

Oil Review

Oil · Gas · Petrochemicals

Africa

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Southern Africa positivity

The latest hotspot for explorers

Africa's licensing promotions: Liberia, Ghana, Senegal and Namibia

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Dr Phindile Masangane, CEO, Petroleum Agency SA, on South Africa's E&P landscape (p34)



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The potential riches of Southern Africa have yet to be unravelled, off Namibia and South Africa. See p11. Image credit: Adobe Stock

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EDITOR'S NOTE

THIS ISSUE TAKES a deep dive into two strategic regions across the African continent. Our cover story (page 11) focuses on Southern Africa, which is on the radar of many new explorers. The pandemic has affected the oil and gas industry worldwide, however, Zimbabwe, Mozambique and Angola, along with other frontiers, offer virgin oil territories, untapped in the 'southern tier'.

In the meantime, Nigeria is examined in detail on page 13. The oil price crash has slashed the oil revenue-dependant country's government revenue from an already low 8% of GDP in 2019 to a projected 5.3% in 2020. However, its natural gas sector is showing rays of hope. With power sector reforms and stable gas exports, even during COVID-19, it aims to be a regional gas hub in the near future. Additionally, Liberia, Ghana, Senegal and Namibia are inviting international bidders to explore high-potential prospects. Could this be the start of a new era of self-sufficiency with the continent's emerging new frontiers?

Deblina Roy

Editor, Oil Review Africa

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Executives' Calendar 2020-21

OCTOBER

28-29 Mozambique Gas Summit
Virtual event
www.mozambique-gas-summit.com

NOVEMBER

9-12 ADIPEC Virtual Conference & Awards 2020
Virtual event
www.adipec.com/virtual-2020-home

18-20 East Africa Oil & Gas Summit
Virtual event
www.eaogs.com

19-20 Downstream Leadership Forum
Virtual event
www.reutersevents.com/events/downstream-strategies/

DECEMBER

1-3 Maintenance, Pumps & Valves Algeria
Algiers, Algeria
www.mpvalgerie.com/en

2 NOC Assembly
London
www.oilandgascouncil.com/event-events/noc-assembly

FEBRUARY

1-5 Africa Oil Week
Cape Town, South Africa
www.africa-oilweek.com

23-25 SECURA North Africa
Algiers, Algeria
www.securanorthafrica.com/en

MARCH

15-18 NAPEC 2021
Oran, Algeria
www.napec-dz.com

24-26 6th POWER & ENERGY TANZANIA 2021
Dar-es-Salaam, Tanzania
www.expogr.com/tanzania/powerenergy

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

10th Practical Nigerian Content rescheduled to 29 November – 2 December 2021

IN COMPLIANCE WITH the directive from the Nigeria Centre of Disease Control (NCDC), a Federal Government body, that extends a ban on gatherings of more than 20 persons, the 10th Practical Nigerian Content (PNC) Forum has been postponed and will take place from 29 November – 2 December 2021 in Bayelsa, Nigeria.

Organised by CWC Events Africa, in partnership with the Nigerian Content Development and Monitoring Board, PNC Forum will discuss the pertinent issues and untapped opportunities in Nigerian Content implementation.

Announcing the postponement of this year's PNC, the executive secretary of the Nigerian Content

Development and Monitoring Board, Engr Simbi Wabote said, "The health and safety of PNC participants is of utmost priority. Taking this into consideration along with the impact the global pandemic and other factors have had on businesses, the decision has been taken to postpone PNC until 2021. We look forward to welcoming participants to the Nigerian Content Centre, Yenagoa, Bayelsa for the 10th annual PNC in 2021."

Over the past nine years, the Practical Nigerian Content Forum, organised in partnership with the Nigerian Content and Monitoring Board (NCDMB), has developed alongside the Nigeria Oil & Gas Content Development Act (NOGICDA). In 2011, the first PNC Forum gathered industry stakeholders to



The 2019 event outlined the plans to take Nigerian Content to the next level as the economy recovers.

explore the requirements of the NOGICDA. During PNC 2012 to PNC 2014, participants outlined the challenges being faced in compliance and explored potential solutions with representatives from the Ministry of Petroleum Resources, NNPC, the NCDMB and other

government agencies. PNC 2015 celebrated the progress made to date, re-examined the objectives of the NOGICD Act and reviewed the top priorities for compliance in the new economic climate of lower oil prices.

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Logan Industries wins contract to manufacture unique safety cages

LOGAN INDUSTRIES (LOGAN), a hydraulic repair, manufacturing and rental company, has won a contract to manufacture a set of unique safety cages to keep offshore technicians safe while inspecting subsea connectors on blowout preventers (BOPs) while on deck.

Logan's safety cage aims to protect the safety of technicians working near the BOP, in the rare event that the load should accidentally drop.

According to the company, the safety cage is designed to absorb and stop a falling load of up to 450,000 lbs. Logan's engineering team used their expertise in basic physics and engineering principles to come up with a solution that makes their customer's operation more



Image Credit: Adobe Stock

The goal is to keep offshore technicians safe while inspecting subsea connectors.

efficient and safer.

Dean Carey, technical director, Logan Industries, said, "We have worked for this customer in various capacities over the last 18 years and this safety cage project award demonstrates the ongoing trust that our customers place in our

experience, knowledge, and ingenuity to dream up solutions for unique projects."

Logan will engineer and manufacture the safety cage in its Hempstead, Texas, facility. Manufacture, installation and commissioning are scheduled for completion in Q1 2021.

Equatorial Guinea and Russia commence geological mapping project

THE FIRST TEAM of Russia's state-owned joint stock company Rosgeo arrived in Equatorial Guinea to kick off a historic geological mapping project.

The initiative commenced with the signing of the Memorandum of Understanding during the Russia-Africa Summit

in Sochi in 2019 between Rosgeo and the Ministry of Mines and Hydrocarbons. It was followed by the signing of two firm services contracts in May 2020 with JSC Zarubezhgeologia and JSC Yuzhmorgeologia, internationally operating subsidiaries of Rosgeo, for the initial phase of seismic

acquisition in the transit zone and state geological mapping in the Rio Muni area in mainland Equatorial Guinea.

JSC Zarubezhgeologia will be performing scouting works for state geological mapping, and JSC Yuzhmorgeologia, for complex seismic acquisition in the transit zone of Rio Muni.

"This is a historic moment for Equatorial Guinea as we welcome once again, long-standing partners of our country to explore onshore Rio Muni. We expect this region of Equatorial Guinea to become a new natural resources hub both for onshore oil and gas operations but also for mining and minerals," declared Gabriel Mbaga Obiang Lima, minister of mines and hydrocarbons.



Image Credit: African Energy Chamber

The programme marks the re-entry of Rosgeo into Equatorial Guinea.

US-Africa collaboration major talking point at Africa Oil Week Virtual

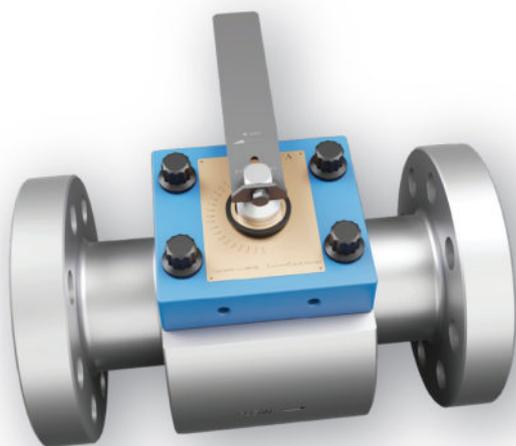
THE PARTICIPATION OF US Department of Energy's assistant secretary for Fossil Energy and the US Development Finance Corporation's chief development officer in AOW Virtual highlighted the importance that the USA places on fostering relationships with the continent.

When the US government launched its Prosper Africa initiative in December 2018, it did so with a vision to open markets for American businesses, grow Africa's middle class and promote youth employment opportunities. Securing the continent's energy future and facilitating electrification for those Africans not yet connected to the grid have been crucial to the initiative since its inception.

Notably, the US Export-Import Bank recently approved a direct loan of up to US\$5bn to support the development and construction of an integrated LNG project in northern Mozambique, demonstrating American appetite for developing natural gas as a major "bridging fuel".

"Africa is home to immense unconventional gas reserves, and they also have abundant renewable resources. It's not about using one or the other; it's about using both to expand energy opportunity and security across the continent. We welcome the opportunity to collaborate with our African partners to develop and use resources across the energy spectrum," said US assistant secretary for fossil energy, Steven Winberg during the online session on 7 October.

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Shell partners with Oyo State to boost gas distribution network

SHELL NIGERIA GAS (SNG) is to facilitate domestic gas infrastructure development in Oyo State following the signing of a Memorandum of Understanding (MoU) with the state government.

The pact targets the distribution of cleaner and more reliable gas energy to industries in the state through a distribution network with potential for around 50 million standard cubic feet of gas per day, starting from the state capital, Ibadan, as the point of first entry.

The MoU set out broad terms and conditions to guide co-operation between the two parties for the project development and delivery. It was signed at the Oyo State Government House by the managing director of SNG, Ed Ubong and the state governor,



Image Credit: ElasticComputerFarm/Pixabay

The governor described the agreement with SNG as critical in the state's efforts to boost industrialisation.

Oluseyi Makinde.

The governor described the agreement with SNG as critical in the state's efforts to boost industrialisation and enhance economic development while improving access to power for residential and industrial areas in the state. "We believe that the agreed terms in the MoU will lead to the signing of the Build-

Operate-Own-and-Transfer agreement so that businesses can begin to reap the benefits of a steady source of energy."

Ed Ubong said, "The partnership is an opportunity to further improve domestic gas utilisation in Nigeria, enabling local industries to thrive and create employment opportunities for Nigerians."

Bowleven continues to make progress on Etinde development offshore Cameroon

BOWLEVEN, THE AFRICA-FOCUSED oil and gas exploration group, has announced that despite the challenges of COVID-19, the company, together with its joint venture (JV) partners, continues to make good progress in the

development of Etinde, offshore Cameroon.

As part of the development planning, and following the appointment of TechnipFMC as lead contractor, Front End Engineering Design ('FEED') work is continuing alongside

other workstreams including field optimisation and commercial discussions with major stakeholders.

The Etinde financing plan will likely comprise various layers, including senior project finance debt, vendor financing from contractors, off-takers and likely equity. The latter will be a function of the agreed field development concept and the associated capex. The next stage of this work effort will be the preparation of the Field Development Plan ('FDP'), Preliminary Information Memorandum ('PIM') and associated suite of lender due diligence reports, in preparation for financing discussions. Bowleven has engaged a financial advisor to assist with this.



Image Credit: Zachary Theodorou/Unsplash

The next stage of this work effort will be the preparation of the Field Development Plan and Preliminary Information Memorandum.

VAALCO announces new 3D seismic survey

VAALCO ENERGY HAS announced that the acquisition and processing of new 3D seismic data will begin in Q4 2020 in connection with the planning of future drilling programmes in the Etame Marin block offshore Gabon. The company also announced the estimated production for Q3 2020.

