

ADNOC 2022

Expanding the Downstream Portfolio



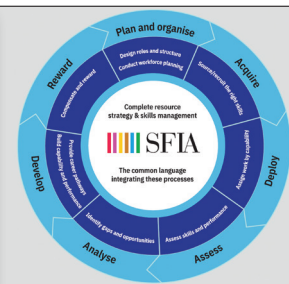
Proserv in strategic UAE push

Energy transition represents a journey, and reliable oil and gas production, supported by service excellence and asset optimisation, will remain core to the region – Page 11



Can sector coupling be a strategic approach?

As energy transition increasingly becomes non-negotiable, this approach allows businesses to reduce costs and decarbonise at the same time – Page 13



Upskilling using SFIA's framework

If an organisation either has high turnover or is lagging on the digitalisation competencies, then action needs to be taken at once to set the course right – Page 15

The company is expanding both vertically and horizontally as it meticulously lays out strategies for the upstream, downstream, clean energy, new energy, and even trading, in effect what is a comprehensive roadmap

ADNOC'S DOWNSTREAM STRATEGY PAYING OFF

By ABDULAZIZ KHATTAK

THE Abu Dhabi National Oil Company (Adnoc) is expanding its downstream as it strives to create a larger role for itself on the global energy scene, including clean energy, through diversification.

It's currently underway with several petrochemical, refining and gas projects, and has in the past few months signed deals worth several billions of dollars with local and international investors in line with its 2030 strategy, which is focused on maximising value from its resources.

The flagship of the downstream is the Ta'ziz Industrial Chemicals Zone — a joint venture between Adnoc and ADQ — in Ruwais, a port city key to Adnoc's oil ambitions. The mega project builds on Adnoc's flagship In County-Value (ICV) programme.

The Zone will feature seven projects worth over \$6 billion, including a 1 million mt/year blue ammonia facility as part of Adnoc's clean energy project.

Projects at the Zone are currently in the design phase with project startup targeted in 2025.

Ta'ziz, short for Abu Dhabi Chemicals Derivatives Company, has received strong local and international investor interest in its projects.

In December, it signed a JV investment worth over \$2 billion with Reliance Industries for a chlor-alkali, ethylene dichloride (EDC) and polyvinyl chloride (PVC) production facility.

That was followed by a pioneering public private partnership (PPP) deal the same month with local investors for 20 per cent stake worth \$4 billion in a portfolio of chemicals projects (full report on page 7).

However, to ensure the efficient functioning of these projects in the long-run, an increasing gas supply will be needed to meet demand for power as well as feedstock.

On the national level, the UAE is aiming for

gas self-sufficiency and is increasing production as well as processing facilities in the downstream.

In December, the company announced a significant increase in natural gas reserves by 16 trillion standard cu ft (TSCF). The country now holds 289 TSCF of natural gas and is the seventh largest in the world in gas reserves.

A month prior, two EPC contracts totaling \$1.46 billion were awarded for the Dalma Gas Development Project. The Dalma field is part of the Ghasha Concession which is the world's largest offshore sour gas development.

Adnoc has given a go-ahead for plans to double liquefied natural gas (LNG) production capacity from 6 to 12 million tons per annum (MMTPA).

The potential expansion of capacity is underpinned by the growth in its natural gas position, with new developments planned to add 3 billion standard cu ft per day (scfd) and more to come from associated gas as it expands its crude oil production capacity.

With regard to processing, Adnoc is expanding Adnoc Gas Processing, its biggest facility with a capacity of 8 bcfd.

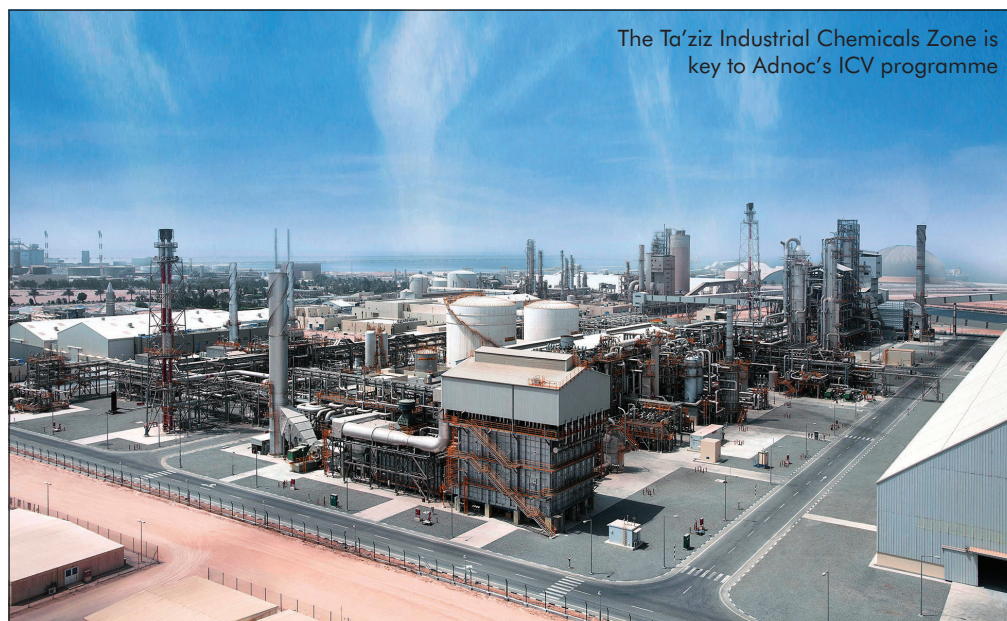
Two multi-billion dollar projects will further boost capacity through the design of a new gas compressor station and pipelines to ramp up sales gas network connectivity.

FUTURE PLANS

In December 2021, Adnoc's Board of Directors approved a spending of \$127 billion in the five-year period of 2022-2026. This will be spent both in the upstream and downstream in addition to clean energy.

The company still has oil production and processing as a major chunk of its activities, something that will remain part of the country's energy mix in the long run.

Sharif Al Olama, Undersecretary for Energy



The Ta'ziz Industrial Chemicals Zone is key to Adnoc's ICV programme

and Petroleum Affairs at the UAE Ministry of Energy and Infrastructure, said hydrocarbons will always be a part of any future energy mix globally, indicating that it will be the case with the UAE as well.

The company is gradually progressing with plans towards achieving its 5 million barrels per day (bpd) production capacity target by 2030.

This goal has contributed substantially to the increase in reserves, and in December the company said national oil reserves had increased by 4 billion stock tank barrels (STB). It now has a hydrocarbon reserves base of 111 billion STB, making it the sixth largest in the world.

LOCALISATION

Ever since Adnoc launched the ICV programme in 2018, it has brought back \$28.6 billion into the national economy in addition to creating over 3,000 jobs for UAE Nationals in the private sector, including over 1,000 jobs this year alone.

The goal is to retain \$43.6 billion in the country in the five-year period from 2022-2026.

Supporting this objective is Ta'ziz, but there is also the expansion of the Ruwais refinery, which can process up to 837,000 bpd, making it the fourth-largest single-site oil refinery in the world and the biggest in the Middle East.

Work is underway to diversify the range of crude oil being refined in Ruwais. Once complete in 2022, the \$3.5-billion Crude Flexibility Project will give Adnoc the ability to process 420,000 bpd of grades such as Upper Zakum – and over 50 others – to increase value.

Another key downstream project that will drive petrochemical production is Borouge. The joint venture with Austria's Borealis that produces polyolefins was scheduled to boost its capacity by 11 per cent to 5 million mt per year by end-2021.

Plans are underway to launch Borouge 4, another mega petrochemical project that will sub-

stantially increase value in the downstream.

NET-ZERO GOALS

Last year in October when the UAE became the first country in the Mena region to set a \$163-billion net-zero initiative for 2050, it had already set the ball rolling with key partnerships in green energy and decarbonisation.

A few days after the announcement, a clean energy partnership was setup with (Emirates Water and Electricity Company (EWEC) that will see Adnoc's power be driven 100 per cent from EWEC's nuclear and solar clean energy sources.

In December, Adnoc's board of directors headed by its Chairman, Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, approved the New Energies Strategy aimed at further reducing Adnoc's carbon footprint and enabling it to capitalise on opportunities in renewable energy, hydrogen and other lower carbon fuels.

At the Ta'ziz Industrial Chemicals Zone, world is progressing on a world-scale low carbon ammonia facility, which will help Adnoc capitalise on growing global demand.

Sales have already been made to Japan, where it will be used in refining, petrochemicals, fertiliser production and power generation.

In conclusion, Adnoc is going full steam ahead, both vertically and horizontally, as it meticulously lays out strategies for the upstream, downstream, clean energy, new energy, and even trading.

Adnoc has traded over one billion barrels of Abu Dhabi's flagship low-carbon Murban crude on the ICE Futures Abu Dhabi (IFAD) since the exchanged launched in March 2021.

All in all the company has in place a comprehensive strategy that will make it what it aims for — a truly global integrated energy company.

Gas self-sufficiency ... Adnoc to proceed with plans to double LNG production capacity





OIL FREE AIR - WHERE YOU NEED IT TO BE

Compressed air is relied upon across multiple industries and oil and gas is no exception, relying on compressed air solutions to complete many challenging applications.

As more users seek options for sensitive compressed air needs - including refineries/ petrochemical, pipelines, power plants and more - products are needed for dedicated oil free plant air and back-up oil free air.

Sullair, an industry leader in innovative compressed air solutions since 1965, introduced its newest model OFD1550 oil free portable air compressor in January 2021. The portable compressor delivers ISO 8573.1 Class 0 oil free air wherever users need it- plantside, refineryside or at the jobsite.

The OFD1550 portable air compressor represents one of the latest solutions in the expanding Sullair oil free portfolio and this month has been named silver award winner in the Power category for the Oil & Gas Engineering magazine 2021 Product of the Year awards program.

