

# Oil Review

Oil · Gas · Petrochemicals

## Africa

VOLUME 14 | ISSUE 6 2019

## FPSO technology

### Transforming the offshore sector



PETAN chairman, Bank Anthony Okoroafor, p26

Special report: East Africa's prospects

Africa Oil Week and ADIPEC round-ups

SAIPEC event preview

Technology: Oil spill prevention, well control, decommissioning, EPC, gas detection



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FPSO vessels are becoming more advanced.  
See page 24. (Image: West Africa Ventures)

## EDITOR'S NOTE

THE YEAR HAS ended with two big events – Africa Oil Week and ADIPEC – both filling the African oil and gas industry with hope for 2020. At Africa Oil Week, a diverse range of government and industry leaders addressed delegates on big ambitions based on excellent discoveries and promising geology, while at ADIPEC, Mohammed Sanusi Barkindo, secretary-general of OPEC, spoke highly of a technical workshop initiative which will take place in Dakar next year.

Elsewhere in this issue, we look at the latest technologies on FPSO vessels, and talk to four industry leaders about issues ranging from regional cooperation and meeting local content requirements constructively through to the importance of workplace safety and high standards.

With 2019 drawing to a close, I'd like to wish all *Oil Review Africa* readers a safe and happy holiday season. We look forward to further dynamic developments in the industry for 2020.

**Georgia Lewis**  
Managing Editor

## CONTENTS

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## NEWS

- 4 **Calendar of events**  
Plus SAIPEC event preview.
- 6 **News**  
Nigeria and Equatorial Guinea focus.
- 39 **Rig count & Innovations**  
Industry activity and latest technology.

## COVER STORY

- 24 **FPSO technology**  
Size matters on the high seas.

## REGIONAL FOCUS

- 15 **East Africa**  
The latest from this promising region.
- 18 **Africa Oil Week 2019**  
Optimism in Cape Town
- 20 **ADIPEC 2019**  
African updates from Abu Dhabi.

## TECHNOLOGY

- 26 **Oil spill response**  
Using aerial vehicles.
- 27 **IT security**  
Keeping the perimeters safe.

- 28 **Construction**  
Opportunities for scaffolders.
- 29 **Gas detection**  
Essential safety advice.
- 30 **Human capital**  
Attracting millennials to oil and gas.
- 32 **Onsite power**  
Using flare gas constructively.
- 33 **Well control**  
An in-sourced success story.
- 34 **Decommissioning**  
Avoiding a horror story.
- 36 **Offshore construction**  
Optimising capex and opex.

## INTERVIEWS

- 22 **Woji Weli, BW Offshore**  
Part two of the exclusive interview.
- 25 **Bank-Anthony Okoroafo, PETAN**  
The importance of co-operation.
- 37 **Godwin Izomor, MG Vowgas**  
Committed to workplace safety.
- 42 **Ahonsi Unuigbo, Petralon Energy**  
Big ambitions for 2020.

# Executives Calendar 2020

## JANUARY

- 13-16 World Future Energy Summit**  
Abu Dhabi  
[www.worldfutureenergysummit.com](http://www.worldfutureenergysummit.com)
- 22-23 Oil & Gas IoT Summit**  
Lisbon  
[www.oilandgas-iot.com](http://www.oilandgas-iot.com)
- 27-28 Middle East & North Africa Energy**  
London  
[www.10times.com/africa-energy-summit](http://www.10times.com/africa-energy-summit)
- 28-30 Global LNG Bunkering Summit 2020**  
Amsterdam  
[www.oilandgasiq.com](http://www.oilandgasiq.com)
- 29 OGUk Exploration Conference**  
London  
[www.oilandgasuk.co.uk](http://www.oilandgasuk.co.uk)

## FEBRUARY

- 25-27 SAIPEC 2020**  
Lagos  
[www.saipec-event.com](http://www.saipec-event.com)
- 25-27 International Petroleum Week**  
London  
[www.ipweek.co.uk](http://www.ipweek.co.uk)

## MARCH

- 18-19 The 6th East Africa Oil & Gas Summit and Exhibition**  
Nairobi  
[www.eaogs.com](http://www.eaogs.com)

## APRIL

- 23-24 International Conference on Oil , Gas & Petrochemical Engineering**  
London  
[www.waset.org](http://www.waset.org)

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

## PETAN on board to help make SAIPEC 2020 a success

WITH A MISSION to engage the entire Sub-Saharan oil and gas industry, SAIPEC 2020 has big ambitions.

Standing for Sub Saharan Africa International Petroleum Exhibition and Conference, SAIPEC is now entering its fourth edition and it will return to the Eko Convention Centre in Lagos. Working directly with PETAN, the organisers will draw on their global resources to ensure that the event delivers to the needs of all stakeholders throughout the region.

The event was formerly known as WAIPEC, and last year's event was the largest petroleum event of its kind in West Africa, as Lagos welcomed in thousands of important regional stakeholders, as well as plus leading international E&P firms and partners, to develop and drive new business across the sector. It featured in excess of 25 technical



*Lagos will host SAIPEC 2020 in February.*

and strategic conference sessions, driven by the steering committee.

For SAIPEC 2020, more than 6,000 visitors are expected, along with 300+ participating companies, over 200 exhibitors and the involvement of more than 50 countries.

The conference sessions will feature topical debates and industry-leading speakers to engage all the players along the entire supply and value chains.

Meanwhile, the exhibition part of the event will give delegates direct access to

stakeholders and major players in the Sub-Saharan Africa supply and value chains for the energy sector, including government policymakers who can detail project plans, approve budgets and implement timelines.

There will also be opportunities to learn more about tenders, upcoming bids, consortia and upcoming projects.

Special events include SAIPEC Women In Industry, which is a new addition for 2020. This aims to provide a platform for some of the finest minds of the oil and gas industry in Sub Saharan Africa to convene and connect and put forward solutions towards building a diverse and inclusive oil and gas industry, with women playing a more important role than ever across the continent.

*To find out more, go to [www.saipec-event.com](http://www.saipec-event.com)*





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## Olusegun Obasanjo addresses Africa Oil Week on developments of the past three decades



OLUSEGUN OBASANJO, FORMER president of Nigeria, addressed Africa Oil Week, held in Cape Town in November.

"Over the 26 years that it has been in existence, I think the fortune of the African oil and gas sector has been up and down," he said. "I will not dwell too much on the past, except to let the past enlighten our present, and our future. Not too long ago somebody looked at me and said to me, 'You will drink your oil'. I thought he was angry because the price of oil was high, and I said to him, we will use our oil, will you join with me in using our oil? I was of course coming from an oil producing and exporting country."

Despite his optimism, Mr Obasanjo admitted that the sector faces some challenges on the continent over the coming decades: "The challenges that we face in Africa are adequate investment in oil and gas, challenges of infrastructure, challenges of security, challenges of local content, challenges of

regulation and challenges of predictability and stability. These are then same in the oil producing countries, the oil market and in the industry in general."

"The present challenges particularly include renewable resources growing into the areas where oil and gas has been predominant," he says. "I believe this should not really worry us too much. For me, I believe for the foreseeable future there will be no renewable energy that will be as portable as oil and gas. That is something that we can take advantage of to ensure oil and gas will still be there for the foreseeable future."

"I believe that this is the area where the oil countries should really work together and take advantage of new technology that is part of the digitalisation transformation such as artificial intelligence. All the technologies that are here now that were not available to us 15 years ago. They are there for use everywhere but are very important in the oil and

gas industry. If we bring this into the industry I believe that ... the fear that we have now will all be a thing of the past. The next 10 to 15 years may not be the way some people think."

Looking ahead, Mr Obasanjo pointed to collaboration across Africa as essential for the long-term sustainability of the oil and gas industry.

"I see collaborations at the national level, at the regional level, and at the industrial level, and of course, collaborating, at the global level," he told the conference. "Collaboration and taking advantage of technology. That would make the life of the oil industry much longer and reduce the fear that some people have that renewable energy resources will make oil and gas a thing of the past. If we can surmount this challenge, then the future of oil and gas cannot be dictated by anybody except by us; the producers and the investors. This will maintain oil and gas as an active resource for humanity."

## Côte d'Ivoire releases five blocks at AOW

CÔTE D'IVOIRE RELEASED five blocks, seeking expressions of interest, at Africa Oil Week. The three new blocks, CI-800, CI-801 and CI-802, along with existing blocks CI-102 and CI-503, benefit from shallow waters, good geological data and are adjacent to existing discoveries and the proximity of infrastructures. Although the bulk of the prospects are in the shallow water, since 2011, 47 exploration licences have been granted by Côte d'Ivoire including four blocks in water depths exceeding 3,000m.

Several oil and gas deposits have been discovered including Espoir, Baobab, Foxtrot, Marlin, Manta, Mahi, Lion and Panther, with most of them now in production. This year's average production is estimated to be around 34,800 bopd for crude oil and 208 mmcf/d for natural gas.

Jean Baptiste Aka, chief of staff at the energy ministry for Côte d'Ivoire, said, "On the part of the ministry in charge of the petroleum and energy side, we want to capitalise on our geographic position and the quality of infrastructures to become the energy hub of the West African sub-region."

"It is our plan that this position will cover all the value chain of the oil and gas industry from upstream exploration and production to downstream activities, including the development of oil and gas infrastructures ... In the country there are four producing blocks with an output of around 38,000 bopd of crude oil and 213 mmcf/d of natural gas, mainly consumed locally in power plants and with growing demand."





West African Ventures (WAV), established in 2000, is a 100% Nigerian company and a leading indigenous provider of offshore engineering, procurement, fabrication, installation, and vessel charter services. With corporate headquarters in Lagos, marine support base & shipyard in Warri, dry-dock and fabrication facilities in Onne Oil & Gas free zone, WAV continues to provide excellent offshore support services to the Nigerian oil and gas sector.

WAV maintains a new and flexible fleet of DP offshore construction vessels. All DP vessels are based on a hybrid design configuration that typically combines the following characteristics:

- ♦ Dynamic Positioning systems that enables a vessel maintain its position in both shallow and deep-water environments.

- ♦ The ability to install rigid and/or flexible pipe.
- ♦ High capacity cranes which have deep-water capability and active heave compensation systems
- ♦ Large accommodation capacity.
- ♦ Large unobstructed decks.

Due to the versatility of this fleet, WAV has the ability to offer the following range of services: Offshore Accommodation, Pipelay, Offshore Construction, SURF and Marine Support. Through its engineering and operational capabilities in Nigeria, WAV can offer above services on a turnkey EPIC contract basis.

WAV also owns and operates a large and diversified fleet of marine support services vessels in West Africa that provides

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## Equatorial Guinea tackles industry challenges at Africa Oil Week



*Gabriel Mbaga Obiang Lima speaks frankly at Africa Oil Week 2019.*

GABRIEL MBAGA OBIANG Lima, Equatorial Guinea's minister for mines, industry and energy, addressed delegates at Africa Oil Week on the challenges which prevent more investment into African hydrocarbons projects.

"We are doing well, and we are delivering great revenue," he

said. "But the issue here is what we are going to do in the future. Two of the fields are mature fields and we need to decide about them going forward. That revenue has allowed us to carry out investment in our infrastructure, but we are still keen on bringing in more companies."

Two of the challenges that often curtail investment in Africa are stringent local content rules and a regulatory framework that can be fluid.

However, for Equatorial Guinea, the subject of local content is not an issue, according to Mr Obiang Lima: "We have a limited population so local content has been mainly focused on a specialised sector such as the service industry."