Cary Bounds, VAALCO CEO, said, "Our long-term strategy is to optimise every location that we plan to drill and identify new locations to add to our drillable inventory. We believe that by acquiring and processing a proprietary 3D, dual-azimuth seismic survey over our entire Etame block we are accomplishing these goals."

"As a result of our strong operational performance to date in 2020, we continue to be cash flow positive and the company is fully funded for all current activities including the upcoming seismic programme. We have lowered our operating cost per barrel and remain committed to optimising production to ensure that we continue to generate free cash flow to fund future field development. We are confident in the long-term potential at Etame and believe acquiring and processing seismic is the first step toward preparing for our future drilling campaigns that we believe will deliver long-term growth, in line with our strategic objectives," he added.

The company expects the full field 3D survey will optimise future drilling locations, provide better imaging of existing satellite and infill locations, as well as identify additional upside opportunities.

Nigeria considers privatising NNPC

THE OIL REFORM bill in Nigeria is expected to privatise the Nigerian National Petroleum Company (NNPC).

As reported in Reuters, the legislation is expected to amend deepwater royalties and scrap major regulatory agencies in favour of new bodies. It aims to revise the country's oil and gas exploration laws.

The bill suggests making the NNPC, a limited liability firm into which the finance and petroleum ministers will transfer NNPC assets. Then, the federal government will pay cash for shares of the company and it will operate as a commercial entity state fund, the source further



Image Credit: Adobe Stock

The legislation aims to revise the country's oil and gas exploration laws.

reported. The aim is to help the company raise funds.

The bill proposes to amend deep offshore royalties made last year by cutting the royalty for offshore fields producing less than 15,000 bpd to 7.5% from 10%.

Trinity Energy to construct oil refinery in South Sudan

SOUTH SUDAN'S TRINITY Energy plans to build a US\$500mn crude oil refinery, as reported in *The East African*.

Additionally, the company is set to make US\$10mn worth of new investments in its Kenyan operations.

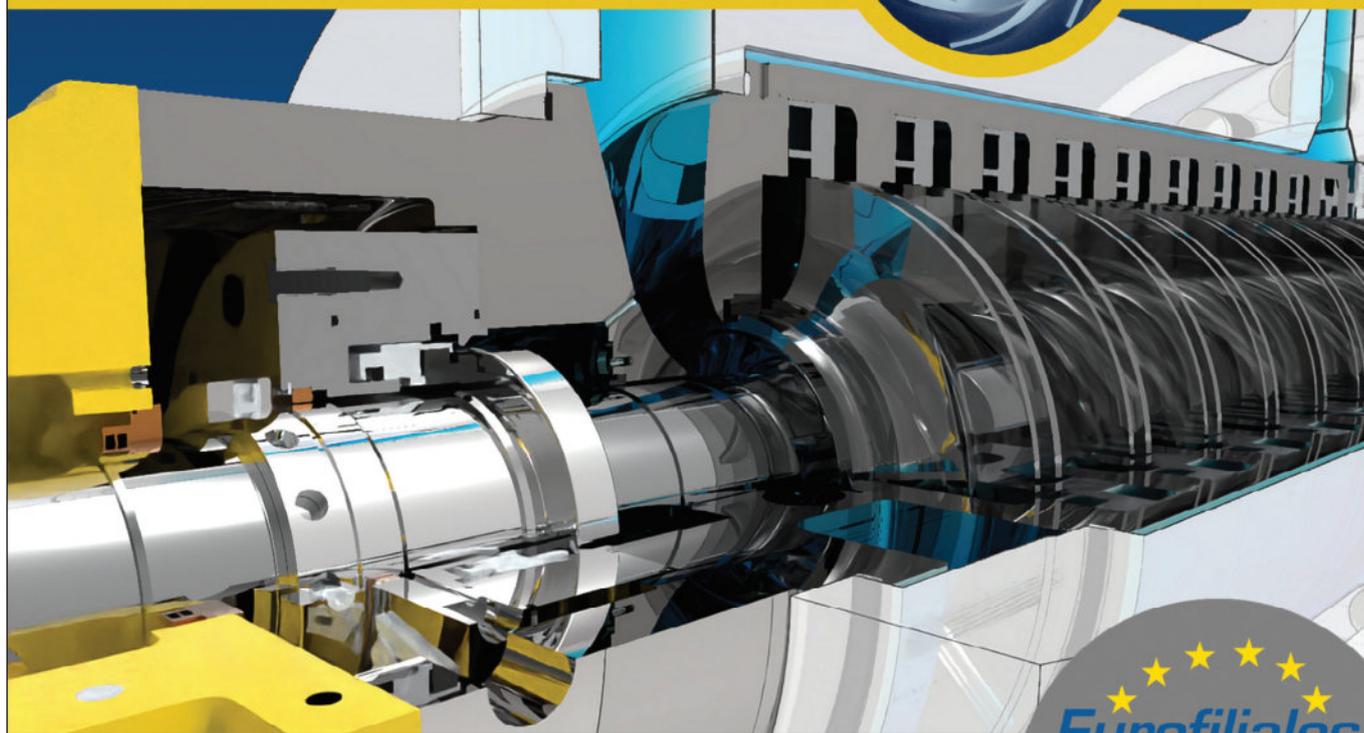
The firm is planning a 40,000 bpd modular refinery at Paloch in the oil-rich Upper Nile State, with the potential of expanding capacity to 200,000 bpd, as well as petroleum storage facilities at Nesitu, in the south of the country.

The refinery is expected to be operational in two to three years, with plans to start distribution of refined petroleum products to

Kenya, Uganda, Tanzania and the Democratic Republic of Congo by road, *The East African* further reported.

"We are already making steady progress towards our refinery project. We have already identified and secured land for the refinery in Paloch. We have engaged Chemex of the United States as the project manager for this project. Separately we are close to tying up project preparatory work financing from Afreximbank, and this will aid in the engineering and design work for the facility," the firm's chief executive, Robert Mdeza told the source in an interview.

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ANPG, ExxonMobil and Sonangol sign three exploration contracts

ANGOLA'S NATIONAL OIL, Gas and Biofuels Agency (ANPG) has signed three risk service agreements with ExxonMobil and Sonangol P&P to increase the exploration area in the offshore area Angola, over 17,800 sq km.

These agreements will make it possible to identify the potential of hydrocarbon resources existing in the Namibe basin. It is recalled that until now the Namibe Basin was an unexplored maritime zone in Angola. Deep water blocks 30, 44 and 45 are located between 50 and 100 km from the Angolan coast, in a water depth that varies between 1,500 and more than 3,000 metres in depth.

ANPG's chairman of the board of directors, Paulino Jerónimo, has underlined the advantages inherent to



Image Credit: ANPG

The aim is to explore and increase the hydrocarbon production potential.

ExxonMobil's presence in the Namibe Basin, which will allow to deepen the geological knowledge, as well as to explore the hydrocarbon potential on the same occasion. ExxonMobil is the operator of Blocks 30, 44 and 45, with an associative participation of 60%, with Sonangol having an

interest of 40%.

Sebastião Gaspar Martins, chairman of the board of directors of Sonangol, stated, "The extension of prospecting and exploration activities to an area that has hitherto been unexplored in Angola is extremely important."

German investors target Mozambique's LNG, gas projects

GERMANY'S ECONOMIC COMMITMENT to Mozambique is set to be strengthened as the Germany Africa Business Forum (GABF) embarks on a three-day trade mission to encourage,

promote and facilitate trade and investment between German businesses and Mozambique's growing economy.

German investors will visit Mozambique during the

Mozambique Gas & Power (MGP) 2021 Conference & Exhibition taking place from 8-9 March 2021, an opportunity organised by Africa Oil & Power (AOP) in partnership with Mozambique's Ministry of Mineral Resources and Energy (MIREME) and the government of Mozambique.

The investor mission provides German investors an opportunity to engage with major Mozambican businesses and political stakeholders. The goal of the investment roadshow is to deepen German-Mozambican relationships in light of Mozambique's recent discovery of substantial natural gas fields, largely considered a game-changer for the country and its people.



Image Credit: Africa Oil & Power Conference

The aim is to strengthen German-Mozambican relationships while developing Mozambique's natural gas fields.

Neptune Energy goes digital with Halliburton

NEPTUNE ENERGY WILL adopt Halliburton's DecisionSpace 365 well construction suite of cloud applications to consolidate all global drilling and well activities, improve efficiency and reduce non-productive time.

The initiative focuses on potential annual savings of more than US\$20mn. The three-year agreement – part of Neptune's digital subsurface programme – will create a platform for Neptune's digital well programme. It aims to reduce the duration for planning wells from weeks to days, automate engineering calculations and consolidate data currently held across multiple global locations into one.

DecisionSpace 365 cloud applications will enable Neptune to build "digital twins" of its wells to not only plan and track their progress throughout their lifecycle, but to model opportunities to optimise performance and predict potential problems before they occur. It can bring benefits to optimising inventories of Neptune's plant, people and production resources.

Neptune's global head of drilling and wells, Brett McIntyre, said, "The industry faces unprecedented challenges at this time and new digital technologies are enabling E&P companies to be more efficient and maximise the value of their activities."

"The digitisation strategy aims to enable Neptune to be safer and more responsible, ensuring production efficiency and profitable growth from our globally-diverse, gas-weighted portfolio," he said.

BIG OIL BETS ON SOUTHERN AFRICA

Major developments over the past 15 years open up viable possibilities in underexplored regions. When it comes to finding promising frontiers for oil and natural gas exploration drilling, international oil companies (IOCs) and juniors are investing in exploration and development (E&D) programmes across southern Africa, with a bigger risk appetite.

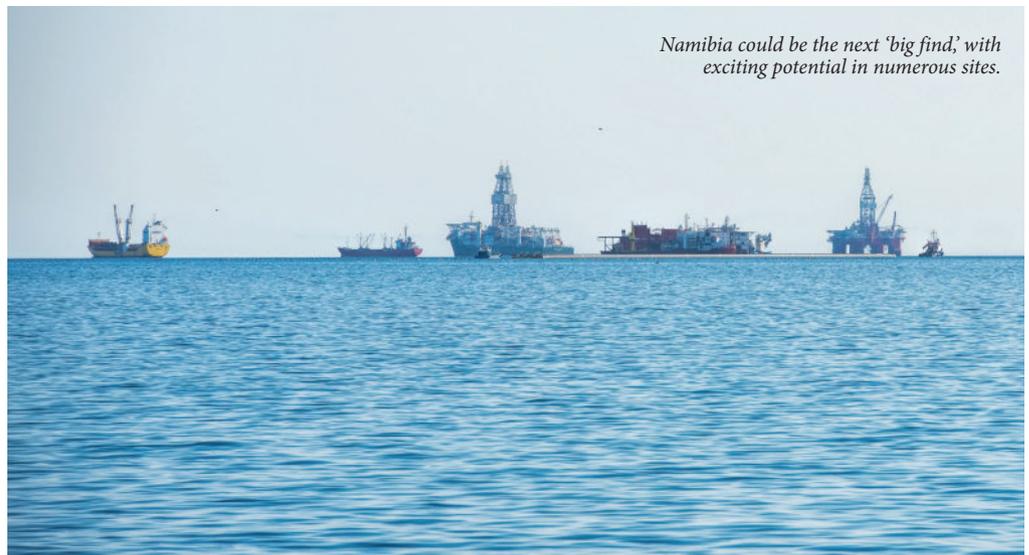
“THERE IS NOWHERE on Earth with as much potential as Africa,” said Jay Park, CEO of the UK-based Reconnaissance Energy Africa (ReconAfrica).