"To win a silver award in this competitive field is an achievement," said Jerel Cole, Senior Product Manager at Sullair. "The OFD1550 is an environmentally-friendly and highly versatile machine. It was designed to reduce the cost of ownership and includes many modern features our customers have been asking for. This is a reliable machine for critical oil free compressed air applications."

The OFD1550 was designed with customer feedback front of mind. It includes several features to help ensure versatile operations and maximum uptime.

It provides 1550 cfm of Class 0 oil free air with adjustable pressures up to 150 psi. Providing the power behind the unit are Tier 3 diesel engine options by Caterpillar and Perkins. The unit also includes the renowned two-stage Sullair air end with high efficiency rotors designed specifically for oil free operation. The rotors are coated with a US FDA-approved food-grade PTFE to help resist corrosion and extend air end life.

It can operate in high altitudes (up to 3,600 metres above sea level) and its large service doors make cooler cleaning and maintenance more convenient. Additional features include an optional refinery package including anti-static belt, non-metallic fan and spark arrestor.

The Middle East is a key market for Sullair, supporting end users with reliable and durable compressed air solutions through local authorised distributor, Kanoo Machinery.

Kanoo Machinery has been a Sullair distributor for 29 years representing the brand and expansive range of compressed air equipment in the United Arab Emirates.

Kanoo Machinery is a part of Kanoo Industrial & Energy Division and is a leading solutions provider in supply, service & rental of equipment to major industries such as Utility, Municipalities, Oil & Gas Refineries,

Petrochemical, Ports, Manufacturing, Fabrication, Retail, Food, Pharmaceutical Industries and Facility Management companies.



Last month Kanoo Machinery secured the first sale of the Sullair OFD1550 in the Middle East for application in the oil and gas processing industry. The unit was delivered by the Sullair EMEA & C.I.S sales team to the end customer during an in-country visit.

Quote from Kanoo: "Kanoo Machinery values it's partnership with Sullair, a leading compressor brand in the world. Our partnership has been successful in making significant breakthroughs in the GCC especially in the oil & gas and construction sectors".

As the industry moves forward, Sullair will always be at the forefront with quality partners, people, innovative solutions, and air compressors that are built to last.

Oil Free Air in a Portable Package

Award winning, environmentally-friendly, oil free compressed air solution designed to minimise cost of ownership and maximise return on investment.



To learn more about the new Tier 3 OFD1550 oil free portable air compressor, visit: europe.sullair.com

Contact Sullair authorised distributor

Kanoo Machinery LLC

Toll Free number: 800 56100 (if calling within UAE)

WhatsApp support number +971 56 547 9222

(24 x 7 - if calling from or outside UAE)

Website: <https://www.kanoomachinery.com/uae/sullair>

Adnoc, Taqa's \$3.6bn project to decarbonise offshore ops

The project will see a first-of-its-kind HVDC-VSC subsea transmission system in Mena to power Adnoc's offshore production operations with cleaner and more efficient energy

ABU Dhabi National Oil Company (Adnoc) and Abu Dhabi National Energy Company (Taqa) have announced a \$3.6 billion strategic project to significantly decarbonise Adnoc's offshore production operations, further strengthening their

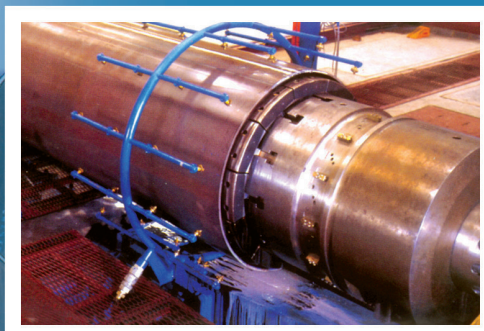
position in driving and leading sustainability efforts and supporting the UAE 'Net-Zero by 2050 Strategic Initiative'.

The innovative project will see the development and operation of a first-of-its-kind high-voltage, direct current (HVDC-VSC)

subsea transmission system in the Middle East and North Africa region.

It will power Adnoc's offshore production operations with cleaner and more efficient energy, delivered through the Abu

NATIONAL PIPE COMPANY LTD.



National Pipe Co. Ltd. (Known as NPC) is a major large diameter line pipe manufacturer and supplier in the Middle East with an annual production capacity of **450,000** metric ton.

N.P.C. produce both longitudinal (straight seam) pipes and helical (spiral seam) pipes with sizes from **20"** up to **84"** for various applications.

- Transmission use of corrosive natural gas, oil and high pressure water.
- General Purpose Pipes.

OFFICE

Location: Khobar North
Golden Belt District
Al Khobar,
Kingdom of Saudi Arabia

Mailing Address: P. O. Box 1099
Al Khobar 31952
Kingdom of Saudi Arabia

Tel: 00966 13 882 5266 (10 lines)
Ext. 121-129-124-125

Fax : 00966 13 882 5435

Email : sales_dept@npc.com.sa

Website: www.npc.com.sa



The project will reduce CO2 emissions at Adnoc's oil production facilities by more than 30 per cent

Dhabi onshore power grid, owned and operated by Taqa's transmission and distribution companies.

The transmission system will have a total installed capacity of 3.2 Gigawatts (GW) and comprise two independent sub-sea HVDC links and converter stations that will connect to Taqa's onshore electricity grid – operated by its subsidiary, Abu Dhabi Transmission and Despatch Company (Transco).

The project offers the potential for Adnoc to more effectively utilise its rich gas – currently used to power the offshore facilities – for higher-value purposes, allowing Adnoc to generate additional revenue.

The project will be funded through a special purpose vehicle (SPV) with each company owning a 30 per cent stake, and a consortium comprising Korea Electric Power Corporation (Kepco), Japan's Kyushu Electric Power Company, and Électricité de France (EDF).

Led by Kepco, the consortium will hold a combined 40 per cent stake in the project on a build, own, operate and transfer basis. It will develop and operate the state-of-the-art transmission system alongside Adnoc and Taqa, with the full project being returned to Adnoc after 35 years of operation.

Construction is expected to begin in 2022 with commercial operation commencing in 2025.

Adnoc Upstream Executive Director Yaser Saeed Almazrouei said: "This first-of-its-kind project is a further example of how Adnoc is advancing practical and commercially viable solutions to secure a lower carbon future, while driving significant foreign direct investment, and, in turn, cementing Abu Dhabi and the UAE's position as a trusted global investment destination," he added.

More than 50 per cent of the project value will flow back into the UAE's economy under Adnoc's In-Country Value (ICV) programme, underpinning Adnoc and Taqa's commitment to driving responsible and sustained investment and value creation for Abu Dhabi and the UAE.

Taqa Group CEO and Managing Director Jasim Husain Thabet said: "As the recognised low carbon power and water champion of Abu Dhabi and one of the top 5 utilities in EMEA by market value, we are pleased to again partner with Adnoc on such an important project that will contribute to the decarbonisation of Abu Dhabi's energy industry in such an impactful way.

He added: "Decarbonisation continues to provide social and economic opportunities for collaboration and growth, which Taqa is actively pursuing through its strategic alliances and partnerships in the market."

Kepco President and CEO Seung-il Cheong said: "Kazuhiro Ikebe, Kyushu Electric Power Company President and CEO, said: "The project will contribute to the reduction of CO2 emissions at Adnoc's oil production facilities by more than 30 per cent."

The agreements allow local investors 20 per cent stake in Ta'ziz Industrial Chemicals Zone projects and is in line with the UAE's industrial growth strategy to raise the industrial sector's contribution in the national GDP to \$81 billion by 2031

Ta'ziz signs first PPP deals to boost localisation

THE Abu Dhabi chemicals industry witnessed its first public private partnership highlighting Abu Dhabi National Oil Company's (Adnoc) continued commitment to deepening its contributions to local industry and pioneering new, innovative means of collaboration with the UAE's private sector.

Investment agreements in this regard were signed by the Abu Dhabi Chemicals Derivatives Company (Ta'ziz) with eight UAE-based investors.

The agreements comprise commitments by the investors to invest in an up to 20 per cent stake in a portfolio of chemicals projects worth Dh15 billion (\$4 billion) within the Ta'ziz Industrial Chemicals Zone, alongside Adnoc, ADQ, and other global strategic partners in Ruwais, Abu Dhabi.

Commenting on the agreement, Dr Sultan Ahmed Al Jaber, UAE Minister of Industry and Advanced Technology (MoIAT) and Adnoc Managing Director and Group CEO, says: "We are delighted to welcome leading UAE-based investors to partner with Adnoc and ADQ to further accelerate the development of Ta'ziz."

"Through Ta'ziz, our new domestic partners will have a stake in ongoing activities to enable additional domestic production of critical industrial raw materials, drive economic diversification and further grow the UAE's advanced manufacturing base, supporting the ambitions



Investors have shown interest in Ta'ziz's chemical projects in Ruwais

outlined in the 'Principles of the 50' set out by our wise leadership.

Meanwhile, Mohamed Hassan Alsuwaidi, the CEO of ADQ, says: "The agreements reflect our aim to strengthen collaboration with the private sector. Sustainable industrial growth ensures that the UAE is well positioned to attract foreign direct investment and grow its leadership across core sectors of the economy where ADQ is active. Through our broad portfolio, we can

unlock the investment potential of Ta'ziz on a global scale, while remaining firmly committed to driving value creation and supporting the sustainable development of Abu Dhabi's economy."

The eight UAE-based investors who have signed agreements with Ta'ziz include Al Dhafra Co-operative Society, Al Nasser Holdings, Alpha Dhabi Partners Holding, Arab Development Establishment, Buhairan, Capital Investment,

Mazrui International and Mazrui Energy Services, and Riverside Investments.

The development of the Ta'ziz industrial hub is expected to benefit from Adnoc and ADQ's world-class infrastructure and high-quality feedstock, as well as the support of MoIAT.