"In general, I can say that more than 90 per cent of the companies have done a very good job regarding local content that we're happy with."

As for the regulatory regime, Equatorial Guinea is going to be working next year on the new industry law: "We believe that our national companies will work more efficiently if, rather than having regular responsibility from a minister, it will be controlled by a law."

## Algeria's Sonelgaz and Equatorial Guinea's Sonagas sign cooperation deal in Malabo

THE NATIONAL ELECTRICITY and Gas Company of Algeria (Sonelgaz) and Equatorial Guinea's National Gas Company (Sonagas) have signed a memorandum of understanding (MoU) on enhanced cooperation in the field of gas transmission, distribution and energy efficiency.

The MoU was signed by Chaher Boulakhras, president and CEO of Sonelgaz, and Juan Ondo Ndongo, general manager of Sonagas, during the 5th Summit of the Gas Exporting Countries Forum, in Malabo, Equatorial Guinea.

The MoU covers the regulatory framework for the gas sector, the transport and distribution of gas through pipelines, the supply and installation of gas meters and all other areas of the energy sector of mutual interest.

The signing was attended by Minister of Energy of Algeria, Mohamed Arkab, and minister of Mines and Hydrocarbons of Equatorial Guinea, Gabriel Mbaga Obiang Lima.



*The signing ceremony, which took place in Malabo.*

## Year of investment for Equatorial Guinea

GABRIEL MBAGA OBIANG Lima, Equatorial Guinea's minister for mines, industry and energy, has announced several capital-intensive projects as part of Equatorial Guinea's upcoming 2020 Year of Investment initiative.

The first project under the initiative will be the construction of a 20,000 bpd modular oil refinery, which will refine crude from the Zafiro and Aseng fields into gasoline, kerosene and Jet 1, among other petroleum derivatives.

The second modular refinery will produce 10,000-20,000 bpd and will be located on the mainland in Kogo next to the country's regasification and cement plants, to be supplied by the Ceiba and Okume Complex. The third refinery in Kogo is planned to refine the gold being exploited in both the country and the wider Central African region.

The next three projects will be in Malabo, Bata and Kogo for the construction of state-owned and state-managed strategic tanks that will be able to refine and store oil, gasoline and liquefied petroleum gas.

The ministry also aims to construct a methanol-to-gasoline unit to meet domestic consumption, with the possibility of exporting to neighbouring countries in the future.

To enable the processing and production of minerals, Equatorial Guinea will be building a urea plant in Kogo.

The final project involves the country's compressed natural gas plant, which includes a bus terminal and gas-powered bus fleet, cooking gas bottling facility and upgraded road infrastructure.





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## Nigeria setting the example for local content development across Africa

**NIGERIAN CONTENT DEVELOPMENT & Monitoring Board (NCDMB)** executive secretary, Engr. Simbi Wabote expressed his opposition towards the creation of multiple local content boards when he addressed a media engagement session in Abuja.

“The NCDMB can modify its templates to suit other sectors. In our view, this is the prudent way to expand and entrench the local content regime in Nigeria,” he said at the event.

The National Assembly plans to develop the extant Local Content Act 2010 to include other sectors of the economy for further domiciliation of contracts. Nigeria – having just signed the African Continental Free Trade Agreement (AfCFTA) – is one of the latest African

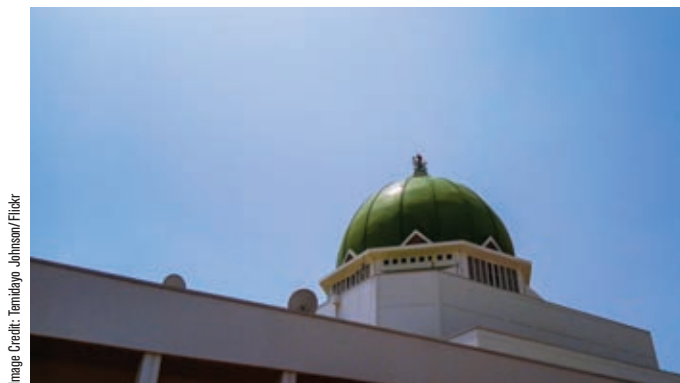


Image Credit: Temidayo Johnson/Flickr

*The Nigerian National Assembly plans to amend local content laws.*

nations to join the entity of 54 African Union States seeking to reduce the economic barriers in pursuit of creating an Africa-wide customs union.

Engr. Wabote also perceives joining the entity as a source of benefits for local oil and gas service companies without

threatening national sovereignty: “If you take the population of Africa and the potential market and given the general level of development of countries, the sky is the limit for any manufacturer that makes the right investment, has the right quality and partnerships.”

## Mozambique LNG project backed by US\$400mn African Development Bank loan

**THE AFRICAN DEVELOPMENT Bank Group (AfDB)** has approved a long-term senior loan of US\$400mn to support the construction of an integrated LNG plant, including a liquefaction facility in

Mozambique. In a statement, AfDB said that the Mozambique LNG Area 1 project, ranked Africa's single largest foreign direct investment to date, comprises a global team of energy developers and operators,

led by Total alongside Mitsui, Oil India, ONGC Videsh Limited, Bharat Petroleum, PTT Exploration, as well as Mozambique's national oil and gas company ENH.

Akinwumi Adesina, Bank Group president, said, “Through its participation, the AfDB again demonstrates its leading role in supporting Africa's transformation. The catalytic effect brought about by the Bank is strategically aimed to help transform Mozambique from ‘developing’ to ‘developed’ nation.”

The LNG liquefaction plant will have a production capacity of 12.88 MTPA. The project is the first of several LNG trains expected to be developed in the northern part of the country.



Image Credit: Adobe Stock

*Mozambique has ambitions to become a developed nation.*

## Vaalco Energy completes Etame well

**VAAICO ENERGY**, AN exploration company focused on West African projects, has completed the Etame 9H development well offshore Gabon.

The horizontal Etame 9H well opened up some 1,000 feet of the Gamba reservoir and it came online with a stabilised flow rate of 5,500 bopd, gross, which gives Vaalco Energy around 1,500 bopd net.

Due to high reservoir quality, the company said, production is higher than the pre-drill estimate of 2,500 to 3,500 bopd. Vaalco has now increased its forecast net exit production rate for 2019 to between 4,500 to 4,700 gross bopd, up 16 per cent from its prior estimate of 3,800 to 4,100 gross bopd.

The company started drilling the Etame 11H horizontal development well with production expected to start in late January. Meanwhile, work is underway to plan well workover programmes on the existing Etame 10H and SE Etame P wells.

Cary Bounds, the CEO, said, “We are very excited with the continued success that we have had in the 2019/2020 drilling programme thus far as we demonstrate the development potential from the Etame field.

“The very strong stabilised net rate of 1,500 bopd from the Etame 9H well is a significant first step toward increasing overall production by approximately 25 per cent in 2020 compared to 2019. We are executing on our strategic plan, building positive momentum into 2020 and remain focused on maintaining our record of operational success,” Bounds added.



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## Bureau Veritas wins Shell Tunisia contract

SHELL TUNISIA UPSTREAM has awarded Bureau Veritas Solutions – Marine & Offshore, a three-year contract to provide asset integrity management support services. It comprises technical safety services, asset integrity and inspection services and general support services and maintain the integrity of process safety systems and critical barriers at Shell's Miskar field facilities.

Shell Tunisia Upstream commented, "BV Solutions were awarded the services for the provision of asset integrity and inspection services based on the combined evaluation for Shell Tunisia Upstream Limited. This will be a new challenge for BV Solutions to deliver its best quality services at a competitive cost level on this contract."

Paul Shrieve, vice-president Offshore and Services, BV Solutions, said, "We look forward to working closely with the team in Tunisia and collaborating to minimise risk and maximise return on its asset through BV services and digital capabilities."

## US provides insurance for natural gas pipeline project linking Egypt and Israel

ADAM BOEHLER, CEO of the US International Development Finance Corporation (DFC), has announced a commitment to provide US\$430mn in insurance to advance energy security in Egypt by rehabilitating a natural gas pipeline and transporting natural gas from fields offshore in Israel.

The announcement was made at the Investment for Africa Forum during a signing ceremony that included Boehler and the US Ambassador to Egypt Jonathan Cohen as well as Egyptian Prime Minister



The pipeline starts at Ashkelon, an Israeli coastal city.

Moustafa Madbouly and Minister of Investment and International Cooperation Sahar Nasr. The insurance will enable Noble Energy to restore the 90km EMG

pipeline running from Ashkelon, Israel to its destination in Al-Arish, Egypt. It will also support the transport of three tcf of natural gas over 15 years.

## ENOC's Dragon Oil acquires BP's Gulf of Suez concessions

DUBAI-BASED DRAGON OIL, a unit of Emirates National Oil Company (ENOC), has acquired BP's stake in The Gulf of Suez Oil Company (GUPCO Egypt) after obtaining the approval from the Egyptian Ministry of Petroleum and Mineral Resources.

Under the terms and conditions of the acquisition, Dragon Oil has become the contractor with Egyptian General

Petroleum Corporation (EGPC) instead of BP in all oil production and discovery concessions in Gulf of Suez area where The Gulf of Suez Oil Company (GUPCO) is the contractor.

The company said in a statement that the completion of the acquisition will enhance the company's strategic production and investments in a number of

regions such as Turkmenistan, Iraq and Afghanistan, bringing the company's daily production estimated at 150,000 bpd.

Dragon Oil's strategy is to reach production of 300,000 bpd by 2026.

GUPCO Egypt currently produces 60,000 bpd from 11 concessions and aims for a sustainable production target of 75,000 bpd by 2021.



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## Dangote refinery backed by government

TIMIPRE SYLVA, NIGERIA'S petroleum resources minister, has pledged support of the Federal Government towards ensuring the completion of the 650,000 bpd Dangote Petroleum Refinery during an official visit to the Petrochemical complex, in the Lekki Free Trade Zone in Lagos.

The minister was led on a tour of the refinery by the group president/CEO, Aliko Dangote, and the company's executive director, strategy, capital projects and portfolio development, Devakumar Edwin.

Mr Sylva said said project was a testament that the country possesses enabling environment for businesses to thrive and added that the success of the project will boost investors confidence in the country's oil and gas project. He implored Nigerians to support the refinery project with a view to ensuring that it creates more value addition to the economy.

Mr Edwin said that the asset creates a market for 11bn barrels per annum of Nigerian crude and can meet 100 per cent of the Nigerian requirement of all liquid products. He added that Nigeria is Africa's largest crude oil producer, but lacks refining capacity to meet its own needs.

"The Dangote refinery, which is designed to maximise petrol output, will produce enough to allow for a small surplus of that fuel for export. It will also be able to send a large volume of diesel and jet fuel to international markets," Edwin commented.

He also noted that there were plans to export diesel to Europe and gasoline to Latin America, Western and Central African markets.

## Equatorial Guinea announces winners of EG RONDA 2019 bidding round

THE MINISTRY OF Mines and Hydrocarbons announced the winners of Equatorial Guinea's oil, gas and mining concessions – Block E G-27 was awarded to Lukoil and GEPetrol and Block EG-09 was awarded to Noble Energy and GEPetrol. Launched in April, the round received interest from 53 international and national companies, with 17 companies submitting bids and seven companies awarded concessions for nine blocks.