The value of subsoil resources in Africa is estimated at US\$60,000 per square mile, compared to about US\$300,000 in OECD countries.

“This is either because Africa doesn’t have its fair share of the world’s resources, or because it hasn’t found those resources yet. I’d put money on the latter because Africa is vastly underexplored compared to the rest of the world,” said Park. Between 2011 and 2014, Africa accounted for one-fifth and 45%, respectively, of global oil and gas discoveries (International Energy Agency). The IEA estimated remaining technically recoverable oil and gas resources in Africa at 450bn barrels and 100 trillion cubic metres, representing 7% and 13% of global total resources.”

Newest radar for explorers

The potential riches of southern Africa have yet to be unraveled, off Namibia and South Africa. The geological formations are dominated by ancient sediments, underlay by basement. There are evidence of oil prone source rocks, reservoirs and subsalt



Namibia could be the next ‘big find,’ with exciting potential in numerous sites.

Image Credit: iJ/Adobe Stock

potential in the untapped ‘southern tier.’

Namibia could be the next ‘big find’ on scale of the US shale boom, with exciting potential in numerous sites, especially the deep/onshore Kavango basin – bigger in territory than shale basin (Eagle Ford) that transformed US into a top oil-producer. It is believed to be an extension of South Africa’s 600,000km Karoo sedimentary basin, home to Shell’s vast Whitehill Permian shale play (estimated reserves: 211 tcf).

“Nowhere in the world is there a sedimentary basin this deep that does not produce commercial hydrocarbons,” commented Bill Cathey, president

at Earthfield Technologies (Houston). One of the leading geochemists and shale sector pioneers, Dan Jarvie of Worldwide Geochemistry reckons there is potential for 120bn barrels of oil equivalent (boe) in the Kavango basin waiting to be proved up to technical recovery – contingent, however, on massive E&D investments.

ReconAfrica has acquired the entire 8.75mn-acre sedimentary basin and exclusive rights to estimated 18.2bn barrels of oil-in-place – including Recon’s Botswana portion of the basin. It holds a 90% interest (the government owns 10%) under a four-year E&D license, plus a 25-

year exploitation permit once commercial discovery is made. Besides good geology, Namibia offers favourable fiscal terms – 5% royalty fees and corporate tax (35%) on oil reserve profits.

Even ExxonMobil has acquired seven million net acres in Namibia from the government for a block about 135 miles offshore in water depths up to 13,000 feet. The supermajor’s big bet on Namibia factors that it comprises similar geology as Brazil’s pre-salt oil basins (Santos and Campos), which have already proven tangibly resource-rich according to industry experts.

South Africa’s offshore areas of Orange and Outeniqua basins are believed to be hydrocarbons

prone. This was confirmed in February 2019 by Total's deepwater discovery on the Brulpadda prospects off the southern coast. The estimated volumes of natural gas and condensate resources are one billion (boe) – representing more than a fifth of the world's entire gas finds during 2018 (IEA).

“With this discovery, Total has opened a new world-class gas and oil play and is well positioned to test several follow-on prospects on the same block,” said Kevin McLachlan, senior vice-president exploration at Total. The French major will spend US\$85.5mn in South Africa to support the drilling programme.

The African Energy Chamber (AEC) echoed, “This is a great first step for the country which still relies on imports of oil and gas despite the great reserves believed to be in its soil and waters.” The Brulpadda discovery has de-risked the geology, while opening up a new exploration province for IOCs and change the energy fortunes of South Africa. The power sector (reliant mostly on coal) will benefit from gas feedstock, which Brulpadda field could supply over coming decades. “Gas is a low-cost, flexible power source that can provide generation primarily above the base load in peak-demand periods,” noted A.T. Kearney, global management consulting firm.

Virgin oil territories

More recently, Africa Energy, a Canadian-based company reported an offshore oil find, off South Africa, with reserves tentatively estimated at 500mn-plus barrels, but what's more significant is that the Luiperd block offers as much as 80% of success, unheard of in frontier exploration today, Africa Energy CEO Garrett Soden told an industry conference. The Luiperd prospect, Argus Media reports, is the largest of South Africa's five offshore blocks that are attracting



Angola's production is characterised by primary and secondary recovery where most of the oil production rates have reached a plateau and some have declined.

Image Credit: Lukasz Z/Alamy Stock

keen explorers' interest.

In Zimbabwe, Australian-based explorer, Invictus is planning a drilling project – its first-ever oil exploration, with a start-up date of October 2021, and a reported cost of US\$15mn. The government is negotiating a production sharing agreement with Invictus should hydrocarbons deposits are confirmed. In the 1990s, Exxon identified an area likely to contain gas but cancelled the project because it was targeting crude oil.

Mozambique, which boasts Africa's biggest untapped conventional gas resources, could possess offshore oil deposits. A consortium led by ExxonMobil was due to start drilling in the first-quarter 2020 within three deepwater blocks, but COVID-19 pandemic has put exploration on-hold until 2021.

The existence of oil in Madagascar was known for over a century but E&D was deemed commercially unviable. Recoverable reserves are estimated by National Office of Mines and Strategic Industries at 1.5bn barrels.

Mature province

Angola plans to discover 40-57bn barrels of crude oil, plus 17.5-27 tcf of gas, according to Hydrocarbon Exploration Strategy (2020-25), with a view to ensuring a base production above one million bpd by 2040. These ambitious targets, however, depend on sizeable foreign and

government investments. Angola, sub-Saharan Africa's second-largest producer (after Nigeria) has proven oil reserves of 9.5bn barrels and 11 tcf of natural gas (US Energy Information Administration).

The upstream regulator ANPG warned that output could plunge to 500,000 bpd from existing matured oilfields by 2028, if no new discoveries are made. “The geology in Angola is very challenging,” noted London-based Energy Aspects. Up to 95% of production is offshore and depletion rates are very high. Energy Aspects' analysis indicates Angola must add 200,000 bpd of new production annually to offset its precipitous decline. Angolan crude is a heavy, sweet crude that yields low sulphur middle distillate.

Over the past year, Italian major ENI reported five discoveries (estimated reserves 1.8bn barrels of light oil), with further finds probable. “We believe that in the deep-water, there are unexplored or underexplored areas which might hold potential, for example in Namibe and ultra-deep lower Congo basin,” stated Eni. ExxonMobil also signed a Memorandum of Understanding with Sonangol to “evaluate the hydrocarbon potential in the Namibe Basin.” To encourage E&D activities, Angola has cut petroleum tax from 20 to 10% for discoveries (below 300mn barrels) that lie undeveloped due

to modest reserves size or excessively high extraction costs. Taxes on marginal fields were also cut by half to 25%.

Angola's production is characterised by primary and secondary recovery where most of the oil production rates have reached a plateau and some have declined. Enhanced oil recovery (EOR) techniques offer the best way to boost output from current oilfields. Using EOR, Angola could recover more than half of the original oil in-place (OOIP), within deep and ultra-deep waters.

In sum, southern Africa boasts the most ‘undiscovered’ hydrocarbons potential. But the area is not a mature exploration and production province, which could increase extraction costs and estimated resources are technically recoverable (i.e. possible/probable) not proven reserves.

The COVID-19 crisis has caused havoc for the oil industry, reflected in delays in final investment decisions, reductions in capital expenditure, cancellation of marginal oil and gas developments and cancelled or delayed licensing rounds. Once oil prices recover in tandem with global economy rebound in 2021, Africa's frontier regions should see growing interest from energy majors willing to invest in the world's next exploration hotspots. ♦

MOIN SIDDIQI, economist

2020 – THE YEAR OF GAS FOR NIGERIA

Being especially sensitive to oil market trends, the oil price crash has reduced Nigeria's external buffers as international reserves are relatively low. However, Nigeria's natural gas sector shows great potential for creating new investment opportunities. Deblina Roy and Moin Siddiqi report.

NIGERIA, LIKE MOST hydrocarbon revenue-dependent countries, is facing the heat of the many-pronged challenges due to the global pandemic and the subsequent massive fall in global demand. The oil price slump has slashed Nigeria's general government revenue from an already low 8% of GDP in 2019 to a projected 5.3% in 2020, one of the lowest in the world.

The oil price crash has reduced external buffers as international reserves are relatively low, the exchange rate lacks flexibility and all major sources of private capital flows are volatile. The IMF in April 2020 approved US\$3.4bn in emergency financial assistance to tackle the severe economic fallout of COVID-19 and the oil price slump.

However, even in this once-in-a-generation test for the oil and gas industry, Nigeria's natural gas sector shows great potential for creating new investment opportunities, particularly due to ongoing power sector reforms and a stable gas export to the international market even during the COVID-19. This is why Nigeria's Minister of State for Petroleum Resources Timipre Sylva has declared 2020 as the year of gas for the nation, uncovering a promising area for investment.



Image Credit: Jan/Adobe Stock

The federal government has adopted many initiatives to position itself as a major gas hub.

Stable gas exports during the pandemic

According to the Department of Petroleum Resources (DPR), Nigeria holds more than 200 tcf of recoverable reserves – the largest on the continent – and produces 1.2 bcf per day. Nearly half of its production is exported, and Nigeria ranks as the fifth largest liquefied natural gas (LNG) exporter globally.

Therefore, the federal government has adopted many initiatives to position the country as a major international player in the international gas market. These include the Nigerian Gas Master Plan, the Nigerian Gas Flare Commercialization Programme (NGFCP), the Nigerian Gas Transportation Network Code (NGTNC) and the National Gas Expansion Programme (NGEP), among others.

Positioning Nigeria as a regional gas hub

The Nigeria Gas Transportation Network Code is expected to deepen the growth of gas market in the country. Mr Sylva disclosed this at the virtual launch of The Go-Live of the Nigerian Gas Transportation Network code in August 2020. The minister said that following the declaration of 2020 as a year of gas, President Muhammadu Buhari's administration was driving major policy and regulatory initiatives to enhance gas reserves growth and support domestic and export project, thus helping the sector achieve the presidential mandate of gas penetration, gas-based industrialisation and economic diversification.

Sylva is optimistic about the programme's success. He said, "In

the coming months, this code together with related interventions, would enable improved gas supply to power, growth of gas-based industries, domestic LNG, LPG and CNG penetration, as well as enhance revenue to the government and create investment opportunities for our people."