Adnoc's operations are a critical engine for industrial growth in the UAE, with competitive feedstocks available to catalyse the growth of industries and manufacturing supply chains.

Similarly, ADQ is advancing economic clusters around essential sectors, ensuring they are part of global value chains, facilitating growth and a broad portfolio of major enterprises that spans key sectors of a diversified economy, as well as enabling private sector investment in the UAE's economy.

The Ta'ziz Industrial Chemicals Zone has received significant interest from leading international and local investors.

Partnership agreements have already been signed with Fertiglabe, a JV between Adnoc and OCI, Mitsui and GS Energy regarding a proposed blue ammonia production facility; and with Reliance Industries, regarding a proposed JV for the development of an ethylene dichloride (EDC), chlor-alkali (CA), polyvinyl chloride (PVC) production facility.

The Ta'ziz Industrial Chemical Zone projects are currently in the design phase with project start up targeted in 2025.

Dayim Equipment Rental Company sets eyes on UAE expansion this year

LEADING full-service equipment rental firm, Dayim Equipment Rental Company, has been working through a multimillion dollar expansion plan across the region as it sees a strong potential in the rental market, especially in the oil and gas sector.

With fully operational hubs in Saudi Arabia, Bahrain, Qatar, Kuwait, the company is planning to expand into the UAE in Q2 2022 as well as Oman.

Outside the GCC, it is looking to expand its operational network into Iraq and India.

Dayim saw a record year in 2021 in terms of revenue and profitability, Andy Carter, General Manager – Mena, tells *OGN*.

"We invested heavily during 2021, and are now expanding our depot network in Saudi Arabia while adding an additional operational hub in the UAE," he says.

For 2022, Dayim Rentals will continue the fleet growth and renewals throughout the year.

EXTENSIVE FLEET

Dayim has in its fleet over 5,000 units for rental, with power generation making up 56 per cent of its fleet. The average age of its fleet is three years which places Dayim Rentals in the top spot in the list of similar sized rental suppliers.

It represents several major brands, including Atlas Copco, KAESER, Generac, JLG and Genie, and has additionally acquired the dealership for Manitou products and now offer these units for rental, leasing and sale.



Carter ... eyes expansion

Manitou is also its most popular machine. Furthermore, Dayim Rentals recently added a number of environment-friendly product lines, including lithium powered generators and solar tower lights.

"We are currently demonstrating a full solar driven power pack to run our remote sites," says Carter.

To cater to the needs of the oil and gas industry, Dayim is going to invest in specialist oil and gas equipment, nitrogen boosters, etc. It is also in discussion with a number of major EPCs companies for a fully outsourced equipment rental and managed service ar-



Dayim represents major global brands

range to help them optimize their productivity.

Dayim supplies equipment to all the major oil and gas, operation, well service companies, including Aramco.

In fact, it was recently awarded an eight-year supply contract for equipment rental for Aramco.

To support its customers, Dayim offers a full

implant technical help desk, through which it places a technical team in the facilities of oil and gas clients and manage all equipment via its GPS mobile help desk. It measures equipment performance against optimization targets using its telemetric solution.

The help desk assists in measuring productivity and equipment usage, such as idle time, load range, engine temperature and fuel usage, to drive optimisation of assets with the goal of reduce clients' operational costs while the clients having full access to this information.

To further meet customer needs, Dayim can customise solutions as per client requirements irrespective of the region they operate in.

It also carries out full onsite project inspection to ensure safe working and that it is supplying the correct equipment for the clients' application.

A bespoke ERP system linked to a central GPS help desk covers the full region.

Commenting on the outlook for the rental market, Carter says: "Equipment rental is still in its infancy in the Middle East when you compare it to the European rental sector. Clients are now realising it does not make financial sense, or it isn't the best use of capital, in owning large fleets of equipment."

Considering that the global Covid-19 pandemic compounded further the clients' needs to conserve capital, rental gives them a flexibility, he says, adding "the rental sector will continue to grow."

Aiming for widespread IoT coverage via LEO satellites

OQ Technology can offer 5G IoT and M2M communication through its growing satellite constellation to help oil companies detect hazardous gases or leaks in oil pipes that need to be communicated quickly, Omar Qaisy tells **OGN**

MANY oil companies employ autonomous aircraft to get visual and thermal images to detect potential problems in pipelines enabling them to carry out predictive maintenance.

With the use of 5G, connectivity can be significantly improved for sharing data between vehicles and coordinating fleets in real time.

OQ Technology, the world's first global satellite 5G operator, claims it can offer 5G Internet of Things (IoT) and machine-to-machine (M2M) communication through its growing satellite constellation, to help companies detect hazardous gases or leaks in oil pipes that need to be communicated quickly.

Over the next few years, the company is planning to launch a constellation of 72 satellites.

In this excerpted interview with Abdulaziz Khattak of **OGN**, Omar Qaisy, the CEO of OQ, gives an overview of 5G IoT satellite technology, and explains the implications and applications of the company's technology and services for oil and gas, and in particular the region.

You claim to be the world's first global satellite 5G IoT operator. How did the idea come about?

I saw a market need for the IoT and machine-to-machine communication via affordable satellite connectivity when I was selling satellite services in oil and gas and logistics sectors in the Europe, Middle East and Africa region.

I realised that existing solutions were not adequate for narrow-band (NB-IoT) communication. In fact, most were, and still rather are, for broadband services, requiring huge data capacity.

At the same time, predictions for connected smart devices went through the roof. That is why I created OQ Technology and began operations in 2016 to provide 5G IoT and machine to machine communication through "cell towers in space".

Our constellation of nanosatellites in low earth orbit (LEO) will connect the 70-80 per cent of the world that is still without internet access.

Since OQ Technology's inception, we have crossed several milestones. We created the world's first universal plug and play IoT device that can provide connectivity leveraging LEO satellite infrastructure; tested the technology in orbit using our Tiger-1 mission in 2019, which was a first in the world; opened offices in Dubai (UAE) and Kigali (Rwanda); launched our first commercial satellite Tiger-2 in June 2021; and won multiple contracts with ESA under the Luxembourg Space Agency national programme, LuxImpulse.

We also successfully carried out a comprehensive test of 5G narrowband IoT (NB-IoT) technology in orbit.

And using our Tiger-2 satellite, we successfully tested our hybrid satellite-cellular user terminal in harsh desert conditions.

OQ Technology is looking to add further satellites to our constellation in 2022. We are also planning an expansion into the US and other countries. Eventually we are hoping to have a base in every continent.

How does your technology differ from other satellite technology in use?

OQ Technology is providing unrestricted cellular coverage for assets and machines anywhere on the planet.

The company is taking advantage of market and technology gaps not covered by existing satellite communication, particularly for low-power, low-cost, small messaging IoT devices.

There are real benefits for combining satellite and terrestrial networks and a range of possibilities that aren't feasible with standard M2M communications.

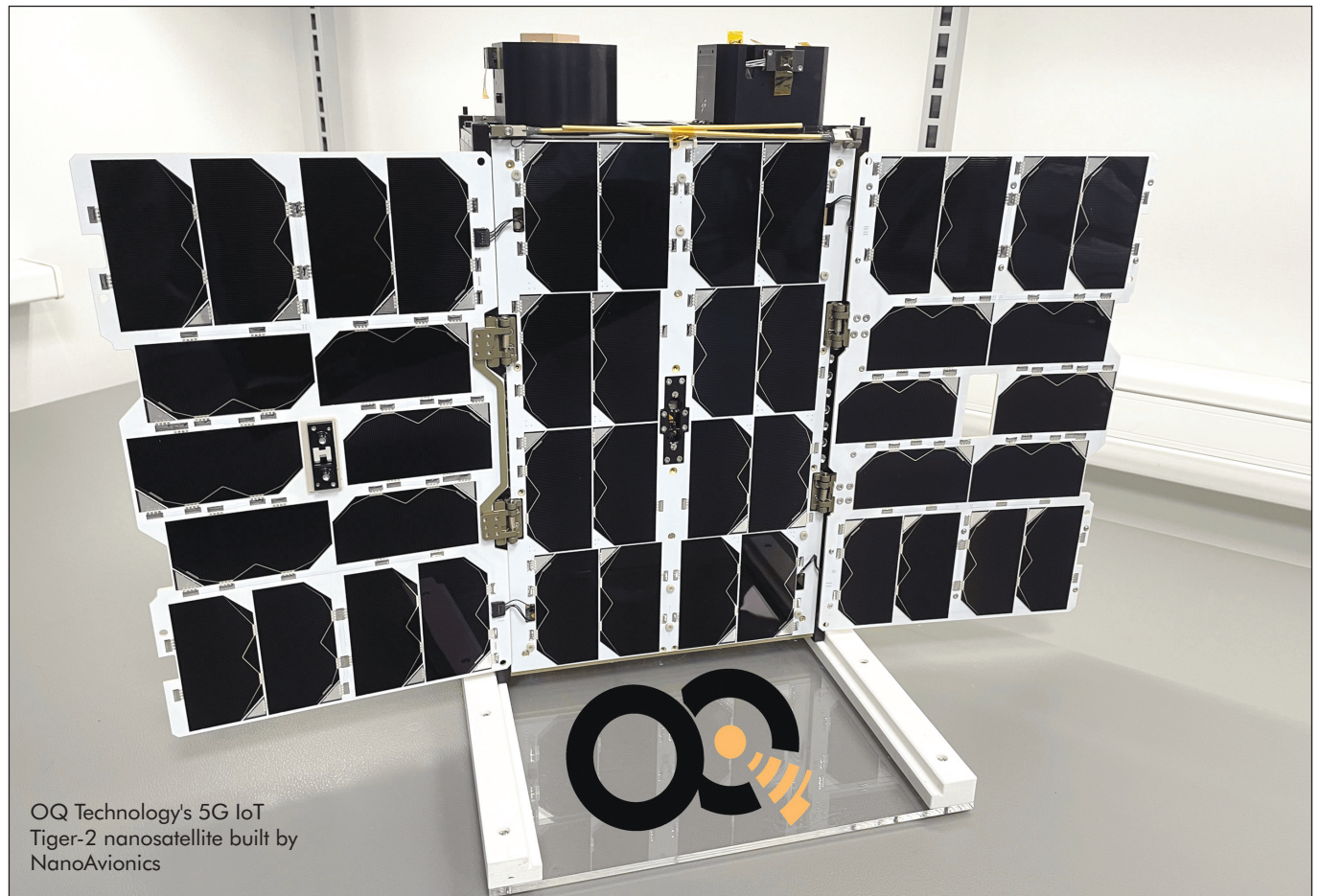
Only about 10 per cent of the Earth's surface has access to terrestrial connectivity services.

