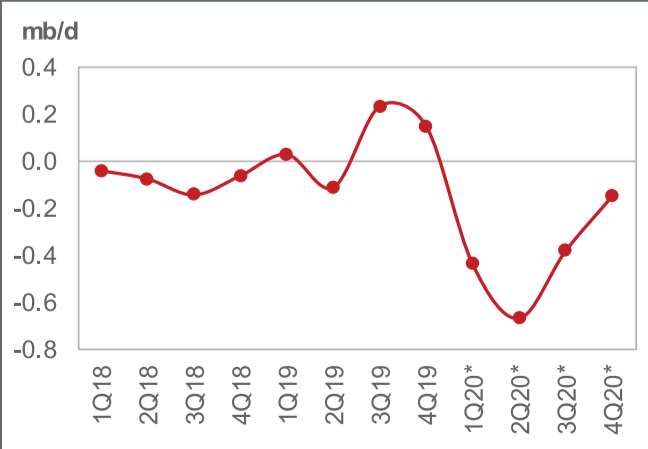


WORLD OIL DEMAND FORECAST, MBPD *

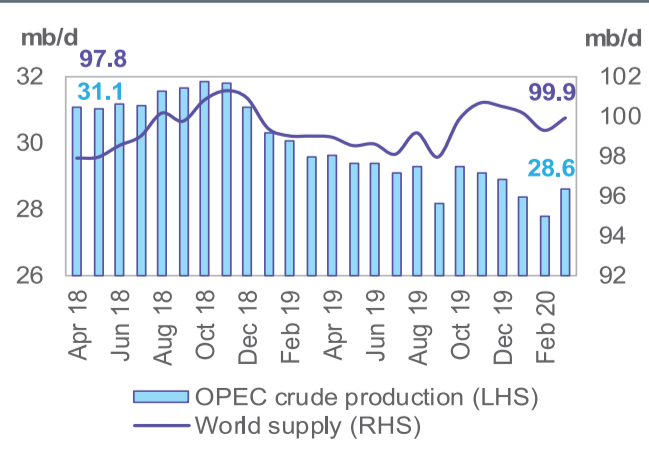
	2019	1Q20	2Q20	3Q20	4Q20	2020	Growth	Percent
Americas	25.62	24.55	20.35	24.78	25.26	23.74	-1.87	-7.30
Europe	14.34	13.10	11.37	13.55	13.78	12.96	-1.38	-9.63
Asia Pacific	7.96	7.88	6.65	6.84	7.50	7.22	-0.74	-9.31
Total OECD	47.91	45.53	38.37	45.17	46.55	43.92	-3.99	-8.33
Other Asia	13.86	13.45	12.70	12.70	13.76	13.15	-0.71	-5.13
of which India	4.84	4.74	4.00	4.04	4.93	4.43	-0.41	-8.52
Latin America	6.58	6.25	6.30	6.44	6.22	6.30	-0.28	-4.26
Middle East	8.20	7.81	7.21	8.14	7.72	7.72	-0.48	-5.83
Africa	4.43	4.41	4.35	4.15	4.30	4.30	-0.13	-2.97
Total DCs	33.08	31.92	30.56	31.42	32.00	31.48	-1.60	-4.84
FSU	4.84	4.50	4.38	4.55	4.71	4.53	-0.31	-6.37
Other Europe	0.76	0.71	0.64	0.57	0.66	0.65	-0.12	-15.37
China	13.07	10.27	12.75	12.57	13.38	12.25	-0.83	-6.33
Total "Other regions"	18.68	15.47	17.77	17.69	18.75	17.43	-1.25	-6.71
Total world	99.67	92.92	86.70	94.28	97.30	92.82	-6.85	-6.87

* Change 2020/19. Totals may not add up due to independent rounding.

YEARLY OIL DEMAND GROWTH IN THE MIDDLE EAST *



OPEC AND WORLD OIL SUPPLY *



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PEOPLE

Saudi Aramco welcomes Weinberger to its Board of Directors

ARAMCO has appointed Mark Weinberger as an independent member to its Board of Directors, to replace Andrew Gould.

On behalf of the Board, Yasir Al-Rumayyan, Chairman of Aramco's Board of Directors, welcomed Weinberger and expressed his appreciation to Gould for his dedication and invaluable contributions to the Board.

Weinberger was the global Chairman and CEO of EY (previously known as Ernst & Young) from 2013 to 2019. He was active in the World Economic Forum, as a member of its International Business Council and as a Global Steward for Economic Progress. He has also held several high level posts in the US Government, including as Assistant Secretary of the US Department of Treasury (Tax Policy) under President George W Bush and Member of the Social Security Advisory Board, under President Clinton. He served on presidential advisory councils to President Trump and President Obama.

Weinberger has a BA degree from Emory University (Economics) in 1983, an MBA and JD from Case Western Reserve University in 1987 and an LLM in Taxation from Georgetown University Law Center in 1991.



