

Oil Review

Oil · Gas · Petrochemicals

Africa

VOLUME 16 | ISSUE 2 2021

East Africa: Offshore ambitions in Somalia

Mozambique: LNG and FLNG projects make headway

Geophysical data: Maximising value from all production assets

News and latest product innovations



Immanuel Mulunga, MD, NAMCOR, speaks about local content development

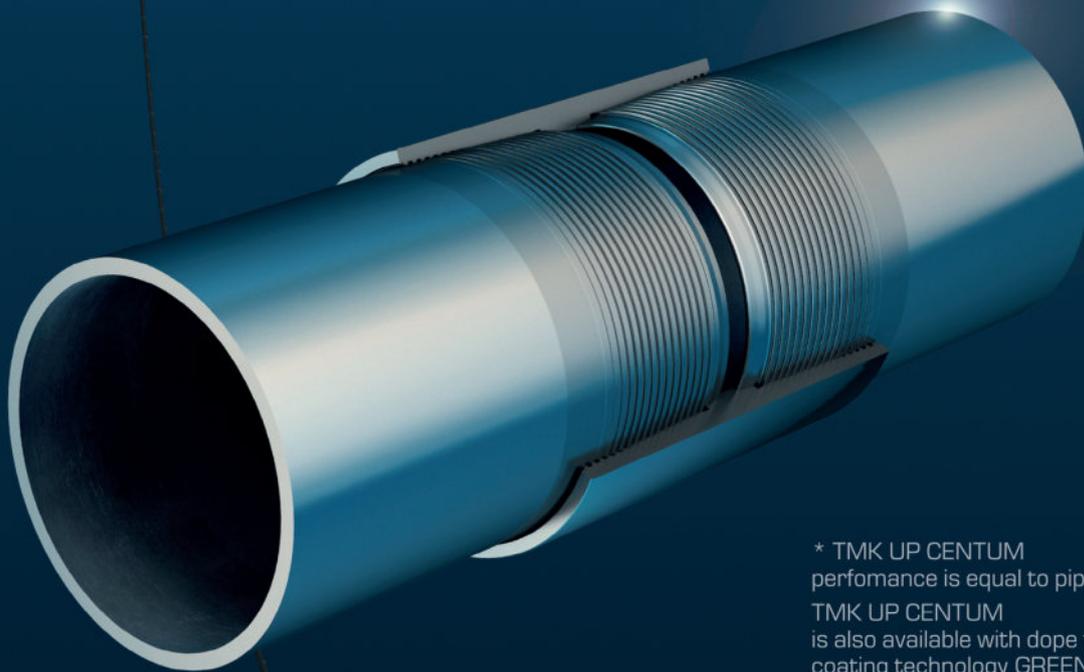


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Get exciting update about Somalia's offshore sector on page 11.

Image Credit: Adobe Stock

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Printed by: Buxton Press

© Oil Review Africa ISSN: 0-9552126-1-8

Alain Charles Publishing

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EDITOR'S NOTE

IN THIS ISSUE, we look at the role of offshore vessels for the smooth running of Africa's offshore logistics industry, the hygienic pumps to avoid damage and create a reliable, safe pumping process and oil wells technology in the ground. Our cover story (p11) explores the untapped potential in Somalia that draws the attention of oil players as this province has opened its offshore waters for E&D. Our news pages cover some of the highlights of EGYPS 2021 – a platform to reshape the markets and the world's future energy mix.

The future certainly looks bright: Karim Badawi, Schlumberger, (p25) points out that access to digitalisation has been more evident than ever for the E&P portfolio and explains how Egypt is leveraging digital to accelerate energy discovery and investment from operators across the globe.

Meanwhile, turn to page 26 to hear from Somaya Ouazzani, founder and CEO of Mimoza Fleur, to know why fewer women move in the oil and gas industry than men.

Deblina Roy

Editor, Oil Review Africa

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Executives Calendar 2021

MAY

19-21 SAIPEC
Virtual
www.saipec-event.com

JUNE

6-10 NIPS
Abuja, Nigeria
www.nigeriapetroleumsummit.com

7-9 EGYPS 2021
Egypt, North Africa
www.egypt.com

29-30 South Sudan Oil & Power
Juba, South Sudan
www.africaoilandpower.com/event/ssop-2021

JULY

1-3 09th Oil & Gas Africa
Nairobi, Kenya
www.expogr.com/kenyaoil

5-8 Nigeria Oil & Gas
Abuja, Nigeria
www.nogevent.com

SEPTEMBER

13-16 Gastech
Singapore EXPO, Singapore
www.gastechevent.com

28-30 7th Mozambique Gas Summit & Exhibition
Maputo, Mozambique
www.mozambique-gas-summit.com

29-30 Ghana Oil, Gas, Energy 2021
Accra, Ghana
www.ghana-summit.com

OCTOBER

4-5 U.S. Africa Energy Forum
Houston, Texas
www.africaoilandpower.com/event/us-africa-energy-forum-2021

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

EGYPS 2021 to be held in-person from 7-9 June

THIS JUNE, EGYPT is bringing together government representatives, global CEOs, NOCs, IOCs, international service providers, EPCs, consultants and financiers to address the evolving opportunities in global energy markets.

Being the North Africa and the Mediterranean's leading oil and gas exhibition and conference, The Egypt Petroleum Show (EGYPS) will be held under the patronage of HE Abdel Fattah El Sisi, President of Egypt, where oil and gas professionals convene to engage in dialogue, create partnerships, do business and identify solutions and strategies that will reshape the global energy markets. The conference is still set to take place in-person from 7-9 June 2021 in Cairo at the Egypt International Exhibition Center with an expanded exhibition space attracting 20,000 attendees from local and international businesses to identify opportunities from Egypt, North Africa and the Mediterranean's future project requirements and strategic priorities for oil and gas sector.

Why Egypt?

The North African country is emerging in the forefront of regional oil and gas activities with

exciting developments in recent years. A total of 14 upstream agreements were signed from March 2020 to date (US\$1.5bn). In January 2021, Energy Ministers of Egypt, Israel, Italy, Greece, Cyprus, Jordan and Palestine approved the transformation of the East Mediterranean Gas Forum (EMGF) into a recognised international organisation for commercial development of the natural gas fields in the Mediterranean area. Around 22 upstream agreements were signed with IOCs in 2020, with minimum investments of around US\$1.6bn and a signature bonus of about US\$139mn, for drilling 74 wells.

The strategic and technical conferences are bringing together industry leaders from regional and international producing, consuming and transit countries to discuss and deliberate the reshaping of markets and the world's future energy mix. The oil and gas professionals will discuss the latest technical challenges, product innovations and project advances to stay technically relevant, digitally competitive and business resilient.

The EGYPS Finance & Investment Summit provides exclusive insights from leading government representatives and industry

financiers and investors who continue to strive to ensure business continuity, profitability and stakeholder confidence.

Combining high-level keynote speeches, panel discussions and live Q&A sessions, the 2021 edition delivers a platform for learning the latest industry trends and developments and most importantly, meeting face-to-face with key stakeholders and decision makers within the health, safety and environment fields that together help drive businesses forwards.

All Secure standards

Following guidance in light of the COVID-19 outbreak, the organiser, dmg events, has developed a detailed set of enhanced measures to provide the highest levels of hygiene and safety at its events, reassuring and building confidence in all attendees that they are participating in a safe and controlled environment. The All Secure standards comprise of four key cornerstones, providing assurance and confidence that all events have health and safety as the number one priority.

www.egypt.com

Azinam acquires 50% interest in Block 2B offshore South Africa

AZINAM SOUTH AFRICA Ltd (ASAL), a Seacrest company, has announced the completion of its acquisition of a 50% operated interest in Block 2B offshore South Africa.

Under the terms of the company's farmout agreement with Africa Energy Corp, ASAL has acquired a 50% participating interest in Block 2B and become the Operator of Block 2B on behalf of the joint venture partners. Africa Energy Corp will retain a 27.5% participating interest in the block.

Simultaneously, Panoro Energy has become a 12.5% participating interest holder on the licence. Crown Energy AB indirectly holds the remaining 10% participating interest.

ASAL and the other licence partners plan to drill up-dip of the A-J1 oil discovery, with the well targeting 349 mmbbl of oil. The Block 2B area has the potential to provide the first major oil production offshore South Africa, and the first oil production in the Orange Basin.

Daniel McKeown, managing director of Azinam South Africa Limited, commented, With A-J1 having flowed oil to surface and with the benefit of a significant database of well and modern seismic information, Azinam believes that Block 2B has the potential to provide South Africa with its first major offshore oil production. This transaction will allow for a well to be drilled to test the wider potential of the A-J1 discovery. Azinam and its partners are targeting 349 mmbbl of oil."

BW Energy re-starts drilling campaign on Dussafu license, Gabon

BW ENERGY LIMITED has announced the re-start of a three-well drilling campaign on the Dussafu license offshore Gabon consisting of two exploration wells in the Hibiscus area and one production well on the Tortue field.

The current campaign is set to start with the Hibiscus Extension appraisal well (DHIBM-2) which is located around 56km from the coast in 119 m water depth. The well is planned as a vertical well to test the northern extension of the Gamba reservoir of the already discovered Hibiscus field. If the well is found to be hydrocarbon-bearing, one or two appraisal side-tracks may be drilled to further delineate the field.

The appraisal well will provide new input to the ongoing Hibiscus/Ruche development

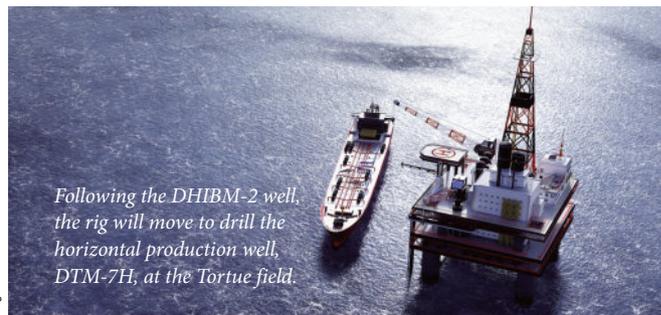


Image Credit: Adobe Stock

Following the DHIBM-2 well, the rig will move to drill the horizontal production well, DTM-7H, at the Tortue field.

project, which is currently based on the already discovered 46.1 mn bbl gross 2P reserve at Hibiscus and the 24.1 mn bbl discovered at Ruche and Ruche North East.

The development project is planned to consist of a converted jack-up rig tied back to the FPSO with 12 development wells drilled in two phases, with first oil expected in the Q1 2023.

"Working closely with the government of Gabon and our

license partners, we are looking forward to unlocking the full potential from Hibiscus and continue our development of the successful Tortue field through this drilling programme. The company expects to generate material cash flow over the next decade from the continued development of Dussafu and to deliver significant value to Gabon and the license partnership," said Carl K Arnet, CEO of BW Energy.

Nostra Terra announces potential portfolio expansion into Tunisia

NOSTRA TERRA, THE oil and gas exploration and production company, has announced progress with the planned strategic expansion of its portfolio into Tunisia.

Exclusive negotiations and preparations have taken place for a large block with existing discoveries, offering both

exploration and appraisal activity and new entities have been organised in anticipation of such expansion.

Completion of the initial transaction is not certain, however Nostra Terra has exclusivity, has negotiated terms and is waiting final approval. Further updates will be made in

due course.

Matt Lofgran, CEO at Nostra Terra, said, "Our core focus at Nostra Terra has been to first build a foundation of steady producing assets where cashflow covers overhead and can be reinvested in growth. We know investors like to see assets that have large potential upsides so that they can deliver substantial value. We said that we planned to add that aspect to the portfolio once we reached cashflow positive."

"We are leveraging the board's extensive experience and network, and we look forward to adding a dynamic asset to the portfolio, with no near term external funding needs, and the ability to have a very positive impact."



Image Credit: Adobe Stock

Nostra Terra is waiting final approval.

Africa Oil & Power and Invest In Africa forge strategic partnership

AFRICA OIL & POWER (AOP) has announced its strategic partnership with Invest in Africa (IIA) – one of the leading business and investment promotion associations for African SMEs – to drive the participation of local suppliers in the energy sector at the upcoming MSGBC Oil, Gas & Power 2021 Conference & Exhibition.

The partnership aims to expand the presence of African SMEs by connecting multinationals and IOCs to credible local suppliers; facilitating collaboration with partners, vendors, clients and governments; and ensuring that large-scale energy developments translate into tangible opportunities for indigenous businesses.



Image Credit: Africa Oil & Power Conference

Ibrahima Talla, African Partner Pool Manager at IIA.

The collaboration between the two entities is foundational

to the event's central mission to promote local content, capacity building and cooperation between IOCs and local partners.

“Invest in Africa has a particular interest in this Summit because it allows key stakeholders of the extractive industries and energies around the MSGBC Basin to meet and access the same level of information on ongoing operations, as well as development prospects,” stated Ibrahima Talla, African Partner Pool Manager at IIA.