Building custom-engineered communications via satellites is the only way to ensure device connectivity on a large scale and in regions that are difficult and expensive to reach via terrestrial networks.

By following the global standard of 3GPP for NB-IoT, OQ can provide a cost-effective and highly scalable system as well as access to a large ecosystem of cellular chip vendors and operators.

OQ's 'cell-tower inside the satellite' technology aims to provide real-time global connectivity with ultra-reliable low latency communication (URLLC) and massive machine type communications (mMTC) for applications in rural and remote areas.

For applications requiring real-time data processing via satel-



OQ Technology's 5G IoT Tiger-2 nanosatellite built by NanoAvionics



Qaisy ... bringing connectivity to the world

lite, including drone control and smart cars, the latency has to be below 10 milliseconds (ms). This can't be provided by satellites in geosynchronous equatorial orbit (GEO), with a latency of up to 250 ms.

Our nanosatellites in LEO can. Through our test centre in Luxembourg, we can demonstrate to customers, struggling with connectivity around the world, how this works in line with their requirements and how it integrates into their systems.

How can 5G satellite technology improve the general connectivity in the world?

5G is an important new development because unlike technologies that rely on cables and cell towers, satellite-based 5G can be ubiquitous and even reach remote areas.

It will enable unprecedented levels of connectivity providing five critical benefits: superfast broadband, ultra-reliable low latency communication, massive machine-type communications, high reliability/availability and efficient energy usage.

Combined with the potential of other technologies such as the IoT, AI or big data, 5G will help us transform and improve health, transport, education and other sectors. It is capable of

creating social value in 11 of the 17 UN Sustainable Development Goals (SDGs).

According to a report, 'The Impact of 5G: Creating Value Across Industries and Society', by the World Economic Forum (WEF) and PwC, the technology enables the speed and smart connectivity to generate approximately \$3.6 trillion in revenue and 22.3 million jobs by 2035 worldwide in the technology value chain alone.

How useful is this technology in the context of achieving net-zero goals?

While the ICT sector only accounts for only 3-4 per cent of global greenhouse gas (GHG) emissions, 5G technology with IoT will be able to increase energy efficiency, reduce GHG emissions and enable more use of renewable energy.

5G could also break the historic cycle where energy usage increases drastically with each generation (2G, 3G, 4G).

City governments and businesses are looking to 5G, AI and IoT technology to create smart cities to become more efficient and sustainable.

Advanced satellite technology together with IoT devices such as smart sensors can detect, identify and relay the sources of greenhouse gas emissions at a global scale and in real-time, so that leak repairs or mitigation solutions can be deployed rapidly.

5G IoT will also enable more people to work remotely, avoiding unnecessary site visits, which will save energy and reduce GHG emissions from vehicles.

International standards require that 5G use much less power than 4G. This means that less power is used while more data is transferred.

Northern Sky Research (NSR), a global space market research and consulting firm, in its latest Space Traffic Study report estimates that the amount of data to/from space will reach more than 500 exabytes of information by 2030.

For example, 1 kWh of electricity is spent downloading 300 high-definition movies in 4G. With 5G, 1 kWh can download 5,000 ultra-high-definition films. That's one order of magnitude.

Combined with IoT, 5G will also reduce the energy consumption of devices, allowing them to automatically switch off when they are not needed.

What can your 5G satellite technology offer the oil and gas industry?

To connect billions of sensors and devices, the infrastructure of the IoT will have to evolve, and satellite capability in LEO is

the only cost-effective way that can push the network beyond what terrestrial providers can offer.

IoT as a technology has already started to penetrate the oil and gas sector. One of its key benefits is remote monitoring of plants and assets.

Through IoT connectivity and devices linked to various systems and networks, we monitor and relay information to help oil and gas workers to better understand how their systems are performing.

Wellhead monitoring is another example. Many wells today are either non-connected or use old obsolete UHF networks or expensive satellite solutions.

IoT also helps improve predictive maintenance standards and overall management efficiency.

Other uses of IoT in the oil and gas sector include real-time event-driven messaging, such as sending alerts to other connected devices should they begin to fail.

Pipeline monitoring is another key advantage offered by satellite-based IoT technology as it enables oil and gas companies to effortlessly monitor and inspect remote pipelines for hazardous gases and leaks.

With pipelines running across several countries and mostly away from terrestrial networks, satellite-based connectivity is the only viable option for that.

We have products that we are ready to deploy to the market. For example, we have a satellite 5G IoT modem and tracker that can monitor asset location wherever they might be on the planet.

During tests with them and the Tiger-2 satellite in LEO, we were able to collect data from customer assets, connected smart meters to the satellite, tracked mobile assets, and even managed to achieve indoor connectivity and localisation of the device while buried in the sand with no external antennas.

We also have a solution that first collects data from satellites through wired or wireless means, it then concentrates the data and sends it out either through cellular, satellite link or a hybrid model.

With regard to safety at oil and gas installations, can you help us visualise a scenario where this technology can help avert disasters?

Many wellheads are not monitored, which can cause serious and very expensive issues like leaks and blow ups both on land and at sea.

The same applies to oil and gas pipelines around the world, where many leaks and vandalism incidents happen each year.

They all require holistic monitoring and a control solution con-



OQ Technology's terminal device can withstand harsh environments

nected to a central SCADA system (supervisory control and data acquisition) across different geographic areas and countries.

Until now, these issues have been impossible to solve, but with our technology and services customers are now able to better monitor their assets with the potential to save millions every year.

Since oil and gas installations are generally restricted sites, will national and international policies be a challenge, and how will you overcome them?

Some countries still require a market access authorisation for foreign satellites to transmit signals over their territory.

To offer services in these countries, operators need to obtain and pay for this authorisation, also known as satellite landing rights, from national authorities.

This is where OQ's landing rights and industry channel relationships, as a result of the efforts by OQ's founding team and

our close collaboration with partners, come into play.

What is your view of the satellite industry in the Middle East?

The Middle East countries remain a good and stable market for satellite operators like us with good opportunities to expand and business applications in demand. It has already been an area of major success for DTH broadcasting and is increasingly becoming a major market for Internet via satellite and a long-term major market for military broadband and narrowband communications.

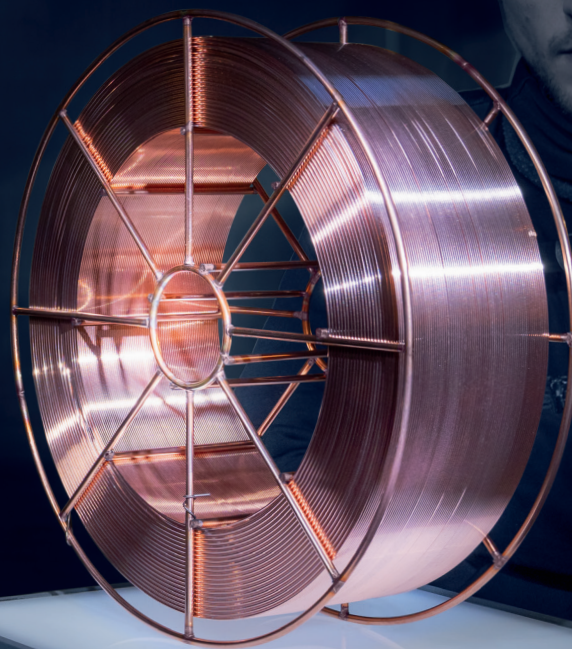
Countries in the region are all investing billions of dollars into research and development to expand to new industries, commercialise 5G, and are poised to become scientific powerhouses within the space sector — a perfect environment for our services.

For full report, visit www.ognnews.com



DIAMONDSPARK SEAMLESS CORED WIRES

brilliance established in 1967



Curious? See the full video
OPERATION: DIAMONDSPARK
online on our website!

Your ultimate goal must be diamondspark. A cored wire of highest quality and performance. Designed by the leading pioneers in filler materials, diamondspark wires are tailored to match the highest requirements for demanding applications. diamondspark seamless cored wires – brilliance established in 1967.

voestalpine Böhler Welding
www.voestalpine.com/welding

voestalpine

ONE STEP AHEAD.

Mitsubishi turbines 'well placed in a region facing energy transition'

With the establishment of its GTCC business in EMEA, the company gets a step closer to helping the world transition to cleaner, more sustainable, and affordable energy, Khalid Salem tells **OGN**

As a provider of the world's most efficient gas turbines operating today, and a leader in hydrogen-fueled turbine technology for 50 years, Mitsubishi Power recognises that highly efficient energy generation technologies can play a crucial role in helping countries across the EMEA region meet ambitious net zero carbon emissions targets.

With the establishment of its Gas Turbine Combined Cycle (GTCC) business in EMEA, the company says its step closer to helping transition the world to cleaner, more sustainable, and affordable energy.

In an exhaustive interview with Abdulaziz Khattak of **OGN**, Khalid Salem, President of Mitsubishi Power Mena, describes the technology brought into the region with the aim of transfer of technology, localisation efforts, key projects, technology of the future, and the company's efforts of supporting the region on its path to decarbonisation.