Block EG-27 in the Niger Basin, was awarded Lukoil and GEPetrol. Block EG-23 in the Niger Basin, which hosts the Estaurolita gas discovery, was granted to WalterSmith, Hawtai Energy and GEPetrol. EG-09 in the Duala Basin was awarded to Noble Energy and GEPetrol. In the Rio Muni Basin, EG-18 was awarded to Africa Oil Corporation and GEPetrol; EG-03 to Vaalco Energy, Levene Energy and GEPetrol; EG-04 to Vaalco Energy, Levene Energy and GEPetrol; EG-19 to Vaalco Energy, Levene Energy and



*The press conference to announce the successful bids.*

Image Credit: Africa Oil & Power

GEPetrol; Block P to Vaalco Energy, Levene Energy and GEPetrol; and Block EG-28 to GEPetrol.

"Hopefully, next year we will attract even more investments to our country," Gabriel Mbagi Obiang Lima, the country's petroleum minister, remarked.

The ministry aims to quickly sign production sharing contracts to enter into the next phase of negotiation. All blocks were offered on a drill-or-drop basis, with a reduction of signature bonuses to a minimum of \$US1 million and elimination of all pre-qualification requirements.

The drill-or-drop policy offers an initial two-year period to explore, process seismic data, define well locations, bring in additional investment, if necessary, and begin drilling. Only after this period, in which a company has the opportunity to evaluate and reduce its risk from the data obtained, will the company have to decide whether it wants to proceed or relinquish its license.

Equatorial Guinea's next licensing round will take place in 2020 and will include a different set of criteria by which to select potential blocks and new acreage on which to bid.

## Egypt starts gas production at Silva field

THE EGYPTIAN MINISTRY OF Petroleum started natural gas production at Silva field at phase 9b of its West Delta Deep Marine

(WDDM) concession in the Mediterranean Sea in November. Silva field is producing an average of 60-80 mcf of gas per day,

according to a ministry statement.

This is the third well to be put in production within a month following the start of production at Sapphire East and Swan East wells in October.

Burullus Gas Company, which undertakes operations at the project on behalf of the Egyptian General Petroleum Corporation and Royal Dutch Shell, has put the three wells in production, increasing the total capacity of the three wells to about 240 mcf of gas per day. By March 2020, the other three remaining wells at phase 9b are scheduled to start producing 170 mcf of gas per day.



Image Credit: Adhobe Stock

*Egypt's Mediterranean fields continue to be a success story.*

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# THE E&P POTENTIAL OF EAST AFRICA

Africa has some of the last opportunities for major oil and gas exploration and energy resource extraction on the planet, with Kenya, Mozambique and Tanzania in East Africa set to play their part. Tim Guest reports.

*Africa Oil, Tullow Oil and TOTAL reported significant progress made on the Early Oil Pilot Scheme (EOPS).*

Image Credit: Tullow

**R**ECOVERING INTERNATIONAL ENERGY prices make Africa increasingly attractive for the oil and gas sector, despite years of fluctuation and uncertainty.

PES Conferences' Africa E&P conference, held in London in October, underlined this fact with its event strapline: Africa is Back, Smarter, Stronger, Better, and the June 2018 Statistical Review of World Energy from British Petroleum quantified things further, showing that Africa possesses some 7.5 per cent of global oil reserves and 7.1 per cent of world

natural gas reserves.

The continent's potential is clear and, according to Deloitte in a recent Deloitte Insights, it's already attracting new

**“ Exploration activities with varied and exciting geology are being ramped up across the continent and that's certainly the case in East Africa ”**

investment, with exploration activities ramping up across its varied and exciting geography and geology. And that's certainly the case in East Africa.

## East Africa's Potential

East Africa is currently being explored by players large and small; offshore discoveries in Mozambique and Tanzania, for example, are dominated by dry gas. Between 180-200tcf is the recoverable reserve estimate of gas found in and around the Rovuma Basin in northern Mozambique straddling the border with Tanzania, with a number of gas discoveries in the

region in recent years.

At PES' London E&P Conference, ExxonMobil and Shell were just two of the major players – amongst numerous smaller players – discussing exploration in the region.

Shell underlined itself as holding the largest acreage in East Africa and said it had recently invested in a study of the East Africa Margin that would identify potential oil 'sweet spots'.

One of the main challenges for exploration companies highlighted at the event, however, has been a lack of appropriate legislation, particularly in relation to gas exploration.

Thankfully, this is now improving – in Kenya in March, for example, a long-awaited petroleum bill was signed into law by President Uhuru Kenyatta to regulate oil exploration and production. It outlines revenue sharing between companies, government and local communities and is essential to allow the fair and effective large-scale exploration and oil production in the country.

Africa Oil and Tullow Oil's activities in the country's Turkana County's Lokichar Basin (see below) will be affected by the new legislation, enabling revenue sharing and final financial details related to activities in the Basin to be concluded by year-end; that will hopefully overcome disagreements between various parties – government and local population – that have existed for some time.

### Gas projects

Tanzania and Mozambique were highlighted at this year's Africa Oil Week in Cape Town in November as having two of the

region's 'brightest' gas projects, one being the massive Coral South FLNG Project, in offshore Mozambique on the prolific Rovuma basin.

ENT's Coral South FLNG facility is the first step in accessing the estimated 450 billion cubic metres of gas, the first of which is expected in 2022; five billion cubic feet should surface each year, thereafter.

The second project, north across the border in Tanzania is the Tanzania LNG Project where a massive 1.6 billion cubic metres of gas lie beneath the surface.

A US\$30bn facility is set to be located at Lindi on Tanzania's coast, acting as terminal and gas liquification hub; the construction start-date for the terminal is 2022. Stakeholders involved include: Equinor ASA

(formerly Statoil ASA), ExxonMobil, BG Group, Royal Dutch Shell, Ophir Energy, Pavilion Energy Private, Tanzania Petroleum Development Corporation, Petroleum Upstream Regulatory Authority, and Tanzania Electric Supply Company.

Further emphasising East Africa's potential at Africa Oil Week was E&P advisors, ION, whose SVP, Dr Brian W Horn, said no more than a tenth of Kenya and Tanzania's their gas potential had been found so far.

"I think there are significant gas reserves undiscovered, but there is also a lot of remaining discovered resource where we have not really explored this margin very thoroughly." Collaboration, he said, was the way forward.

**“ There are significant gas reserves undiscovered, where we have not explored the margin thoroughly. Collaboration is the way forward.”**

### First Kenyan oil

The Heads of Terms agreements to develop the South Lokichar Basin oil fields, (referred to earlier), was signed in June between the Kenyan Government and JV partners, Africa Oil, Tullow Oil and TOTAL. It was a significant milestone for Kenya.

One strength of this project, according to Africa Oil, is that all parties work well together across all development workstreams and 'significant progress has been made so far this year'.

They also reported significant progress made on the Early Oil Production Scheme (EOPS), with production increasing in May from 600 bopd to 2,000 bopd and reservoirs, wells and associated facilities all performing well.

More than 150,000 bbls of oil have been safely delivered to Mombasa so far. Africa Oil has a 25 per cent working interest in Project Oil Kenya with Tullow Oil (50 per cent and Operator) and TOTAL (25 per cent) holding remaining interests. ♦



*An aerial shot of the Early Oil Pilot Scheme (EOPS) project.*





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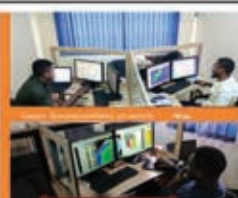
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# AFRICA OIL WEEK DOMINATED BY OPTIMISM FOR 2020

Africa Oil Week offered a great deal of optimism for the oil and gas industry across the continent, with gas development and upstream projects in sharp focus, and leading speakers sharing their unique perspectives on how the sectors are developing. Nancy Onyango reports.

**OIL AND GAS** executives and stakeholders from across the African continent and beyond gathered in Cape Town in November for the 2019 edition of Africa Oil Week. The annual industry gathering provided country scenarios overviews showcased enabling technologies unlocking Africa's vast oil and gas potential and also discussed the various headwinds and strategies to mitigate them against the backdrop of rising global energy demand and downturn of oil prices at US\$58 per barrel as of December 2019.

Given the projected African population growth of 1.7 billion people by 2030, an estimated additional 3.4 million bbl/d of refined fuels will be needed to meet Africa's needs by 2030. As explorers look for new prospects in a variety of geologies in different regions, the Africa oil and gas sector is projected to be a major money-spinner for the continent.

Africa Oil Week saw the participation of more than 1800 delegates and 26 African ministers and government leaders.

Former Nigerian president HE. Olusegun Obasanjo and Steven Winberg US Assistant Secretary at the United States Department of Energy were among the dignitaries who graced the event.



*Gwede Mantashe, South Africa's minister of minerals, resources and energy, gave an overview of the country's progress.*

## AoWomen Breakfast Briefing

Africa Oil Week kicked off with a special breakfast briefing for African oil female executives. According to the World Petroleum Council and Boston Consulting 2017 report, women represent 22 per cent of employees in the oil and gas industry worldwide. The objective of the session was to bridge gender gaps and explore what can be done to promote inclusive growth and ensure

women have presence, voice and opinion in shaping energy policy, transactions and agreements across Africa.

According to Ogutu Okudo, Kenya's country manager for SpringRock Energy, who moderated the breakfast briefing, Africa is "moving from gender quotas to skills quotas in the oil and gas industry."

"The involvement of more women must be addressed through organisational and government policy," she said.

## Technology and innovation

Some selected examples of how technology has been deployed in across the value chain that generated a buzz during the conference include:

Samsung's SHI-MCI FZE fabrication yard, Nigeria: This US\$300 mn investment is the first ISO 29001 certified yard on the African continent. It is the first in Africa to deploy a proprietary Samsung software to reduce raw materials waste and improve production efficiency.

ExxonMobil has applied 4D seismic technology for monitoring of water and gas sweep in deepwater production wells in Angola.

Shell has used VR-powered digital simulations to conduct more precise resource exploration, as a result there was a cost reduction of US\$5.4mn (down from US\$15mn).

## The future of the markets

Hydrocarbons continue to play a significant role in the energy mix that will satisfy Africa's growing energy needs. Significant discoveries across the continent, including those in Angola, Tanzania, Senegal, Mozambique, Nigeria and Mauritania attests to Africa's abundance of various energy plays.

In his opening remarks, Gwede Mantashe, minister of



mineral resources and energy for South Africa said, "The IRP 2019 makes provision for gas-to-power projects, with gas from the year 2024. We intend to establish the first LNG hub in the Coega IDZ, in the Eastern Cape Province. Herein is an opportunity not only to invest but to also help develop the gas industry in this country."

Mr Mantashe added that "The Coega Special Economic Zone (SEZ) site, the first LNG import terminal, will lay the foundation for new Gas to Power plants. It will also see the conversion of existing power plants from diesel to gas. We also intend to use that location as a base for importing feedstock for the gas-to-liquids refinery in Mossel Bay."

He announced the impending amendment to the Gas Act of 2001, which will be tabled in Cabinet soon.

Senegal's petroleum and energy minister, Mouhamadou Makhtar Cisse and Somalia's Minister of Petroleum and Mineral Resources, Abdirashid Mohamed Ahmed announced the launch of the first oil and gas licencing rounds. Somalia's licencing round is set to open in late December 2019.

Irene Muloni, Ugandan minister for energy, shed light on the much-awaited Albert Basin-wide crude development project and the ongoing second licencing round for oil exploration.