“This constitutes the foundation of the local content promoted and advocated by IIA. We are convinced that this forum will promote the establishment of partnerships that will foster the creation and sharing of value.”

Eni and SONATRACH sign a series of agreements

THE CEO OF Eni, Claudio Descalzi, and the president general manager of the Algerian state company SONATRACH, Toufik Hakkar, have signed various agreements in the exploration and production,

research and development, decarbonisation and training fields.

These agreements mark a further step forward in strengthening the partnership between the two companies.

The first of the agreements signed aims to implement an ambitious programme for the relaunch of exploration and development activities in the Berkine basin region and provides for the creation of a gas and crude oil development hub through a synergy with existing MLE-CAFC installations. This agreement is part of the process to finalise a new hydrocarbon contract in the basin, under the aegis of the new Algerian oil law which came into force in December 2019.

Claudio Descalzi and Toufik Hakkar signed a MoU to develop the partnership between Eni and SONATRACH in the new technologies sector, with a focus on renewable energy, biofuels and hydrogen.



Image Credit: Adhbe Struck

The focus is on biofuels, renewable energy and hydrogen.

Ever Given vessel freed from Suez Canal

AFTER THE Ever Given container vessel ran aground amid high winds and a standstorm in the Suez Canal on Tuesday 23 March, effectively shutting off the important maritime route, international trade has been severely impacted but now service has resumed as the vessel has finally been pulled free.

It is estimated that around 12% of total globe trade passes through the Suez Canal each year, and the effective sealing off of the channel has caused widespread disruption which has left few industries unaffected: it has been suggested that around US\$9.6bn worth of goods has been held up each day. For the oil and gas sector, it was another setback after a challenging period which has seen hydrocarbon prices plummet over the last year.

Although oil is still set for a fourth quarterly gain, the disruption in the Suez Canal provoked a dip in prices with West Texas Intermediate falling as much as 2.5% and Brent also falling.

Unwedging the Ever Given was no easy feat. With the vessel measuring nearly 400m and weighing almost 220,000 tonnes it was not a case of a simple manoeuvring operations once it became stuck. After nearly a week of continued efforts, in the early hours of Monday 29 March, thanks to the efforts of Egyptian and international salvage teams, the stern was finally freed.

However, as was warned at the time, there was still much to do as the bow was still stuck rock-solid. With the ship free to continue on its journey, traffic can finally flow once again after six days of holding.

Total confirms final agreement for Lake Albert Project

PARTNERS OF THE Lake Alberta development project, Total, China National Offshore Oil Corporation (CNOOC), Uganda National Oil Company (UNOC), and Tanzania Petroleum Development Corporation (TPDC) have concluded the final agreements required to launch the undertaking in East Africa.

The agreement was confirmed at a signing ceremony held in Entebbe, in the presence of Yoweri Museveni, president of the Republic of Uganda, Samia Suluhu Hassan, president of the United Republic of Tanzania, Patrick Pouyanné, chairman and CEO of Total, as well as representatives of CNOOC, UNOC and TPDC.

The Lake Albert development encompasses Tilenga and Kingfisher upstream oil projects in Uganda and the construction of the East African Crude Oil Pipeline (EACOP) in Uganda and Tanzania. The Tilenga project, operated by Total, and the Kingfisher project, operated by CNOOC, are expected to deliver a combined production of 230,000 barrels per day at plateau. The upstream partners are Total (56.67%), CNOOC (28.33%) and UNOC (15%).

The production will be transported from the oilfields in Uganda to the port of Tanga in Tanzania via EACOP cross-border pipeline, with Total, UNOC, TPDC and CNOOC as shareholders.

Trident Energy completes hot-tapping operation in Equatorial Guinea

TRIDENT ENERGY HAS confirmed the successful completion of its first deep offshore hot tapping operation in Equatorial Guinea, conducted on its CEIBA field which is located on the present-day continental slope.

This method, completed at a water depth of 780m, has allowed Trident Energy to create new gas injection points on two subsea production jumpers where there were none before.

The operation involved the London and Equatorial Guinea teams including experts from the onshore operations, production and offshore departments. Trident Energy was also supported by contractors including Trendsetter Engineering, IK Norway and Searov (a Deepocean Company).



Image Credit: Adobe Stock

The company has carefully considered health, safety and environmental risks.

With such a project comes a variety of health, safety and environmental risks which need to be carefully considered and managed especially as production remained in service whilst the operation took place. Utilising

the expertise from the engineering and HSE teams and experienced contractors involved, the company investigated all possible risks and only proceeded with the process when it felt it was safe to do so.

ADM Energy exploring Barracuda oil field development options

ADM ENERGY PLC, a natural resources investing company, has conditionally agreed to invest in the development of the Barracuda oil field in OML 141, an existing discovery and near-

term production asset in swamp/shallow waters offshore Nigeria.

The investment will be made by way of an acquisition of a 51% interest in K.O.N.H. UK

Limited, which holds an indirect interest in a risk sharing agreement for the Field. The completion of the investment is expected in the Q2 2021.

Consideration for the Investment may total up to US\$1.3mn, of which US\$0.25mn is to be settled in cash on completion and the balance is to be settled in equity on completion and on satisfaction of certain project milestones.

ADM Energy intends to raise approximately US\$0.5mn in cash by way of a subscription, for new ordinary shares to, inter alia, provide funding for the Investment. The subscription will be effected by way of an accelerated bookbuild, at a price of 4.25 pence per new ordinary share.



Image Credit: Adobe Stock

The completion of the investment is expected in the Q2 2021.

Tecnimont S.p.A. receives US\$1.5bn NNPC contract in Nigeria

TECNIMONT S.P.A, A subsidiary of Maire Tecnimont S.P.A., has been awarded a contract by the Federal Executive Council to carry out rehabilitation works for the Port Harcourt Refinery Company, a subsidiary of Nigerian National Petroleum Company (NNPC).

The project includes engineering, procurement and construction (EPC) activities for a full rehabilitation of the Port Harcourt refinery complex. The complex is composed of two refineries totalling an overall capacity of approximately 210,000 bpd. The project will be delivered in phases from 24 and 32 months and the final stage will be completed in 44 months from the award date.



The signing ceremony of the EPC contract between NNPC and Tecnimont S.p.A.

Pierroberto Folgiero, group CEO of Maire Tecnimont commented, "With this great result we confirm the soundness of our business strategy on geography diversification, as one of its key elements is to grow and assist our clients in their revamping initiatives, leveraging on our technological know-how to ensure more efficient and

environmentally better performing processes and products. Moreover, we enhance our footprint in Nigeria and in sub-Saharan Africa, a market with excellent downstream prospects given its demographics and the necessity to unlock greater added value from the transformation of natural resources."

Qatar Petroleum enters two offshore exploration blocks to expand presence in Namibia

QATAR PETROLEUM HAS entered into an agreement with Shell to become a partner in two exploration blocks offshore the Republic of Namibia.

Under the terms of the

agreement, subject to customary approvals, Qatar Petroleum will hold a 45% participating interest in the PEL 39 exploration license pertaining to Block 2913A and Block 2914B, Shell (the operator)

will hold a 45% interest, and the National Petroleum Corporation of Namibia (NAMCOR) will hold the remaining 10% interest.

His Excellency Saad Sherida Al-Kaabi, the Minister of State for Energy Affairs and president and CEO of Qatar Petroleum, said, "With this second exploration and production sharing agreement in Namibia, we are pleased to expand our exploration footprint in the country, and to further strengthen our presence in the southern Africa region. Working on these promising and prospective blocks with our valued long-term partner, Shell, is another step towards achieving our international growth strategy. We look forward to working together with the Namibian Government, NAMCOR and Shell on these blocks."



Image Credit: Qatar Petroleum

The two exploration blocks located offshore Namibia.

Eni reveals new light oil discovery offshore Angola

ENI HAS MADE a new light oil discovery in Block 15/06, in Angola's deep offshore. The well was drilled on the Cuica exploration prospect located inside the Cabaça Development Area and close to the Armada Olombendo FPSO (East Hub). It resulted in an oil discovery with a size estimated between 200mn-250mn barrels of oil in place.

The Cuica-1 NFW has been drilled as a deviated well by the Libongos drillship in a water depth of 500 m, and reached a total vertical depth of 4100 m, encountering an 80 m total column of reservoir of light oil (38°API) in sandstones of Miocene age. The discovery well is going to be placed in an optimal position as a producer well. The result of the data collection indicates an expected production capacity of around 10,000 barrels of oil per day.

Cuica is the second significant oil discovery inside the existing Cabaça Development Area and confirms the Block 15/06 Joint Venture's commitment to leveraging the favourable legal framework on additional exploration activities within existing Development Areas.

The well-head location, placed close to East Hub's subsea network, will allow a fast-track tie-in of the exploration well and relevant production, immediately creating value while extending the Armada Olombendo FPSO production plateau. It is expected that production will start within six months after discovery.

A three-year extension of the exploration period of Block 15/06 has been granted until November 2023.

Tullow Oil starts multi-well drilling campaign offshore Ghana

TULLOW OIL PLC has announced the start of a multi-year, multi-well drilling campaign offshore Ghana with the commencement of drilling of the first well at the Jubilee Field.

As previously announced, the Maersk Venturer, which has been contracted for four years, is expected to drill four wells in total in 2021, consisting of two Jubilee production wells, one Jubilee water injector well and one TEN gas injector well.

The 2021 drilling campaign is the first part of Tullow's 10-year business plan which was presented at Tullow's Capital Markets Day in November 2020. The Ghana portfolio has a large resource base with extensive infrastructure already in place. Through a rigorous focus on costs and capital discipline, Tullow believes that these assets have the potential to generate material cash flow over the next decade and deliver significant value for Ghana and investors.



Image Credit: Afolabi Sirook

Tullow is working closely with the government of Ghana and joint venture partners in the country.

Throughout this campaign, Tullow will continue to implement its Shared Prosperity strategy through a strong local content programme with suppliers in Ghana, the professional and technical development of Ghanaian nationals and continued investment in STEM education, enterprise development and shared infrastructure.

Rahul Dhir, CEO, Tullow Oil plc, commented, "Working closely with the government of Ghana and our joint venture partners in Ghana, I am confident that we will unlock the full potential from the Jubilee and TEN fields through this multi-year, multi-well drilling programme."

Kenya ultimatum

Meanwhile, Tullow Oil has received an ultimatum by the Kenyan government to present a comprehensive investment plan for the oil production in Turkana County or risk losing concession on two exploration fields in the area. As reported in the Business Daily Kenya, Tullow is still to develop the field for commercial production. The company has attributed the delay to several factors including unfavourable oil prices worldwide, approval delays for land and water rights, dispute in tax and COVID-19 disruptions.

MEASUREMENT IN THE OIL & GAS INDUSTRY

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Siemens Energy appoints Nadja Haakansson as managing director for Africa

SIEMENS ENERGY HAS announced the appointment of Nadja Haakansson as managing director for Africa.

The company has a rich heritage in Africa, stretching back over 160 years, and has played a significant part in pioneering sustainable and economic developments in numerous African countries.

As managing director for Africa, Haakansson will be based in Morocco, and is responsible for supporting Siemens Energy's business across the continent, as well as developing opportunities to meet the challenges of the energy transition, while improving access to stable, affordable, and sustainable energy. As part of driving the energy transition, improving availability of sustainable energy



Image Credit: Siemens Energy

Nadja Haakansson has been appointed managing director for Africa at Siemens Energy.

is the foundation for long-term economic prosperity.

"Nadja's appointment highlights her extensive leadership experience, excellent reputation, and her ability to forge strategic partnerships in an important

market. Our primary goal at Siemens Energy is to energise society. Around 580 million people in Africa lack access to electricity, making it an important region where we can leverage our innovative technologies and improve lives for generations to come," said Christian Bruch, CEO Siemens Energy.

Since October 2019, Nadja Haakansson has been the vice president for Energy Services, Region Africa and managing director Morocco and Ivory Coast at Siemens Energy.

"Reliable access to energy is key to the societal, industrial and economic development of Africa and I am dedicated to making an impact here, in collaboration with our customers, partners, and talented teams of Siemens Energy in Africa," said Haakansson.

Axxela completes 18km natural gas pipeline in Ogun State, Nigeria

AXXELA LIMITED, VIA its subsidiary Transit Gas Nigeria Limited (TGNL) and in partnership with the Nigerian Gas Marketing Company

Limited (NGMC), has successfully commissioned an 18km gas pipeline system in Ogun State, in the south west of Nigeria.

The 150 mmscfd pipeline runs from IbeFUN to Rite Foods Limited's large-scale factory in Ososa, Ogun State.

First gas has been delivered through this pipeline to Rite Foods Limited, the manufacturer of Bigi Drinks, Rite and Bigi Sausages and Fearless Energy Drinks. With consistent gas supply, the fast-moving consumer goods company will achieve significant energy cost savings.