Gas projects

The West African nation's major gas development projects have demonstrated resilience to external market forces. Saipem, in a joint venture with Daewoo E&C Co Ltd and Chiyoda Corporation (SCD JV), has been awarded by Nigeria LNG (NLNG) Ltd the contracts for the engineering, procurement and construction of the Nigeria LNG Train 7 Project. The project is expected to contribute approximately eight MTPA of LNG capacity, increasing LNG output by 30%. The expected delivery of NLNG Train 7 is by 2024.

Other major developments include Seplat Petroleum and NNPC's US\$700mn Assa North-Ohaji South gas project. With a capacity of 300 mcf per day due to come online in 2021, the plant is set to process wet gas from Blocks 21 and 53 located in the Niger Delta. Shell Petroleum Development Company has also signed an agreement to produce an additional 300 mcf per day from the field. ♦

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In the post-COVID-19 era, industry will see a greater take-up of solutions and technologies to improve asset performance.



IS 'SMART' OILFIELD ON THE GO?

Image credit: vitabam/Abbie Stock

When times are tough, asset optimisation is a priority for a profitable oilfield.
Martin Clark reports.

GETTING THE MOST from an asset is essential for all operators throughout the life of any project, upstream or downstream; fractional savings in the energy sector can equate to millions of dollars.

For an industry already highly data dependent – where even pipelines communicate feedback to data centres on a 24/7 basis – this is good news in terms of asset optimisation.

And the COVID-19 outbreak appears to have only accelerated the role that technology plays in this modern-day 'smart' oilfield.

Chevron, for instance, is working with industry partners Schlumberger and Microsoft to deploy optimised technology looking to speed up data processing, creating new opportunities to identify savings and efficiencies across an entire project or site. The benefits on a new field development could include accelerating time to get

the first oil.

Microsoft's multi cloud specialist, Dizando Norton, said at a recent virtual industry event that there are a number of such transformative projects now underway across southern and eastern Africa.

"These projects are supported namely by Microsoft's enabling cloud services allowing customers to increase efficiency while reducing operational costs."

The virtual event – Leveraging the Power of Technology for Oilfield Optimisation – examined how digital applications are capable of

“ The benefits on a new field development can include accelerating time to first oil.”

uniting real-time data with advanced analytics to improve decision-making and boost efficiency and sustainability on the ground.

This, ultimately, has a big pay-off when it comes to asset optimisation.

According to Vaseem Khan, global vice-president digital, analytics and innovation and chief innovation officer at engineering giant McDermott, as oil companies face up to profitability squeezes, digitalisation and optimisation of assets have emerged as principal cost-cutting measures.

"Technology is an enabler for sub-Saharan Africa to become more competitive and become one of the most prominent producing areas globally."

Asset optimisation is also a means to maintain the integrity of equipment, and underpin reliable performance over a long duration.

In one project, following a government regulation regarding

well maintenance, Microsoft implemented a real-time monitoring solution to proactively detect corrosion – ultimately reducing corrosion by up to 46%, thus avoiding a potential 'plug & abandon' further down the road.

Again, these small gains can equate to many millions of dollars in terms of lost downtime or lost production in a real-world oilfield setting.

The consequences and benefits at the continent's mega projects are simply vast.

Baker Hughes, for example, has an agreement in place for its asset performance management software to support the Nigeria LNG project on Bonny Island, Africa's single-biggest energy scheme.

Asset optimisation was here to stay anyway. Now, in the era of COVID-19, industry is all set to see an ever greater take-up of related solutions and technologies to improve asset performance. ♦

REMOTE CERTIFICATION

The COVID-19 pandemic has accelerated the use of remote technologies in the role of certification and testing in Africa and beyond. Martin Clark and Deblina Roy report.

Remote inspection solutions are effective alternatives when there is limited or no physical access to site.



Image Credit: Image credit: Perytsky/Adobe Stock

THE PANDEMIC OF 2020 has pushed the boundaries of technology when it comes to certification and testing, with a surge in remote-based meetings and inspections taking place.

Initially, that meant helping companies with business continuity as the COVID-19 outbreak played out.

Leading testing, inspection and certification provider, Bureau Veritas, has made the most of digitalised inspection services during the crisis to help mitigate risk and prioritise health and safety.

The company had already deployed remote inspection, supervision and augmented inspection services in multiple use cases around the world.

Remote inspection solutions are effective alternatives when there is limited or no physical access to site, when experts are not available immediately, or when sites are affected by travel bans or restrictions, the company noted earlier this year.

Bureau Veritas provides services right across the oil and gas industry chain, from upstream through to downstream.

Its remote technology means operatives on a work site can communicate and stream activity via the internet, mobile phone or smart glasses to Bureau Veritas' inspection experts located off-site – potentially, anywhere in the world.

Results are then analysed remotely and communicated digitally to the client. Other



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▷ WHAT KEEPS THE GLOBAL ECONOMY MOVING?

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digital solutions with augmented 3D inspections can also be deployed, according to the company.

Indeed, this year has been a test for similar technologies and creative ways of working all over the world.

In Finland, the regulator STUK carried out a scheduled inspection of a nuclear power plant being built by a subsidiary of Russia's Rosatom over Skype.

It said the measures were necessary to comply with social distancing and other restrictions during the coronavirus pandemic.

In Africa, the use of such technologies has brought with it continuity at a time of chaos.

The advance of other new technologies and devices – from drones to remotely-operated vehicles for subsea work – has likewise been gathering pace in recent years.

It means the important work of testing and certification on major oil and gas installations across Africa and worldwide could continue even in the face of a pandemic.

That will be important going forward in a world in which health, safety and hygiene issues have pretty much moved to centre stage.

Renato Catrib, senior vice president for industry and facilities global service lines at Bureau Veritas, said it will require companies to be flexible, responsive, innovative and committed to society at large – and with ever greater transparency.

This dependence on new technologies will become integral from now on.

Catrib said what used to be considered 'innovation' will become a pillar of the 'new normal' – our ability to leverage digital technologies.

"The situation has enabled people to adapt in real time," said Catrib. "Digital will help meet society's growing demand for transparency. This is why we have



Image Credit: OPITO

The OPITO standard will enable marine personnel to boost their skills and experiences in the oil and gas industry.

decided to propose the online availability of inspection and audit results. Everything is recorded on a digital platform that we have specifically developed for this offering."

In August 2020, Bureau Veritas expanded its remote service centres and pilot projects with leading energy companies, to accelerate the drive towards real time verification for offshore assets. The first step in the journey – remote inspection and verification - has led to the opening of seven remote service centres in major locations around

the world. Bureau Veritas aims to convert 50% of physical surveys offshore to remote surveys by the end of 2021.

The latest centre opened in Singapore recently, joining others in Shanghai, Miami, Rotterdam, Piraeus, Istanbul and Dubai. A centre is proposed for Aberdeen in autumn 2020 with others planned to enhance the global network. By increasing connectivity in this way, Bureau Veritas is able to maximise cost efficiency for operators while maintaining service quality and firmly reducing carbon footprint.

“ Digital will help meet society’s growing demand for transparency: this is why we have decided to propose the online availability of inspection and audit results. Everything is recorded on a digital platform that we have specifically developed for this offering,” said Catrib.

New oil and gas industry standard

To support the transition of marine personnel into the oil and gas industry, OPITO, international skills organisation for the energy industry, and Merchant Navy Training Board (MNTB), have launched a standard. The OPITO BOSIET with CA-EBS – [STCW 95/2010 Conversion] aims to recognise similarities between the BOSIET training requirements for workers travelling to offshore installations and the maritime industry’s STCW95/2010 certification, which offers similar instruction on basic safety and emergency response for marine personnel.

Kris McDonald, training centre manager at Clyde Training Solutions, said, “The OPITO BOSIET with CA-EBS – [STCW 95/2010 Conversion] demonstrates innovative cross-industry collaboration that will benefit marine personnel moving across to the oil and gas sector.” ♦

SMARTER LIFTING TO INCREASE FLOW OUT OF THE WELL

Digital control and monitoring has accelerated the need to have ‘intelligent’ artificial lift to further raise performance. Therefore, reinventing artificial lift for a new era in the oil and gas industry is very much needed. Martin Clark reports.

AS AFRICA'S OIL industry has matured, so too has the quest for new solutions to improve production out of older fields and wells.

There is mounting interest in artificial lift systems that have proved their mettle in other production centres around the world, from the Middle East to the Gulf of Mexico.

Heavyweight industry players in this segment include the likes of Schlumberger, Weatherford and Baker Hughes, all of which continue to innovate to improve well reliability and performance and help bring down upstream lifecycle costs.

That's no more important than today, in an era of subdued pricing and an unsettled outlook for the global oil and gas industry generally.

The advanced artificial lifting solutions are all set to bridging the gap between well conditions and the production requirements with software and services that optimise artificial lift based on the operators' specific well and reservoir information, thus ultimately boosting the production. Advancements in the sector include electric submersible pumps (ESPs), progressing cavity pumps (PCPs), horizontal surface pumps, sucker rod pumps, gas lift, power systems and cables and many others.

Typically, artificial lift has

meant the use of a mechanical device inside a well, such as an electrical submersible pumping (ESP), or velocity string, or by injecting gas into a well.

The aim is to increase the flow out of the well, which is especially significant in more mature fields as production begins to wane.

New technologies are also being rolled out, such as the continuous belt transportation method, which uses an oil-absorbing belt to extract liquids from more marginal wells, again, another important trend within Africa.

The use of real-time data is also integral to the performance efficiency of modern-day artificial lift solutions.

Digital control and monitoring has fuelled the emergence of ‘intelligent’ artificial lift to provide operators with a range of data to further raise performance.

Increasingly, these solutions are also being embedded into new production sites as well, as operators chase after marginal gains in an era of tough economics.

In Ghana, one of West Africa's newest producers, Aker Energy is integrating artificial lift into its broad array of subsea systems for the development of the US\$4.4bn Pecan field.

The scheme is centred around a floating production storage and offloading (FPSO) vessel and a

subsea production system that will comprise up to 26 wells.

This will include 14 advanced, horizontal oil producers and 12 injectors with alternating water and gas injection, and the use of multiphase pumps as artificial lift, to maximise oil production.

The 110,000 bpd Pecan field, located in ultra-deep waters around 115km offshore, will become Ghana's fourth producing oil field and marks the next phase of development for the prolific offshore Deepwater Tano / Cape Three Points block. ♦



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ENSURING OPTIMAL PRODUCTION WITH SUITABLE FLOW METER

Flow meters not only increase application reliability but also enable the measuring accuracy and service life of assets. Innovations are seen to accurately detect blockages of the float caused by impurities in the medium or by strong, repeated pressure surges.

FLOW MEASUREMENT IS critical in the upstream oil and gas sector for offshore and onshore activities including well testing, enhanced oil recovery, fractionation, completion and separation to recover and process crude oil and natural gas.

For example, during the exploration and drilling stages at the oil and gas fields, there is a need for accurate and dependable flow instrumentation to ensure optimal production.