In June 2021, Mitsubishi Power expanded its operational footprint across EMEA with the establishment of a GTCC EMEA Business Unit in Dubai, UAE. How will this unit help the region in its energy transition goals?

Headquartered in Dubai, UAE, this new business unit is a testament to our continued and deep commitment to the region's power industry.

Our core expertise is providing reliable, innovative, and environment-friendly energy solutions to our customers.

This is especially important as accelerated evolution of hydrogen technology, along with the optimisation of the hydrogen supply chain, has prompted governments and organisations in the Middle East and North Africa (MENA) region to prioritise hydrogen in their energy strategies.

As a prime testbed for hydrogen, the region has a unique opportunity to be in the driver's seat of hydrogen development since its physical and economic ecosystem features ample low-cost land, stable economic climates, low cost of capital, existing industrial capacity, while also serving as an excellent source of renewable energy, particularly solar.

The UAE is updating the 2050 strategy and there is potential for hydrogen to play a greater



Salem ... committed to region's power industry

role in the national move towards decarbonisation.

The new business unit will focus on the sale of the most successful gas turbines in the industry – the J-Series Air Cooled (JAC) gas turbines – which boasts world-class reliability of 99.6 per cent, and efficiency of approaching 65 per cent.

Capable of operating on a mixture of up to 30 per cent hydrogen and 70 per cent natural gas, the gas mixture can be increased to 100 per cent hydrogen in the near future.

Our gas turbine combustion cycle technology leads the market in delivering a low carbon, stable power supply, when it is needed.

The business unit focuses on promoting only the J-Series Air Cooled gas turbines. Will you add more systems in the future?

At Mitsubishi Power, we are always looking to better serve our customers by identifying market gaps, providing business solutions and finding innovative ways to help them reach their goals.

We focus on helping customers maximise their asset value by offering total turnkey services including training, emergency service, preventive maintenance, and support for operation and maintenance (O&M) with state-of-the-art ICT



JAC gas turbines ... the most successful in the industry

technology.

In addition, we are constantly seeking new opportunities to grow our presence and offer our innovative energy solutions across the world.

Our gas turbine combustion cycle technology leads the market in delivering low carbon, stable power supply, when it is needed.

For large gas turbines like the J-series, we aim to achieve 100 per cent hydrogen-firing capability by 2025, followed by commercialisation thereafter.

Our natural gas fired gas turbines can be upgraded to burn hydrogen fuel with minimal modification to convert existing power generation facilities.

In addition, since hydrogen can be used in Mitsubishi Power' large-capacity gas turbines, application of these technologies can help stimulate large-scale hydrogen demand.

The establishment of this new business unit will enable us to partner more closely across the value chain to provide high quality, reliable solutions that further enable the rapid transformation of the region's power supply.

What other notable key projects and partnerships does Mitsubishi Power have underway in the region?

Currently, our leading JAC-class gas turbine is set to power a 2.4-GW gas-fired Fujairah F3 power plant being built in the UAE.

The \$1.14-billion plant will use an efficient combined cycle technology in the region and will be the largest natural gas fired GTCC facility in the UAE, playing a crucial role in the country's power generation sector while also contributing to the GCC's power grid.

Another key Mitsubishi Power project in the region is the construction of a 1,026.3-MW gas turbine GTCC power plant in Sharjah, UAE.

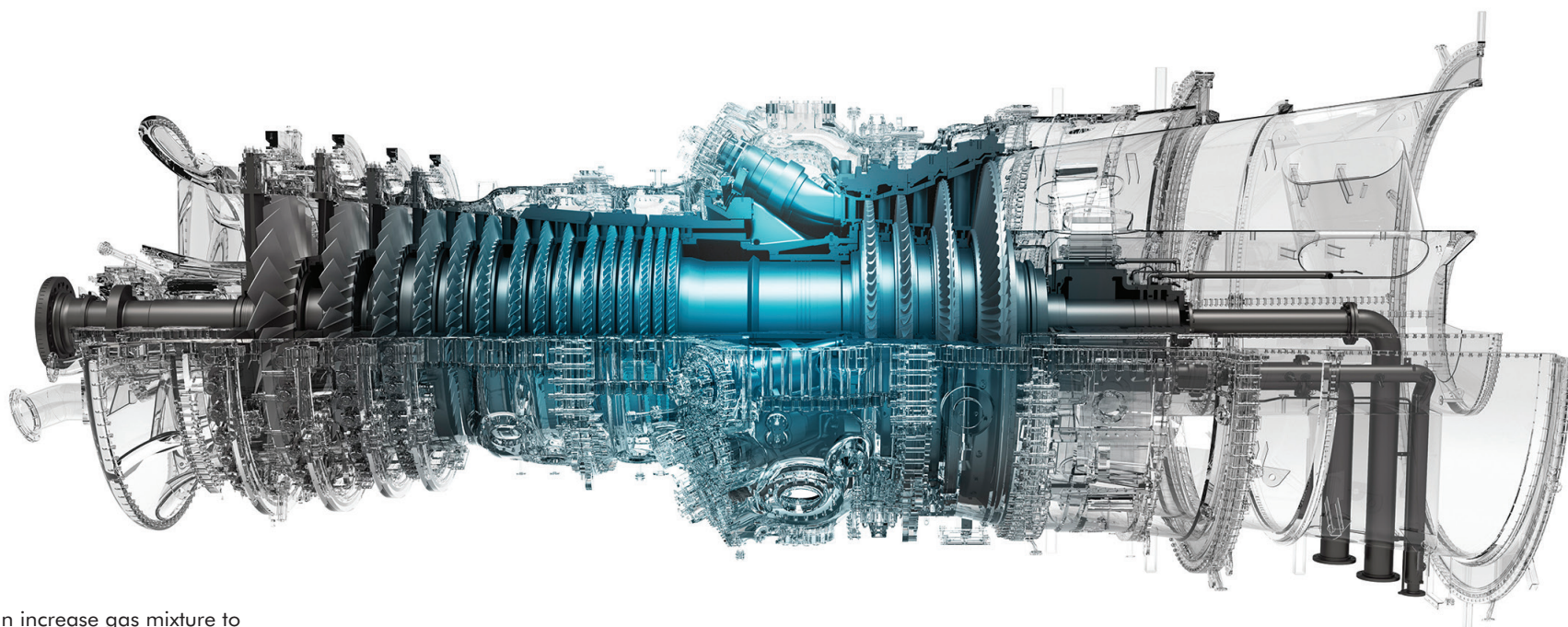
The plant, to be fired by natural gas, will centre on two M701F gas turbines in a project underway by the Sharjah Electricity and Water Authority (SEWA), in the coastal city of Layyah.

Our aim is to contribute to a stable electricity supply in Sharjah through the provision of our F Series gas turbines.

In June 2021, we also signed contracts for three long-term service agreements (LTSA) for six gas turbines in Egypt.

The three contracts cover the Sidi Krir, El-Atf and Cairo North power plants, all of which are combined-cycle generators (CCGT) power plants.

For full report, visit www.ognnews.com



Mitsubishi can increase gas mixture to 100 per cent hydrogen in its turbines

Angus Rodger and John Bright tell **OGN** the energy transition represents a journey and reliable, efficient oil and gas production, supported by service excellence and asset optimisation, will remain core to the region for years

Proserv's growing service offering reflects UAE's strategic push

LATE last year in a keynote speech at the Abu Dhabi International Petroleum Exhibition and Conference (Adipec), Dr Sultan Al Jaber, Managing Director and Group Chief Executive of the UAE's Adnoc, referenced how the global economy cannot 'simply unplug' from oil and gas as it ramps up a much-needed transition to more renewable energy sources.

Dr Al Jaber forecast hundreds of billions of dollars of investment to keep pace with anticipated demand and the UAE itself has ambitious plans to lift its output capacity to five million barrels per day within 10 years.

Angus Rodger, the General Manager of leading controls technology company Proserv's Abu Dhabi operation, recognises change is required rapidly but knows this is a journey.

He says: "The need for the world to transition to greener energy sources is irrefutable and Proserv has its own roadmap for pivoting our business, and harnessing our expertise in controls and asset optimisation, into areas such as offshore wind.

"But equally, the taps are not suddenly going to be turned off and we will all require hydrocarbons for some years."

He adds: "When you look at the Arabian Gulf, oil and gas have been the cornerstone of economic growth, so we also have a responsibility to support the gradual move to sustainable energy by making sure we can make on-going production efficient to prevent potential leaks and unnecessary emissions, and extend the life of equipment to reduce waste."

BUILDING THE PORTFOLIO

Proserv's Middle East service business has earned a reputation for its bandwidth of capability (integrating manufacturing via its site in Dubai) and its maintenance agility – what the team calls being 'OEM agnostic'.

In 2021, Rodger oversaw the acquisition of Dron & Dickson's Middle East business, providing electrical engineering services and ex-certified equipment, suitable for use in potentially explosive atmospheres.

John Bright, Operations Director, who plays a key role liaising and collaborating with Proserv's major clients, including Adnoc, with whom it enjoys a long-standing partnership, explains the thinking around the deal: "We have always been guided by the voice of our customers and the needs of the market. Over recent years, we have been growing our footprint but our key partners have regularly approached us asking about how we could support them further. So this acquisition was partly instructed by that impetus, and as a result we have expanded our expertise and potential, while reflecting what our clients need."

The Proserv strategy to broaden its service provision is in step with the viewpoint expressed by Adnoc's top executive at Adipec. With production in the UAE to be increased and sizeable investments to be made, the only way targets will be met is via optimising brownfield assets and this fits into Proserv's core specialism.

Rodger explains that the addition of the electrical engineering know-how and ability to work in hazardous areas offers advantages throughout the energy value chain.