Speaking on the project commissioning, Axxela CEO Bolaji Osunsanya said, "This venture is in firm alignment with our near-to-long term market expansion strategy, and emphasises our push to broaden our asset portfolio and strengthen our market play within the gas sector."



Image Credit: Adobe Stock

An 18km gas pipeline has been commissioned in Ogun State, Nigeria.

Pharos Energy receives approval from EGPC

PHAROS ENERGY HAS received provisional approval from the Egyptian General Petroleum Corporation's (EGPC) main board to an amendment of the fiscal terms of its El Fayum Concession, which is now subject to the approval of the Egyptian government.

Under the new terms, the Cost Recovery Petroleum percentage will be increased from 30% to 40%, allowing Pharos a significantly faster recovery of all its past and future investments.

In return, Pharos has agreed to:

- ♦ waive its rights to recover a portion of the past costs pool (US\$115mn)
- ♦ reduce its share of Excess Cost Recovery Petroleum from 15% to 7.5%.

Work for phase 1b of the water flood programme in El Fayum has commenced, utilising the funds raised in the equity placing earlier this year.

Ed Story, president and CEO, said, "The improved cost recovery terms mean past and future investments in El Fayum can be recovered thanks to a significant increase in Pharos' total share of gross revenues. Together these new fiscal terms mean an improvement of up to US\$5.7/bbl in the breakeven price.

"We appreciate the cooperation and commitment of the leadership team at EGPC and the support that we have received from the Egyptian Ministry of Petroleum and Mineral Resources. We look forward to working with them to realise the significant mutual benefits of these new arrangements."

The company has been encouraged by the level of interest and is currently reviewing a number of attractive bids.

IS SOMALIA THE NEXT EXPLORATION HOTSPOT?

After nearly three decades of civil war, coupled with multiple sovereignty issues, Somalia is now open to international majors. Although its petroleum industry is in the fledgling stage, exploration companies are confident of discovering crude oil in Africa's most adventurous oil frontier.

THE UNTAPPED POTENTIAL and strategic location next to shipping lanes should draw the attention of oil players to Somalia in search of 'elephant' finds, as this new province has opened its offshore waters for exploration and development (E&D). The Somali government in March 2020 signed a preliminary roadmap with a Shell/ExxonMobil joint venture for E&D of potential offshore hydrocarbons reserves after receiving US\$1.7mn for the lease of their concessions. Besides oil giants, small companies who are aggressive risk-takers are also keen to get a foothold in unexploited oil basins of Somalia.

Italian and British geologists first identified oil seeps during the colonial era. Exploration began in 1948, when Sinclair Oil, Conoco and Agip (now ENI) discovered eight petroleum basins: Daban; Migiurtinia; Mudugh; Mogadishu; El-Wak Mander; Ogaden; and Chismaid and Lamu Basin – with columns of five-six kilometres in several areas, and ranging in age from Jurassic or Triassic to Tertiary (several million years ago).

Country geology

Mature, oil-prone source beds plus potential reservoir rocks and structures exist in a variety of geological settings, as well as a rich variety of trapping



Somalia has the longest coastline in Africa, which extends to 1,000 kilometres along the Red Sea and 1,900 kilometres along the Indian Ocean.

configurations – both sandstone and carbonate with large potential closures. Another positive is the presence of direct hydrocarbon indicators, such as visible flat spots, (Petroleum Economist). Some of the eight sedimentary basins have sediment thickness exceeding five

km and contain good reservoir rocks, seals and traps necessary for hydrocarbons to deposit. The Jurassic separation of Somalia and the Madagascar-Seychelles-India block (several million years ago) has created oil-prolific deposits that share many characteristics with the Ogaden

basin (South Africa), and partially also the Rovuma basin (Mozambique). Geologists divide 'offshore' Somalia, overlain by the current seismic grid into three basins, each defined by their own individual structural regimes: Obbia basin in the North, Central Coriole basin, and Southern Juba-Lamu basin.

The northern region has signs of limestone reef build-ups, sandstone tilted fault blocks and large anticline folds of rock, all within close proximity to oil-rich wells. The temperature in the north increases rapidly that allows the Jurassic rocks to be prime sources to generate oil, as opposed to natural gas. Additionally, these Jurassic rocks are only around one to two miles below sea level.

While temperatures in the southern region are much cooler, and the potential oil-dense oceanic crust is two to 2.5 miles below sea level. Geoscientists have concluded that "the North and South might differ in temperature, depth and reservoir type; both areas appear to be rich in hydrocarbons and show great promise for producing great amounts of oil." (Neil Hodgson, *Somalia Awakes as East Africa's Oil Province*, December 2016).

Somalia also shares the geological structure of the Arabian Peninsula, however, the volumes of sediments in Somali basins are larger compared to the

Arabian Peninsula. The bulk of the Indian Ocean margin lies within Somalia – it has around 58 oil blocks dotting its 3,000 kilometres coastline. Moreover, the area shares similar geological characteristics with Kenya, Tanzania and Mozambique, where sizeable discoveries of oil and gas were made over the last decade.

Recent Guyana and Suriname oil discoveries (South America) testify to high quality oil-prone source rocks deposited in a deepwater setting – the striking resemblance is believed to be present within the deepwater Somali basin. Almost entire offshore/onshore parts of Somalia remain unexploited. Geologists judge the probability of finding good quality reservoirs reasonably high.

Seismic imaging

There is some evidence of a working petroleum system offshore Somalia. Expert geographical assessments suggest the offshore basin boasts billions of barrels of oil. A 2017 study revealed that Somalia is home to 20,582.75 kilometres of untapped reserves. Geographically, there are large oil and gas accumulations in the wider region. Explorers analysing new seismic data recognise the potential of discovering reserves matching those of its neighbours in East Africa.

The results of two new 2D seismic surveys conducted by British firms Soma Oil & Gas and Spectrum Geo (covering an offshore area exceeding 120,000 sq km) suggested Somalia holds promising oil reserves of up to 100bn barrels along the Indian Ocean coast, between the cities of Garad and Kismayo. The extensive 2D seismic data has revealed ‘extraordinary’ and ‘gigantic’ structures.

Meanwhile, another subsurface data processing company, Norway-based TGS, estimated unrisks resources for



Image Credit: Adobe Stock

The East African nation hopes to replicate the offshore exploration success enjoyed by Guyana in recent years.

the Somali basin with a strong possibility of oil-prone prospects offshore along the whole length of the Somalia margin, potentially holding 30bn barrels. TGS had acquired 40,000 kilometres of 2D data – covering the seven blocks currently on offer. Recent 2D seismic surveys show the area to be full of hydrocarbon reservoirs, and potential oil wells – strong indications of widespread distribution of good quality source rocks.

Institutional building

The Somali government took several constructive steps to boost hydrocarbons exploration by ratifying in February 2020 a new Petroleum Law assisted by the International Monetary Fund (IMF). It provides a stable, long-term legal – regulatory framework to protect the investments of international oil companies (IOCs) as well as honouring all contracts signed in the last 30 years. Equally, governance has also strengthened – with the Somali Petroleum Authority being separated from Somali National Oil Company.

An internationally competitive Production Sharing Contract (PSC) model has

adopted fiscal terms to specifically reflect Technical, Economic, Commercial, Operational and Political (TECOP) considerations. Somalia has opted for flexible upstream terms, whereby the royalty rate would fluctuate between 5% and 35% depending on oil-price, along with a profitability-based profit-sharing scheme – equitable for both national interest and IOCs.

Somalia hopes that promising geology, top quartile fiscal terms and an improving economy will induce IOCs to develop its offshore sector. The first ever licensing round for seven offshore blocks was opened on 4 August 2020, six months after the passing of Petroleum Law. It is due to end on 30 June 2021.

Caution

Somalia is among the few remaining unexplored oil frontiers globally, albeit highly prospective, however, investors should proceed with caution when entering ‘untested’ margins. Estimated resources are ‘probable’ or ‘possible’ but not ‘proven.’ The country carries political/security risks and suffers from a decrepit infrastructure. It also ranks the

lowest out of 180 countries on the Transparency Initiative Corruption Index. “There are other challenges facing the development of Somalia’s oil reserves. The spending cuts announced by companies worldwide amid the Covid-19 pandemic are already taking their toll on exploration in Africa and may also affect the interest of operators in venturing into the frontier waters of “an internally troubled state,” according to Rystad Energy.

In sum, Somalia could be the last of Africa’s oil gems. It hopes to replicate the extraordinary offshore exploration success enjoyed by Guyana in recent years. Some of the 58 oil blocks could prove “technically a recoverable” (i.e. proved reserves) contingent, however, on substantial upstream capital expenditure, high oil prices and much improved security for the global exploration industry.

Are we finally set to see the start of E&D activity in one of the world’s few untapped hydrocarbons frontiers? The time has come for IOCs to seriously consider exploring for oil and gas in Somalia. ♦

Moin Siddiqi, economist

MOZAMBIQUE: LNG AND FLNG PROJECTS MAKE HEADWAY

Aligned with the rise of LNG hotspots across the continent, Mozambique is set to become a global gas exporter by 2023, and with robust and progressive gas-focused policies, the country's gas sector is set to become one of the fastest growing globally by 2040.

DRIVEN BY NEW and commercial-sized discoveries and progressive policies, African natural gas consumption and production is set to become one of the fastest-growing sectors globally by 2040.

While a large share of these resources is yet to be developed, the continent holds a promising future. According to the Gas Exporting Countries Forum (GECF) report: *Global Gas Outlook 2050*, Africa is expected to increase its share of global marketed gas production from the current 6% to 11% by 2050.

Despite project delays initiated by COVID-19, and a temporary market oversupply that has limited capital expenditure leading to new project sanctions, several African Liquefied Natural Gas (LNG) projects have been able to progress, positioning Africa as a major LNG competitor globally.

As reported in the African Energy Chamber's (AEC) *Energy Outlook 2021*, African gas markets have not been insulated from COVID-19, but are less exposed than oil markets as COVID-19 primarily curtailed the transportation sector, in which gas is less used. However, the gas market was already experiencing a market glut due in part to export growth of key producers that accelerated global LNG exports and contributed to



According to the Africa LNG report, Mozambique is at the forefront of global gas development.

market saturation.

Africa's natural gas consumption is expected to grow at an average of 3.3% per year – to reach approximately 195 bcm in 2025 and up to 380 bcm in 2050, according to Africa Oil & Power's (AOP) *Africa Energy Series: Africa LNG Special Report 2021*.

Aligned with the rise of LNG hotspots across the continent, Mozambique is set to become a global gas exporter by 2023, and with robust and progressive gas-focused policies, the country's gas sector is set to become one of the fastest growing globally by 2040. Mozambique has garnered significant international attention due to significant offshore gas

discoveries, equating to approximately 100 tcf and corresponding to large-scale LNG developments, including Total's Mozambique LNG and ExxonMobil's Rovuma LNG.

Mozambique LNG, Coral South FLNG and Rovuma LNG

Total's Mozambique LNG project, the country's first onshore LNG development with a target operational date of 2024, remains on track and managed to secure the largest project financing in Africa to date. CCS JV, comprising Saipem, McDermott and Chiyoda, has signed a deal with ABB to provide a

comprehensive electrical system for the Mozambique LNG field. ABB's 26-month project will culminate in a significant installed base in Mozambique for ABB and will involve collaboration across multiple ABB divisions and regions, led by ABB in Singapore. Fourteen large onshore electrical houses (e-houses) or prefabricated electrical substation buildings (PESB) – specifically designed for oil and gas applications, will be built by ABB team in Singapore and transported to the Mozambique LNG Project site.

Eni's Coral South was the first project approved by Area 4 partners for developing gas

resources discovered in the Rovuma Basin, off Mozambique's coast. In November 2020, Eni announced the lifting and installation of the last of the 13 topside modules of the Coral-Sul FLNG facility, currently under construction in South Korea. This lifting is to schedule and in line with the expected sail-away in 2021 and gas production start-up in 2022. In March 2021, TechnipFMC awarded survey work to UTEC, a global surveying company and part of marine energy and infrastructure services group, Acteon, to support the development of the Coral-Sul FLNG (floating liquefied natural gas) project, the world's first in ultra-deepwater in Mozambique.

ExxonMobil's Rovuma LNG is facing a delay to the final investment decision (FID) as the US major is working with its partners to bring down costs. Recently, ExxonMobil and Total have been in negotiations over their massive LNG projects and the success in the talks could be particularly important for Exxon, which has to woo investors ahead of a delayed final investment decision (FID) on its US\$30bn Rovuma LNG project.

A lucrative investment destination for Africa

Very recently, the President of the Republic of Mozambique, HE Filipe Jacinto Nyusi, was awarded "African Energy Person of the Year 2020," which represents a recognition by the energy industry for multiple years of consistent hard work that has commenced multibillion dollar gas projects in Mozambique, at a time when the industry was going through a crisis globally.