Weinberger

Glørstad is SVP Exploration



Glørstad

AKER BP has appointed Evy Glørstad as Senior Vice-President (SVP) of Exploration and Reservoir as from October 2020. She will replace Ole-Johan

Molvig.

Evy Glørstad holds a PhD in Petroleum geology/sedimentology. She has a broad experience as a geologist from BP in Norway and the US.

She has held several managerial positions in Aker BP since joining the company and has led the company's exploration activities since July 2018.

New Occidental CFO

OCCIDENTAL Petroleum has named company insider Robert Peterson as its new chief financial officer.

The appointment, effective immediately, comes when the shale producer is struggling with a massive \$40 billion debt load from its purchase of rival Anadarko Petroleum, an ill-timed bet on rising oil prices. Peterson, 49, has served in various positions at the company and was most recently senior vice president in Occidental's Permian enhanced oil recovery business.



Peterson

Changes at Seadrill



Vartdal ... leaving

SEADRILL Limited has announced Bjarte Bøe will join the board, replacing Birgitte Ringstad Vartdal, who will step down following her recent appointment as Executive

Vice-President of European Wind and Solar at Statkraft.

Bøe brings extensive experience serving on boards and audit committees of public companies, and has over 30 years of experience in the finance industry. He currently serves as a Director of the Hermitage Offshore, and holds an MBA.

Board appointments



Brinker

THE Düsseldorf District Court has appointed new members to the Uniper SE Supervisory Board.

They are Prof Dr Werner

Brinker, independent energy consultant; Dr Bernhard Günther, CFO of innogy SE; Dr Klaus-Dieter Maubach, Managing Director of Fortum's Board of Directors; Sirpa-Helena Sormunen, General Counsel of Fortum; and Tiina Tuomela, Executive Vice-President, Generation Division of Fortum.

Bollom is VP of offshore

QUALITY Companies, the global offshore and on-shore construction, fabrication and electrical and instrumentation company, has appointed Derek Bollom as Vice-



Bollom ... experienced

President of offshore and offsite operations for Quality Construction and Production.

Based in Youngsville, Los Angeles, Bollom will be responsible for establishing and implementing offshore and off-site operational policies, objectives and procedures for Quality Construction and Production.

Villa takes on global role



Villa ... support role

SERCEL-GRC, an oil and gas service company that designs, manufactures and markets downhole data acquisition instruments and surface equipment, has named Alejandro Villa as global customer support engineer.

Villa will be based in Bogotá, Colombia, and will be responsible for managing and assuring satisfaction for Sercel-GRC's global client base. He brings 18 years of experience in supporting and training oil and gas customers with artificial lift and reservoir downhole monitoring solutions.

CALENDAR OF EVENTS

SEPTEMBER 2020

1-3 **World Heavy Oil Congress & Exhibition**
Venue: Oman Convention & Exhibition Centre, Muscat, Oman

Contact: Raed El Forkh
Phone: +971 50837 4721
Email: raedelforkh@dmgevnts.com
Website: <https://www.worldheavyoilcongress.com/>

14-16 **Oman Petroleum & Energy Show (OPES)**
Venue: Oman Convention & Exhibition Centre, Muscat, Oman

Contact: Satyam Chopra
Phone: +968 24660124; +968 99344198
Email: satyam.chopra@omanexpo.com
Website: <https://www.omanpetroleumandenergyshow.com>

14-17 **GEO - 14th Middle East Geosciences Conference and Exhibition**

Venue: Bahrain International Exhibition & Convention Centre, Bahrain

Contact: Fawzi Al Shehabi
Phone: +973 17 550033
Email: fawzi.alshehabi@ubm.com
Website: <https://geo-expo.com/>

18-19 **11th GPCA PlastiCon**

Venue: Dubai, UAE
Contact: Salman Khan; Jerry Rodrigues
Phone: +971 4 451 0666 ext. 155/103
Email: sales@gpcaplastics.com
Website: www.gpcaplastics.com

20-21 **Saudi Maritime Congress**

Venue: Dhahran Expo, Dammam, Saudi Arabia
Contact: Antanina Severdiajeva
Phone: +971 52 927 5767
Email: antanina.severdiajeva@informa.com
Website: <https://www.seatrademaritimeevents.com/smc/en/home.html>

OCTOBER 2020

5-7 **Gulf Constructon Expo, Gulf Property Show, Interiors**

Venue: Bahrain International Exhibition Centre
Phone: +973 17299123
Email: info@hilalce.com
Website: <http://www.gulfconstructionexpo.com>, <http://gulfpropertyshow.net/>, <http://www.interiorexpo.net/>

6-8 **OPEX Mena 2020**

Venue: Diplomat Radisson Blu, Bahrain
Phone: +44 (0) 20 7357 8394
Email: enquiries@europetro.com
Website: <https://europetro.com/week/opexmena2020>