### Local content

Local content frameworks ensure that the exploitation of natural resources is not a curse but profitable to host African countries, generating gainful employment and sustainable benefits to society. The PwC Africa Oil and Gas review for 2019 cites the need for oil and gas companies to creatively engage local communities to ensure that operations are not hindered.

The report stated: "Over the years, mistakes have been made in managing relations with local communities and earning a



*Irene Muloni, the Ugandan minister of energy and mineral development, is hopeful about licencing rounds.*

'licence to operate'. Though the licence to operate resides with the government of Nigeria, the involvement of local communities is key to successful operations of the industry."

Samsung Heavy Industries was lauded as a multinational company that has successfully implemented the local content framework in Nigeria, receiving endorsement and support from NCDMB and NNPC, as well as being recognised by the Nigerian Oil and Gas Opportunity Fair for its contribution to local content development since 2017.

According to David Inglis, Business Development Director at Samsung Heavy Industries, "shipbuilding is a high-tech, innovative business that demands the best. SHI's signal involvement in Africa's oil and gas sector to date has been with the design and construction of the Egina FPSO vessel in Nigeria. This was built for Total to exploit the Egina field, offshore Nigeria, to depths of 1,300 to 1,400 metres. This field alone is expected to be responsible for 10 per cent of the country's future national oil production."

Mr Inglis added, "By understanding this dual nature of shipbuilding from SHI's experience and recognition of it

as one of the major shipbuilding companies globally, we were able to design a local content programme that not only delivered opportunities to Nigeria, but also helped develop cutting-edge technology. The welding school serves as the gateway to opportunities – a blend of the global and the local is a perfect model for delivering the needs of the industry."

The conference emphasised product diversification and value addition which ensures gains such as jobs, sales revenues and taxes from petrochemicals manufacturing are not lost and oil and gas companies can remain competitive in the energy sector. During the Africa oil leaders debate, Gabriel Mbaga Obiang Lima, Minister of Mines and Hydrocarbons of Equatorial Guinea, remarked, "Nigeria, Equatorial Guinea and Angola are large exporters of LNG to China, Brazil and Japan but fail to supply any African country because there is a lack of adequate infrastructure to receive the product. Our focus has not been to create the right products that can be utilised within the continent."

He called for more product diversification as one of the strategies to ensure job creation

and to attract investments.

Mr Mantashe said, "Agenda 2063 of the African Union enjoins us to develop Africa's energy infrastructure where all our countries are connected. Our oil and gas needs to be harnessed to deliver modern energy services to all households and businesses. Our gas must power plants and other petrochemical facilities in our countries, as it reaches for export markets. This will ensure that we do not always import beneficiated hydrocarbons."

### The next generation of industry leaders

The event closed with a students' programme offering the industry with the next wave of talents. It provided students from universities across Africa with insights from leading oil and gas experts and leaders.

Breakthrough technologies are unlocking new oil and gas reserves. Maximising the benefits of hydrocarbon resources will reverse the resource curse and provide opportunities for economic growth. ♦

*Turn to the news section on page 4 for updates from Nigeria, Equatorial Guinea and Côte d'Ivoire at Africa Oil Week 2019.*

# AFRICAN OPPORTUNITIES AND GLOBAL DEBATES AT ADIPEC 2019

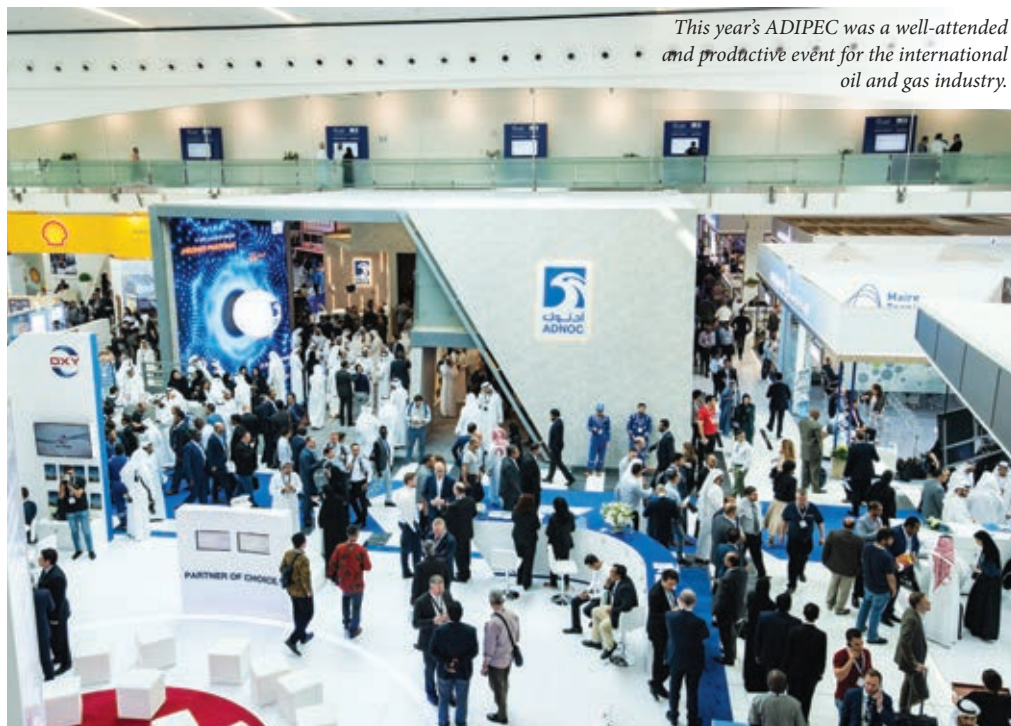
ADIPEC 2019 provided companies with a keen interest in the African market with a platform to showcase their products, as well as being a place where voices could be heard at the highest level in Abu Dhabi.

**ADIPEC 2019 PROVIDED** companies with a keen interest in the African market with a platform to showcase their products, as well as being a place where voices could be heard at the highest level.

Against a backdrop of growing awareness about climate change and the need for energy transition, as well as ongoing market volatility, ADIPEC provided African voices with a platform for having views heard, as well as offering exposure to companies eager to expand into African markets.

Ahead of the event, Gabriel Mbaga Obiang Lima, Equatorial Guinea's minister for mines and hydrocarbons, was upbeat about what ADIPEC means to his country's energy market, as well as the wider continent: "The good news for Equatorial Guinea and many African countries is, we have the resources. African countries have some much-untapped reservoirs of oil and natural gas that have regrettably been underexplored. We need to attract investment in our oil and gas industry, explore, supply the market and also develop our countries. ADIPEC is a great place to meet potential investors. We have a unique relationship with the UAE through OPEC and the GECF"

Abdel Fattah El-Sisi, president of the Arab Republic of Egypt, visited the Abu Dhabi National



*This year's ADIPEC was a well-attended and productive event for the international oil and gas industry.*

Oil Company's (ADNOC) stand at ADIPEC. President Sisi was welcomed to the stand by Dr Sultan Ahmed Al Jaber, the UAE minister of State and ADNOC Group CEO, and other members

**ADIPEC is a great place to meet potential investors. We have a unique relationship with the UAE"**

of ADNOC's senior leadership team. During his visit, President Sisi was briefed on how ADNOC is embedding digital technologies, including artificial intelligence, big data, and blockchain, across its full value chain to enhance operational efficiency, drive greater performance, enhance environmental protection and empower its people.

At the Oil & Gas 4.0 Strategic Roundtables, leaders expressed concern at growing criticism of the industry in light of climate change, along with the impact of

depressed oil prices environment on financial capital markets performances for the sector and overall growth projections.

Mohammed Sanusi Barkindo, secretary-general of OPEC, promoted the organisation's technical workshop, which will be held in Dakar early next year. Mr Barkindo welcomed the initiative as a very timely one, insisting that now is the right time for countries such as Senegal to engage with OPEC and the global oil industry: "Such technical workshops can establish a framework for the long-term



sharing of best industry practices for new African producers. They ultimately benefit the development of transparent and sustainable industries, this is good for Africa and Africans.”

The workshop will be open to regional technicians from ministries and NOCs.

Among the companies showcasing their products at ADIPEC this year was Schneider Electric, which used the event to highlight how its IoT-enabled, interoperable architecture EcoStruxure helps its oil and gas customers create more value across their enterprises.

Georges El Mir, vice-president oil and gas, Middle East and Africa, commented, “Our technologies enable our customers to take a holistic view of their operations to optimise CapEx and OpEx investments.”

“For example, we can help bring down the traditional barriers between power management and process automation systems to help industrial customers solve critical engineering and operating challenges. Because they now have the ability to connect assets that are the centre of their projects with assets that are at the core of their operations across the full lifecycle of their plants, our customers can realise new levels of efficiency and agility, while improving the safety and profitability of their operations,” he added.

Specialty chemicals company Evonik took part in ADIPEC for the second year running this year.

“For us, ADIPEC presents a great platform to connect with the most important regional players and promote our technologies” said Herndrik Schoenfelder, regional president, Evonik Middle East and Africa.

“Evonik is proud to bring its innovative solutions and a broad range of products to the region. We help to unlock reservoir potential, protect asset life and enhance production and



*Abu Dhabi hosts ADIPEC, one of the biggest oil and gas events in the world.*

throughput for the oil and gas industry,” explained John Wey, head of the Evonik Oil and Gas Industry Team.

Themed ‘Insight through Digitalisation’, Emerson’s stand presented solutions aimed at driving asset performance,

improving safety and enhancing profitability for end user operations, such as its Plantweb Digital Ecosystem for practical approach digital transformation. A highlight this year was an exhibit highlighting Emerson’s footprint in the Middle East and Africa through an interactive layout of Emerson’s facilities and capabilities across the region. ●

**“ As OPEC expands, it is important to open its technical meetings and workshops to non-member countries”**

*BW Adolohas been operating on Dusaffu field since 2008.*



Image Credit: BW Offshore

## BUILDING A SOLID PRESENCE IN THE NIGERIAN MARKET

This is the second instalment of a two-part interview with Woji Weli, BW Offshore's Nigeria Country Manager. Here, he expands on the company's successes in Nigeria and the commitment to local content and job creation.

**Oil Review Africa (ORA):** Tell us about your experiences working on the Okwori field offshore for Addax Petroleum, and the Abo Floating Production for Nigeria Agip Exploration (NAE).

**Woji Weli (WW):** Abo was the first field for which we provided FPSO lease-and-operate services in Nigeria and it was Nigeria's first deepwater field, brought onstream and operated by NAE in 2003. We operated it as Prosafe Ltd prior to Prosafe acquisition

**“ The FPSOs on the Abo and Okwori fields have operated for more than 6,000 and 5,000 days respectively without a lost time injury”**

by BWO in 2011.

As the first deepwater production operation in Nigeria, there were technical and operational challenges which BWO Nigeria met and solved with our global affiliates, NAE,

the NNPC and regulators.

NAE systematically expanded the field as new reserves are proven up, bringing on new wells for additional production. BWO undertook an extensive in-situ life extension project from 2013

to keep the unit operating safely with high uptime.

Shortly after Abo, we brought in the Sendje Berge FPSO in 2005, into the Okwori field, operated by Addax.

Our second FPSO in Nigeria benefited from synergies with our first. Both FPSOs have performed safely and reliably over the years with the units on Abo and Okwori fields having operated for more than 6,000 days and 5,000 days respectively without a lost time injury.



**ORA: Tell us about BW Offshore's other Nigerian activities.**

**WW:** BWO is the major presence of the BW Group in Nigeria. The group is comprised of BW Offshore, BW LPG, BW Tankers, BW LNG, BW Chemicals, BW Dry Cargo and BW Fleet Management.