Under President Nyusi's leadership, Mozambique emerged in 2020 as the leading destination for investment in Africa. It is likely to continue being a leading destination for energy sector investments globally in the coming decade,



Image Credit: 3t EnerMech

3t EnerMech's project will see the partnership provide evidence-based analysis into the current oil and gas skills training in Mozambique. The country is focusing more of capacity building exercises.

with upwards of US\$100bn to be invested across the entire energy value chain to monetise its gas resources. Investments in Mozambique's gas industry, gas-to-power and planned petrochemical developments will have a significant impact in improving not only the socio-economic conditions in Mozambique, but are also likely to significantly impact the entire sub-region positively.

Focus on local content development

Aligned with the rise of LNG hotspots across the continent – in which Mozambique is set to become a global gas exporter by 2023 – local content development has become a key to maximise the in-country value in the provisions of goods and services, thus revolutionising the economy. International oil and gas companies as well as the government are taking a number of initiatives to ensure skill developments among the country's oil and gas workforce.

Total-operated Mozambique LNG plant is working actively within the Cabo Delgado community to support sustainable development

through local education to develop a qualified workforce and support a burgeoning regional economy. Through a series of high-impact initiatives, including programmes that focus on primary, secondary and tertiary education, as well as technical and vocational training, the project is spearheading local capacity-building in-country and generating opportunities to expand community development and knowledge transfer through natural gas.

Africa Oil & Power held its Mozambique Gas & Power (MGP) 2021 day of technical workshops, aimed at enhancing local content and knowledge transfer in Mozambique's growing energy industry. The virtual workshops targeted a range of subjects including capacity building, critical infrastructure, security and community and deal-making across the energy value chain.

In a recent development, 3t EnerMech, a strategic alliance between 3t Energy Group and EnerMech, has announced a significant contract with the UK government, which is expected to help shape future training

requirements for Mozambique's growing oil and gas workforce. The project will see the partnership provide evidence-based analysis into the current oil and gas skills training of Mozambican Technical and Vocational Education and Training (TVET) institutions and compare this to international standards to identify any existing gaps.

3t EnerMech vice-president Andrew Noble said, "A core aim of the partnership is to engage with local regions to develop local content and ultimately deliver more highly skilled global workers. Winning this significant piece of work in support of Mozambique's local content development strategy is of major importance to the new alliance and its strategic objectives."

"Mozambique is a significant player in the global oil and gas market and with activity continuing to ramp up, the country requires a robust, skilled workforce to support new long-term projects. This study will play a key role in future training and development programmes in the country and we look forward to delivering the data it presents." ♦

SENEGAL'S FIRST POWER PLANT: GAS CONVERSION

THE TECHNOLOGY GROUP Wärtsilä will convert the close to 90MW Bel-Air power plant in Dakar, Senegal to operate on liquefied natural gas (LNG). The plant, which is owned by Senelec, Senegal's public utility company, currently operates on heavy fuel oil.

The conversion will future-proof the facility as Senegal's long-term strategy is to lower the carbon footprint of energy production by switching to gas when a domestic supply is available. This project is part of an interim LNG-to-Power 'bridge' solution, and is the first ever power plant gas

conversion in Senegal. The order with Wärtsilä was booked in the Q1 2021.

"Our two main aims were to improve the plant's environmental profile and to lower the operating costs. By taking advantage of Wärtsilä's deep experience and strong capabilities in power plant gas conversions, we can achieve both of these goals. At the same time, we are preparing the plant for the country's future gas supply infrastructure," said Papa Mademba Biteye, managing director of Senelec.

The Bel-Air plant's existing six Wärtsilä 46 engines will be converted to six Wärtsilä 50DF dual-fuel engines. Wärtsilä's current operation

and maintenance agreement covering the existing engines is being renegotiated in view of the conversion. Wärtsilä's dual-fuel engine technology allows the use of multiple fuels, providing the option to operate on gas with liquid fuels as back-up.

Besides the engine conversion, it will cover all aspects to ensure successful operations on gas. Everything from safety to operational reliability are taken into account, with control functions, mechanical auxiliary systems, as well as electrical and automation systems being upgraded as required. The project is expected to be completed before the end of 2021. ♦



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| <p>FEATURES</p> <ul style="list-style-type: none"> Online filtration, no personal Intervention is required. Units are capable to handle very high flow rates with less footprint. + Water wastage is <1% Consistency in outlet water quality + Energy efficient Technology Uniform cleaning + Plug & Play Technology + No extra pump required for Backflushing Stand by filter not required | <p>APPLICATION</p> <ul style="list-style-type: none"> Side stream filtration (Sea / River, Canal) Condenser / Nozzle protection Intake water filtration + Membrane protection Nozzle protection Desalination Plants. |
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PUTTING THE PIECES TOGETHER

The complex jigsaw of logistics underpins the smooth running of Africa's offshore industry.
Martin Clark reports.

AFRICA'S OFFSHORE INDUSTRY is underpinned by logistics every step of the way.

The scale of many energy projects today is enormous, but success always comes down to the detailed organisation and execution of a multitude of smaller tasks and operations.

Sometimes those smaller tasks are themselves immense undertakings.

Heavy lift experts Jumbo Maritime recently completed supporting work on Total's CLOV MPP project in Angola, using its giant H800 class vessels.

It meant picking up an empty 24-metre diameter carousel from Subsea 7's Norway headquarters and then loading a substantial length of subsea umbilical and auxiliary equipment – with a combined weight of 1,255 tonnes – for onward delivery off West Africa.

And behind every big undertaking – from hauling rigs and other heavy equipment into place, to making sure subsea equipment is positioned perfectly on the ocean floor – there are thousands of firms who come together to make it happen.

Key industry players like Bollore Logistics brought all of these skills to bear during the Covid-19 crisis, flying in essential healthcare supplies where they were needed in Africa and across the globe.

It is among a multitude of big



Image Credit: ASCO

ASCO starts the year with West Africa contract wins.

industry players supporting Africa's oil and gas sector.

Another is Geodis, which recently renamed its industrial projects unit Geodis Project Logistics.

The move widens its oil and gas offer, and reflects growing activity levels in the renewable energy segment, as well as integrating marine logistics and its aid and relief business into an expanded logistics operation.

Luke Mace, senior vice president for Geodis Project Logistics, said it brings together many of the common challenges faced across all of these areas.

"While the logistical challenges of each sector can be

very different, all have very important requirements in common – expertise in handling, attention to detail and quality of service."

The management of all the moving parts of a fluid supply and logistics chain is, in itself, a task for specialists.

Global logistics management firm ASCO was awarded two vessel monitoring contracts in West Africa earlier this year, worth US\$3.5mn.

The contracts include provision of ASCO's vessel monitoring service for collision risk management, along with an entire field monitoring solution inclusive of design, procurement,

installation, maintenance and monitoring.

The service will ensure that ship platform collisions and threats to subsea infrastructure do not go undetected, said Craig Revie, ASCO's group energy transition manager.

"Interactions between vessels and offshore structures continues to represent a major accident hazard for the energy industry, and whilst surveillance systems using radar, AIS and cameras provide a real time picture of maritime activity, these are not always being operated and monitored to their full capabilities, therefore increasing risk to assets." ♦

READING

BENEATH THE LINES

The use of geophysical data has become instrumental in decision making in Africa's oil and gas industry. Martin Clark reports.

GEOPHYSICAL DATA REMAINS integral to the oil and gas search in Africa, and in maximising value from all production assets.

It has become an area driven by technological advances, with operators now able to view beneath the surface in ways unimaginable decades ago.

These tools helped paved the way for the development of Angola's mighty offshore sector.

One of the biggest names in the business is Fugro, which is currently working on a number of geotechnical and environmental surveys off the coast of Angola for Eni.

The multipurpose survey vessel, the Fugro Scout – specifically designed for seabed sampling and in situ testing in water depths up to 3000 metres – is conducting a deepwater environmental survey to acquire, analyse and interpret sediment and water samples from Eni's Agogo field development.

A second vessel, the Fugro Helmert, is helping conduct a route survey in Angola's nearshore areas, including various environmental, geotechnical and geophysical surveys.

These will help to calculate the best installation route and optimise cable burial protection for the New Gas Consortium, a group of multinationals that includes Eni, looking to maximise the nation's gas potential.

"Our vessels are supporting

The aim of the geophysical survey tools is to help pave the way for the development of the offshore sector.



Image Credit: Adobe Stock

Eni in Angola and delivering a range of specialised geo-data services," said Jaco Stemmet, Fugro's Africa director.

"These projects are two great examples of how we unlock insights to help our clients design, build and operate their assets in Africa in a safe,

“ Geophysical tools can help to unlock projects in offshore and onshore.”

sustainable and efficient manner.”

Geophysical tools can help to unlock similar projects onshore too.

French firm Sercel designs and manufactures high-tech solutions for subsurface exploration, and identifying hydrocarbons buried deep underground.

CGG GeoSoftware has also launched WellPath, an interactive 3D well path planning solution for optimal well planning in unconventional and fractured reservoirs and offshore development platforms.

WellPath is set to show the complexity of the subsurface

drilling environment in 3D so that drillers can quickly plan and QC horizontal wells on high-density, multi-lateral pads or large offshore platforms.

According to CGG, the solution is expected to enable drilling engineers to perform interactive directional well path planning while adhering to the constraints of geological targets and engineering design. Drillers can optimise plans based on fractures, facies, geobodies and reservoir attributes while avoiding hazards, legacy wells, and recent completions prevalent in certain areas, such as the Permian Basin of west Texas ♦

WONDER WELLS FOR SMARTER PRODUCTION

Integrating smart technology into wells is nothing new, but it has brought with it major benefits to performance, economics and dependability. Martin Clark reports.

THE INTEGRATION OF technology into almost every aspect of the energy industry has not stopped with the oil wells in the ground.

Far from it: intelligent wells, featuring some degree of direct monitoring or remote control equipment can now collect, transmit and analyse well data in real-time.

This means operators gain 24/7 insight into well and reservoir performance and integrity. Potentially, it's transformative for a business — in terms of reduced downtime, optimum performance and higher profitability.

Innovators in this field include world-beating drilling and services giants such as Weatherford and Halliburton, both active right across Africa.

Schlumberger — which recently launched the Egypt Upstream Gateway initiative to showcase the North African county's oil and gas potential and subsurface information via a digital platform — is another drill technology pioneer.

The company has worked on numerous projects in all of Africa's key oil territories.

In Nigeria, that included work on an onshore project to collect data from a remote intelligent well where output is transmitted straight from the field to the operator in Lagos.

To retrieve data from the

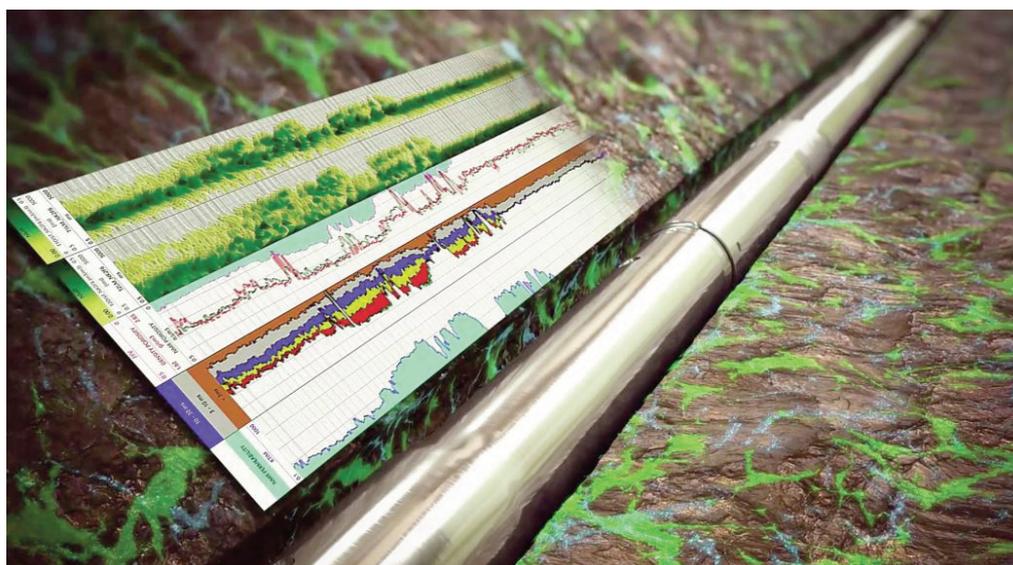


Image Credit: Schlumberger

MagniSphere service delivers real-time reservoir evaluation data to improve drilling performance and optimise well placement for maximised production.

system, the operator had initially planned to send a technician to the site every two months for manual data retrieval.

Employing a conventional automated collection system, with a large presence at the well site, was considered too risky due to theft and vandalism concerns, and too difficult to power — which led to the Schlumberger remote intelligent well system.

Instead, a compact, self-powered WellWatcher Connect system collects data and transmits it directly to the operator's main office, reducing site visits and improving reservoir management.