11-12 **4th GPCA Responsible Care Conference**

Venue: Riyadh, Saudi Arabia
Contact: Hector Aquino
Phone: 971144510666
Email: hector@gpca.org.ae
Website: <https://gpcaresponsiblecare.com/>

13-15 **7th GPCA Research & Innovation Summit**

Venue: Riyadh, Saudi Arabia
Contact: Hector Aquino
Phone: 971144510666
Email: hector@gpca.org.ae
Website: <https://gpcaresponsiblecare.com/>

21-22 **North America Assembly & Dinner - Oil & Gas**

Venue: The Whitehall Houston, Houston, US
Contact: Ryan Barry
Phone: +27 21 001 3891
Email: ryan.barry@oilcouncil.com
Website: <https://oilandgasCouncil.com/event-events/north-america-assembly-and-dinner/>

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2-4 **Abu Dhabi International Petroleum Exhibition & Conference**

Venue: Abu Dhabi National Exhibition Center (Adnec), ABU DHABI
Phone: +971 2 444 4909
Email: adipec.enquiry@dmgevents.com
Website: <https://www.adipec.com/>

3-5 **SPE International Hydraulic Fracturing Technology Conference and Exhibition**

Venue: Oman Convention & Exhibition Centre, Muscat, Oman
Contact: Samir Hassan
Email: shassan@spe.org / registrationdubai@spe.org
Website: <http://www.spe-events.org/intlhydraulicfracturing/>

PROJECT WATCH – OMAN *

Project	Facility	Budget	Status
Biofuels Refinery	Biofuels	800,000,000	FEED
Bitumen Refinery	Bitumen	300,000,000	On Hold
Chlor-Alkali PVC Plant	Chlor Alkali	1,500,000,000	FEED
Block 10 Exploration and Production of Copper and Gold reserves	Copper	100,000,000	Construction
Blocks 1&2 Metallic Minerals Exploration	Copper	100,000,000	EP
Copper-Gold Processing Plant	Copper	45,000,000	EP
Liwa Plastics Industries Complex - Steam Cracker	Ethylene	2,900,000,000	Commissioning
Block 50 (Masirah Bay Offshore) - Exploration	Exploration	250,000,000	Construction
Block 7 Onshore Exploration and Production	Exploration	160,000,000	Construction
Block 56 Onshore Exploration and Production	Exploration	50,000,000	Construction
Block 54 Onshore Exploration and Production	Exploration	50,000,000	EP
Block 47 Onshore Exploration and Production	Exploration	40,000,000	EP
Block 57 Onshore Exploration and Production	Exploration	3,000,000	EP
Saih Nihayda to Duqm Special Economic Zone Gas Pipeline	Gas	100,000,000	Construction
Iran to Oman Subsea Natural Gas Pipeline	Gas	600,000,000	EPC ITB
Block 43b Onshore Exploration and Production	Gas Exploration	40,000,000	On Hold
Block 61 - Ghazeer Field Development	Gas Field Development	5,000,000,000	Commissioning
Block 61 - Khazzan and Makarem Gas Fields Development	Gas Field Development	24,000,000,000	Construction
Mabrouk North East Deep Gas Field Development	Gas Field Development	5,000,000,000	EP
Yibal Rejuvenation	Gas Production	500,000,000	Construction
Flare Gas to Power Schemes	Gas Recycling	200,000,000	FEED
Sohar LNG Bunkering Terminal	Liquefied Natural Gas (LNG)	90,000,000	EPC ITB
Salalah LPG Extraction	Liquefied Petroleum Gas (LPG)	650,000,000	Construction
Duqm Bunkering Terminal and Ancillary Facilities	Marine Terminal	80,000,000	EP
Coal Terminal	Marine Terminal	300,000,000	On Hold
Fuel Bunkering Facilities at Duqm Port	Marine Terminal	150,000,000	Project Announced
Liwa Plastics Industries Complex - NGL Extraction Units	Natural Gas Liquefaction (NGL)	700,000,000	Construction
Nylon Plant	Nylon	250,000,000	EP
Main Line Oil - Ras Markaz Crude Oil Terminal Pipeline	Oil	300,000,000	FEED
Rabab-Harweel Integrated Plant (RHIP) - Overview	Oil & Gas Field	3,000,000,000	Construction
Block 60 Concession - Onshore	Oil & Gas Field	1,100,000,000	Construction
Yibal Khuff Sudair Field Development	Oil Field Development	3,000,000,000	Construction
Marmul Polymer Phase 3 (MPP3) - Off-Plot and On-Plot Production Facilities	Oil Field Development	270,000,000	EP
Duqm Liquid Jetty (IP7)	Oil Storage Terminal	600,000,000	Construction
Ras Markaz Crude Oil Park	Oil Storage Terminal	400,000,000	EP
Oil Storage and Terminal	Oil Storage Terminal	200,000,000	Project Announced
Methanol-to-olefin (MTO) Scheme	Petrochemical Plant	2,300,000,000	On Hold
Duqm Refinery - Overview	Petroleum Oil Refinery	7,700,000,000	Construction
Duqm Refinery - Main Process Units	Petroleum Oil Refinery	4,000,000,000	Construction
Duqm Refinery - Offsites and Utilities	Petroleum Oil Refinery	2,000,000,000	Construction
Duqm Refinery - Package 3	Petroleum Oil Refinery	800,000,000	Construction