Our LNG company does some business with Nigeria LNG. Within BWO is a turret, mooring, swivel and installation group which provides for mooring solutions worldwide. Our technology company provides customised solutions and we select the most suitable methodology and spread for safety and cost-effectiveness. This group is bidding for EPC work with IOCs in Nigeria for offshore project.

**ORA: How far reaching is BWO's involvement in the Nigerian gas industry?**

**WW:** BWO is not directly involved in the Nigerian gas industry at present.

The gas from the two FPSO units we operate is reinjected into the reservoir, so it does not make its way to Nigeria LNG or used in generating electricity. But the BW Group comprises various other member companies including BW LPG and BW LNG.

BW LPG is the world's largest



*First oil was achieved from BW Catcher in December 2017.*

Image Credit: BW Offshore

Very Large Gas Carriers (VLGC) owner and operator, by number of VLGCs and by LPG-carrying capacity. BW LNG manages the LNG and gas solutions business and has been involved in shipping of LNG since early 1970s. You may see a few of these fleet belonging to BW LNG and LPG sailing on Nigerian waters. BWO aims to be more involved in Nigeria gas as it's an important, abundant, cleaner energy source.

We are in the process of marketing an FPSO gas unit for possible use on two large non-associated gas supply projects.

**ORA: Tell us about your local content programme and corporate social responsibility.**

**WW:** BWO Nigeria is a Nigerian company having recently made changes in its shareholding structure (51 per cent Nigerian) to foster indigenous participation in our activities.

We are passionate about building local capacity, developing local talent and giving back to our immediate community. BWO has recorded 90 per cent Nigerian crewing from a conscious understudy and transition programme. This is good for our

business as we foster local participation in our activities and it's more cost effective.

It is easier to quickly deploy critical staff when they are local. Training and manpower development remain a key goal.

BWO has embarked on a successful internship programme that has seen more than 40 graduates from Nigerian Universities in the last two years exposed to intensive onshore and offshore training across different functions and departments. A few interns were exposed to the BWO Oslo and Singapore offices. We have retained 25 per cent of these interns as employees.

As part of our CSR, we are running a scholarship scheme where four Nigerians will be sponsored for post-graduate studies in engineering courses at the Norwegian University of Science and Technology and 20 outstanding engineering undergraduate students at selected Nigerian universities will be provided financial support throughout their study. ♦

To read the first part of this interview, go to [www.oilreviewafrica.com/current-issue/magazine-archive](http://www.oilreviewafrica.com/current-issue/magazine-archive) and go to Oil Review Africa 5 2019



*Sendje Berge has been operating on Okwori field since 2002.*

Image Credit: BW Offshore



*FPSO vessels are getting bigger to cope with increased production capacities.*

Image Credit: Ken Lim/Flickr

## THE NEW BREED OF FPSO VESSELS: BIGGER AND BETTER

The new fleet of purpose-built FPSO hulls are grander in scale than the old tanker conversions of before. Martin Clark reports on why size really does matter for the growing FPSO sector.

**WEST AFRICA HAS** long been a pioneer in the evolution of floating production storage and offloading (FPSO) vessels. These have been an important feature in the opening of the region's offshore sector, from early deepwater projects such as Girassol off the Angolan coast, through to today – Norwegian firm Aker Energy is planning an FPSO concept to exploit the offshore Pecan oilfield in Ghana.

One leading industry player, MODEC, celebrated 50 years supporting the offshore industry in 2018. It currently operates more than a dozen FPSOs across the world. These include FPSO Professor John Evans Atta Mills, now operating on the TEN (Tweneboa, Enyenra and Ntomme) fields in the Deepwater Tano area offshore Ghana and FPSO Kwame Nkrumah MV21

installed on the country's flagship Jubilee field.

The company has played a big part in pushing the boundaries of FPSO technology through the decades. This year, it unveiled what it calls the "next generation new-built hulls" for FPSO vessels with the 'MODEC NOAH', developed in partnership with Mitsui E&S Shipbuilding Co. Key features include a large deck area to cope with the trend toward

**“Increases in required production capacities has led to insufficient deck space and crude oil storage capacity”**

larger, heavier and more complex topsides. According to a company statement: "In recent years, large FPSOs have mainly been based on converting used Very Large Crude Carriers (VLCCs). However, as a result of increases in required crude oil and gas production capacities, the topsides have become bigger and heavier, which has led to insufficient deck space area and insufficient crude oil storage capacity. Additionally, the durations of the client contracts are increasing, thereby requiring longer FPSO design lives."

MODEC expects heightened demand for new-built FPSO hulls. The concept is adaptable to a range of shipyards around the world and is based on a modular design concept, offering greater flexibility. This means it can accommodate a variety of requirements for FPSO projects, including different mooring

configurations. The unique hull form consists of flat or two-dimensional bending plates, aimed at reducing construction costs while maintaining seakeeping properties and minimising green water and slamming loads impact.

Earlier this year, MODEC was awarded a contract by Australia's Woodside Energy for an FPSO for the SNE deepwater oil field off Senegal. The country's first offshore oil development is located within the Sangomar Deep Offshore permit area, approximately 100 km south of Dakar. The FPSO will be designed to produce around 100,000 barrels of crude oil per day, with first production targeted in 2022. "In recent years, numerous offshore oil fields have been discovered in West Africa, and MODEC considers this as one of its most important core regions," the FPSO specialist noted in a statement. ♦



# “AFRICANS HELPING AFRICANS”: PETAN REACHES OUT

In an exclusive interview with *Oil Review Africa* managing editor, Georgia Lewis, PETAN chairman, Bank-Anthony Okoroafor talks about local content, pan-African cooperation and progress in Nigeria.

**B**ANK-ANTHONY OKOROAFOR DESCRIBED 2019 as a “great” one for the Petroleum Technology Association of Nigeria (PETAN). He said one of the organisation’s major achievements for 2019 was the introduction of the PETAN Seal of Quality (PSQ), a certification for operators along the entire value chain. It has been three years in the making, working closely with Bureau Veritas. The focus of the PSQ is meeting high standards in safety and quality via an extensive checklist. So far, 25 companies have attained PSQ certification.

Following on from successful participation at major oil and gas events this year, such as OTC, Mr Okoroafor said that for 2020, PETAN is looking forward to its involvement in SAIPEC in February next year, the event formerly known as WAIPEC. At OTC 2020, PETAN will hold workshops on deep offshore operations open to all delegates. Member events will continue to be important for PETAN as well.

“We will be doing a lot of training organised locally in Nigeria on capacity building,” he said, before talking about a partnership with Shell where 50 people are trained up in vital industry skills to “make them employable” across Nigeria and beyond, as well as the importance of working closely with universities.



Bank-Anthony Okoroafor, PETAN chairman.

He told *Oil Review Africa* that PETAN has been involved in ensuring university lecturers, who are educating the oil and gas professionals of the future, “learn the practical aspects [of the industry onsite] rather than just through teaching.”

In regard to upskilling Nigerians, Mr Okoroafor said that within the oil and gas industry, “any jobs that can be done, can be done by Nigerians, there is no job that Nigerians cannot do ... People are our greatest asset.”

Mr Okoroafor said it is important to focus on integration across Africa, starting with regional integration and then moving towards fuller pan-African cooperation.

“The integration of Africa will be complete - then we can address all the issues of Africa, such as 600 million people without electricity,” he told *Oil Review Africa*.

Foro 2020, Mr Okoroafor said PETAN aims to “keep on improving” and offer objective advice to the Nigerian

government as a non-political, well-respected organisation and strong industry advocate. He is confident that 2020 will be the year the Petroleum Industry Bill is finally passed.

In regard to working closely with Timipre Sylva, who took over as the petroleum minister in August, he said PETAN is giving him time to settle into the job before engaging with him in the new year: “He is someone we know very well ... We will support and advise him.”

Likewise, he said that PETAN is looking forward to working closely with Mele Kyari, the newly appointed group managing director of the Nigerian National Petroleum Corporation: “He is focused, he’s not corrupt and he’s a visionary so I think this will go well for the oil and gas industry. He’s a geologist by training.”

Development of the Nigerian refinery sector is another priority, according to Mr Okoroafor, praising the Dangote refinery project as well as progress with smaller refinery projects over the past four years. He called for minimal government involvement in the construction and running of refineries as he believes this is best left to the private sector.

“2020 will be very, very busy. We will make recommendations to government and get people spreading the knowledge.” ♦

*It is hoped that aerial surveillance will play a vital role in mitigating oil spills.*



# PROTECTING THE ENVIRONMENT WITH THE EYE IN THE SKY

Unmanned aerial vehicles are ready and waiting to lead the oil spill response with technology that aims to minimise the impact on the environment and prevent major disasters.  
Martin Clark reports.

**OIL SPILLS ARE** big news wherever they take place, but it is an area where the global industry takes a collaborative stance. New technology is helping in the fight against spills, large and small, including the deployment of drones or unmanned aerial vehicles (UAVs).

In September, Terra Drone demonstrated at an offshore field in Angola how drones can be used as a surveillance and reconnaissance tool in oil spill incidents. In the exercise, environmentally friendly coloured dye was released at the sea surface to simulate a spill.

The company says UAVs provide a safer, faster and cheaper solution than using helicopters or manned flight operations to identify spill locations. During the test, six flights were flown to attempt locating and sizing the

simulated spill to showcase how drones can be used to collect crucial information in an emergency response situation.

Siva Keresnasami, operations director at Terra Drone Angola, said it is “inevitable” that drone operations will play a greater role in oil spill response in the future. “Drones are fast and effective, and they equip decision-makers with the exact information needed to enable them to make correct decisions in the field.”

The idea is taking root across the industry. Oil Spill Response Limited (OSRL) is the largest international industry-funded cooperative which exists to respond to spills globally. It was among the first on site after the infamous 1989 Exxon Valdez disaster off Alaska.

This year, it expanded its offer with the launch of a UAV service, designed to better support

members’ needs in the event of a spill, whether they are in Africa or the Arctic.

In order to ensure the shortest time to mobilisation, OSRL has signed agreements with a number of third-party UAV providers around the world, including Bristow Aerial Solutions, Sky-Futures and Vertical Horizon Media. Each of its UAV partners was selected based on its relevant in-country experience, technical capabilities and geographical reach.

“The UAV sector is fast moving, with both the core technology and physical equipment constantly being upgraded,” said James Pringle, senior response specialist for OSRL.

“Equally, around the world, applicable regulations for the safe use of UAVs differs significantly and changes regularly. In light of

these challenges, we decided that the best way to integrate this capability into our offer was to create long-term partnerships with the world’s leading UAV providers – ensuring that our members benefit from the most cost-effective and reactive solution.”

Pringle said OSRL has identified a range of scenarios where UAVs could provide vital support in the event of a spill, including containment and also post-treatment inspections.

“For example, if you are conducting a shoreline survey, it would typically take a team up to an hour to survey one kilometre. The UAV can scan that same area in minutes and, through its unique sensors and availability to reach difficult to access areas, provide additional information that a physical team would struggle to detect from land.”



# MITIGATING CYBER THREATS FOR OIL AND GAS OPERATORS

Jonathan Crouch, senior vice president for strategy at ThreatQuotient, gives his tips on how oil and gas companies can be smart about cyber security.

**T**HERE IS NO silver bullet technology in security and even the smartest, most experienced person in the world can't prevent, detect or remediate issues without the right information and technology.