But technology continues to evolve, with Schlumberger's latest

drilling upgrade its MagniSphere high-definition NMR logging-while-drilling service.

This delivers accurate, real-time producibility analysis for optimum well placement, resulting in improved production and recovery in complex reservoirs.

"MagniSphere service provides operators with a full understanding of reservoir producibility while concurrently enabling enhanced drilling performance," said Jesus Lamas, president of well construction.

"The service provides operators with automated, high-definition NMR data while drilling, which is used to maximise reservoir exposure and

ultimately optimise production."

The technology has already been successfully used in the field in the Middle East and the Black Sea and looks set to be tested in Africa soon.

It reflects how digitalisation is increasingly transforming how energy companies operate. Engineers, both in the field and potentially in an office overseas, are increasingly using big data and digital technology to improve efficiency and boost production.

The advent of the intelligent well, an integral part of the overall smart oil field, has become a key enabler, and an area which seems set to expand rapidly as the sector evolves. ♦

A CLEARLY DEFINED ROADMAP FOR GROWTH ACCELERATION

James Scullion, CEO of OSSO (formerly Centrifuges Un-limited), describes the ambitious growth plan OSSO aims to deliver by expanding oil and gas presence on-and-offshore, highlighting the challenges operators face and the heat transfer solutions for maximum drilling efficiencies.

Deblina Roy reports.

ORA: As Centrifuges Un-limited rebrands as OSSO, what is OSSO's "new ambitious growth plan" to expanding its oil and gas presence on-and-offshore in the near-to-medium term?

James Scullion: We have a clearly defined roadmap for growth acceleration that takes into account a number of factors. The first is to ensure that we continue to support and grow our core oil and gas business by way of international expansion, equipment enhancement and building key strategic partnerships that will further enhance our offering to clients. In addition to this, we are already investing in new technologies and equipment to support our existing client base.

ORA: You said, "Operators are facing complex challenges whether it be environmental or financial and we have the proactive solutions to support them." What kinds of challenges are operators facing right now?

James Scullion: There are a number of challenges facing the industry right now; the more significant long-term change we are seeing is a global shift towards the provision of cleaner, more sustainable energy streams. The demand to provide solutions that help operators meet environmental



According to Scullion, there is a wealth of opportunity in Africa, and OSSO aims to rebuild relationships with local partners.

targets, whether it be their own or government-driven mandates, will only increase over the coming years. As an industry with a complex and diverse supply chain, businesses need to ensure they have at the very least identified what they need to do in order to meet those targets.

ORA: How are OSSO's mechanical separation and heat transfer solutions effective in maximising drilling efficiencies while minimising environmental impact?

James Scullion: Because we use mechanical separation, we are effectively reducing additional waste streams, as our equipment does not require filters to be changed out and replaced. The efficiency of our equipment helps to enhance drilling time by processing waste streams at the

source, reducing backloading of slopwater onshore and, in turn, reducing the need to skip and ship from an environmental standpoint.

Our heat transfer solutions, including our unique remote temperature control system AutoCul, help operators to maintain greater control of the mud temperature. AutoCul enables continuous temperature monitoring and auto adjustment, thus removing the need for manual handling, providing a faster, more accurate and efficient way of monitoring the mud temperature. Our mud coolers help reduce the release of fumes and harmful vapours, providing a safer, more enjoyable work environment. By reducing and maintaining downhole temperatures, you can maximise the longevity and performance of the downhole tools, meaning

you can drill deeper and for longer, therefore reducing downtime by not pulling out of the hole so frequently.

ORA: Apart from oil and gas, how you plan to broaden access into the wider energy and industrial markets?

James Scullion: This is something we are actively working on now. Across the wider energy market, we have identified areas where our skills, equipment and knowledge could easily be transferred. An example of this is geothermal; we are starting to see an increase in this form of energy conversion primarily because it's seen as a cleaner energy resource, and with our years of knowledge and experience within oil and gas we can with little effort move into this adjacent market.

ORA: What are you doing in Africa at the moment? What is OSSO's future plan to expand into Africa's oil and gas horizons?

James Scullion: We previously worked predominantly in West Africa but also Egypt and South Africa. Looking ahead, we see a wealth of opportunity, and our medium- to long-term view would ultimately see us building relationships with local partners in key growth areas across the region. ♦

GOOD OPPORTUNITIES FOR CONSTRUCTION AND FABRICATION

Despite financial cutbacks and operational difficulties as a result of the pandemic, EPC projects in Africa's oil and gas industry provide good opportunities, and the drive towards localising engineering, construction and fabrication continues. Louise Waters reports.

THE COVID-19 PANDEMIC has had a severe impact on Africa's oil and gas project market, forcing delays and cutbacks while on an operational level hampering activities such as construction, engineering, fabrication and manufacturing.

However, Africa Energy Chamber's *African Energy Outlook 2021* report forecasts that as far as the services sector is concerned, EPCI companies are expected to benefit the most from future spending with EPCI "the only segment expected to buck the trend of declining expenditure on the back of the LNG facilities expected to be constructed towards 2025."

Subsea tiebacks and LNG projects will remain the pillar of future industry spending, it says.

As far as recently-awarded EPC contracts are concerned, TechnipFMC was awarded an EPCI contract valued between US\$75 and US\$250mn in February 2021 for the North El Amriya and North Idku (NEA/NI) concession subsea tieback gas field project offshore Egypt. TechnipFMC will design, manufacture, deliver and install subsea equipment.

While in January, Cabinda Gulf Oil Company (CABGOC), the wholly-owned Angolan subsidiary of Chevron, awarded Subsea7 a contract valued between US\$150mn and US\$300mn to construct and install the Lean Gas

Platform (LGP) system for the Sanha Lean Gas Connection (SLGC) project offshore Angola. Subsea 7 anticipates that fabrication will take place at Sonamet's yard in Lobito, Angola from late 2021 to 2022.

In May 2020 Saipem, in joint venture with Daewoo E&C and Chiyoda, won an EPC contract for the Nigeria LNG Train 7 project, to be executed at Bonny Island LNG complex in Nigeria. The contract, awarded by Nigeria LNG (NLNG), is reported to be worth more than US\$4bn. The project, which is expected to boost Nigeria's LNG output by almost a third, consists of the construction of one complete LNG train and one additional liquefaction unit with a total capacity of around eight MTPA, plus other extensive associated utilities and infrastructure.

Stefano Cao, Saipem's CEO, commented that the award proved the "validity of the management methods of COVID-19 emergency, thanks to the flexibility of our organisational model and the practice of our people to work remotely."

A project that is likely to result in significant EPC contracts is the Lake Albert Development project in East Africa, which encompasses the Tilenga and Kingfisher upstream oil project in Uganda and the construction of the East African

Crude Oil Pipeline (EACOP) in Uganda and Tanzania which will transport oil from the oilfields in Uganda to the port of Tanga in Tanzania. The main engineering, procurement and construction contracts are expected to be awarded shortly. Total, which operates the Tilenga project, stresses that it will create significant in-country value for both countries.

Local capacity building

Local content is an important factor in the award of EPC and fabrication contracts. When Aquaterra Energy won a contract from CABCOG to design and support installation of an offshore platform off the coast of Angola in February 2020, Sea Swift was chosen for its modular design to minimise build and implementation time and for the ability to fabricate the platform locally in Cabinda, Angola, according to the company.

Stewart Maxwell, technical director at Aquaterra Energy highlighted the "growing importance of flexible platform fabrication that can not only help local content rules but also reduce environmental impact via innovative installation options."

In Nigeria, the Nigerian Content Development and Monitoring Board (NCDMB) has been instrumental in encouraging local engineering, fabrication and manufacturing

capacity. Timipre Slyva, junior minister petroleum resources and chairman of the government council of the NCMDB, noted that Nigeria can now handle fabrication of more than 60,000 units a year with its array of world-class fabrication yards, with the infrastructure in place for the integration of FPSO in country. He added that the delivery of substantial elements of the Total Egina project and the integration of six modules in the country are as a result of local content intervention. Other achievements have included the construction of oil and gas parks in Bayelsa and Cross River States.

All installation and construction is taking place in Nigeria for the NLNG Train 7 project, which is expected to create more than 12,000 direct jobs. More than 70,000 tonnes of manufacturing materials will be produced in country. NLNG stressed that the project will support the development of local engineering and fabrication capacity and in building and maintaining LNG plants.

Elsewhere, South Africa's Saldanha Bay Industrial Development Zone on South Africa's western cape, is making progress. Specialised manufacturing and fabrication facilities are currently under construction, with a specialised corrosion protection facility already completed. ♦

DON'T OVERLOOK INVISIBLE THREATS

A disruption event from a cyber attack at an oil and gas facility can occur at any point across the three major stages of oil and gas operations: upstream, midstream, or downstream. With increasing automation use, the oil and gas sector is finding that network encryption is critical to safeguard against cyber attacks. Deblina Roy reports.

AMONG RECENT SECURITY breach incidents in the oil and gas sector, one of the latest victims is Royal Dutch Shell which fell prey to a data breach related to a vulnerability in software from Accellion Inc.

In a statement on 16 March, Shell stated that the data security incident involved Accellion's File Transfer Appliance that it uses to transfer large data files securely. The data accessed, during a "limited window of time" according to Shell, included some personal data along with data from Shell companies and some of their stakeholders. In fact, the ongoing investigation has shown that an unauthorised party gained access to various files during a limited window of time, however, "there is no evidence of any impact to Shell's core IT systems as the file transfer service is isolated from the rest of Shell's digital infrastructure."

But it's not just an isolated incident in the global energy sector. In 2018 December, Italian multinational oilfield services company Saipem reported a cyber attack that hit servers based in the Middle East, India, Aberdeen and Italy and had a global consequence, causing threats to data and infrastructure.

As automation continues to evolve, the utilities sector,



Image Credit: ABB

ABB and Forescout collaboration will integrate Forescout's cyber technology within ABB's portfolio of industrial expertise and cyber security solutions.

particularly oil and gas, is finding that network encryption is a critical to safeguard against cyber attacks. According to the latest threat report by security firm Dragos, the oil and gas industry is a valuable target for adversaries seeking to exploit industrial control systems (ICS) environments. As the number of attacks against ICS overall is increasing, adversaries with specific interest in oil and gas companies remain active and are

evolving their behaviours.

Dragos' report tracks five activity groups targeting oil and gas. The report has revealed a new activity group targeting the industry, bringing the total number of tracked ICS-targeted activity groups to nine, five of which directly target oil and gas organisations.

Not only that, The "Accenture Upstream Oil and Gas Digital Trends Survey 2019," the seventh edition of Accenture's report on

digital technologies in the upstream oil and gas industry, surveyed global 255 industry professionals, including C-suite executives, functional leaders and engineers, which finds that cyber security has emerged as the top focus of upstream oil and gas companies' digital investments.

There's even MIT Technology Review's report that says up to 96% of local industrial control systems are vulnerable to cyber attacks.

Therefore, as the threats to businesses and infrastructure from network intrusion and data breaches are growing, it is crucial that critical industries have robust, sophisticated cyber security solutions in place.

To offer its customers further choice and cyber security capabilities, ABB is uniting with Forescout. The collaboration will integrate Forescout's cyber technology within ABB's portfolio of industrial expertise and cybersecurity solutions to enhance operators' abilities to detect known and unknown control system threats.

There's even greater news for securing the oil and gas communications sector too. Siemens is providing robust industrial networks to ensure fast and secure data protection, boost remote maintenance or remote access and interconnect industrial facilities to accelerate digitalisation. ♦

“Managing attacks isn't just a matter of protecting reputation, share price and operations, but it is part of greater responsibility for national services and security,” said Rich Holsman, managing director at Accenture.

HIGH-CHANNEL-COUNT SURVEY FOR CLEARER IMAGING

In oil and gas, seismic survey is a crucial stage of seismic exploration. It is the key to analyse the potential of any prospective exploration area. Many international companies are investing heavily in Africa – to update and upgrade technological advancements at this crucial E&P stage.

IN MARCH 2021, seismic equipment and reservoir monitoring instruments manufacturer Sercel announced that its high-performance equipment is currently being deployed on another 3D megacrew survey in North Africa.

The crew is operating with an 80,000-channel 508XT land acquisition system, complete with QuietSeis digital sensors, and 10 Nomad 90 Neo broadband vibrators in challenging desert terrain. Combined with the superior seismic data performance of QuietSeis, super-heavy Nomad 90 Neo vibrators are the ideal choice for a high-productivity broadband survey programme, providing a wider frequency range, high energy output and excellent sweep quality.

Emmanuelle Dubu, Sercel CEO, said, “It is especially exciting to have our latest-generation digital equipment deployed on this high-channel-count onshore survey. Our 508XT acquisition system and Nomad 90 Neo vibrators are exactly the right combination for high-performance surveys, delivering unparalleled subsurface data quality for clearer seismic imaging.”