When a shale gas reserve has been found, the initial stage of the extraction process is to pump the water-based solutions into the well to release the trapped gas. Here, flow monitoring is necessary to verify the outputs of hydraulic-driven equipment such as power units on drilling rigs and to monitor test machinery and tools for proper fluid flow rates.

Therefore, the choice of the most suitable flow meter to keep track of fuel gas to flare and acid gas measurements, as well as monitoring liquefied natural gas (LNG) during processing, transportation and storage is critical. Further, the adoption of automation across the oil and gas value chain has also had a major impact on the adoption of flow meters, thus owing to the greater need for efficiency and accuracy in the operation of these equipment.

An integral part of oil and gas industry

Significant developments and innovations have been seen in ensuring accurate flow measurements in the industry. Global manufacturer and provider of process instrumentation, measurement solutions and services KROHNE has introduced the OPTISWIRL 2100. The vortex flowmeter aims at basic utility applications in the process industries and is an economical solution for the measurement of liquids, (wet) gases, saturated and superheated steam where high accuracy is not required.

Also, in addition to the electronic device diagnostics, additional application diagnostics are now available for the H250 M40 variable area (VA) flowmeter, stated KROHNE. The existing NE107 device diagnosis is extended to include VA specific application diagnostics. The device now detects, for example, blockages of the float caused by impurities in the medium or by



KROHNE's H250 M40 variable area flowmeter is set to offer additional application diagnostics.

strong, repeated pressure surges. Pulsations in liquid measurements with positive displacement pumps or compression oscillations in gas measurements are also detected.

In February 2020, Badger Meter announced new hazardous area certification to

ATEX/IECEx Zone 2 for the Dynasonics TFX-5000 transit time ultrasonic flow meter. TFX-5000 ultrasonic clamp-on flow and energy meters set to provide a versatile solution for measuring volumetric flow and heating/cooling rates in clean liquids as well as those with small amounts of suspended solids or aeration, such as surface water or raw sewage. Typical applications include water mains, reclaimed water, lift stations and booster pump stations in water and wastewater or the energy transfer of chilled water (cooling) and glycol/hot water (heating) in HVAC systems as well as produced water in oil and gas applications.

The TFX-5000 meter is specifically developed for fluid flow metering and heating/cooling energy measurement and can be employed for a host of data logging tasks. Users can select up to eight parameters to log, including flow rate and total, signal strength, and alarms with a time/date stamp to an eight GB microSD (Secure Digital) card. It also features helpful diagnostics that take the guesswork out of isolating process or application problems. Users are alerted to out-of-specification flow conditions and can access history with the most recent alarm, error and event codes. 🔴

WHAT LESSONS CAN BE DRAWN FROM THE MV WAKASHIO INCIDENT?

After a ship ran aground and released an alarming amount of oil into Mauritius' waters, Rubesh Doomun, on-demand lawyer of Centurion Plus, discusses the legal provisions currently in place.

THE MV WAKASHIO, which bore the Panama flag, and had Japanese companies listed at its owners, had come to an inglorious end. Furthermore, the efforts of the crew members to prevent the oil onboard the tanker from spilling into the Mauritian waters failed dismally. The local fishermen have since been wallowing in disappointment and pessimism.

The Merchant Shipping Act 2007 (MSA) applies to every ship in any place within Mauritian waters, but excludes a naval vessel. Hence, the MV Wakashio, which was sailing in an environmentally sensitive area off the east coast of Mauritius, will most likely be deemed to be within territorial sea, which is legally defined as being the sea between the baselines and a line of which every point is at a distance of 12 nautical miles from the nearest point of the baselines.

At the time of the grounding, the ship was reported to have contained approximately 3,894 tons of fuel oil, 207 tons of diesel, and 90 tons of lubricant oil on board. The Merchant Shipping (Prevention of Pollution by Oil and Noxious Liquid Substances in Bulk) Regulations 2019, which are regulations made under section 228 of the MSA, provide for the International Convention for the Prevention of Pollution from Ships 1973, its Protocols



Image Credit: International Maritime Organization/Flickr

The IMO is helping to mitigate the impacts of the MV Wakashio oil spill in Mauritius.

and Annexes I and II to have force of law in Mauritius.

Regulation 24 of the Regulations provides that where a foreign ship in Mauritius is involved in an accident, the master or owner of that ship shall report the accident immediately to the director of Shipping in Mauritius and to the state where the ship is registered. The director may then decide whether a survey is required.

It is further stipulated by the Regulations that the discharge of oil/oily mixture into the sea shall be prohibited unless it results from the damage to the ship or to its equipment provided that two conditions are met. First, all reasonable precautions were taken after the occurrence of the damage or discovery of the

discharge to prevent or minimise the discharge. Secondly, neither the owner nor the master acted either with intent to cause damage or recklessly and with knowledge that damage would probably result.

Therefore, should the survey required to be carried out by the director reveal that any of the above two conditions were not respected, and the director is satisfied that the evidence so warrants, he may cause proceedings to be instituted against the owner or master of the ship and may detain the ship. The director may further cause a physical inspection of the ship to be undertaken to gather evidence relating to the suspected violation, where either the ship has refused to give information

or the information supplied by the ship is manifestly at variance with the evident factual situation.

The Environment Protection Act and the Civil Code provisions also cater for civil liability in this case. Therefore, this leaves plenty of room for any civil action.

Now that the cleaning process is at full throttle, the issue of civil liability will soon be on the table. The coming weeks loom ahead with some question marks. The Japanese owners have publicly extended their apologies for the ecological disaster suffered by Mauritius. They have also reassured the country that they take at heart the protection of the environment. But what this would mean in terms of compensation remains to be seen. ♦

HOW TO DYNAMICALLY ACT UPON DOWNHOLE INSIGHTS?

In-well fibre optic technology can lead to production improvements in the order of several hundred million dollars per asset.

PRODUCTION BENEFITS OF hundreds of millions of dollars per asset can be realised through the use of in-well fibre optic technology when the vast amounts of data produced are managed and translated rapidly into actionable insights.

This is according to a white paper from LYTT, specialist data analytics solutions provider for industrial assets.

Prad Thiruvankatanathan, co-founder and chief product and technology officer, LYTT, said, “Oil and gas companies have a huge data opportunity. On the one hand, they can continue as they have been, basing multi-million-dollar production decisions on little to no information, or make the choice to invest in the real-time insights they need.”

While the oil and gas industry started to install fibre optic cables in hydrocarbon wells three decades ago, these networks are substantially underused despite their potential to lead to significant production improvements with the emergence of distributed acoustic sensing (DAS). Companies are wary of DAS technology because of the vast amount of data it produces, and the capacity and skillset required to turn this data into something that can immediately add value to operations.



More than ever, the industry needs to work collaboratively and empower operators to manage risks with proven technologies.

Image Credit: JT Jeeraphum/Altbis Stock

As a result, operators have become accustomed to making multi-million-dollar operational decisions based on data collected intermittently and that only offers a snapshot of well performance.

Optimising profitability will be vital in 2020 and beyond

Lytt provides a solution to address the data volume issues. By leveraging fibre optic cables working as downhole sensors, insights are generated that solve fundamental challenges to production in hydrocarbon wells such as inflow phase and flow profiling; outflow profiling; sand identification and well integrity analysis. Using hybrid analytics, this data can provide a real-time view of changes in production, enabling operators to act upon

the downhole insights dynamically.

As the oil and gas industry continues to face substantial challenges in the form of fluctuating oil prices driven by economic shocks and geopolitical battles and increasing pressure on governments and corporates to cut their environmental impact, optimising profitability and efficiency will be vital throughout 2020 and beyond.

In the white paper “Raising Recovery Rates in Real-Time,” LYTT demonstrates how hybrid analytics enable oil and gas firms to profit from underused fibre optic networks and boost efficiency and well production in real-time.

The white paper has further highlighted three challenges producers face when dealing with legacy or remediated assets. These include sand detection,

well integrity and flow profiling. It also explains how hybrid analytics can help owners and operators tackle these issues.

“In this time of uncertainty, the industry needs to work collaboratively and empower operators to proactively manage risks with proven technologies. We have already seen results of several hundred million dollars across a group of assets by adding production, managing integrity and increasing field recovery,” stated Thiruvankatanathan.

Thiruvankatanathan continued, “There is no question that oil and gas will remain an important part of the global economy for many years to come. But companies need to ensure their operations are as sustainable as possible by maximising the production from existing wells and reducing the need for further drilling or infrastructure.” ♦

IATF 2021 TO BOOST TRADE AND INVESTMENT

In 2021, IATF will focus on the African Continental Free Trade Area (AfCFTA) – a single market for goods and services across 55 countries, aimed at boosting trade and investment.

THE OIL AND gas industry has been one of the hardest hit sectors by the COVID-19 pandemic, with reduced demand and plummeting prices, leaving many of the industry's players reeling. The price of a barrel of Bonny Light was trading just above US\$67 at the beginning of the year, plummeting to below US\$15 on some days during April and was trading at around US\$44 in late July.

The Environment Investigation Agency (EIA) estimated that there was a 21 mmbbl per day oversupply in global oil markets during April, but it had returned to inventory drawdown by June. As with commodities, price, supply and demand volatility in the O&G industry is nothing new and tends to be cyclical.

In Africa, O&G remains a huge employer and big business with rigs, exploration, production, refineries, storage terminals, port facilities, pipes, oil tankers and more all forming part of the direct mix. Also, the tentacles and supply chains of the African O&G industry embrace and collaborate with many other sectors: wholesale and retail; IT equipment and services; construction; machinery and equipment; maintenance; hotels; restaurants; legal and accounting services; and employment agencies amongst others. All these vastly expand the O&G impact meaning that sales, purchases, services, investments



Image Credit: IATF

In light of the COVID-19 pandemic, the event is rescheduled to 2021 from 1-7 September 2020.

and contracts abound. The advent of the African Continental Free Trade Area (AfCFTA) and improved market information, coupled with a move towards diversifying supply chains, will make it much easier to leverage the entire African continent to resource required goods and services.

“ The AfCFTA will leverage the entire African continent to resource required goods and services.”

Bringing together buyers, sellers and service providers in 2021

To this end, Afreximbank and the African Union have organised the Intra African Trade Fair 2021. The event brings together buyers, sellers and service providers from every country in Africa and many from beyond. The visitors will be able to meet and engage with new contacts, find the reliable supplier and showcase goods or services to the O&G industry.

The IATF2021 is being held in Kigali, Rwanda, from 6-12 September 2021. It provides a unique business platform enabling buyers and sellers to network, interact and explore business, trade and investment opportunities. It also hosts a

conference with top-level speakers on all matters relating to business trade and investments. For those that can't physically attend there is also a year-round Virtual Trade Fair negating the need for travel and hotels. IATF2021 is expected to result in more than US\$40bn of trade and investment deals bring concluded, with over 10,000 delegates attending and over 1,100 exhibitors displaying their goods and services.