EP: Engineering & Procurement

*Sources: DMS Projects

Duqm Refinery & Petrochemical Complex - Package 3*



Name of Client : Duqm Petroleum Terminal Company (DPTC)
Estimated Budget: \$800,000,000
Revised Budget : \$900,000,000
Facility Type : Petroleum Oil Refinery
Sector : Oil, Refining
Status : Construction
Location : Duqm
FEED : Worley
PMC : Technip
Main Contractor : Chicago Bridge & Iron Company (CB&I); Saipem
Award Date : Q3-2017

Project Status
 As of April 2020, Al Sarooj Construction has completed 40 per cent of its package, which includes the construction of the civil buildings.

Project Scope
 The main facilities in Package 3 include the crude oil storage at Ras Markaz, an export terminal, and an 80-km crude pipeline. The detailed scope includes installation of liquid products storage tanks, dry bulk handling facilities for pet-coke and sulphur storage, loading facilities, unloading arms, ship loaders and conveyors, pipelines, buildings, workshops, road and other infrastructure, associated utilities, and operation of the facilities.

Project Finance
 The client of the project is Duqm Petroleum Terminal Company (DPTC), which is a joint venture company between Oman Oil Company (OOC) and the Port of Duqm (PDC).

Project Schedules

Project Announced	2Q-2012
PMC ITB	4Q-2014
FEED	4Q-2014
EPC ITB	1Q-2015
Engineering & Procurement	3Q-2017
Construction	1Q-2019
Completion	3Q-2022

Background
 The Duqm Liquid Bulk Berths and Tank Farm Project involves the development of liquid bulk berths and terminal facilities for the import of crude oil and the export of finished products with a total storage capacity of 760 000 cu m, from the 230,000 bpd Duqm Refinery and Petrochemical Industries Company (DRPIC). The finished products handled are naphtha, Jet A1, diesel/gasoil (go), high sulphur fuel oil (HSFO), refrigerated liquefied petroleum gas (RLPG), pet coke and sulphur handling and off-loading facilities. The project also includes the deepening of the existing Duqm Port Basin to 18 m (CD), with a dredged volume of over 30 million cu m and reclamation volume of over 10 million cu m for the offshore development of the marine and topsides infrastructure on the Lee Breakwater.

INDUSTRY NEWS

STATS Group Expands Operations in Oman

MUSCAT: STATS Group has strengthened its presence in Oman with the opening of a new workshop, storage and testing facility in Muscat.



The expansion comes after the pipeline technology specialist secured a two year extension to a Master Services Agreement with Petroleum Development Oman (PDO) to provide pipeline isolation and hydrostatic testing services.

Also in the Middle East, STATS have trebled the size of their operation in Abu Dhabi in a move to a larger workshop and office facility in the Mussafah district.

STATS Group are market leaders in the supply of pressurised pipeline isolation, hot tapping and plugging services to the global oil, gas and petrochemical industries. Headquartered in Kintore near Aberdeen, the company also has operations in Edmonton in Canada, Houston in the USA, Abu Dhabi and Qatar in the Middle East and Kuala Lumpur in Malaysia.

STATS Group Middle East director, Angus Bowie, said: "The PDO Master Service Agreement is an important contract and we are delighted it has been extended further. The new facility in Oman will help support this contract and having a local presence gives us a platform to extend our footprint in the Sultanate and wider Middle East region.

"With our commitment in Oman and further investment in larger facilities in Abu Dhabi, it should open up new opportunities and underlines how much we value our existing clients in the region."

Last year STATS signed an exclusive partnership agreement with Saudi Arabia's Safari Oil & Gas, one of the Kingdom's top 50 listed companies, and longer term plans to open a permanent base in KSA.



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Emerson leverages IIoT to optimise asset performance

Emerson's Plantweb, put to action by companies around the world, uses data generated by a facility's existing or new sensors and offers analytics tools and secure connectivity to enable scalable monitoring services

PUBLIC sector industries such as hotels, banking, and residential facilities have been leveraging third party services (maintenance, logistics, catering, etc) for decades. The obvious reason to outsource work is to reduce costs through third-party experts and execute a service when needed by the customer.

In the Middle East and Africa (MEA) region, oil and gas companies started the outsourcing of assets health and performance monitoring decades ago. However, since companies have equipment from several OEMs (for pumps, turbines, motors, valves, etc) it makes it difficult to manage these assets in a cost-effective manner. This opens the doors for third-party service companies to address the scope of different OEM's assets in a single contract.