Africa has actually been seeing a momentum of seismic acquisitions across the continent in past years. In December 2020,



Sercel's broadband seismic vibrator truck, Nomad 90 Neo.

the USA-based VAALCO Energy announced the acquisition of three-dimensional (3-D) seismic data at the Etame Marin block offshore Gabon. According to Cary Bounds, CEO, “Our new 3D seismic survey is a vital tool in helping us unlock the remaining 116 million gross barrels of oil reserves and resources identified on the license. The new seismic data will help us optimise every location to drill and potentially identify new locations to add to our drillable inventory. Additionally, our recent announcement of the acquisition of Sasol’s interest at Etame combined with the new 3-D seismic survey underscores our confidence in the long-term potential at Etame.”

To add more to this momentum, in October 200, Polarcus Limited was awarded 3D seismic data acquisition

services in West Africa with an expected duration of two months.

Seismic activity is accelerating in Equatorial Guinea as the country intensifies its E&P Activities in 2021. Last year, Trident Energy started a 4D seismic survey over the Block G assets which contain the Ceiba and Okume fields offshore Equatorial Guinea. With this, the country will see three exploration wells drilled in Trident Energy-operated Block G in 2021.

CGG, the geosciences leader, has a number of activities going on in the African region. In East Africa, CGG is working on survey to help explorers better understand the petroleum potential of undertested offshore regions. As stated in the company’s website, it is aiming to intersect crucial oil and gas wells in the area and provide structural constraint to the imaged data.

In South Africa, the company is working on Durban and Zululand basins. Located off South Africa’s East Coast, the deepwater potential has still not been explored. As stated by the company, the basins have possible analogues to the Rovuma and Mafia Basins located offshore Mozambique and Tanzania to the north and the conjugate North and East Falkland Island Basins.

Additionally, last year, the company announced the final 3D PSDM seismic dataset from its 15,400 sq km multi-client survey of the outer Zambezi Delta in Mozambique. The ultramodern data was acquired over blocks Z5-C and Z5-D and surrounding open acreage as part of a multi-client programme agreed between CGG and Mozambique’s Instituto Nacional de Petroleo (INP). ♦

WAYS TO KILL YOUR CENTRIFUGAL PUMP

Centrifugal pumps are reliable, low maintenance pumps. They are responsible for more than 40% of all fluid transfer in industry worldwide. A centrifugal pump is a low maintenance, if well selected, reliable part in your process.

THE CENTRIFUGAL PUMP has a very simple principle. Due to centrifugal forces caused by a spinning impeller, liquid is sucked in at inlet and pressure is built at the outlet. No valves are needed, and there are few moving parts.

However, there are some other essentials that can influence the results of the pumping process and can even damage the pump severely. Here are the most important points to consider to avoid damage and create a reliable, safe pumping process with hygienic pumps.

Selection of the right pump size

Centrifugal pumps have a very atypical performance curve compared to positive displacement pumps. When the counterpressure in the pump will go down, the flow will go up and the used motor power will follow the flow. From the moment that the pump will need more power compared to the nominal power, it will start overloading and will heat up. If this process is lasting too long the isolation from the motor windings will burn and will cause an electric failure. Therefore, it is very important that the entire process is taken into account when selecting the pump.

Select the right mechanical seal

The mechanical seal has two seal faces that are running to each

other. In normal conditions there is always a film of liquid between the seal faces that guarantees the lubrication of the seal. If, of course, there is no fluid in the pump or the pump is sucking a lot of air, the seal faces will run dry and start to heat up. The elastomers in the mechanical seal will get burned and lose their sealing capability.

Select the right installation format to avoid cavitation

This is a typical problem when for example the piping of the system at the suction side of the pump is not configured correctly. To prevent this problem in critical applications, and in fact in all cases, choose a pump with a very low NPSHr value, which will be able to work in tough conditions. With Capdata the perfect installation scheme can be configured.

Select the correct process installation system to avoid water hammer

Water hammer is a typical problem that occurs in process systems with long lines and large piping diameters. This happens when a huge mass of fluid hits a fast closed valve and in reaction, sends a peak pressure back into the system that passes the centrifugal pump. This is a problem that has to be solved in the process installation by selecting slower valves and/or

shorter piping, wherever this is possible.

The pumping of foreign objects

When the fluid flow is contaminated with objects such as bolts, nuts or other foreign objects your impeller will be stuck because there is only limited free space. Even if the pump is equipped with a free flow impeller or a channel impeller (where objects as big as potatoes are pumped with), metals or hard pieces will, in most cases, not pass the pump but will be stuck between the pump and the pump housing. The impeller, pump casing and/or bearings will be damaged.

Pumping abrasive fluids?

Select a duplex pump

When your process needs a hygienic pump, but the fluid is very abrasive, it is a good option to select a mechanical seal made of SiC/SiC with hard seal faces. But there is another problem to overcome: it is important for a hygienic pump that all wetted parts (including O rings) are in the fluid stream to ensure that the pump can be cleaned properly during CIP.

Selecting the right seal for variable or high system pressures

Most hygienic pumps running at simple process conditions are equipped with bellow seals. The

pressure between the seal faces is mostly dependent on the inlet pressure. With high inlet peaks some clattering from the mechanical seal can occur, which will damage the seal faces by impact. But in the end a continuous higher inlet pressure at bellow mechanical seals will also create a huge wear from the seal faces. Both of these problems can be solved with a balanced/sterile mechanical seal that is independent from the inlet pressure.

Install motors with condensation holes to kill humidity

Every electric motor must have an IP rate which indicates the degree of resistance against dirt and water penetration. Unfortunately there is no rating for the humidity resistance. When an electric motor runs it will heat up. Thus, the air in the motor will expand and there will be air that will exit the motor.

Frequency converter and connections

Too long wires without a filter will cause EMC and isolation problems. With larger motors this can cause bearing damage. Bad electric connections will cause that the motor runs on one winding instead of three and will cause it to burn. ♦

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TRANSFORMING PIPELINE OPERATIONS WITH DIGITAL TECHNOLOGIES

Saul Zambrano, global industry director, energy and utilities digital transformation leader, Software AG, discusses how digital technologies can help pipeline operators.

What are the main asset management challenges facing pipeline operators?

One of the greatest challenges facing the oil and gas sector is that the industry is stuck at the moment. While overall pandemic-related demand reduction has stabilised, no one is quite sure when a return to normal will happen and what it looks like. And while everyone can agree that accelerating “digital transformation” initiatives will be good for the bottom line; the reality is that almost all oil and gas companies are in cash conservation mode – which limits their appetite for transformation projects. Fortunately for pipeline operators, their business model is moving in the opposite direction. First, pipeline and storage companies are seeing their cash balances grow as a large percentage of contracted volumes are under long-term contracts. Second, storage revenues have increased as the industry is still producing more oil and gas than the world can consume, which has inflated storage fees.

And quite a few pipeline operators are taking advantage of this window of profitability to accelerate their digital transformation initiatives.

The greatest areas of focus on improved asset management is centered on three areas:

- ◆ How can blockchain technologies be utilised to make the custody transfer process more secure and efficient?
- ◆ How can they create more real time visibility of asset performance to assist in capacity and maintenance planning?
- ◆ In the age of increasing concerns of the industries impact on carbon emissions, what types of technologies are available to monitor and mitigate Scope 1 carbon emissions?

How can IIOT technologies help operators to manage their pipeline assets more effectively and obtain visibility across their operations?

One of the greatest challenges facing pipeline operators is that a fair amount of industry standard pipeline management practices are built on fragmented data. When one looks at the number of assets that are deployed by multiple vendors across both pipeline and storage operations, the challenge of data integrity becomes evident. For each asset vendor there is a different set of data points being generated. Harmonising this data so that it is normalised and made actionable is not a trivial exercise. Compounding this problem is that a large

percentage of these assets are not being centrally monitored through digital technologies. As a result, data is not being recorded or being recorded manually. A fully capable industrial IoT platform must have the ability to connect to both legacy PLC and RDU sensors, as well as greenfield sensors that are deployed to create more visibility. And as this capability is enabled, an integrated view of operations is created where data is available, timely, and easy to access by the resources who need it.

How can predictive analytics, machine learning and AI help to pinpoint problems before they occur, and promote better decision making?

Most asset maintenance procedures are preventative in nature. This is primarily driven by the fact that many field assets have not been digitalised. Consequently, if asset performance data is being logged through manual processes, it is not being done, according to a standardised data model across operations. As a result, while the capabilities of AI/ML enabled predictive analytics have been documented across multiple industries, the oil and gas sector suffers from lack of data quality. Unfortunately, this low data quality limits the ability to deploy AI/ML capabilities.

What are the benefits of migrating to the cloud for pipeline operators?

For quite some time, one of the principal debates on cloud strategies was whether the benefit was there in relation to cost efficiencies and technical capabilities. The answer is yes and yes. The more critical question for oil companies is how they migrate to the cloud and manage their data across both cloud and on-premises applications that are not migrated. API management will become the critical enabling technology to navigate this requirement.

How would you advise companies to approach a digital transformation programme?

All great journeys begin somewhere. And the one key element of all great journeys is that there is a rigorous and thorough inventory exercise at the beginning to ensure that the provisions are sufficient to support the goals of the journey. As companies undertake their digital transformation journeys, they should keep in mind two key areas. One, what are we trying to accomplish? Two, how will we accomplish it? Consequently, it is critical that companies take an inventory of their existing OT/IT application portfolios to understand whether they have the right tools to execute on their goals in a scalable, sustainable and secure manner. ♦

DIGITALISING EGYPT'S NATIONAL E&P ASSETS

How is Egypt leveraging digital to accelerate energy discovery and investment from operators across the globe? Karim Badawi, managing director for Egypt and East Mediterranean at Schlumberger, explains.

IN TODAY'S DYNAMIC upstream environment, we face a more competitive landscape that demands greater efficiency in how we explore for energy. Our industry also faces new challenges emanating from a drive toward more sustainable energy production.

To address the many challenges our industry faces, we must be more agile and resilient. In Egypt, these tenets have been central to the country's energy sector's transformation and modernisation. For several years, Egypt has invested heavily in this sector, laying the country's groundwork to become a strategic energy hub for the region. Much progress has been made since the Ministry of Petroleum and Mineral Resources first laid out its modernisation programme's goals, including increasing its workforce-skills through local training programmes and investing in key infrastructure projects, particularly in the midstream sector.

Now, as Egypt's programme matures, modernisation efforts continue to focus on unlocking the sector's full value chain potential as a growth and sustainable development engine. While there are many factors at play for Egypt to achieve this objective, a key enabler is digitalisation.

A prime example of this is the Ministry of Petroleum and Mineral Resources' work with Schlumberger on a national project for the digitalisation of the country's E&P assets. The recently launched Egyptian Upstream Gateway (EUG) is an industry-first platform that digitally showcases these assets to investors worldwide and leverages the latest digital technology and solutions to accelerate discovery throughout the country.

The launch of the EUG provides the Egyptian government with the freedom to manage its natural resources, promote



Karim Badawi is managing director for Egypt and East Mediterranean at Schlumberger.

investment in exploration and production, streamline interactions across its energy sector, and manage investor compliance for reserves development in a single platform.

The platform achieves two key objectives for the country: It enables anytime, anywhere access to mission-critical subsurface and production data, eliminating the inefficiencies of the traditional National Data Repository (NDR) model, and it provides a robust, connected platform for promoting licensing rounds and connecting stakeholders with potential business opportunities.

Previously, Egypt leveraged physical

locations to store vast amounts of subsurface information. This dated NDR model limited ease of access to international investors and the country's ability to ensure data integrity in the long term and enhance data security. This NDR model is not exclusive to Egypt, and in fact, causes significant challenges for other energy-rich countries across the globe.

The EUG provides secure, remote digital access to data via an online portal, eliminating the need to travel to a physical location. The data is displayed to users in the context of a regional map, so it is easy to find, and as new data is added or existing data is enhanced with new processing technologies, it is instantly updated to all the platform's users. These updates ensure the data is kept evergreen, meaning everyone always has access to the same data.

With abundant subsurface information now easily accessible via the EUG, the country is realising key opportunities to promote its assets to a much wider audience. For example, the EUG is currently hosting Egypt's first digitally-enabled bid round, providing national and international investors with an array of information on the available lease blocks and the capability to participate in the bid round online. The current round, which ends on August 1, includes nine blocks in the Mediterranean Sea, 12 in the Western Desert, and three in the Gulf of Suez.

Existing asset holders now have faster access to data and reduced cycle-time through data ever greening. The platform also offers opportunities for portfolio expansion through trading.

As Egypt continues to evolve and modernise, this robust platform will evolve with it, creating more opportunities for Egypt to promote investment in the country from across the globe. ♦

WHY DO FEWER WOMEN MOVE INTO THE INDUSTRY THAN MEN?

Somaya Ouazzani, CEO and founder of Mimoza Fleur, a boutique executive search firm specialising in the legal sector, has highlighted the issues of gender diversity in the oil and gas sector.