People who are interested to visit and benefit from the trade and investment boosts from AfCFTA, can put IATF2021 into Outlook, iCal or Google calendar now. ♦

For more details about IATF2021, visit www.intrafricantradefair.com

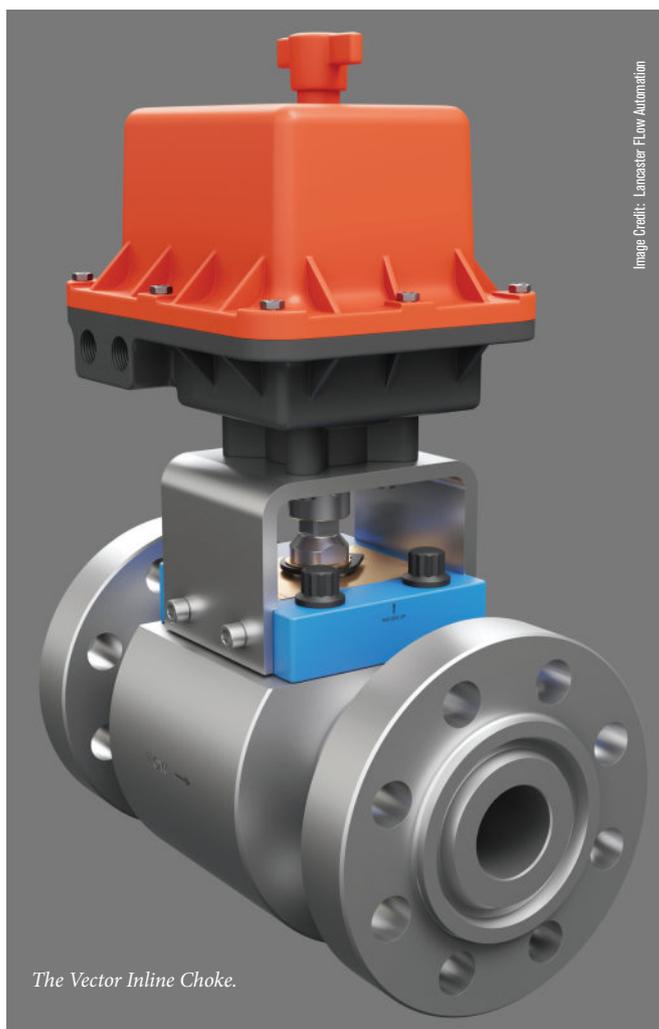
NEW HIGH-PERFORMANCE PRODUCTION CHOKE FROM LANCASTER FLOW AUTOMATION

Lancaster Flow Automation is continually advancing its cutting-edge solutions to accommodate the oil and gas industry's requirements to operate at increasing pressures while delivering outstanding efficiency and reliability.

LANCASTER FLOW AUTOMATION, which has designed and manufactured high-performance production chokes for more than 20 years, has released a new product called the Vector Inline Choke, in line with its commitment to constant innovation.

Lancaster Flow Automation continually advances its engineering to accommodate the oil and gas industry's requirements to operate at increasing pressures while delivering outstanding efficiency and reliability. Engineered using 3D Modelling and fluid dynamics, the Vector Inline Choke has been manufactured for optimal performance in challenging liquid and gas applications. The new choke significantly increases efficiency

“To generate even further cost savings, the Vector Inline Choke has a Class V leakage rating, meaning the choke will stay in service for longer and require less maintenance.”



The Vector Inline Choke.

and sets new standards of durability. Perhaps the greatest advance in the product is its revolutionary flow system called the Guide Vane. This remarkable piece of engineering directs the flow of fluids directly

into the opening of the trim, providing a lower erosion rate and thereby increasing the longevity of the choke. Additionally, Lancaster Flow's proprietary design of the trim disc openings allows for finer

control and higher differential pressure drops.

To generate even further cost savings, the Vector Inline Choke has a Class V leakage rating, meaning the choke will stay in service for longer and require less maintenance. Furthermore, it has been designed so that maintenance may be carried out while the choke is still in service. Like the company's other products, the Vector Inline Choke requires extremely low operating torque; there is no need for large hand wheels or additional personnel. Designed and tested to API 6A PR2 standards, it may be operated manually or with a pneumatic or electric powered actuator and depending on the choke's specific application, wear sleeves are available in stainless steel, solid tungsten and stellite.

The Lancaster Flow Vector Inline Choke is available now and will be manufactured at the company's headquarters in Houston, Texas and Samarinda, Indonesia. Maintenance for the choke will be fully supported worldwide, including in the Gulf via its service facility in Abu Dhabi. The Lancaster Flow Vector Inline Choke has patent pending in the USA. ♦

For further information, email info@lancasterflow.com or melvinsng@sagapce.com

ADVANCING THE DIGITAL TRANSFORMATION OF OIL AND GAS

Thomas Siebel, author, chairman and CEO of C3.ai, spoke at a Gastech Virtual Summit Tech Talk on the factors driving the digital transformation of the oil and gas industry, and the importance of digital technologies in surviving the impact of COVID-19.

SIEBEL BEGAN BY saying we are undergoing a “mass extinction event”, with predictions that 40% of the companies on the planet today will not survive the next decade. Companies with “new DNA”, such as Amazon, Uber, Tesla and Google are filling the vacuum.

“When we get to this issue of corporate mass extinction and digital transformation, predictions are that 70% of the existing companies today will go digital and 21% will succeed. The rest will go out of business,” he said. “This digital transformation process has clearly been accelerated in the post-COVID economy.”

Digital transformation has now come to the top of the agenda for the CEO and board directors, he continued.

“What are the vectors driving the information technology industry in the 21st century? These would include elastic cloud computing, like AWS, and Azure, and Google Cloud. The concept of big data means we’re able today to deal with, store and manipulate data sets that were previously unmanageable. With this phenomenon of the Internet of Things, we are sensing the value chains, travel, transportation, oil and gas, healthcare utilities, the power grid, so that all the devices in the value chain are becoming remotely machine



Oil and gas companies need to embrace digital transformation to survive.

Image Credit: Adobe Stock

addressable.....today we’ve probably sensed in an order of 50 billion devices around the world. Across all value chains, this is accelerating.” The confluence of technology trends such as cloud computing, big data and the Internet of Things is enabling us to solve problems using artificial intelligence that were previously unsolvable.

“Unless we adopt these technologies, we will cease to exist. You have the opportunity to either reinvent yourself or slowly go out of business,” he said.

Through its partnership with Baker Hughes, Baker Hughes c3.ai, the company is bringing together a set of AI applications that address the entire value chain in oil and gas.

“In a typical deployment, we

will be aggregating massive amounts of data from enterprise information systems, extraprise information systems, whether might that be the weather, terrain, social media, equity prices, commodity prices, and the aggregated data will also be coming from a very large constellation in a sensor network. We aggregate those data into a unified federated image. These data might be hundreds of petabytes of data. We process this data at the rate that it arrives, say, 60 or 90-hertz cycles, so processing millions of transactions per second, typically in the elastic cloud, but sometimes on-prem, and then we bring to market a family of AI applications that address network, inventory and yield

optimisation, reliability, predictive maintenance, energy, water and emissions management.”

The company’s largest use case is Royal Dutch Shell. “We’re doing everything from AI-based predictive maintenance for offshore oil rigs to production optimisation in wells, process optimisation, refining, AI-based predictive maintenance for 550,000 valves. In that application, we’re managing two million machine learning models in real-time.

“It is very large scale, and we are partnered with Baker Hughes and Azure to reinvent Shell in the 21st-century economy to produce lower cost and safer energy, more renewable energy, and digitally transform the company.” ♦

DO YOUR FACILITIES HAVE A 'PROLONGED' LIFESPAN?

Despite the many huge advances in recent decades, there is no 'one size fits all' when it comes to coatings in the oil and gas industry. Martin Clark reports.

SPECIALIST PAINTS AND coatings provide a barrier between critical equipment and the elements, ultimately prolonging the lifespan of rigs, pipelines, wells and other essential facilities.

Major players in this niche include the likes of Jotun, Akzo Nobel and Bredero Shaw.

The global anti-corrosion coatings market is anticipated to reach US\$39bn by 2027, according to Grand View Research, growing at around 4.6 per cent annually.

According to it, the oil and gas industry — which accounts for over a third of this overall market — will continue to drive demand, in part, due to the presence of sulphur in crude oil, which causes corrosion in pipelines, vessels, and containers.

"These coatings act as a barrier to prevent the interaction between the corrosive materials, compounds, chemicals from the

“ Specialist paints and coatings solutions prolong the lifespan of rigs, pipelines, wells and other essential facilities.”



Image Credit: Kenney/Adobe Stock

The industry is ready and receptive for more coatings solutions.

metal surfaces," it noted.

However, specialist paints and coatings serve many other functions too, from protection against fire risk to the daily battle against the weather, whether that's the harsh, desert sun of the Sahara or the cold, deep waters of the Atlantic.

The likes of Jotun and the other peer innovators have pioneered new coatings options for oil and gas operators, providing ever greater choice from the original first-generation

materials in the 1940s, such as coal tar enamel and asphalt (bitumen), widely used for onshore pipelines.

Despite these advances, there remains no such thing as an ideal coating for all purposes, with the optimal choice dependent on a wide range of factors.

All are being tested fully as Africa's oil and gas industry expands and evolves.

To boost coverage across Southern Africa, Canusa-CPS and Dhatec this year extended a

partnership pact with Steel Pipe Industries (Pty) Ltd (SPI) that will strengthen their presence across South Africa, Mozambique, Botswana and Zambia.

SPI focuses on all aspects of field joint coating, rehabilitation, pipeline preservation and pipe logistics.

With multiple large-scale oil and gas projects planned or underway — from Ghana to Mozambique — the continent would seem a ready and receptive market for more coatings solutions. ♦

HOW INDUSTRIAL IOT IS FUELLING THE DIGITAL OILFIELD TRANSFORMATION

The implementation of IoT and machine learning technology can take on 80% of tasks executed on modern well sites, and thus man-hours and department hand-offs are significantly reduced.

TECHNOLOGY HAS TRANSFORMED the oil and gas sector: prices are lower, expectations are higher and the competition is fiercer than ever. To successfully navigate this industrial evolution, energy operators in Africa must invest in innovation so that they can take advantage of the transition to digital. By keeping up with the rapid modernisation, operators can deliver a service which benefits them, their customers, and the environments in which they operate.

As the Internet of Things (IoT) begins to transform industries all over the world, having a network that can cope with the huge influx of data from connected devices and systems has become paramount to maximising productivity and profit. The alternative is inefficiency and, at worst, errors which could cost producers a significant amount of time and money. More devices and more connections mean more opportunity for cybercriminals, too. Therefore, protecting the increased volume of data being stored within and transmitted between interfaces is crucial to protecting return on investment (ROI), productivity and security.