Bright and Rodger (right) ... supporting the region on the path to sustainability

"We already had a great team of multi-skilled technicians, with broad hydraulics and some electrical capabilities, upgrading and maintaining systems. But the addition of a specialist electrical engineering team, with full Compex certification, means we are more of a 'one-stop-shop' service outfit, able to work on a wider array of kit, including in potentially explosive areas.

"The specialist skill set of this team also makes the hazardous areas of our industry safer. From the lighting to wiring and junction boxes, we are upgrading all of this within the production infrastructure so ultimately risks are reduced."

MOVING MIDSTREAM & DOWNSTREAM

Bright describes how the addition of Dron & Dickson's business is part of Proserv's natural evolution: "Five years ago, our focus was the wellhead, but we have gradually expanded our abilities ever further. What this acquisition means is that we can now reach into midstream and downstream areas of the industry, such as production facilities and refineries, enhancing the intrinsic electrical reliability and safety during planned shutdowns. This enables us to go to the next level as a service partner."

The certification of the components provided by the new electrical team lends itself to the kind of hazardous zones found within gas processing plants and both Rodger and Bright anticipate more demand from their top-line clients in these areas.

Both also underline that, via this purchase, Proserv has become the principal distributor in the UAE for several globally recognised hazardous area product manufacturers, including Wolf Safety and Weidmüller.

WELL MONITORING TECHNOLOGY

With ambitious production targets mapped out for the UAE, Rodger believes his new electrical team's expertise will play a core part in upgrading Proserv's highly effective well monitoring solution – Smart Box.

He emphasises the same rigorous standards around materials and safety certifications, applied to wiring and junction boxes, are being integrated within this accessible and cost-effective device.

Smart Box can make a substantial difference to real-time fault detection, allowing asset managers the ability to be alerted to problems before they occur, simply via an SMS on their cell phone, and able to shut down a well remotely if required.

Rodger stresses the challenges facing the world's major producers around effective condition monitoring:

"The biggest players can have 5,000 onshore wells, some in inaccessible places, and it is hugely difficult to support the monitoring of these assets. What Smart Box does is provide targeted maintenance interventions if a potential fault is detected, with personnel armed with more information on the nature of the issue, while, with the reassurance offered by the solution's real-time monitoring, fewer physical visits are then required – saving time and allowing better deployment of resources."

Bright reveals how even a small percentage of outages can impact profitability:

"The NOCs here, Adnoc and Aramco, recognise very well how crucial it is to make sure their towers maintain operations through a joined-up service provision, but any mature asset, producing corrosive fluids for decades, will inevitably develop pain points," he says.

"It is estimated, on average, 2 per cent of wells are out of action at any one time due to various problems. For every million barrels produced, that is 20,000 that could have been but weren't, and at present prices, that is a seven-figure sum. Downtime quickly mounts up."

ENVIRONMENTAL ANGLE

Bright says Proserv's Smart Box can be tailored to assess a range of specific parameters that an operator might require and is a perfect monitoring device for remote and ageing wells.

Its simplicity of use means quick decisions can be made and these can have big impacts on both the environment and HSE.

"Around the world, leaks of gases like hydrogen sulphide (H2S) represent a danger to the immediate environment. I know of wells in Europe, close to farmland and residential communities, where this was a major concern. It is an invisible threat to livestock or people that come too close to the leak. Similarly, technicians could approach a well to assess a problem, unaware that H2S is leaking out of it and could be hospitalised, or worse," Bright explains.

"So, in these times where efficiencies need to be improved to reduce emissions and carbon footprints, Smart Box can enable safe, reliable production with an ability to assess potential environmental impacts," he concludes.



Proserv technicians working on the firm's Smart Box digital solution

Digital firms need to keep up with industry's ever-changing demand

As the digital landscape of advanced engineering and operations becomes increasingly complex, industrial software companies are adapting their solutions to meet customer needs, Russell Herbert from Aveva tells **OGN**

THERE is no doubt that companies want to embrace digital technology, and the value it can offer, in far more sophisticated ways than ever before.

Speaking to **OGN**, Russell Herbert, Global Industry Principal – Oil and Gas, Aveva, says: “Customers want to link systems and data together in context and constantly run analytics against this big-picture information so that accurate predictions can be made and their operations can be safer and more productive than ever before.”

This desire to do more has inevitably meant that the amount of software in industrial assets and the complexities of inter-connecting everything has grown.

Companies like Aveva are recognising that to meet the demands of customers, what is now required is a far broader digital offering that encompasses advanced applications and layers of advanced analytics alongside critical data management platforms that can help operators bind everything together and get the very most from their investment in technology.

OPTIMISING O&G OPS THROUGH SOFTWARE

The portfolio at Aveva is broadly split into two areas. The first area covers engineering, industrial asset design, information management and supporting the construction process, so that assets can be developed in the most efficient and optimal way possible.

Herbert says: “Our software allows companies to perfect a design and predict how an industrial plant will perform a long time before anything is built hence greatly reducing the risk of costly issues developing in the future.”

The second half of Aveva’s portfolio is centred on operations, including running assets, monitoring them in real-time, optimising their performance and predicting problems before they cause an impact.

“Being able to support this entire end to end story means we can offer significant value to operators across the entire asset lifecycle. Information from the engineering phase can flow into operations and be the basis for understanding and improving how the asset will perform day to day,” explains Herbert.

He says taking this holistic view puts Aveva’s customers in the best position to be able to operate sustainably by maximising their production, optimising their maintenance all whilst reducing their energy consumption and lowering their costs.

Speaking about technologies such as advanced analytics, AI and machine learning (ML), Herbert says these are obviously really important, and for certain types of problems, there is simply nothing that comes close to the value they can deliver.

“And what is really exciting now with AI and ML is that the expertise and experience around all this technology has grown significantly across the industry in recent years,” he adds.

Herbert says many companies have run their own projects and have often even built their own internal groups of experts. “In doing so, a significant amount of real-world experience has been gained allowing operators a far better understanding around the real benefits of advanced analytics and where best to fit it into a broader company digital strategy.”

Some problems require very advanced analytic capabilities that look at the complex interrelationships between data and help operators predict future events.

AI and machine learning are perfect for these. Other problems can be solved with far simpler real time streaming analytics in cheaper and more straightforward ways.

The industry is maturing around their understanding of all this and those leading the way are recognising they must embrace a variety of different types of analytics and ways of looking at information whilst also ensuring the data strategies that underpin all their analytics need to be as good as possible.

LESSONS FROM TRADITIONAL INDUSTRIES

There are many opportunities for those involved with the energy transition to learn from traditional industries, such as oil and gas, power, metals and mining.

Although the new assets that will be built will look quite different, when these are broken down to their constituent parts, they will often still contain many types of familiar equipment that have been deployed and operated for many years.

Most of the industrial world has now been using digital



Adnoc's Panorama control centre is based around Aveva's Unified Operations Centre technology



Herbert ... optimising operations through software

technology in their operations for over 20 years and in doing so have gained a huge amount of experience and expertise, including in recent years with new technology such as predictive analytics and digital twin.

Companies have learnt how to properly collect and manage all their industrial information, how to make it available to their entire organisations and how to design, monitor and optimise their assets to get the very best performance from them.

Together these lessons provide the digital building blocks for success that will be so critical when it comes to the energy transition.

“There are going to be a lot of familiar challenges that this industry will need to face, but there are also going to be a lot of new ones where technology will play a significant role. The expertise and experiences people have gained to date will be critical in adapting to these,” says Herbert.

A lot of the commercial viability of new energy transition projects will be very dependent on technology that still needs to be developed and there's going to be a lot of a lot of pressure on optimising these assets and ensuring their performance and energy consumption is well managed.

DIGITISATION OF FUTURE ENGINEERING/OPS

No one type of software tool is going to solve every operator's problem, says Herbert. “What operators will increasingly need is different systems and tools from different vendors working together in an optimal way.”

He says over the next 5 to 10 years, there will be a groundswell of support from software vendors, like Aveva, to improve this situation.

“Technology companies will increasingly recognise that they need to offer their customers a holistic view that encompasses open data standards alongside advanced data management, analytics, and application strategies.

“These changes will help customers to further embrace digital technology and truly start achieving the levels of operational performance that digital transformation has been promising for some time but has sometimes been harder to achieve,” he adds.

AVEVA-ADNOC COLLABORATION

Adnoc is a significant user of Aveva technology. For over 10 years most of the Adnoc operating companies have used Aveva's PI system for collecting, analysing, and monitoring all their operational data.

These companies include Adnoc Onshore, Offshore, Gas Processing and Refining.

Herbert says each one of these has hundreds of thousands of industrial sensors covering every part of their operation and all this information is managed for Adnoc through PI.

“Adnoc has built many world-class solutions that rely on all this data, none more impressive than their recent Panorama Control Centre based around Aveva's Unified Operations Centre technology,” he says.

Panorama takes all of Adnoc's operational data from PI and combines it with many other sources of information to present a fully integrated view of all oil and gas operations in Abu Dhabi.

Once all this information is brought together, it is fed through Aveva's Value Chain Optimisation suite of tools enabling Adnoc to continuously ensure their entire supply chain is running in the most optimal way possible.

“Adnoc has reported that the Panorama project alone has delivered hundreds of millions of dollars in value and greatly improved the way they operate,” Herbert concludes.

As energy transition increasingly becomes non-negotiable, this approach allows businesses to better manage their energy, and reduce costs and decarbonise at the same time, Ashraf Yehia, Managing Director – Eaton Middle East, tells **OGN**

Can sector coupling be a strategic approach to energy price volatility?

THE Middle East's energy markets are expanding to include different forms of energy production, with hydrogen energy in the lead.

The UAE, Saudi Arabia, and Oman have set plans to produce more than 2 million tons of hydrogen per year in the next 15 years.

The power grid in the GCC is robust, and most of the countries here have demand management tools that make any power outage unlikely. It is fair to say that many businesses were unprepared for steep price hikes after the impact the pandemic had on everything in general.

However, it is important to note that some GCC countries will have clean energy sources fully feeding power grids.