BROADLY SPEAKING, FOR every four male partners that move into the International Commercial Arbitration (ICA) sector, only one female partner does. The figures are even more depressing for female arbitration practitioners working in the oil and gas sector. Is this a problem particular to the oil and gas sector or is it an arbitration problem, more generally?

In our experience as a search firm, we think it more likely that the gender diversity problems seem more pronounced in the oil and gas sector because it is one of the heaviest users of arbitration agreements within their contracts.

It is readily accepted that the arbitration arena remains one of the least diverse legal practice areas worldwide.

It is also because more than most, the oil and gas industry is one under particularly intense scrutiny (whether because of profiteering, climate change issues, bribery, geopolitical importance etc).

Whether the oil and gas industry is as cognisant as it should be of these gender setbacks is one issue. Another is whether the industry is proactive enough in responding to these serious problems.

In an attempt to better understand the reasons for poor, but slowly improving, statistics



Somaya Ouazzani is the CEO and founder of Mimoza Fleur.

on: a) why so few women move into this space; and b) why fewer women than men end up in partner and / or head of roles in this space, we dissected some of the key projects we have done for law firms in the last 36 months.

We also analysed the make-up of various ICA teams in leading UK-based law firms, and we looked at the composition of the world's major arbitral bodies.

In doing so, we observed the following:

1. There is a disconnect between the number of female senior

associates versus the number of partners, which supports the view that despite there being more senior female lawyers in the ICA sector, less women are being 'made up' organically and fewer are securing lateral partner positions.

2. The number of global sector heads or sector co-heads is particularly low for females, worldwide.
3. The number of female arbitrator appointments in the ICA sector is much lower than men worldwide,

particularly in the UK.

4. There is considerable underrepresentation of women within the world's major arbitral bodies, which is compounding problems. There needs to be greater consciousness raising. One way is for clients, especially the world's supermajors, to ensure questions are asked around diversity during the law firm tendering process. There needs to be a greater emphasis on work-life balance in the industry and, at the very least, an environment which acknowledges the extent to which a female practitioner's peak career phase coincides with her optimal child bearing age.

Firms should consider the benefits of having male and female co-heads. When awarding mandates to legal recruitment and search firms, law firms should think carefully about partnering with recruitment partners that prioritise the diversity agenda.

Databases specific to female practitioners in the field would assist law firms, recruitment firms, clients and counsel to effectively identify female practitioners in this space. Fortunately, with the development of metric-based decision making in law firms as a whole and the availability of AI hiring tools from companies (such as Pirical), this should not be hard to achieve. ♦

A CRITICAL NEED FOR GLOBAL COLLABORATION ON CLEAN ENERGY TRANSITIONS

Top international energy and climate leaders from more than 40 countries took part in the IEA-COP26 Net Zero Summit on 31 March to identify how to work together to reduce global greenhouse gas emissions and meet the goals of the Paris Agreement.

THE NET ZERO summit, co-hosted by IEA executive director Fatih Birol and COP26 president Alok Sharma, brought together high-level representatives of energy and climate ministries from countries including Australia, Brazil, China, Colombia, France, Germany, India, Indonesia, Italy, Japan, South Africa, the United Kingdom and many others. Participants from a broad cross-section of civil society groups, private companies and government institutions also took part in the discussions.

The Summit is a critical milestone on the road to COP26 in Glasgow in November. It brought together representatives of countries covering more than 80% of global GDP, population and emissions. High-profile participants included Zhang Jianhua, China's minister of energy; Frans Timmermans, executive vice-president of the European Commission; Raj Kumar Singh, India's minister of power, new and renewable energy; and John Kerry, the USA presidential special envoy for Climate; Amani Abou-Zeid, African Union commissioner for Infrastructure and Energy; and Ngozi Okonjo-Iweala, director-general of the World Trade Organisation (WTO).

"It is time for the world to move from a decade of climate change deliberation to a decade



Image Credit: IEA

IEA principles address issues such as technology collaboration, best practice sharing, investment tracking, ensuring people-centred transitions etc.

of delivery. The UK strongly encourages countries to endorse the IEA's seven principles for achieving net zero. Today's Summit clearly showed willingness from governments, civil society and businesses to work together in each emitting sector to make this happen and keep the 1.5 degree target within reach," said Alok Sharma, the COP26 president.

Many IEA member governments supported the seven key principles presented by the IEA at the Summit to guide the implementation of net zero commitments. The principles cover essential areas such as the need for sustainable recoveries

from the Covid-19 crisis, the critical importance of implementable emissions reduction roadmaps for the current decade, and the development of stronger mechanisms for international coordination to accelerate innovation and deployment in each major emitting sector of the global economy.

No country can do this alone: Birol

"If we want the transition to clean energy to happen quickly, the world's major economies have to work much more effectively and closely together. The Summit's Key Principles show what needs

to happen, and I offer the IEA's full support for the UK COP26 presidency's efforts to strengthen the international cooperation mechanisms that will accelerate our transition to net zero."

To support stronger government actions, the IEA on 18 May will publish the first comprehensive roadmap for the global energy sector to reach net-zero emissions by 2050. Requested by the COP26 Presidency as a key input, the roadmap will set out a pathway for what is needed from governments, companies, investors and citizens to put global emissions on a path in line with a temperature rise of 1.5 degrees. 🔥

OWI WA LINED UP FOR SEPTEMBER 2021

OWI West Africa 2021 is set to highlight topics such as the future of good well intervention, logistics and supply chain, production enhancement and well integrity, with new areas covering logistical challenges and solutions.

WEST AFRICAN OFFSHORE Well Intervention Conference (OWI West

Africa 2021) is aiming for September 2021 in Accra, Ghana. The event, earlier postponed in response to the global COVID-19 pandemic, will address key themes such as cost reduction, overcoming logistical challenges and increasing well performance using the latest well intervention intelligence.

This is a platform to hear from regional and international offshore operators and well service companies at the cutting-edge of subsea innovation. OWI West Africa 2021 will cover topics such as the future of good intervention, logistics and supply chain, production enhancement, well integrity, and much more.

Now in its third year, the OWI WA Conference is leading West Africa in offshore well intervention and has established a robust platform for well intervention stakeholders to share industry best practice.

With West Africa's largest markets Nigeria and Angola recognising the need for increased well intervention activity and growing markets such as Ghana planning for the future of their green fields, there has never been a better time to get involved.

OWI WA 2021 content focuses on:

- ◆ **Logistics:** Engage with major

The event will discuss major topics in the areas of West Africa's oil and gas sector.



Image Credit: Adobe Stock

operators to understand past challenges and successes regarding getting tools in country, vessel sharing, and sourcing locally.

- ◆ **Technology and Equipment:** Learn how to reduce costs by exploring the latest technology and discuss the importance of new

“ The OWI WA Conference has established a robust platform for well intervention stakeholders to share industry best practice.”

technology acceptance.

- ◆ **Rigless and Light Well Intervention:** See rigless case studies throughout West Africa showcasing the benefits it brings operators.
- ◆ **Mature Wells and Increasing Productivity:** Increase profitability by making the most of existing assets by examining successful solutions to common problems.
- ◆ **Regulations:** Keep informed with the latest policy and regulation and how they impact on well intervention projects to stay ahead of the game.
- ◆ **Benefiting Local Economies:** Examine emerging practices in locally-developed solutions, championing independent regional companies, see the potential for local

economic growth.

OWI WA 2021 has gathered influential speakers from operators, regulatory bodies and world leading service companies to share their expertise on the latest well intervention techniques and intelligence. The impressive line-up of speakers includes Chiwuike Amaechi, subsea systems and intervention engineer, Shell Nigeria; Dr Wisdom Enang, design engineering lead, ExxonMobil; Matthew Eghan, subsea engineering lead, Tullow Oil; Ato Debrah, senior petroleum engineer, Ghana National Petroleum Corporation; Segun Lanade, logistics supervisor, Shell Nigeria; Geraldo Ramos, senior production engineer, Sonangol. ◆

www.offsnets.com/owi-wa

SAIPEC VIRTUAL: KEEPING INDUSTRY CONNECTED

The sub-Saharan Africa International Petroleum Conference & Exhibition (SAIPEC) will be held virtually from 19-21 May 2021. Deblina Roy looks at the context of the show's post-pandemic return and some of this year's themes.

THE WORLD HAS changed, and so has the way of doing business. As business strategy evolves, SAIPEC 2021 aims to keep the industry connected, engaged and in continual collaboration with the energy industry across the sub-Saharan Africa.

Hosted by the Petroleum Technology Association of Nigeria (PETAN), SAIPEC is one of the leading events in the centre of the region's oil and gas hub. Under the theme: *Post Covid19 – From Global Crisis to Global Opportunities*, SAIPEC will act as a pivotal platform for the whole region. For 2021, SAIPEC is set to tip the scales, standing as not only the largest event in Sub-Saharan Africa's oil and gas hub, but also the only truly industry led event, held in partnership with the largest oil and gas association in Africa, the Petroleum Technology Association of Nigeria (PETAN).

For the fifth edition, SAIPEC enables the users to enjoy the whole SAIPEC experience from the comfort of working environment.

In its virtual format, SAIPEC will be hosted on the energy advance platform, allowing participants to interact and companies to promote their products and expertise, develop leads and generate meetings throughout the event and for subscribers - continuing further



Could the success of the pre-pandemic events be reflected in the post-pandemic virtual?

365 days a year.

The conference programme will again benefit from the participation of industry leaders and experts from all over the world. Delegates will be able to access more than 40 hours of the highest-level content at a time convenient to them; providing invaluable insight, information and a platform for interactive debate.

According to the organisers, the content and proceedings for 2021 events are driven by a steering committee and speakers, representing a cross-section of major stakeholders and the most senior representatives from the

sub-Saharan Africa oil and gas industry, delivering high-level strategic sessions and discussions on game-changing solutions, combined with an international exhibition.

More to this, through topical debates and speaker sessions, SAIPEC 2021 will offer direct access to the primary stakeholders and key players across the entire sub-Saharan Africa supply and value chains. Across three days, speakers and delegates will have the opportunity to participate within business, technical and special focus sessions, providing critical insights into the region's oil and gas industry.

Apart from the keynote sessions, Session panel discussions will focus on a wide range of areas including maximising sub-Saharan Africa's upstream potential highlighting the opportunities as several new and existing countries offer their prospects. Running alongside the conference, the virtual international exhibition is attracting an increasing number of specialised companies who will be showcasing their latest products and services, including many international and regional energy companies and service providers, regional and national oil companies. ♦

AFRICAN RIG COUNT

| COUNTRY | February 2020 | March 2020 | February 2021 | March 2021 |
|-------------------|---------------|------------|---------------|------------|
| ALGERIA | 38 | 34 | 22 | 25 |
| ANGOLA | 6 | 6 | 4 | 4 |
| CAMEROON | 2 | 2 | 1 | 1 |
| CHAD | 7 | 7 | 3 | 3 |
| CONGO | 2 | 2 | 0 | 0 |
| CÔTE D'IVOIRE | 0 | 0 | 0 | 0 |
| EQUATORIAL GUINEA | 0 | 0 | 0 | 0 |
| GHANA | 2 | 2 | 0 | 0 |
| KENYA | 5 | 5 | 3 | 3 |
| LIBYA | 16 | 11 | 12 | 12 |
| MAURITANIA | 1 | 1 | 0 | 0 |
| MOROCCO | 1 | 0 | 0 | 0 |
| MOZAMBIQUE | 1 | 1 | 1 | 1 |
| NIGERIA | 23 | 21 | 7 | 6 |

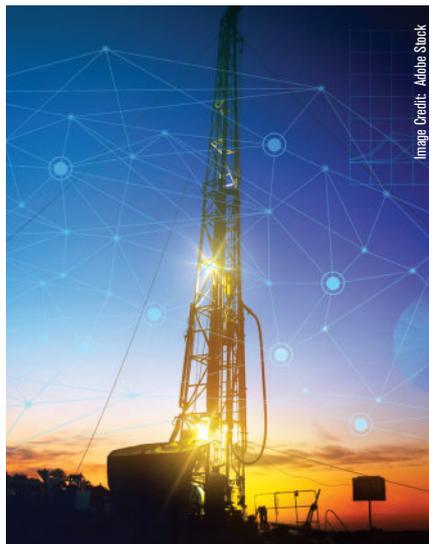
Source: Baker Hughes

Ambyint and Microsoft partner to deliver production optimisation at scale

AMBYINT, A LEADER in well lifecycle production optimisation and artificial lift enhancement, has announced a co-sell qualified partnership with Microsoft Corporation to provide oil and gas exploration and production (E&P) companies with solutions that optimise rod lift and plunger lift wells. Ambyint solutions leverage Microsoft Azure within its platform to increase production, lower operating expenses, and reduce GHG emissions by delivering production optimisation at scale.