Enabling remote management of devices and equipment

On an industrial scale, IoT

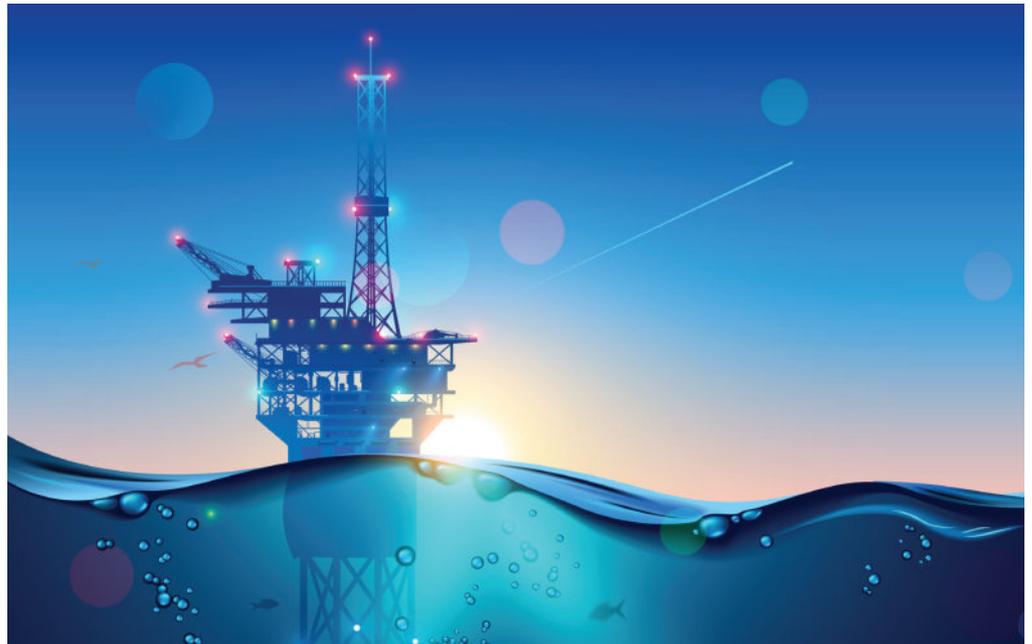


Image Credit: AndSus/Adobe Stock

Speedcast aims to provide 24/7 IT support to oil and gas assets and energy base camps.

solutions enable remote management of devices and equipment, pipeline monitoring and real-time defect detection, allowing early interventions in malfunction scenarios including pipeline leakage, gas bottlenecks and safety breaches. Algorithms can also generate automated recommendations for well placement in the construction of oil rigs via subsurface planning, saving on costs and environmental damage. By optimising productivity, the protecting crew and preserving the surrounding environment, producers can make better-

informed operational decisions from the ground up, facilitating a stronger market position.

Having focused on expansion across Africa over the past decade, Speedcast is committed to providing technology, equipment and fully-managed networks to sub-Saharan regions and beyond. Last year, Speedcast initiated its sixth project in Mozambique, working to deliver a wide range of fully managed services and 24/7 IT support to offshore assets and energy base camps. With offices and teleports across the continent, it has worked closely with local

economies to operate in accordance with the region's unique challenges and priorities.

By making the investment in fully-managed value-added solutions to cater to the needs of the customer, producers can remain competitive in today's volatile market.

Offering solutions which remain resilient in harsh environments and are compatible with existing systems, Speedcast facilitates a seamless transition without causing operational disruption. ♦

www.speedcast.com

NEW FRONTIERS OFFER LATEST LICENSING OPPORTUNITIES

During the Africa E&P Virtual Summit, held from 16-17 September, leaders from Liberia, Namibia, Senegal and Ghana highlighted Africa's latest licensing opportunities and prospects with a focus on unlocking potential in these regions. Deblina Roy reports.

Liberia is encouraging investment in unexplored terrains that have good potential for success.



Image Credit: Ana/Afrique Stock

THE MOST INTERESTING opportunities available in licensing and open acreage in Africa in 2020 and beyond are being unlocked so international bidders can explore Africa's new oil and gas frontiers. These prospects are providing governments with an opportunity to pitch and engage the international E&P community to invest.

Liberia's hydrocarbon exploration activities

"Liberia has has 82,000 sq km of 2D data and 24, 500 sq km of 3D data. The country has an established presence of hydrocarbon geological discovery," said Archie Donmo, director-general of Liberia Petroleum Regulatory Authority (LPRA).

"With a flexible negotiation, Liberia is encouraging investment in areas such as unexplored terrain with top potential for success, or a basin that has never been drilled in past. Companies operating in Liberia are

“Liberia’s regulatory regime is clear, uncomplicated and predictable,” said Archie Donmo, director-general of Liberia Petroleum Regulatory Authority (LPRA).

Chevron Corporation, ExxonMobil, Mitsubishi, Eni and others. In terms of regulatory instrument, we have the New Petroleum (Exploration and Production) Reform Law, 2014, FDI regulations, petroleum sharing agreements and applicable law of our legislatures.”

According to Donmo, Liberia has three ways of issuing petroleum rights: the international competitive bidding process, direct negotiation and an executive allocation to the national oil company that is issuing its blocks.

“Our maximum block size is around 3,500 sq km (offshore basin) and 2,000 sq km (onshore basin). Our offshore acreage has 33 oil blocks. Of them, Liberia basin is from block 1-24 and the Harper basin is from block 25-33. We are tendering about nine oil blocks

within the Harper basin. The bid round activities occur in four stages. The pre-qualification stage runs from April to October 2020; the bid submission stage to run from November 2020 to February 2021; the winners to be announced on March 2021; the negotiation and ratification to be held in April 2021.”

Ghana's attractive fiscal regime

Egbert Faibille Jnr, CEO of Petroleum Commission Ghana, said that Ghana has four sedimentary basins: three offshore and one onshore. The onshore basin covers an area of 63,000 sq km with estimated proving reserves of 1,035 mmbbl and 1.72 tcf gas. The plate types are structural or devonian and stratigraphic combination or cretaceous.

The laws that help to regulate the upstream petroleum sector include the Petroleum Exploration and Production law; Ghana National Petroleum Corporation Law 1983; PNGC law 1964; Income Tax Act of 2015; the Petroleum Commission Act 2011; Petroleum Revenue Management Act of 2015; Petroleum Exploration and Production Act of 2016.

“The 2D and 3D seismic data are available in Ghana's onshore and offshore prospects. In 2018, Ghana commissioned the integrated reservoir solutions to undertake original reservoir study and geological dataset, the report of which is available from Core Laboratories.

“A project of immense importance to Ghana is the Voltaian basin project. Tested around the exploration well, the Voltaian basin covers around 103,600 sq km and is currently being explored to establish its prospectivity. Ghana National Petroleum Corporation is spearheading exploration works in the Voltaian basin.

“A number of exploration opportunities exist in offshore Ghana. In the western basin, block 4 is available presently and a block overview is available in the eastern basin. In the national news paper Daily Graphic, the Ministry of Energy has published an invitation for 11 blocks which will soon be available through direct negotiations with the government of Ghana or licensing rounds in the eastern basins.”

Senegal's 2020 licensing round

Commenting on the licensing rounds in Senegal, Joseph Medou, director-general of Senegalese national oil company Petrosen, said, “Last year, we launched a licensing round in 12 offshore open blocks, some of which are located in deepwater. In those areas, 2D data and new 3D data were acquired in recent



Image Credit: dpreazy/Adobe Stock

With the help of technology, Namibia is uncovering many more opportunities that never existed in terms of prospectivity. Despite past setbacks, Namibia remains optimistic.

years, the quality of which is really good and done in a joint venture with TGS and GeoPartner. These data are reprocessed and presently available for companies that are interested to invest in those open blocks.

“The 2020 Senegal Licensing Round will be an open competitive tender with applications evaluated on the basis of standard criteria. The licensing round is the second international competitive bidding round arranged by the Ministry of Petroleum and Energy in Senegal. Given the ongoing COVID-19 condition and restrictions imposed, the Ministry of Petroleum and Energy has announced an extension to the deadline for submission of applications until 15 December 2020.”

Namibia's Orange basin has the highest potential for success

Maggy Shino, petroleum commissioner, Ministry of Mines & Energy, explained, “The Orange basin in Namibia covers an area of

“The Namibian government, together with partners, has invested heavily in 2D and 3D data and that will help to explore more opportunities in the coming days.”

3,50,000 sq km. On the Namibian side, it is a much underexplored basin and we have only four exploration wells. Between Namibia and South Africa, the basin hosts around three discoveries in three different types. On the Namibian side, we are going to unlock it further with another discovery very soon.”

Total and Impact are set to study the next well in this basin later this year under block 2912 and 2913, Shino said. “Shell is planning to drill another prospect during 2021. The Kudu gas field project in Orange basin also has potential to use Kudu gas for LNG and transport the gas to power for Namibia and southern African region. The Venus exploration well is set to be drilled by Total and partners sometime in December this year. We are planning to drill two stratigraphic wells in the Kavango basin.”

She added that the Namibian government, together with partners, has invested heavily in data. “Almost our entire offshore coastline is well lined up with 2D seismic data. Also, we have quite a significant chunk of 3D patches that have covered our coastline. The Namibian government, with National Oil Company and Core Lab, has completed a regional reservoir study that enables you to see the characterisation of proven and potential shifts in drift that are indicative of the reservoir presence in Namibia.”

With technological advancements, we are uncovering many more opportunities that never existed in terms of prospectivity, Shino concluded. ♦

AFRICAN RIG COUNT

COUNTRY	August 2019	September 2019	August 2020	September 2020
ALGERIA	44	42	30	22
ANGOLA	4	4	1	2
CAMEROON	2	2	0	0
CHAD	7	7	3	3
CONGO	2	2	0	0
CÔTE D'IVOIRE	0	0	0	0
EQUATORIAL GUINEA	2	1	0	0
GHANA	1	1	0	0
KENYA	7	7	3	3
LIBYA	16	16	13	9
MAURITANIA	0	0	0	0
MOROCCO	1	1	0	0
MOZAMBIQUE	0	0	0	0
NIGERIA	15	17	8	10

Source: Baker Hughes

Weatherford launches new reservoir characterisation solution

WEATHERFORD INTERNATIONAL HAS launched ForeSite Sense, a comprehensive reservoir monitoring solution that shows, in real-time, critical downhole data such as pressure, temperature and flow.

ForeSite Sense reservoir monitoring solutions deliver actionable, real-time intelligence across mature, shale and deepwater wells.

"Data tells the story of reservoir behaviour, and reservoir behaviour determines production efficiency and cost of asset ownership," said Brent Baumann, president, completions and production, Weatherford. "Without question, intelligence drives profitability. ForeSite Sense empowers operators to monetise

their data because it creates continuous, actionable intelligence for any well, in any environment and for every budget."

From single production zones in mature fields to distributed sensing arrays in deepwater basins, Weatherford combines single-cable simplicity, proven sensor reliability, and unprecedented data quality. ForeSite Sense matches data needs with well complexity and economics to deliver a life-of-well solution that draws from a comprehensive selection of optical, quartz, and piezo-electric gauges, paired with optical flowmeters and intelligent capillary and coiled-tubing remediation services.