Sultan Ahmed Al Jaber, the UAE Minister of Industry and Advanced Technology and Managing Director and Group CEO of Adnoc said at Adipee in November 2021 that Adnoc will be the first to implement this.

Data from Gulf News and Index Mundi, shows how gas and oil prices have remained somewhat stable for much of the past year, but when considering the past decade, the prices have increased ever since the pandemic, particularly after mid-2019. So it's easy to see why some complacency has crept in.

WHAT'S CAUSING THE TURBULENCE?

The Covid-19 pandemic has caused unusual price fluctuations, which should begin to level out. But there is no quick cure for the ills that beset the region's energy industry, as well as the global one.

Several sectors such as the economy or the energy sector have a complex knot of problems that is unlikely to unravel quickly. This means price volatility cannot be fully predicted in the foreseeable future.

Recent and ongoing price spikes are to some extent connected with uneven ramping up of demand as countries across the GCC emerge from the pandemic crisis — each working to their own different recovery schedules. Natural gas prices have spiralled upward relatively from the beginning of the crisis till now.

Even though most of the GCC's energy is produced from oil, there are plans to change that in the future. Recently, the UAE authorities announced their net-zero carbon emissions around 2050.

This will obviously allow companies to let go of natural gas resources and suppliers. This has the potential to shed light on potential partners to produce more unconventional and conventional reserves.

In addition, according to Al Jaber, these developments will aid the plan to achieve self-sufficiency.

Although the GCC countries as well as European ones have attempted to alleviate energy price pressure on both domestic and business users using a variety of methods, the fact remains that the underlying price trend for both gas and electricity has shifted upward.

EFFECT OF DECARBONISATION PROJECTS

Another strand of that knot of problems - and one which could prove difficult to loosen - is the need for public and private investment in decarbonisation projects to meet reduction targets that are either mandatory, or set to be mandatory globally, pushing more and more countries in the Middle East to put a plan to achieve that.

Governments from around the world have met recently at the United Nation's COP26 climate talks in Scotland to agree on global targets for carbon emission reduction.

Inevitably, there has been discussion of the role that renewables such as wind, solar and hydro will play a big role in meeting the ever-growing demand for power.

Renewables will be key to decarbonisation in most countries, which is how that issue of grid resilience creeps into the frame.

The switch to renewables is likely to be uneven because the process of closing coal and gas-fired power stations will remove swathes of generation capacity quickly.

As new sources of power such as solar and wind farms are connected to the grid, problems can arise



Yehia ... making sense of energy transition

with grid capacity. This means that the physical infrastructure, the power lines themselves, must be upgraded to increase capacity to manage the new power supplies.

This is a time-consuming and expensive process especially for countries in the GCC that have spent the last decade focusing and building around the gas and oil sector.

Therefore, the switch to renewables or clean energy will require them to alter a huge part of their infrastructure and en-

ergy supplies.

Although most countries have mechanisms to cope with power shortages, such as interruptible electricity contracts that reduce demand from major uses when the need arises, it remains the case that switching to commercial renewable sources could be a bumpy ride, particularly as power demand rises due to the electrification of heat and transport.

SECTOR COUPLING CAN EASE THE STRAIN

Energy transition is increasingly non-negotiable, mandated in various forms by governments within and outside the GCC and EU, and across virtually every sector of the economy.

Buildings, transport, and industry are all affected, with the switch from fossil-fuelled vehicles to electric vehicles perhaps the most prominent.

Sector coupling is the term that describes how energy consuming sectors can be linked with energy producing sectors to make the most of all available power, particularly renewable power.

It is this linkage that can help businesses take a strategic approach to energy price volatility.

Our recently launched 'Buildings as a Grid' approach to energy transition unites the power needs of buildings and electric vehicles with on-site renewable energy generation, and it is based on sector coupling.

At an enterprise level, the Buildings as a Grid approach means businesses can use digitally-controlled energy storage to manage power and reduce costs within the confines of their building or site.

At its most basic, the approach involves taking off-peak energy from the grid and storing it for use when needed. This can be done quickly, without grid upgrades.

However, the approach is about much more than that. It is truly strategic because it paves the way for the energy transition.

It prepares the building for an energy future beyond fossil fuels. And because the exact shape of that future is still unclear, the approach is highly flexible.

Buildings as a Grid is not a single product, or even a single system - we call it 'an approach' because it will be different for every business that adopts it.

'BEHIND THE METER' MATTERS

The power industry refers to everything that is the responsibility of energy users as 'behind the meter'. This can be anything from machinery to heating and lighting, and it includes EV charging and energy storage.

Behind the meter, businesses are in control. This is where they can define their own approach to energy management to save money, increase resilience, and boost carbon-efficiency.

Energy storage and on-site renewables are key tools they can choose to combat higher energy prices in the short term and build a greater degree of self-sufficiency in the mid-to-long term.

The switch to EVs will be a defining feature of this decade. BloombergNEF, the clean energy primary research provider, said in its Electric Vehicle Outlook 2020 report that the number of EVs globally is expected to jump from 8.5 million in 2020 to 116 million in 2030.

As more drivers switch to EVs, they will need charging wherever they go. This means premises that host business, commercial, educational, governmental, healthcare or leisure services, or similar, will need to provide EV charging, as will companies that own or manage residential apartment buildings.

Buildings as a Grid can manage bi-directional energy flows that include the flow of power between EVs and buildings to make the most of EV battery capacity.

This can be highly effective wherever there is extensive vehicle parking, and particularly valuable as part of an EV fleet charging strategy.

The uncertain energy outlook has left many business leaders pondering how to shield their businesses from price rises and power outages, and what they can do to manage energy and meet decarbonisation goals. Sector coupling is a route they can choose right now.



Eaton's 'Buildings as a Grid' unites the power needs of buildings and electric vehicles with on-site renewable energy generation

Digital procurement supporting the region's oil and gas industry

With a changing energy landscape, the industry should capitalise on digitalisation and utilise technology to streamline its procurement operations to deliver increased value, says Hani Mosbeh, Vice-President Sales Middle East & Africa, JAGGAER, tells **OGN**



Identifying potential value of procurement through digital technology

THE oil and gas industry was already facing a market headwind long before the pandemic started; however, Covid-19 further accelerated the wind speeds and changes that would otherwise have taken years to happen to unfold in a matter of months.

Despite Brent oil prices currently at around \$70 per barrel (which is particularly impressive when we consider it averaged \$41 per barrel in 2020) and a robust global economic recovery, particularly in the US, Europe and China, the unpredictability of the virus and its re-emergence in certain markets is putting the recovery under pressure.

In the Middle East, the UAE has committed to reducing carbon dioxide emissions by 70 per cent and increasing clean energy by 50 per cent by 2050.

With this changing energy landscape, the oil and gas industry now has the opportunity to capitalise on digitalisation and utilise technology to streamline its procurement operations to deliver increased value.

As a result, the big oil and gas players face a range of vital strategic questions. These relate to the re-pacing of oil and gas investment in the short term, transforming legacy technology estates to support their net-zero ambitions, and identifying when investment in renewable generation will yield tangible cash flow.

The role of exploration in the future and reinvesting surplus cash flow into the business are additional questions currently being considered.

Many in the oil and gas industry have been addressing the role digital technologies play in disrupting their existing business models.

Digital transformation makes it easier than ever before for a procurement function to play a significant role in optimising the business and its supply chain while delivering cost savings.

If we take the challenging trading conditions of 2020 as an example, oil dropped as low as \$17 per barrel, and as a result, oil and gas organisations were in a position where they had to achieve more with fewer resources.

Of course, these were unprecedented times; however, one of the ways companies within the industry are achieving this is by capitalising on procurement technology.

WHAT DOES DIGITISATION MEAN FOR O&G?

Digital technologies are helping all industries reshape their business landscape, which is no different for oil and gas companies.

What does digitalisation mean for the oil and gas industry? In short, digital transformation is helping the oil and gas sector tackle the challenges it faces in the long term and create value for all its stakeholders.

A study by the World Economic Forum has revealed that digi-



Mosbeh ... focus on digital transformation for procurement

talisation can unlock up to \$945 billion of value for the oil and gas industry, which would unlock a further \$637 billion for the broader society over the next 10 years.

SOURCES OF VALUE FROM DIGITALISATION

First and foremost, digital transformation enhances efficiency, increases customer value, manages risk, and provides direction when generating new revenue opportunities.

Digitalisation also has a fundamental role in controlling and managing the risk of disruption to supply chains and compliance through predictive maintenance and providing increased visibility.

The agility of the business is another hallmark of digital implementation, allowing it to react to change with product pricing or commodity trading strategies.

As we highlighted earlier, the UAE has set out clear and defined targets for the reduction of CO2 emissions and increase clean energy output.

Technology implementation enables organisations to deliver against their net-zero ambitions through nature-based solutions and carbon credit management.

The use of tech also promotes opportunities to integrate within the organisation – developing integrated products across

value chains.

It also allows for the development of innovative business models and customer-centric products such as real-time customer support.

More concisely, digitalisation eliminates routine and creates greater visibility over spend and risk.

THE TECHNOLOGY – THE SOLUTION

Procurement technology allows companies to effectively identify sources of potential value through advanced analytics, unlock sourcing and negotiation strengths and retain value in the business through effective contract, performance, and risk management.

By utilising procurement technology, it is possible to develop supply management strategies that recognise changing political and economic pressures.

It can assess the risks associated with geopolitical shifts, identify alternative suppliers for renewable energy projects, and take advantage of the competitive technology market.

The technology also allows companies to diversify suppliers and broaden their marketplace. Suppliers are identified, vetted and onboarded faster, achieving indigenisation and similar goals.

There are more opportunities to monitor performance more accurately while increasing competition between suppliers.

In addition, there are opportunities to build, issue and evaluate sourcing events between internal stakeholders and external partners collaboratively.