In the past, services like this were difficult to execute. Challenges like data infrastructure, data consolidation and available experts were barriers to effectively monitor various assets. Even if companies or third party service providers were able to acquire data, they had to spend too much time preparing that data to analyse.

In today's era of digital transformation, oil and gas companies are looking to leverage expert knowledge in real time to lower monitoring costs, improve safety and optimise asset performance and availability.

Emerson, a global industrial automation provider, is addressing the need of the industry by leveraging the power of IIoT (Industrial Internet of Things) to deliver the Plantweb Digital Ecosystem.

Plantweb leverages data generated by existing or new sensors in a company's facility and offers analytics tools and secure connectivity to enable scalable monitoring services.

Emerson offers different service types with consistent delivery, including:

Health Monitoring: Monitoring asset health for sudden changes or alerts. Examples include DeltaV systems, and steam traps.

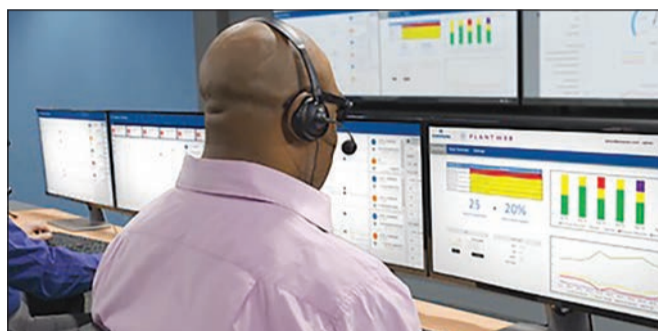
Condition Monitoring: Monitoring for failure conditions on complex assets such as machines, valves and flowmeters.

Performance Monitoring: Ensuring that an asset is operating or performing as expected. Examples include flowmeters and analysers.

Product as a Service: Providing a full turn-key monitoring solution. Emerson owns and maintains the monitoring equipment and communication network.

Engineered Connected Services: Custom Connected Services offerings built specifically for our customer's needs.

Emerson has worked with a global energy company for im-



Plantweb leverages data generated by existing or new sensors and offers analytics tools to enable monitoring

plementing a cloud-enabled monitoring solution for the heat exchangers. The Connected Services solution deployed by the energy company partnering with Emerson was designed to start small, focusing on harvesting and analysing heat exchanger data at one refinery – and even at this scale, the enhanced monitoring solution measurably improved the plant's operational efficiencies.

The data and recommendations provided by Emerson experts, notes a company representative, helped shift the plant's maintenance strategy from a reactive to a proactive approach where the appropriate plant personnel are now alerted to issues before they impact operations and are equipped with the information they need to take action.

"Equally important, refinery personnel are now freed from time-consuming monitoring tasks and can more effectively focus on higher-value functions that benefit overall operations," he says.

That's the power of enhanced insight, and that's the power of Plantweb, he adds.

Plantweb has been put to action by companies around the world. Singapore-based Denka is reducing steam loss and energy consumption thanks to a steam trap-monitoring solution from Emerson Connected Services.

Meanwhile the Chevron Oronite Singapore manufacturing plant is constantly looking to improve safety, reliability, energy efficiency, productivity, and integrity for their next quantum leap in operational excellence. They decided to digitally transform how the plant is run and maintained.

To enable digital transformation, Chevron Oronite deployed Plantweb in phases starting with Real-Time Locating System



Oil and gas companies are looking to leverage expert knowledge in real time to lower monitoring costs

(RTLS) for rescue locating and geofencing, equipment condition monitoring, steam system monitoring, tablets to access software in the field, and corrosion monitoring.

IT and OT are specialised departments, but for this project they collaborated for a fully integrated solution. As a result they have improved reliability, energy efficiency, productivity, and integrity, and the plant is a safer place to work.

Headquartered in St Louis, Missouri, US, Emerson is a global technology and engineering company providing innovative solutions for customers in industrial, commercial and residential markets. Its automation solutions business helps process, hybrid and discrete manufacturers maximise production, protect personnel and the environment while optimising their energy and operating costs.

Emerson has actively engaged with MEA national oil companies to provide services to improve the health and performance of their critical equipment. Scaled service offerings allow customers to achieve success and identify opportunities to solve additional challenges in the future with additional monitoring services.

Pema flange fitting station simplifies wind tower production

PEMA Flange Fitting station (PEMA FF) is an ideal solution for both onshore and offshore tower production. The solution simplifies production and improves safety.

The continuously growing size of wind turbines requires larger diameters and heavier weights in flanges and tower sections, which makes the handling of these components with overhead crane more challenging and requires special skills and tools from the crane operator.

With Pema FF station, flange fitting is possible without turning the shell, and thus cranes can be released to other tasks. Also, the amount of repairing is minimized as there is no need for lifting clamps.

"It is amazing how many different flange designs there is currently on the market. Pemamek has worked together with both onshore and offshore customers to make Pema FF Station flexible for all different variations," explained Teemu Tolonen, Pemamek's Application Manager of Wind Energy.