"Installed in more than 7,000



The new solution delivers actionable, real-time intelligence across every well environment.

wells, ForeSite Sense is field-proven in every well environment and geography from the Permian Basin to the Middle East to deepwater Brazil," said Baumann.

"Weatherford has a three-decade track record of 99% reliability with 14,000 sensors. More importantly, the ForeSite

Sense end-to-end reservoir intelligence is integrated into the ForeSite ecosystem, creating the world's only single-sourced, production performance solution."

For more information, visit www.weatherford.com

Partnership to accelerate CCS technologies

NORWAY'S DNV GL, SINTEF and Technology Centre Mongstad (TCM) have signed a memorandum of understanding to further develop and scale up carbon capture, utilisation and storage (CCS) technologies globally.

CCS is the only currently available technology to deeply decarbonise hydrocarbon use. Scaling the technology will be critical to achieve national and international climate targets. DNV GL's 2020 Energy Transition Outlook forecasts that the technology will help mitigate more than two gigatonnes of CO₂ emissions by mid-century. However, the forecasts also indicate that CCS will not begin to scale until 2030, and support is needed in terms of government incentives and industry focus on finding ways to reduce the cost of CCS technology.

TCM's capability to facilitate large scale testing and verification of CO₂ capture technology allows technology developers reduced technological and financial risk. DNV GL and SINTEF will guide and support processes to qualify CO₂ capture technology, and providing verification of assets, infrastructure and storage sites.

"There is a significant need to accelerate efforts to scale CCS technology to allow the world to move toward its net-zero targets with greater confidence. Our partnership with TCM and SINTEF will allow us to work closely together to accelerate the deployment of CCS as a critical technology to deliver on nationally and internationally agreed climate targets," said Liv A. Hovem, CEO, DNV GL – Oil & Gas.

Amarinth expands centrifugal pumps range

AMARINTH HAS EXPANDED its range of API 610 OH3 & OH5 and ISO 5199 vertical inline overhung single stage centrifugal pumps for use across oil and gas, process and industrial applications.

Amarinth has expanded its range of single stage vertical inline overhung centrifugal pumps in API 610 11th edition OH3 and OH5 standards for use in the oil and gas industry, and in ISO 5199 standard for process and industrial duties. All pumps are available in a wide variety of materials from carbon steel to exotic alloys, including NACE compliant materials.

Additionally, pumps can be supplied as close coupled or long coupled.

Both API 610 and ISO 5199 pumps are designed to comply with ATEX specifications and will shortly conform to the new



The Amarith API 610 OH3 long coupled pump.

IECEx certification for centrifugal pumps as soon as the relevant audits can be conducted. The vertical inline pumps

utilise the same proven hydraulics as Amarith's horizontal pumps that are used on many of the world's most demanding pump projects. Advanced computer techniques, including 3D modelling, finite element analysis and computation fluid dynamics, are used to ensure high reliability and maintainability.

All pumps feature a back pull-out with metal-to-metal fits. API 610 OH3 and OH5 pumps are designed for 30 years (three years uninterrupted operation) life and ISO 5199 pumps for 20 years (two years uninterrupted operation) life.

Standard documentation, testing and NDT packs are offered with all API 610 and ISO 5199 vertical inline pumps.

Amarinth also designs bespoke packages which can be tailored to fit exact requirements.

Image Credit: Amarith

New 4K camera range for hazardous area surveillance

SYNECTICS HAS UNVEILED its new COEX 4K camera range, which provides a comprehensive suite of camera stations for hazardous-area (and safe-area) applications.



The COEX 4K IP TriMode camera station.

It offers a hazardous-area 4K TriMode camera station (colour, mono, and thermal imaging in one housing) certified to operate in temperatures up to +70°C and with enhanced cybersecurity.

"Our latest COEX 4K camera stations deliver exceptional image quality, which means users can zoom much further into an area of interest than ever before. Another benefit of the new range is that it also delivers improved situational awareness across a more comprehensive coverage area than HD, providing sharp image quality for critical monitoring," stated Darren Alder, divisional director for Oil & Gas at Synectics.

The new COEX cameras integrate seamlessly with existing video management systems, including Synergy, and provide advanced video streaming options. They provide continuous, reliable image capture in all lighting, weather, and operational conditions.

Projects protected by COEX cameras include the world's largest gas-to-liquids plant and the most sizeable floating liquified natural gas facility ever built.

Image Credit: Dresser Synectics

OilX recognised by Frost & Sullivan for digital oil analysis

FROST & SULLIVAN HAS recognised OilX with the 2020 Global Product Leadership Award, acknowledging OilX's ability to use satellite data, AI and maritime intelligence to meet the oil market's supply-demand dynamics.

The current tracking inventories system usually has a lag of one to two months, increasing the dependence on historical data to estimate supply-demand dynamics and leading to inaccuracies in projections. Besides, they only track the level of oil tank storage. Backed by the European Space Agency (ESA), OilX provides actionable insights to commodity markets, making it the world's first digital oil analyst.

OilX works with oil traders on their digital transformation journey. In its role as a strategic data partner, it provides refiners with a database to build digital initiatives.

OilX has also successfully secured seed funding of US\$2.2mn from Citigroup and GS Caltex and is expected to use this investment to expand its data engineering capabilities and product portfolio, from crude oil to refined products. Also, the company integrated IIR Energy's data into its refinery analytics package and leveraged the shipping technology through its joint venture with The Signal Group.

CGG GeoSoftware launches well path planning solution

CGG GEOSOFTWARE HAS 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

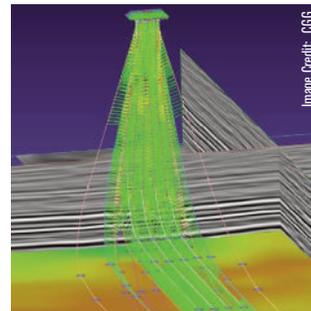


Image Credit: CGG

WellPath is part of CGG's InsightEarth 3D visualisation and interpretation software suite.

and engineering design. Drillers can optimise plans based on fractures, facies, geobodies and reservoir attributes while avoiding hazards.



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Halliburton Landmark introduces Digital Well Operations

HALLIBURTON HAS INTRODUCED Digital Well Operations, an open and integrated well operations software that seamlessly connects the entire value chain – operators, service providers, logistics providers and rig providers – to deliver more efficient and safe wells.

Digital Well Operations connects the rig site and field workers to remote operation centres using Live Plan, which is a digital twin of the well. It creates and maintains real-time views of each well phase, bringing design and execution together to increase operational efficiency and lower well construction costs.



Image Credit: ElMeinlor/Flickr

The solution connects the entire value chain to deliver efficient and safe wells.

Based on open architecture, the solution integrates with the Halliburton Digital Well Programme for a seamless end-

to-end well construction workflow. The Digital Well Operations solution includes four plug-and-play products: Well

Operations Monitor, Real-Time Well Engineering, Real-Time Control-Edge and Real-Time Solution. Digital Well Operations is available on iEnergy, the industry's first hybrid cloud designed to deploy, integrate and manage E&P applications on the public cloud or a private cloud with iEnergy Stack.

Digital Well Operations can leverage third party and operator engineering and artificial intelligence, machine learning models and advisory systems. This creates a unified experience for improved drilling automation. The solution is built on a variety of industry standards such as Energetics and Open Sub Surface Data Universe (OSDU).

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SA UPSTREAM SECTOR

DIVERSIFYING ENERGY SECURITY

Dr Phindile Masangane, CEO of Petroleum Agency SA, is optimistic about South Africa's exploration and production landscape. She is keen to promote sustainable development of oil and gas contributing to energy security in South Africa. Deblina Roy reports.

Can you briefly describe the role of Petroleum Agency SA in South Africa's oil and gas sector?

Petroleum Agency SA (PASA), South Africa's national regulator for the upstream oil and gas industry, has three main functions. The first is to attract investment to South Africa's oil and gas upstream industry. We have a team of geologists and geophysicists who interpret data gathered through past exploration activity to determine prospectivity, and use this to attract exploration companies to South Africa.

The second function of PASA is to regulate the upstream industry in terms of the Mineral and Petroleum Resources Development Act, its regulations and other applicable legislation. The third function is to act as the national archive for all data and information produced during oil and gas exploration and production in South Africa.

What is required to secure stability and security in the sector?

The oil and gas exploration industry has always been extremely volatile, being subject to global economic forces and highly dependent on the fluctuating oil price. In addition, oil and gas exploration is exceptionally risky in terms of initial, upfront capital investment



Dr Phindile Masangane is optimistic about the country's upstream oil and gas industry.

Image Credit: Petroleum Agency SA

with long periods before any return on investment and profit generation.

To counter this, oil and gas exploration companies require equitable terms, and especially long-term stability and consistency in contractual terms, together with political and independent judicial stability.

Where are the challenges and opportunities that lay ahead?

South Africa's upstream industry faces challenges of low oil prices, uncertainty regarding terms and legislation, environmental concerns and public negativity regarding fossil fuels, lack of local skills and public pressure on

government to nationalise South African assets.

Current opportunities lie in the development of the stand-alone Upstream Petroleum Resources Development Act (UPRDA) and its accompanying regulations. This rewriting of the legislation governing oil and gas exploration and production gives South Africa a chance to address the requirements of the industry.

Can you provide details about the new SA O&G explorations?

There is currently ongoing exploration of the prospects close to the Brulpadda discovery. Odfjell's Deepsea Stavanger oil rig is drilling the Luiperd prospect

which is the second of five prospects in the group. The Brulpadda well discovered light oil and gas condensate, but the phase in the other prospects can only be determined through drilling.

Other exploration coming up offshore is the planned drilling of the Gazania -1 well off the west coast, a prospect close to the A-J1 oil discovery made in 1988. African Energy Corporation has entered into a partnership with Azinam and Panoro in this block (still to be approved by the Ministry) and have identified numerous prospects in the block. Azinam will become the operator. The well will test the Gazania and Namaqua prospects. Drilling is expected in Q1 2021.

Off the east coast, Eni and Sasol have identified potential drill prospects in deep water, but the testing of these by drilling has been delayed due to various issues including COVID-19 and its effect on the oil price.

Once the UPRDA and its accompanying regulations are finalised, we can expect the initiation of active exploration for shale gas onshore. The true potential of this resource will only become known through drilling and production testing, but this may certainly represent a major economic boost for the economy of South Africa. ♦

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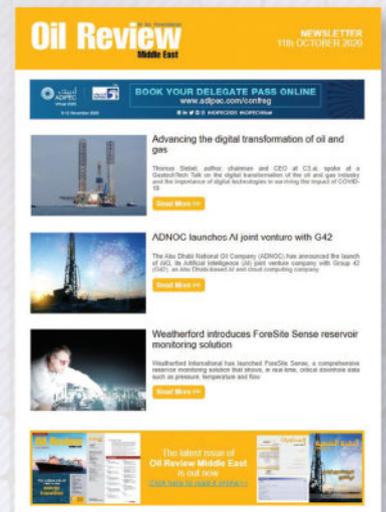
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