Ambyint solutions optimise oil and gas wells by automating anomaly detection, controller setpoint recommendations, setpoint changes, and production versus plan analytics to enable real-time production optimisation. The company employs advanced physics-based models, deep subject matter expertise, and artificial intelligence to deliver highly scalable and proven applications.

Ambyint's partnership with Microsoft



The partnership will provide oil and gas companies with solutions that optimise rod lift and plunger lift wells.

Azure allows for seamless deployment of Ambyint's automated, domain-driven data ingestion and contextualisation capabilities for SCADA systems and other oil and gas software's batch and streaming data. The partnership also enables deployment of Ambyint's proven production and artificial lift optimisation applications into E&P companies' existing Azure environments. Azure gives Ambyint the ability to deliver a customised data analytics experience, scalable data storage, and the processing power required to analyse terabytes of data daily.

"At Ambyint, we are focused on developing and deploying best-in-class solutions designed to deliver better production outcomes for our customers," said Chris Robart, chief commercial officer at Ambyint. "Microsoft is a technology leader in energy, and our partnership with them will further drive innovation within our company and accelerate our customers' digital transformation journeys."

Real time data visualisation dashboard launched

LYTT, A SOFTWARE and analytics company, has launched spotLYTT, a new cloud-based visualisation dashboard that gives users unprecedented visibility into the production performance and health of each asset in their portfolio in real time.

spotLYTT livestreams reservoir insights from acoustic and temperature data sourced from fibre optic sensors alongside time-series data to users anywhere in the world, via the cloud. It provides oil and gas companies with an intuitive, secure and continuous way to see exactly what is happening downhole, enabling asset managers to identify immediate threats and informs their operational decision making.

To date, products attempting to provide this critical level of reservoir performance insight have been unable to give users remote access to dynamic visualisations of in-well data in real time – a key requirement for driving efficiency and enhancing production across the increasingly remote-working international oil and gas industry. LYTT's solution has been designed to fill this critical technological and operational gap.

Prad Thiruvankanathan, co-founder, LYTT, said "spotLYTT™ is a cloud-based web interface that provides users with a complete, dynamic view of production insights displayed alongside other contextual sensor information – allowing petroleum engineers to see the impact on production profiles within wells resulting from operational changes."

KROHNE introduces ultra-compact flow meter

KROHNE HAS INTRODUCED the AF-E 400 ultra-compact electromagnetic flow meter for utilities and industrial automation applications. It is specially designed to fit in applications with little installation space available, e.g. in cooling lines of welding equipment, bending machines and robots, or on chemical dosing skids. The AF-E 400 matches the requirements of application areas in heating and cooling/temperature control, machine building of washing or dosing equipment, HVAC, and utilities and industrial automation applications in all process industries.

The AF-E 400 features a stainless steel housing and is suitable for continuous use at +90°C/ +194°F liquid temperature, allowing for operation in very demanding cooling and hot water



The AF-E 400 ultra-compact electromagnetic flow meter.

Image Credit: KROHNE

applications. The round bore reduction of the sensor makes the flowmeter more resilient in terms of increased pressure, ensuring high accuracy over a wide pressure and temperature range, and a high turndown ratio without risk of cavitation. The

integrated temperature measurement eliminates the need for an additional sensor, minimising the intrusion points in the pipe and providing more data from the process.

The AF-E 400 also features extensive self-diagnostics.

Caterpillar receives clean air award for Cat 3512E Tier 4 DGB engine

CATERPILLAR INC. HAS won the U.S. Environmental Protection Agency's (EPA) Clean Air Excellence Award in the category of Clean Air Technology for the Cat 3512E Tier 4 DGB engine.

The 3512E Tier 4 DGB well service engine enables operations

to reduce diesel consumption and greenhouse gas (GHG) emissions while maintaining power, performance, and reliability. With this innovative dual-fuel technology, the engine automatically maximises the amount of natural gas used to

displace diesel, and offers the industry's best diesel displacement rate of up to 85%.

"It is a great honour to be recognised by the EPA for our Cat 3512E Dynamic Gas Blending engine – the first and only DGB engine on the market certified to meet the U.S. EPA Tier 4 Final emission standards," said Caterpillar vice-president Tana Utley. "Dynamic gas blending is another game-changing step on our journey to help customers meet their total cost of ownership and greenhouse gas reduction goals and build a better world."

Caterpillar offers both new factory sales of the 3512E DGB as well as retrofit kits to enable the use of DGB technology on existing 3512E diesel engines.



The Cat 3512E Tier 4 DGB well service engine.

Image Credit: Caterpillar Inc.

Olympus' new DC series offers complete corrosion monitoring and weld inspection

OLYMPUS' NEW DC series (DC1–DC5) dual element transducers come with NDT instruments and ultrasonic inspection procedures, providing complete corrosion monitoring toolbox for maintaining tank and pipeline integrity.

As field inspections change, inspectors can benefit from having the complete set of transducers, with a total combined thickness range of 0–2 in. (0–50.8 mm), as well as the extra pipe weld inspection tool with the DC3 model.

All models provide a cleaner signal and offer less ring down compared to other models, which helps in resolving smaller defects, inspecting closer to the surface, and differentiating between two indications.

The low-profile designs and



The transducers can be paired with the Olympus EPOCH 650 for accurate and efficient corrosion mapping

small tip diameters (DC1 and DC2), and the integrated wedges (DC3), make it easier to inspect hard-to-access areas such as boiler tubes. The DC3 model is fast and reliable, and performs high-speed manual weld inspections.

The transducers have thick-

walled, wear-resistant housing (DC2 model) and replaceable wedges (DC4 and DC5), for better longevity. A heat-resistant delay line up to 150°C (300°F) on the DC1 and DC2 models helps reduce maintenance time for elevated-temperature pipe and tank inspections.

DNV releases new service specifications of DNVGL-SE-0568 for energy industries

DNV HAS RELEASED a new service specification document to support stakeholders across the Additive Manufacturing (AM) value chain, ensuring that materials used to produce AM parts are best in quality.

The new specification can support global oil and gas and other industries willing to adopt AM technology for gaining cost efficient benefits and maintaining safety, as well as reducing the supply-chain carbon footprint.

The new service specification (SE) DNVGL-SE-0568 is being launched to define DNV's additive manufacturing qualification scheme, and provide the basis for obtaining and retaining DNV statement, and certificates for the endorsement of facilities, digital

products/services, qualification of manufacturers, building processes, parts and part families, AM machine(s) and equipment and AM personnel.

This is in accordance with the industry standard DNVGL-ST-B203 which DNV created for the oil and gas, energy, digital and heavy industry sectors.

DNVGL-SE-0568 is part of a portfolio of DNV Additive manufacturing related standards and recommended practices for the oil and gas and offshore industries. "To enable additive manufacturing technology's widespread use and help it to fulfil its potential in disrupting operations and maintenance in industry, there needs to be a greater level of confidence in the products required in its ongoing



Brice Le Gallo, regional director, Energy Systems, APAC and director of the Global Additive Manufacturing Centre

use," said Brice Le Gallo, regional director, Energy Systems, APAC and director of the Global Additive Manufacturing Centre.

AllAssets platform to get a new module

LLOYD'S REGISTER HAS announced that users of its asset performance and risk management platform, AllAssets, will now benefit from a new module called event management.

Heavy industries, including oil and gas, has experienced significant increases in the backlog of safety and critical maintenance, compounded by the impact of COVID-19.

AllAssets users will now be able to track anomalies and non-conformance from creation, typically identified during inspection activities, through to resolution, helping drive efficiency, mitigate risks and reduce backlogs.

The new features allow multiple users to be assigned to specific steps in the process. They are notified of their requirement to contribute, improving transparency of responsibility and prioritisation of workload.

All updates and insights are collated into one place, bringing visibility and shareability to each task and across the organisation as a whole. Patterns across NCRs can also be identified, to support the decision-making process and address multiple issues at the same time.

Facilitated by Lloyd's Register's low code approach, the update is being made available through the use of pre-loaded templates to support the resolution of non-conformance reports, incorporating industry experience and best practices gathered over many years of supporting customers in managing their risks.

The templates can be easily customised by users to meet the demands of their plant and and its team.

ECD Specific Ion Analyzer for hazardous areas available as ATEX and IECEx or FM Safety Approved

THE RUGGED S88 Specific Ion Sensors and the intelligent X80 Universal Transmitter Analyzer from Electro-Chemical Devices (ECD) are available as ATEX and IECEx- or FM-approved to provide safe, precise measurement of water-based chemicals. ECD's S88 Specific Ion Sensors (pION) are utilised in a wide range of industrial processes and industrial plants. Their proven, easy-to-replace specific ion electrode cartridge design converts the chemical activity of a specific ion dissolved in a liquid (water) into an electrical potential (Voltage) that is proportional to amount of the ion in the solution.



Image Credit: ECD Analyzers

ECD-X80 S88 Analyzer used in industrial processes.

ECD's precision S88 pION Sensors monitor and detect

ammonia, ammonium, bromide, cadmium, calcium, chloride,

copper, cyanide, fluoride, potassium, sodium and sulfide. These chemicals are utilised in petrochemical processing, electronics and semiconductor fabrication, metals and mining, power generation, aquaculture and environmental monitoring. In addition to pIONs, the S88 Sensor Series also can be configured to measure pH, ORP, dissolved oxygen, conductivity or resistivity. No matter the measured parameter, the S88 Series Sensors convert the analog signals from their electrode cartridge into a digital protocol that allows two way communications with the X80 Universal Transmitter.

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NAMIBIA WELL ON ITS WAY TO BUILDING CAPACITY

For 2021, National Petroleum Corporation of Namibia's (NAMCOR) focus lies in the operational control of the National Oil Storage Facility of Namibia (NOSF), coupled with its aggressive retail expansion strategy, according to Immanuel Mulunga, managing director at NAMCOR. Deblina Roy reports.

What role are oil and gas playing in meeting Namibia's energy demand?

Oil and Gas makes a significant contribution to the country's energy demand. Heavy Fuel Oil (HFO) used by mines for some of their internal operations, as well as for power generation, are instances where there is an exceptionally high demand. Industrial kitchens as well as a number of domestic kitchens use gas for cooking and various other functions. Almost all forms of transportation such as vehicles, boats and airplanes are dependent on fuel for movement. The construction industry is equally dependent on the oil and gas industry. NAMCOR assists in the alleviation of this demand through its constant supply of various petroleum products to multiple industries across the country.

What are the main challenges and opportunities Namibia is facing for future oil and gas explorations?

The imminent global transition from hydrocarbons to electricity has the potential to negatively affect investment in oil and gas exploration. This will negatively impact our prospects and earlier discovery. Reduced exploration budgets are another unfavourable development for hydrocarbon investment and are likely to result



Image Credit: NAMCOR

Immanuel Mulunga is the managing director at NAMCOR.

in fewer wells being drilled. However, our electricity networks are not at the same pace as those of developed countries which inevitably require us to be users of hydrocarbons for quite some time in the future.

Being the national oil company of Namibia, what are key focus areas of NAMCOR? How is NAMCOR focusing on the acquisition of production assets internationally?

NAMCOR has two key business focus areas namely upstream,

which involves the exploration and production of oil and gas resources. Under the Downstream operations, the company is involved in the fuel retail sector and opened its first branded fuel service station at the Hosea Kutako International Airport in August 2019. It also supplies petroleum products to the market. Currently, for 2021, our focus lies in the operational control of the National Oil Storage Facility of Namibia (NOSF), coupled with our aggressive retail expansion strategy.

In terms of evolving approaches to local content, what are the key initiatives NAMCOR has taken for employment, industrial and technological development?

As a State Owned Enterprise (SOE), NAMCOR is subject to Namibia's Public Procurement Act of 2017, which essentially promotes local providers. The company has increased its staff complement over the previous years and was fortunate to retain staff during the COVID-19 pandemic. NAMCOR makes a significant contribution to capacity building by dedicating a budget for the educational and training needs of its employees. The company also takes in a number of interns and temporary employees each year to assist university students to earn much needed practical experience. After the internship, many of them are taken on board as temporary employees. A few of them have been fortunate to be employed on a permanent basis.

The company has significantly invested in ICT infrastructure. For example, staff members can now log into the company systems externally and be in position to fully work away from the office environment. This has been a transformation in the procurement process from manual to digital. NAMCOR is well on its way to becoming paperless. ♦

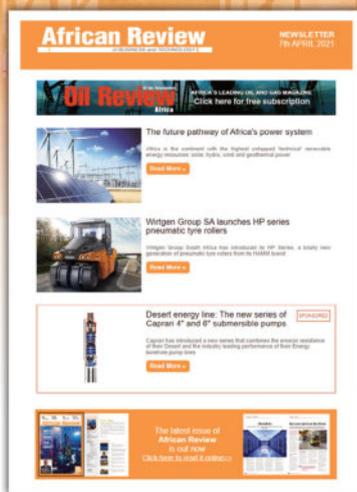
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