With PEMA FF station, the production time for flange fitting and welding is reduced while the quality of fit-up only increases. The station

can be integrated with PEMA Column&Boom, which enables welding to be done in the same place. The integration significantly increases the easiness and efficiency of manufacturing, and it's been proven successful also in offshore wind tower foundation production.

"Our FF Station can handle tubular and conical shells, it has a wide range for different diameters and lengths of the shells and changeable tools to help to adjust the fit-up tool for different L- and T-type flanges," summarized Tolonen.

Pemamek, founded in 1970, is a global welding and production automation leader. The company designs and manufactures welding automation technology and integrated manufacturing solutions to a wide range of heavy metal industries. PEMA solutions are based on the highly advanced robot and automation technologies that significantly increase throughput on heavy fabrication lines.

Pemamek is a family-owned limited company with solid finances (AAA-rated company). Today, Pemamek employs 250 personnel at its headquarters and factory in Finland and has local sales offices in the USA, Brazil, Russia, and Poland.



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TECHNOLOGY

Wärtsilä digital VTS ensures safety on Baltic Sea route

TECHNOLOGY group Wärtsilä has been contracted to install its electronic route exchange platform on 50 tankers as part of the Sea Traffic Management (STM) Safety of Navigation in the Baltic Sea (BALT SAFE) project.

The lead partner in the project, which is supported by the European Commission, is the Swedish Maritime Administration. The order with Wärtsilä was placed in March, and the ECDIS upgrades are scheduled for delivery in June 2021.

The Baltic Sea has one of the highest shipping intensities in the world. The project is focused on increasing the safety of vessels by providing digital Vessel Traffic Services (VTS) to the fleet. Wärtsilä has already equipped 129 vessels with STM compliant ECDIS. STM is a methodology to define a set of systems and procedures to guide and monitor sea traffic in a manner similar to air traffic management.

“Wärtsilä has the know-how, the installed base, and the dedication to achieve a more connected future. With the installations happening this year, we will be able to analyse data from the interaction between ships, and between ships and shore,” says Cajsa Jersler Fransson, STM BALT SAFE Ship Testbed Manager from the Swedish Maritime Administration.

“We believe that standardised information sharing is an important means for improving safety and efficiency in the shipping industry. STM makes such sharing secure, interoperable, and customer controlled,” says Torsten Büssow, Managing Director, Wärtsilä Voyage.

VTS systems around the Baltic Sea, such as the Wärtsilä-based VTS St. Petersburg, will be able to receive and send route plans to vessels, thereby enabling ‘route cross-check’ and ‘risk situation alert’ services. Information is transferred via Automatic Identification System (AIS) between ships. Between ships and shore, the data is shared through the Maritime Digital Infrastructure.

One of the main successes of the STM Balt Safe project has been the development of cross-industry collaboration, as leading competitors among providers of ECDIS and VTS systems are currently planning to establish an open non-profit consortium to develop the maritime digital infrastructure, established within the STM Validation project. All existing implementations, and the current project, will run on the newly-formed Navelink platform, provided by the consortium.

Efficient and reliable data exchange among port operators, ser-



Wärtsilä's electronic route exchange platform will help increase the safety of vessels in the Baltic Sea

vice providers, and ships can cut waiting times during port calls and assist in achieving just-in-time arrivals. The validation of STM in ports has also demonstrated considerable potential savings across various aspects of the transportation chain, while improved predictability of operations promises port and ship operators significant economic gains.

Wärtsilä radically transforms vessel voyage planning and navigation by leveraging the latest digital technologies, to deliver a step-change in safety, efficiency, reliability, and emissions control.

Wärtsilä is a global leader in smart technologies and complete lifecycle solutions for the marine and energy markets. By emphasising sustainable innovation, total efficiency and data analytics, Wärtsilä maximises the environmental and economic performance of the vessels and power plants of its customers. In 2019, Wärtsilä's net sales totalled EUR 5.2 billion with approximately 19,000 employees. The company has operations in over 200 locations in more than 80 countries around the world. Wärtsilä is listed on Nasdaq Helsinki.

Tristar JV signs deal with Linde-Sigas for gases transport

TRISTAR Group, a global integrated energy logistics company, has said its joint venture in the Kingdom of Saudi Arabia (KSA)—United Stars—has signed a five-year contract with Linde-Sigas for transportation of industrial and medical gases.

Tristar's mandate will be to transport these products to Linde-Sigas' diverse portfolio of clients throughout KSA from five centrally located depots in Dammam, Jeddah, Riyadh, Jubail, and Yanbu.

Linde-Sigas is a majority owned subsidiary of Linde in KSA and leading manufacturer of industrial and medical gases.

The initial contract is for five years with the option to extend on completion for an additional two years.