I look at security as a combination of organisational maturity (people) and functional maturity (processes and technology). A good strategy for security, regardless of your size, is usually breadth and depth in combination with maturity.

What I mean by that is breadth of coverage for your enterprise: What technologies do you have in place to make sure you're protecting all the "entrances" or perimeter to your network. Then examine depth of coverage: How are you monitoring endpoints and what is going on inside your network?

You should also focus on maturity train your personnel in security and the business, making sure they know what they are trying to protect; develop processes that are repeatable, sustainable and scalable; and make sure you understand the threat. Incorporate threat intelligence so you know what to prevent and how big a problem is when you find it on your network.

The adoption of cybersecurity standards would help to provide security for oil and gas companies. Even just implementing leading practices



*Remote computers can provide easy entrance into networks for cyber criminals.*

Image Credit: Adobe Stock

and creating standards around security for industrial control systems (ICS) and supervisory control and data acquisition (SCADA) would be a drastic improvement. Many operational networks aren't monitored today, and even fewer have controls available to prevent, detect, monitor or remediate attacks.

For example, it is standard practice to restrict or remove the use of remote desk protocol (RDP) on servers and workstations in most industries. However, most operational networks rely on RDP for system maintenance and performance monitoring so it is left open. Many modern attacks leverage RDP for initial access and to spread throughout

operational networks.

A shortage of skilled and experienced professionals is a problem throughout the cybersecurity industry not just in oil and gas. The difficulty is retention. You can spend a lot of time and money training people up, at which point they will receive multiple offers from more money from other companies. This can really hurt the efficiency of an organisation.

But that is more around the day-to-day security operations centres and incident response teams. Most organisations can find seasoned leadership. The difficulty we face in cybersecurity is funding. The business has to buy in and understand that

security is important to the success of the organisation.

You can't grow revenue if someone is stealing your innovative technology of the future or consistently underbidding you, and you will lose market share if you lose control of your ability to extract or refine oil.

Companies need to understand that in order to preserve future revenue, they need to invest in security now, and they need invest at a level and enable their security groups in a way that creates impactful change. ♦

*This is an extract from an article that appeared in Oil Review Africa's sister publication, Oil Review Middle East.*

# SCAFFOLDING COMPANIES GET OIL & GAS CONSTRUCTION BOOST

Africa's scaffolding companies are set to reap the benefits of oil and gas industry growth on the back of local content rules. But it has not stopped international players seeking entry into this vast emerging market. Martin Clark reports.

**T**HE AFRICAN OIL and gas industry is providing a rich stream of work for the continent's scaffolding firms. Growth in Nigeria, Angola, Algeria and Egypt and the emergence of new markets is resulting in opportunities for scaffolding contractors. In Equatorial Guinea, indigenous service company, Apex Industries has signed a deal with the Duscaff Organisation, a joint international scaffolding supply company headquartered in Dubai. The deal covers the supply of scaffolding products that comply with the very best in industry and global norms.

"Apex is determined to work with the oil sector and build alliances with international companies to add value to Equatorial Guinea's economy," said Apex chief executive Leoncio Amada Nze.

The agreement means Apex Industries and the Duscaff Organisation will support ongoing and future construction and industrial projects in Equatorial Guinea and across the Economic Community of Central African States (CEMAC).

The deal between Apex, an indigenous African company, and Duscaff is promising for the wider African oil and gas construction sector. When African companies are able to make high-profile deals on important projects, it sets an example for other local



Image Credit: RND Kwikform

*There is immense growth potential in the scaffolding sector, thanks to oil and gas construction projects.*

companies to follow. This, in turn, can help Africa's oil and gas countries meet local content requirements.

The use of scaffolding services for the oil and gas industry is being nurtured by governments in a bid to drive local content. In Ghana, scaffolding is a niche reserved for local players on energy projects. Kwasi Agyeman Manu Senya, business advisory and enterprise development manager at the Petroleum Commission is keen to encourage more Ghanaian firms to take advantage of the opportunities. Areas reserved for indigenous firms in the oil and gas sector include scaffolding, waste management, security services, fire fighting, vehicle rental and

leasing, among others. But indigenous firms do not know the rules on local content, so he called on companies to understand the regulations in order to actively play a part in supporting the sector.

"Assess yourself and know your capability and do your assessment before engaging in the sector," he told a Takoradi business briefing.

International partnerships also help local players. South-African Waco Africa signed an agreement with Austria's Doka GmbH to distribute Doka products and systems across sub-Saharan Africa and the Indian Ocean Islands. The agreement will see Waco Africa become one of the largest formwork providers

on the continent in terms of presence and capacity through its subsidiary Form-Scaff. The Waco Africa footprint covers more than 30 branches in nine sub-Saharan African countries.

"Doka will add enormous value to Form-Scaff the African market leaders who are renowned for their extensive branch network and stockholding as well as their robust product range supported by detailed designs, engineering services and on-site technical support," said Mike Els, CEO of Waco Africa.

Paolo Zumaglini, from the Doka GmbH management board, said Africa remains an exciting opportunity, and Doka's priority is to offer cost-effective, timely and safe solutions. ♦



# A MATTER OF LIFE OR DEATH

Technology drives safety improvements in gas detection delivering greater portability and accuracy, keeping employees safe along the way.  
Martin Clark reports.

**G**AS DETECTION HAS always been fundamental to safety across the energy field. This is no different today, though technology has made it easier with the arrival of portable, internet-enabled and other devices.

Major players in the global wireless gas detection space include the likes of Siemens, Honeywell and Thales. Much of the innovation in recent times has focused on improving safety for operatives, while delivering high-accuracy data.

Agilent Technologies introduced its new micro gas chromatograph – the Agilent 990 Micro GC system – intended to monitor the safe distribution, calorific valuation, and odourant level in natural gas.

With double the battery life of previous models, the portable system provides over eight hours of remote operation for many applications. An optional mobile browser interface allows remote connectivity with other devices such as laptops or tablets, and allows hands-free, unattended operation in places that are more difficult – or potentially less safe – for humans to access.

Compact and rugged, it delivers laboratory-quality data whenever and wherever it is needed, according to Agilent's Eric Denoyer. "This not only improves scientific and business outcomes for our customers but



Image Credit: Adobe Stock

*Detecting gas before a fire starts saves lives.*

also helps improve the quality of life in the communities we serve."

UK-based Crowcon, a part of the Halma group, recently released a new series of customisable gas detection controllers which, it says, offer great versatility. The modular design of the new GM series controllers means each can be built to the user's specification, Crowcon said in a statement.

"This includes the choice of input and output types and channel quantity, as well as mounting type and power supply options. The controllers can also be upgraded by adding additional functionality at any time after the

initial installation."

There are three models in the new range: the GM16 provides up to 16 channels, GM64 has 64-channel capacity and the GM128 offers up to 128 channels.

"With the GM controller series targeting hazardous gas monitoring applications, the easy-to-use navigation and configuration features improve safety by minimising the time users need to spend in potentially hazardous locations," Crowcon said.

The controllers can be specified for traditional 4-20mA analogue communications if that is what the user already works with. However, they can also be

supplied with digital addressable communications, which allows multiple fixed detectors to be linked together on a single communication loop. "This drastically reduces the cabling and labour costs, as well as the time taken to complete the overall system installation."

It added: "Furthermore, the ability to view data and configure the controller remotely improve safety even further. All data and functions can be accessed from the controller front panel or the information can be fed to a remote fixed computer screen or mobile device with internet capability." ♦

# FOSTERING A PASSION FOR OIL AND GAS CAREERS AMONG MILLENNIALS

Peter Haugaard, head of People, Performance and Culture, KPMG Lower Gulf, discusses how to convince millennials that oil and gas is an industry offering promising career opportunities.

**R**ESearch indicates that more recent generations may view oil and gas as an industry in decline rather than an innovative sector in which to build a future, and that it is more detrimental to the environment and society than beneficial. When you ask millennials to identify their preferred career path, they often name employers in technology, public service, and corporate social responsibility. Oil and gas does not always make their list, because they do not think it matches their values.

Generally, millennials prize purpose and meaning in their careers. For instance, they often prefer to join companies that clearly articulate their principles, according to Gallup research. It indicates that millennials seek career mobility, with 87 per cent saying that professional development or career growth opportunities are important.

The Gallup findings suggest they are willing to change companies to gain experience. Yet at the same time, millennials tend to seek more of a work-life balance than previous generations. In the office, they typically prefer collaborative effort to solitary work, and value inclusion and diversity.

This generation grew up

with ubiquitous technology, and they want their employers' enterprise technology to be up to date and on par with what they use in their personal lives. A remarkable 93 per cent say that a business having the latest technology is important when choosing a workplace, and 42 per cent would leave if the technological infrastructure was substandard.

Millennials often look for employers who will expose them to Industry 4.0 (i4.0), but may not realise that their opportunity to work with new technologies does not have to be at a "technology" firm. The i4.0 technologies that oil and gas companies have implemented over the last decade are in line with what many millennials want exposure to, such as automated production, remote asset monitoring and data analytics to crunch vast amounts of valuable information. ExxonMobil and the Massachusetts Institute of Technology leveraging AI to detect oil in deep ocean waters is the kind of project millennials can get excited about. Meanwhile, BP's upstream chief operating officer for production, transformation and carbon recently said that millennial employees are demanding teams

work in a more agile way to complement the increasing deployment of these digital tools.

Forty-six per cent of millennials intending to stay at their current organisations for at least another five years say they receive help understanding and preparing for i4.0.

Yet among those intending to leave within two years, that figure dropped to 28 per cent.

Some employers labour under the misapprehension that millennials have no

loyalty. Yet, while they are willing to move for the right opportunity, their job tenure is no shorter than that of Generation X, setting similar career goals as those of prior generations. They nurture a desire to make a positive impact on their organisations, like baby boomers. They would also like to work with diverse groups of people, like Gen X.

The oil and gas sector would do well to consider tailoring its employee values to match millennial values. High compensation alone may not attract this cohort. The millennial focus on altruism offers organisations an opportunity to refocus their brand to articulate a social mission that differentiates themselves from competitors.

Some organisations may need to redefine their core competencies, which in turn can update and create new career paths. By redesigning and communicating new progression opportunities, companies can reinforce their commitment to the current workforce to better engage and retain talent, while attracting employees with the skills needed in the future. New technology creates opportunities to attract innovation- and career-focused employees as organisations shift their employee base toward higher-value work like strategy and analytics, and away from repetitive, manual tasks. Not only does this allow oil and gas organisations to remain relevant, but the availability of more strategic and advisory roles can lead to higher job satisfaction and improved retention.

To create a pipeline of fresh talent, consider developing relationships with local universities, offering internship and externship programmes as well as sponsoring events such as 'hackathons'. Industry leaders can combat misperceptions by sharing positive stories from current employees. Employers may highlight that oil and gas offers some of the most innovative, rewarding opportunities of any industry. ♦

*The oil and gas industry can be made appealing to tech-savvy millennials.*





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# POWERING OIL AND GAS OPERATIONS USING FLARE GAS

Flare gas can be used to power the oil and gas industry. Cummins is one company which is leading the way with new technology to ensure flare gas is not wasted.

**D**YNAMIC EXPANSION OF the oil and gas industry fuels demand for new technologies that tackle the impact of flare gas emissions globally. While the production of oil has grown by roughly 30 per cent over the past two decades, the climate impact of flare gas continues to be of concern. Globally, 140 million cubic metres of natural gas are flared annually, emitting more than 300 million tons of carbon dioxide into the environment. According to Cummins, a lack of infrastructure to capture and sell the flare gas released when drilling is a major environmental problem. Billions of dollars in wasted gas could generate reliable, affordable electricity and yield billions more per year in increased global economic output.