In an uncertain energy marketplace, it's imperative to move to a more strategic approach that allows you to drive better contract terms, deeper volume discounts and more bargaining power with advanced event hosting.

Procurement technology also provides the opportunity to lower costs on both sides of supply relationships by evaluating the value of bids beyond just price, whether you're collecting simple quotes or running complex events.

It is about impacting the bottom line with more informed decision making and leveraging high-performing suppliers with clear data insights.

CONCLUSION

Ultimately, digital transformation, supported by procurement technology, enables a business to do a lot more with less.

Procurement is responsible for managing the acquisition of assets and managing the supply chain in meeting their mission requirements. With the industry facing strong headwinds, it is no surprise that organisations in the oil and gas sector are looking to unlock value through digital transformation.

The value procurement technology adds will be essential for the continued growth of the oil and gas sector in the Middle East.

If an organisation either has high turnover or is lagging behind on the digitalisation competencies, then action needs to be taken at once, and this article is invaluable to set the course right in 2022, Dr Saadi Adra, CEO, of Advisors, tells **OGN**

Upskilling for digitalisation with the help of SFIA's framework

IN 2019, employee turnover increased by 8.3 per cent from the previous year, and by 88 per cent from 2010 ((Work Institute). This rate reached an alarming 57.3 per cent in 2021 (Bureau of Labor Statistics).

High turnover together with the pressing need for a better strategy for the digital world are perhaps two alarming things that are keeping CEOs and leaders awake at night.

It becomes more critical when the 'digitally-competent' staff starts to migrate. This is then a red flag and is a sign that the end is near.

Although digitalisation skills readiness and employee turnover might seem as two distinct factors, there just might be a direct causal relationship between the two.

The turnover of digitally developed staff in a digitally mature environment is much lower than elsewhere. Check the turnover rate at Google, Microsoft, Apple, and even Aramco.

Statistics show that the cost of talent shortage varies; it is projected at \$435.7 billion for the US, \$90 billion for the UK, and \$147.1 billion for China (Catalyst, 2020).

Resources are unquestionably the most valuable asset hence developing the right structure, acquiring the right talent, upskilling for the needs of the digital era, while retaining all of them, altogether is the real challenge.

In simpler terms, answering questions such as 'What skills do we have?' and 'What skills do we need?' is an imperative for the sustainability of the organisation.

People, their skills and experience have become a critical aspect for the operations of companies with a dependency on information and communications technology (ICT). Clearly oil and gas, petrochemicals, EPC contractors and operators alike are within these.

Most companies don't know the current skills of their digital, cybersecurity and ICT workforce, or what they need in the short-, medium- or long-term.

Without this there is significant risk of visible business disruption, cybersecurity breach, digital transformation and project failure, compromised ability to deliver products and services to customers at agreed levels, poor employee engagement, recruitment and retention, ineffective training and development.

SFIA has been developing the right framework based on experience to solve real time

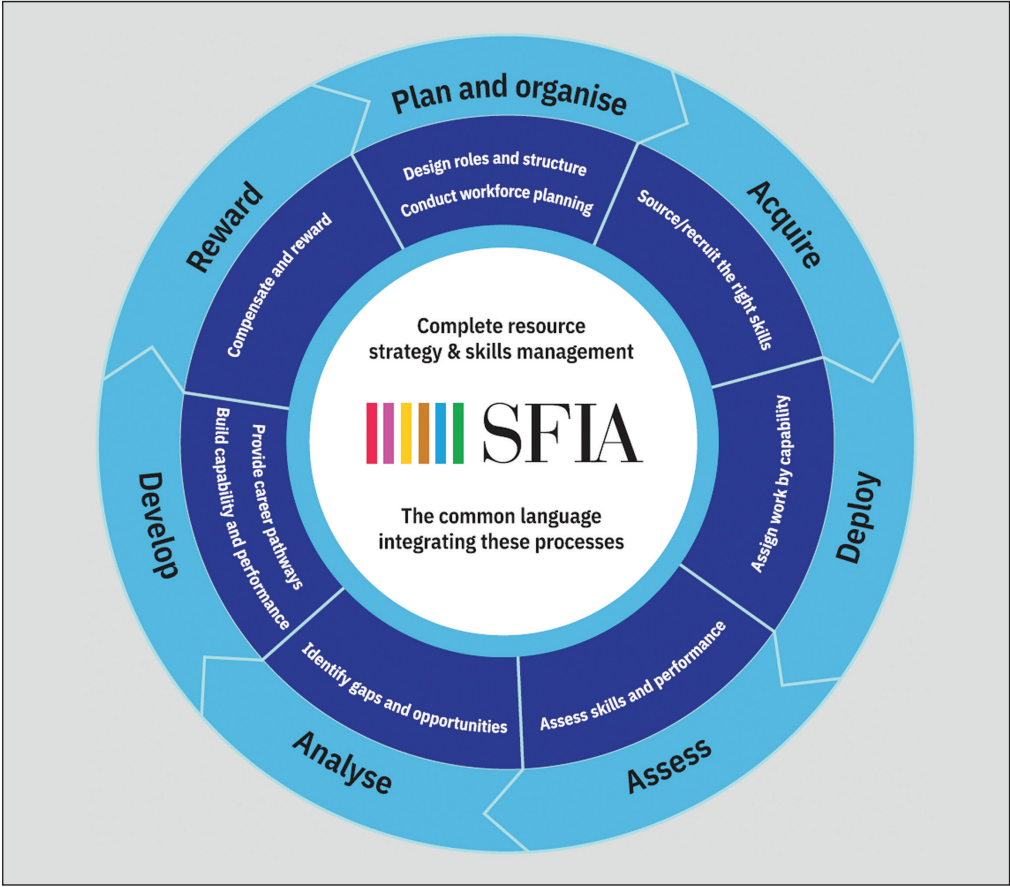


Figure 4 ... the complete resource strategy and skills management model

problems related to skills and competencies encounter in any job role to allow organisations achieve a consistent and integrated skills and people management system.

SFIA is a not-for-profit global foundation that undertakes collaborative development. It was built by industry and business for industry and business, and offers industry-led skills and competency framework for the digital world. It defines the skills and competencies required by professionals who design, develop, implement, manage, and protect data and technology.

SFIA's core principles are community-led collaboration, openness and sharing, support for the global ecosystem, flexibility, integrity, relevant, straightforward and usability.

With over a 20-year track record of successful use, proven sustainability, and timely updates, SFIA has been adopted by governments, corpo-

rates, and individuals in almost 200 countries.

SFIA exists to enable and support the workforce and skills management cycle. It has assessed and provided 121 professional speciality skills with 495 skill level description (figure 1).

Skills proficiency and professional competency are attained at a particular level due to the practice of that skill in a real-world situation.

The SFIA framework is built on a straightforward 7-level framework that brings together professional skills, behaviours, and knowledge to reflect experience within the real-world working environment.

The seven SFIA levels of responsibility provide the backbone for the SFIA framework (figure 2). They are not levels of increased knowledge, academic achievement or years of practice, but from following what you are guided to do (Level 1) up to setting strategy,

inspiring the organisation, and mobilising the workforce (Level 7), combine to provide a common language to describe levels of responsibility across roles in professional disciplines.

These levels of responsibility are described with generic attributes and include: Autonomy, Influence Complexity Business Skills and Behaviours and Knowledge, and are outlined for each level of responsibility in a consistent manner with an increasing responsibility, accountability, and impact from Levels 1 to 7 (figure 3).

Figure 4 shows the complete resource strategy and skills management model that assesses the flow of SFIA implementation of integrating the processes, starting from planning and organising to reward.

To comprehend the importance of these seven processes, some key and challenging questions need to be asked:

- How sure are you about the right set of skills/capabilities/knowledge/attributes that you need to realise vision 2030?
- How many times do organisations recruit what seems to be the perfect resource through CVs, aesthetics and references only to discover later that it was a disastrous decision?
- How do organisations validate that the right people with the right skills are allocated to realise top strategic initiatives? What if organisations do not possess all the needed resources to fulfil all their commitments and initiatives?
- Are we using international standards and best practices for assessing skills and performances?
- What is the status of the organisation in terms of identifying the gap between what it has versus what it needs, to achieve its vision?
- How can organisations develop their best staff and update their career paths in the digital era in a manner that can enhance retaining the top performers?
- Are we rewarding the wrong people or maybe missing the right ones?

**Advisors, Advisors Saudi and Advisors Egypt are providing SFIA services for the oil and gas, petrochemical, EPC, government and industry to enhance resource management and readiness for the digital age.*

For full report, visit www.ognnews.com

Level 7	Set strategy, inspire, mobilise
Level 6	Initiate, influence
Level 5	Ensure, advise
Level 4	Enable
Level 3	Apply
Level 2	Assist
Level 1	Follow

Generic SFIA attributes							
Increasing responsibility, accountability and impact							
SFIA levels	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
Guiding phrase	Follow	Assist	Apply	Enable	Ensure, advise	Initiate, influence	Set strategy, inspire, mobilise
Generic attributes							
AUTONOMY	Demonstrating increasing levels of autonomy – the level of ownership and accountability for results in the workplace						
INFLUENCE	Demonstrating increasing levels of influence – the level of positive impact with colleagues, clients, suppliers, partners, managers, leaders and the industry as a whole						
COMPLEXITY	Demonstrating the ability to perform work of increasing complexity – the scale and impact of the issues, opportunities, tasks and processes addressed in the workplace						
BUSINESS SKILLS AND BEHAVIOURS	Demonstrating increasing business skills and positive behaviours – operating effectively with the required level of impact in the workplace						
KNOWLEDGE	Demonstrating increased responsibility for developing and applying knowledge to achieve individual and organisational objectives in the workplace						

Figure 2 ... The seven levels of responsibility provide the backbone for the SFIA framework

Figure 3 ... generic attributes of the seven levels of responsibility