Eugene Mayne, Group CEO of Tristar, says: “I am delighted to announce our expanded agreement with Linde-Sigas, which is testimony, once again, to our expertise in energy logistics as we continue to grow and expand our blue-chip client base in Saudi Arabia.

“Linde-Sigas is one of Tristar's long-standing partners in other Gulf markets, so we are particularly pleased that we can provide them with a comprehensive end-to-end logistic solution for KSA. Our business continues to grow steadily and, with a global presence in more than 20 countries today, I look forward to reporting on further business developments in due course.”

The contract was signed by Mehdi Benzaari, Linde-Sigas General Manager, and Aous Ali, United Stars KSA Country Manager, at a signing ceremony at United Stars' headquarters in Modon, Dammam second industrial area. Also present were Zubair Siddiqui, Yameen Younus and Mishari Alomiri of Linde-Sigas, and Paul Vincent and Anoop Palatty of United Stars.

Headquartered in Dubai, UAE, Tristar offers end-to-end fuel logistics solutions to blue-chip clients including international and national oil companies and international NGOs. Its integrated en-

ergy logistics platform spans road and maritime transportation, specialised warehousing, fuel farms, commercial aviation refueling and remote fuel supply operations.

Tristar operates in more than 20 countries across 3 continents and has a 21-year proven legacy of operational quality making it

a partner of choice to its customers, with a track record of profitable growth. The company operates to the highest international health, safety, environmental and compliance standards and has received awards for its exemplary record of operational and safety excellence.



The management team of United Stars and Linde-Sigas

Churchill Drilling Tools, Mohawk Energy join with Coretrax to improve innovative offerings designed to improve production performance and well intervention efficiencies

Oil and gas techno firms unite to solve key oil field issues

THREE oil and gas technology firms have joined forces to offer the global oil and gas industry an integrated and boundary pushing approach to well lifecycle integrity and production optimisation.

Churchill Drilling Tools and US based expandable tubular well specialist Mohawk Energy have joined with Coretrax under its new brand, with a unified innovation offering designed to improve production performance and well intervention efficiencies.

Kenny Murray continues as CEO of Coretrax, which now employs 250 people globally across the UK, Middle East, the US and South East Asia. John Fraser, formerly Global Business Development Director at Coretrax has been appointed Chief Operating Officer. Former Mohawk Energy CEO Scott Benzie is now Chief Technology Officer at Coretrax.

Michael De-Rhune meanwhile has joined the new leadership team as Chief Financial Officer. He was previously Group CFO at Excellence Logging and has held senior financial roles with Bibby Offshore, CEONA and Subsea 7. The company has also strengthened its support services with key appointments across the business in HR, finance, global QHSE and integration.

Given current industry challenges with the low oil price and Covid-19, it's ever more important that we support the sector with a continuous focus on reducing rig costs

Kenny Murray, CEO of Coretrax, says: "Oilfield challenges continue to grow in complexity and our mission is to push boundaries to support the industry with novel and advanced ways to tackle well integrity and production optimisation."

"Given current industry challenges with the low oil price and Covid-19, it's ever more important that we support the sector with a continuous focus on reducing rig costs. Integrating the impressive people and products from Churchill Drilling Tools and Mohawk Energy with Coretrax allows us to provide life-of-well solutions from drilling to decommissioning, directly targeted at production performance and integrity issues."

Coretrax now has a portfolio of over 50 technologies offered through three innovation platforms and plans to launch disruptive technologies to market this year. The company intends to reinvest more than 15 per cent of revenues into R&D each year.

Murray adds: "Our customers can expect the same responsiveness and problem-solving approach; but will benefit from a much broader portfolio of unified technologies and solutions. We also intend to increase

our manufacturing capabilities, supporting the local economies in which we work."

Churchill Drilling Tools was founded in 2002 with operations in the UK, US and Middle East. Mohawk Energy was formed in 2004

in Houston providing innovative tubular expansion technologies. Aberdeen headquartered Coretrax has an extensive Middle East footprint including Saudi Arabia, Abu Dhabi, Doha and Qatar with other operations in Houston and Malaysia.



Coretrax's innovative offering will help improve production performance and well intervention efficiencies

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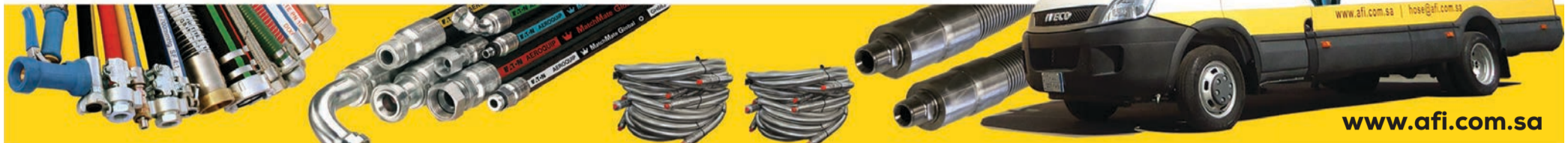
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JXTG considers building new ENB plant in Jubail

The plant, part of the Amiral petrochemical complex, will make Saudi Arabia JXTB's third global production site after Japan and the US

JXTG Nippon Oil & Energy Corporation has announced a feasibility study for a new ethylidene norbornene (ENB) plant to be built in Jubail, Saudi Arabia, as part of the Amiral petrochemical complex, a Saudi Aramco and Total joint venture.