"Governments, development institutions and oil companies around the world are being pressured to look at the amount of money spent in gas flaring and the damage it is causing to the environment," said Linda Nezerwe, technical specialist at Cummins, and expert in emissions control for diesel and gas generator sets. The company launched the HSK78G natural gas generator series, designed to provide reliable power regardless of the natural gas source or the climate, and capable of generating power from very aggressive fuels otherwise considered waste products.

"The quantity of unburned fuel that needs to be flared is usually known, but the question is what to do with it," she added.

The World Bank, which has launched an initiative called Zero Routine Flaring by 2030,

has stated that if this gas were used for power generation, it could provide about 750 billion kWh of electricity, or more than the African continent's current annual electricity consumption. While associated gas cannot always be used to produce power, it can often be utilised in a number of other productive ways or conserved.

**“Advancing technology in natural gas generators leads to robust power solutions, even with very aggressive fuels with minimal derating”**

"A critical development for the oil and gas industry is the advancing technology in natural gas generators to utilise fuel sources that would otherwise be considered waste products," continues Linda Nezerwe. "This



Image Credit: Cummins

Linda Nezerwe, technical specialist at Cummins, is optimistic about responsible use of flare gas.



Smart technical solutions can reduce emissions from gas flaring.

leads to robust power solutions even with aggressive fuels with minimal derating. The result is routine flaring can be reduced and transformed into a more environmentally friendly option while helping communities through the supply of electricity."

These advancements in power generation applications allow operators to utilise environmentally harmful raw flare gas for diverse purposes instead of simply burning it, with clear benefits to the environment. 🔴



# IN-SOURCING FOR FULL WELL CONTROL

Markus Ritter, operations manager at Oil Dynamics, talks about developing well control pump technology for successful, efficient operations.

**W**HEN WE STARTED our business, we were standing in front of an empty building, with a lot of ideas and with full enthusiasm. Since you can't simply get ESP equipment test benches off the shelf, we had to develop our test benches by ourselves. We had the great situation where we could engineer, manufacture and assemble the test benches completely in-house. All our test benches were done this way, the mechanical, electrical and software engineering as well as the important subject of safety and environmental impact analysis were done at Oil Dynamics. This is against the common outsourcing trend, but we benefit from the insourcing to have full control and full know-how in house. This enabled us to build test benches with the latest technology available. All test benches are controlled via a computer, the user input is limited as much as possible, which eliminates possible copy-and communication errors.

The reliable in-house testing and inspection prior to shipment offers the end user the benefit of exactly knowing the equipment's behavior. The end user can be sure his equipment was tested, meets the requirements and is ready for operation. Used pumps and motors can be requalified and verified against their catalog



performance. Based on that data the equipment can be reused or rebuilt which produces significant cost savings.

We can test different scenarios of pumps and complete pump trains. This includes testing according to the ESP industry standard API 11S, as well as full string testing of horizontal pumping system and other rotating equipment systems. All of these different scenarios are common to measure pump or pump train specific measurements which may

include, pressures, flow rates, fluid temperatures, fluid specific gravity, torque and other measurements. With these parameters, the pump can be fully digitalised and qualified for final installation in the field.

Our customers have different challenges to overcome. Every single pump is tested and inspected before the final release to the customer. Further to this, it is also a good idea to test new pumps when they have been warehoused for quite a while or when the pump or motor has

been shipped, flew and trucked around the world. The customer benefits from testing new pumps by having a detailed report about the pump performance, the customer can be sure how the pump is behaving in the well. The benefit is more information, less production loss, less time at the rig floor waiting for replacement parts. During the pump test the operator already gets information about the tested pump. At the end of the test, the data is stored into the database. A report, which is given to the customer is generated.

Storing data is very important. Also important is to know what to store, how to store and where to store the data. Each individual test bench has its own, dedicated database. Every test bench computer is offline again, this is against a clear industry trend to bring everything onto one server and to have it available at any time anywhere. We decided to go a different way! The data security on the test bench computers have to be very high, dedicated computers, password protected, not connected to any wired or wireless network, data backups and correct storing of the backed-up data. The data from the dedicated computer is exported to an engineering database where our engineers run statistical and analytical data analysis. ♦

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# HOW TO AVOID THE HORRORS ON A DECOMMISSIONING PROJECT

Laura Petrie, a partner at Aberdeen-based Ledingham Chambers, writes about the realities of decommissioning in the oil and gas industry, outlining the steps needed for a successful end-of-life project with a horror movie analogy.

**S**URVIVING A HORROR film and thriving in the fast-evolving and – most likely – frenetically paced decommissioning industry have more in common than meets the eye. You can see them on the horizon. Moving slowly. First one, then several more appear. As the numbers grow it becomes easier to see how to deal with them: we become more practised at choosing the right approach; at managing them. There are still many more to come. Once we truly know how to deal with them, they'll be finished. This is not the opener of the newest zombie novel or movie. It's a slightly irreverent outline of the current status of decommissioning projects in the UKCS, but also in other oil-producing parts of the world.

At the moment, working in this slow-moving area of the oil and gas industry feels like being in a typical horror movie: the early stages are slow, scene-setting pieces where all the players are defining their roles but all too soon the action will ramp up, and then it'll be over before we know it.

Notwithstanding significant projects underway in this region, the Oil & Gas UK Decommissioning Insight report 2017 says the estimated spend for decommissioning in the UKCS as a whole still only represents around 10 per cent of the total business spend in the same region for the entire oil and gas industry. While this indicates a slow start, it's likely a large proportion of decommissioning projects will come 'live' at the same time, meaning that the decommissioning industry is likely to have a short but frenetic lifespan.

Those who want to be the (services and supply chain) heroes still have time to prepare and work out their strategy to tackle the decommissioning market and walk away victorious, but laying out those foundations needs to start now in order to make the most of the opportunities that'll come up.

In keeping with the title, here are a few lessons that are as useful for surviving a horror story as they are for negotiating the growing decommissioning industry –

## Be prepared to investigate (and assess)

The best horror movie heroes know that they will have to investigate something at some point — to assess the unidentified scratching noise, bump, or scream; or just to find out more about the impending apocalypse.

Contractors should be similarly readying themselves by assessing their products and services; considering how these can be used or adapted for decommissioning; and ready themselves to price sensibly.

Being proactive in demonstrating how specific items or services can be of use shows an awareness of the market and the need to move and adapt with the operators' requirements.

Early engagement with operators and specifically asking for direction on likely timescales for decommissioning, or offering to assist in planning, can help to position an organisation at the forefront of the operators' minds: demonstrating an agility in dealing with a changing market.

This is particularly true as OGA stewardship requirements

are pushing operators to budget as early as possible for decommissioning expenditures.

## Safety in numbers

True heroes know there is strength in numbers; although, they aren't scared to go it alone if needs be. There has been much discussion on collaboration in the UKCS in recent months with the primary focus being using this approach to achieve 'maximum economic recovery.'

But working together to develop or build on ideas for decommissioning is just as important. The fact that the Oil and Gas Technology Centre (OGTC) has a dedicated Decommissioning Solutions Unit that focuses on collaborating with other OGTC divisions and industry bodies shows contractors there's an overwhelming need to work together.

As more and more contractors turn to investigating and assessing decommissioning products, there's increased opportunity to build relationships with like-minded businesses, and identify the gaps in both the market and a contractor's own product portfolio, which could give rise to a profitable collaboration.





It's always worth noting that the one of the keys to successful collaboration is in being astute enough to recognise when these partnerships are working, but also when they're not.

As we've said, the window for decommissioning is likely to be relatively narrow, and this makes ongoing assessment of potential or current collaborations all the more imperative.

To be well placed to win decommissioning work, contractors need to be ready to also cut those projects which are not truly beneficial, and ensure they're lean enough to survive.

### Look behind you!

We all know the formula – the scary killer, the monster, or the clown with the red balloon, is always right behind the hero when he or she is looking everywhere else.

The condensed timeframe for the decommissioning industry means that there will be a similarly compressed market for competitors.

Early preparation and marketing, as well as engaging with operators promptly, will help contractors position themselves ahead of competitors.

Equally, contractors should be seeking to leverage historic relationships for development or operational work when entering the decommissioning sphere. Reverting to previous relationships and looking back to past projects where relationships worked well will provide a competitive edge.

**“ It is important to be prepared, to make sure terms or contracts fully assess the potential risks and allocate liability accordingly.**



Image Credit: oz\_willowherb/Flickr

*The global decommissioning sector can learn from the examples in the UK market.*

### Make sure everything is in working order

The car doesn't start; the gun misfires; the lock is broken – all these things make the hero's life harder and hamper a successful getaway.

This is especially true in the contract or terms and conditions for decommissioning work.

The nature and scope mean there will likely be many areas which require terms of a bespoke nature or at least a clear link to a defined scope of work. Many contractors try to apply a single catch-all set of terms and, in the majority of cases for decommissioning work, standard terms and conditions are not an ideal fit.

It is important to make sure terms or contracts fully assess the potential risks and allocate liability accordingly. In particular, pollution risks will need to be managed clearly and carefully, and bespoke provisions may be required depending on the scope of work.

By addressing this now and

reviewing standard contracts and terms and conditions, contractors will be well placed to show they have considered the vagaries of decommissioning and have a clear understanding of the requirements.

The new LOGIC standard contract for decommissioning work, due to be launched later in 2018, will be a strong starting point for contractors reviewing their own practices.

### When all else fails – ask for help

Finally, the hero realises he really should listen to the sage older character after all and call in reinforcements. The growth of decommissioning in the UKCS has similarly led to an increase in industry bodies designed to support contractors here.

As I've said, OGTC has divisions specifically established to focus on decommissioning, and networks such as Decom North Sea are designed to engage contractors with potential collaborators or signpost

potential opportunities.

Contractors will find they are best placed to respond to requests for decommissioning work if they fully arm themselves with the best information, guidance and connections.

### Be prepared – to pitch and perform

Decommissioning is increasingly a focus for the UKCS industry, which means there's no shortage of discussions, points of information and (in true self-aware horror movie style) articles claiming to provide guidance on how to best engage in these projects. The reality is that contractors need to be ready to pitch and perform quickly.

By assessing their own capabilities, fine-tuning their contracting structure and gathering the right people and information around them, they should be well placed to survive and thrive in the market. ♦

*This is a blog post from  
www.moraychamber.co.uk*

# OPTIMISING OPEX AND CAPEX WITH A HOLISTIC TERMINAL O&M PHILOSOPHY

With offshore construction, it can be easy to miss one valuable piece of the puzzle – long-term operation and maintenance (O&M). O&M is not an afterthought, but an investment that requires holistic application throughout the project life cycle, as Marsol demonstrates.

**W**HEN IT COMES to designing and constructing an offshore terminal, it is of paramount importance to determine two aspects before proceeding. What are the requirements in terms of throughput? How is the terminal going to be operated? Once this has been established, the basis of design can be finalised incorporating all the operational needs and design requirements, thus giving a blend of design parameters that ensure optimisation of capex and opex. Typically, this would be intrinsic to establishing the budget and the EPC Contractor would need to construct in line with the above parameters. Is it thus fair to ask: “Have the interests of all stakeholders been considered?”