JXTG Group is the world's leading ENB producer with one production line in Japan and two production lines in the US. The new plant will make Saudi Arabia a third production site.

The proposed capacity of the new ENB plant is 23,000 tonnes per year and it is expected to start commercial operation in the late 2020s.

Its location meanwhile in Saudi Arabia, downstream of the world scale mixed feed cracker of the Amiral complex, will ensure the future ENB plant of the reliable supply of raw materials and energy.

Announced in October 2018, Amiral petrochemical complex will be integrated downstream of the Satorp refinery. The joint venture is 62.5 per cent owned by Saudi Aramco and



The new ENB plant will produce 23,000 tpy

the rest by Total. It will comprise a world-scale mixed-feed cracker – the first in the Gulf region to be integrated with a refinery – with a capacity of 1.5 million tonnes per year of ethylene and related high-added-value petrochemical units.

With ENB demand expected to be firm and increasing in the mid and long term, this project will contribute to the stable ENB supply chain of the JXTG Group, not only to existing customers, but also to future customers around the world.

ENB is an important component in the manufacture of ethylene propylene diene mono-

mer (EPDM), an advanced heat and weather resistant synthetic rubber used primarily in the automotive and construction industries. Demand for ENB has been increasing strongly alongside the growth in the automotive production sector.

JXTG provides stable ENB supply for their worldwide customers through independent production locations and its network of terminals in the US, Europe, and Asia.

JXTG Group has developed the ENB business since 1979 and has grown its production to an overall capacity of 68,000 tons per year in April 2020.

In its long-term vision and medium-term management plan, the JXTG Group has set a goal of advancing into the high value-added derivatives business and expanding it globally. By providing a stable supply of products in these businesses, JXTG aims to become one of the most prominent and internationally-competitive energy and materials company groups in Asia.

IN BRIEF

Aramco reviews \$10bn pipeline stake sale

DUBAI: Saudi Aramco has hired JPMorgan Chase & Co and Mitsubishi UFJ Financial Group as advisers to review a \$10-billion pipeline stake sale, *Reuters* has said quoting a *Bloomberg News* report.

Aramco hasn't yet started a formal sale process, the people said. It may wait until market turmoil caused by plunging oil prices and the impact of measures to halt the spread of the coronavirus eases before it begins soliciting interest in the asset, they said.

Chairman Yasir Al-Rumayyan is looking for ways to raise money from assets that are not central to the company's operations. A sale could raise more than \$10 billion, people familiar with the matter said last month.

The review comes amid a similar move by Abu Dhabi National Oil Company (Adnoc), which is seeking to attract investors to its \$15 billion gas pipeline after selling a portion of its oil pipelines for about \$4 billion last year.

QP begins drilling in North Field East

DOHA: Qatar Petroleum has started the development drilling campaign for the North Field East Project, or NFE (previously known as the North Field Expansion Project).

The first of 80 NFE development wells was spudded by the jack-up rig "GulfDrill Lovanda", which is managed and operated by GulfDrill, a joint venture between the Qatar based drilling champion, Gulf Drilling International, and Seadrill Limited.

This phase will increase Qatar's liquefied natural gas (LNG) production capacity from 77 million tons per annum (Mtpa) to 110 Mtpa. The second phase will further increase capacity from 110 Mtpa to 126 Mtpa.

Aramco, Adnoc high value brands

DUBAI: Oil and gas giant Saudi Aramco with a brand value of \$46.8 billion has claimed the title of the Middle East's most valuable brand, said Brand Finance.

Meanwhile, Abu Dhabi National Oil Company (Adnoc) is the Middle East's second

most valuable brand, up 29 per cent to \$11.4 billion. The brand is also the first UAE brand to achieve a brand valuation of more than \$11 billion, a testament to the success of the Group's ongoing transformation strategy.

GP Global acquires Nigerian assets

LAGOS: GP Global, a leading global energy-to-agriculture conglomerate, said it had made a strategic acquisition of the lubricants assets of Grand Petroleum, Nigeria's leading lubricants player and part of the Nosak Group, in order to expand and strengthen its presence in Nigeria and West Africa.

The acquisition includes assets such as – lubricants brand – HiSpeed and a state-of-the-art blending plant with an annual capacity of about 50,000 metric tonnes in Lagos, which includes storage tanks with a capacity of 6,000 kilolitres. The acquisition will position us one of the fastest-growing global lubricants and base oil businesses," said Sudip Shyam, Global Head- Lubricants & Base Oil, GP Global.

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