When approaching offshore construction holistically, it stands to reason that those who will use and regulate the facility should be involved in the design and construction process to ensure capital costs and operating expenses are optimised, while the ongoing integrity of the system is maintained. Decisions should not be governed simply by minimising the design and fabrication costs. Instead, start by creating an operating philosophy document for O&M that deals with the entire value chain and lifecycle of the project.

Over the years, it has become obvious throughout the development process, that there were inconsistent contractual priorities when converting the Front-end Engineering & Design (FEED) concepts into reality (conflict between project management being short-term and operational management being long-term having different priorities and consequences).

We have to keep in mind that the owners, or financiers, will not be the terminal operators.



Image Credit: Marsol

By the time the facilities are completed, the contracting structure – from FEED through to project champion – will involve investors’ consultants, the EPC contractor, contractors’ consultants, subcontractors and vendors.

The ‘missing man’ here is the future operator, who will inevitably take full care and custody of the facility under the O&M contract.

The needs and vulnerabilities of this stakeholders are often not considered by the preceding contractors, as it’s not the scope of any individual participant, leading to discrepancies between what is functional, what is required and what is constructed.

This very important consideration should not be stitched on in the end, but instead, be integrated into the design, engineering, fabrication, installation and operation processes right from the start of the project design.

If your terminal has long passed its FEED stage, you can still optimise by implementing Marsol’s Advanced Systems Integrity Management (ASIM). ASIM uses data collection, analysis, holistic field condition

data and methodologies (physical and operational) to arrive at the optimum design for the site. This is paramount as, quite often, the operating environment in the modern-day context is changing, and thus the design parameters are no longer relevant, and modifications may be needed.

The only constant we know is change. As investors and management, it is paramount to fully understand the implications of the changes and adjust accordingly. Over the last 50 years, Marsol has developed engineering solutions for the fabrication, commissioning and operation of offshore terminals and infrastructures. During that period, we have increasingly identified and reengineered points of failure in many different systems. Most were generated the changing environmental conditions and by operational practices not suited to that particular facility.

By adopting a rounded, full lifecycle approach it is possible to ensure that all stakeholders take an approach that optimises both cost and operational efficiency at the minimum acceptable risk level over the entire life of a facility. The result is a win-win situation for all concerned. ♦



# KEEPING EMPLOYEES SAFE AND MOTIVATED

Godwin Izomor, managing director at MG Vowgas, talks to *Oil Review Africa* about the company's commitment to workplace safety and meeting high standards in all aspects of the business.

**Oil Review Africa (ORA): With a new petroleum minister and a new group managing director of NNPC, are you optimistic about 2020 for the Nigerian oil and gas industry?**

**Godwin Izomor (GI):** These new appointments in Nigerian oil and gas industry has given fresh momentum and hope to catalyse and fast track processes for major projects. Oil and gas analysts and players are confident that this duo will bring in the required boom and reforms, which includes the Petroleum Industry Governance Bill that the industry is in dire need of.

**ORA: Tell us more about your company's commitment to workplace safety.**

**GI:** MG Vowgas places a premium on all her employees. This is demonstrated by putting in place workplace safety policies, procedures and plans that are all designed to guarantee the safety of everyone. Management sets the tone and provides the necessary leadership required to ensure success of all our workplace health and safety plans. This commitment has yielded several positive results. These include the British Safety Council International Safety awards in 2015 and 2019, which MG Vowgas won for demonstrating a strong commitment to health and safety.



Image Credit: MG Vowgas

Godwin Izomor says MG Vowgas aims for zero workplace injuries.

MG Vowgas is certified to the ISO 45001: 2018 occupational

**“ MG Vowgas places a premium on all her employees, we have a motivated workforce and robust budget for human capital development”**

health and safety management system standard. In conclusion, MG Vowgas believes that “Goal Zero” can be achieved. This means zero harm to our people, including visitors and subcontractors, the environment, assets and our reputation.

**ORA: Tell us more about the Quality Management System.**

**GI:** MG Vowgas has an unwavering commitment to quality. Here, we ensure the satisfaction of customers, statutory and regulatory requirements by means of a methodical leadership, quality

service and customer partnership. We demonstrate excellence in this regard by continuously improving our processes to achieve the goal of “getting it right, the first time, every time”. MG Vowgas is certified to the ISO 9001: 2015 quality management system standard.

**ORA: What is your company culture like for employees?**

**GI:** Our employees are our asset, we have a well-motivated employee workforce and we have a robust budget for human capital development. ♦

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# AFRICAN RIG COUNT

COUNTRY	September 2018	October 2018	September 2019	October 2019
ALGERIA	49	46	42	43
ANGOLA	4	4	4	2
CAMEROON	1	1	2	2
CHAD	7	7	7	7
CONGO	4	4	2	2
CÔTE D'IVOIRE	1	1	0	0
DRC	0	0	0	0
EQUATORIAL GUINEA	0	0	1	1
GABON	3	4	8	8
GHANA	1	1	0	0
KENYA	8	8	7	7
LIBYA	9	9	16	16
MAURITANIA	2	2	2	2
MOZAMBIQUE	0	0	0	0
NIGERIA	14	15	17	18
SENEGAL	0	0	0	0

Source: Baker Hughes

## The power of three: Ecosse IP launches three new technologies at Offshore Decommissioning event

ECOSSE IP (EIP), based in Banchory, Aberdeenshire presented at three new technologies at the Offshore Decommissioning Conference, which was held in November.

EIP was one of 12 companies invited by OGTC to present new technology at the conference.

Dorothy Burke, managing director, unveiled the company's latest innovations for offshore operations to the 400 delegates.

The Deployment & Recovery System (DRS) is a modular skid and basket system for the deployment and recovery of subsea assets.

The Mass of Water Turbine (MOWT) has been designed and engineered by EIP to harness kinetic energy from water.

The Floating Offshore Wind



Dorothy Burke launches three products at a decommissioning event.

Tensioning System (FLOWT), designed by EIP, delivers wind energy to offshore platforms, making it an environmentally friendly solution for onsite power.

(Turn to page 32 for more onsite power solutions, with Cummins outlining how they are using flare gas for powering oil and gas operations, rather than burning it).

Using a combination of these technologies ensures that EIP is aiming to transform subsea operations with cost-effective solutions, saving the industry time, improving safety and reducing the cost of the decommissioning for operators.

For more product information, go to [www.ecosse-ip.com](http://www.ecosse-ip.com)

## Thunder 5,000 pump aims to extend consumable life and cut downtime

GARDNER DENVER PETROLEUM & Industrial Pumps has introduced the Thunder 5,000 HP Quintuplex pump. It is designed for dual-fuel gas engines, electric motors, diesel engines and gas turbine direct drives.

Edward Bayhi, vice president and general manager, Petroleum & Industrial Pump Division, said, "The Thunder 5,000 HP Quintuplex pump has successfully made it through validation testing. Crucially, operators can now substantially decrease their consumable cost and fatigue cycles due to the pump's long stroke advantage. This means slower operating speeds can be maintained, resulting in longer consumable life and reduced fatigue cycles. The same flow rate can be achieved with smaller plungers, reducing operating load on the pump, leading to extended



Image Credit: Gardner Denver

*The pump could increase consumable life by 37 per cent.*

pump life and less downtime."

With stainless steel construction and geometry designed to minimise stress, the pump features a range of next-generation fluid end technology. The pump's 11-inch stroke length meets or exceeds the pressure and flow output of high rod load/short stroke pumps, and can increase consumable life by 37 per cent.

Bayhi added, "The Thunder 5,000 HP Quintuplex pump is offered in combination with Redline Packing. This is the critical seal system in the heart of the pump, which substantially improves performance in harsh conditions, extends maintenance intervals, reduces downtime and ultimately increases profit margins for our clients."

## Portable pumps provide practical solutions for offshore applications

THE SPX FLOW Bolting Systems range, featuring the PA60 (Air-



Image Credit: SPX Flow

Hydraulic) and PE45 (Electric-Hydraulic) Infinity Stage Pumps, is designed to increase oil-flow to the tools and achieve fast, easy bolting-activity. This design increases efficiency by providing continuous pressure at up to twice the speed of standard two-stage pumps. Powering up to four separate tools simultaneously with an easily adjustable pressure regulator valve, the fixed 103 bar retract relief valve

increases operational performance with enhanced safety for employees.

Also from the Bolting Systems range, hydraulic 'P Series' hand pumps offer a robust solution with all metal construction that won't burn through in hot-work environments. They are designed for fast, easy operation using two speeds, to reduce handle strokes frequency and effort.

The pumps are available in a range of models with features to match application needs, such as: increased oil volume for use with larger or longer stroke cylinders; link design to significantly reduce handle effort; strong lever for tough applications, and leak-free designs.

[www.spxflow.com](http://www.spxflow.com)

*Portable pumping is efficient.*

## Addressing the issue of sand control failure

INDEPENDENT GLOBAL COMPLETIONS service company Tendeka, has launched a single trip sand control solution.

The Filtrex remedial sand control system provides the flexibility to be installed thru-tubing, through the tightest of restrictions. The first of its kind, the Filtrex system provides the ability to perform sand clean out while installing the tool.

Using an open cell reticulated depth filter, the tool is run in-hole compressed, once set, the filter will expand into the casing or failed screen filling the annular gap. The filtration is fully protected during deployment and will not be exposed until at the correct location. The tool will retain sand while allowing fluid flow through the depth filtration media. Once set, the tool requires no further intervention.

Eilidh McKay, technical support manager at Tendeka said: "Sand control failure is a common occurrence in the industry, and as such, there is a challenge to regain sand control in existing damaged completions without the requirement to perform a workover. The process of thru-tubing sand control can be costly and time consuming, requiring the removal of sand prior to installing a sand control solution, with most existing solutions enabling the wellbore to refill with formation sand reducing productivity, and are susceptible to erosion failure."

In mature basins, sand issues account for eight per cent of all shut in wells either due to failure of the existing sand screen or onset of sand production due to depletion or water production.

[www.tendeka.com](http://www.tendeka.com)



## Restrata shares safety and security technology at ADIPEC

RESTRATA BROUGHT ITS flagship personnel safety and security tool, the Restrata Platform to this year's ADIPEC exhibition and conference in Abu Dhabi.

The technology, which provides real-time tracking of people and assets anywhere in the world, has been adopted by operators around the world.

Events in the Middle East, including risks to oil tankers in the Strait of Hormuz, have brought safety to the forefront of many operators' minds. Concern over such incidents, coupled with the continued desire to improve the safety and wellbeing of their people, has generated increased interest in the Restrata Platform,



Image Credit: Restrata

The Restrata stand at this year's ADIPEC exhibition.

with many companies reviewing the safety of people and assets.

Restrata CEO Botan Osman said at the exhibition: "The safety

of people and assets is something that should be at the heart of any business, and the Restrata Platform can give organisations that peace of mind they yearn for in the current climate.

While clearly concerning for everyone involved, recent events in the Middle East and elsewhere in the world have reaffirmed the value of digital technology to the safety and security of the oil and gas industry. Our software enables companies to efficiently manage any incident in real-time, meaning teams onshore and offshore can ensure the safety of those involved as quickly as possible."

[www.restrata.com](http://www.restrata.com)

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Laser Engineering & Resources Consultants Ltd .....	17
Liugong Dressta Machinery sp. z o.o. ....	11
MG VOWGAS Limited .....	44
Shree Steel Overseas FZCO .....	12
The Havilah Maritime Services Ltd .....	9
Tolmann Allied Services Company Ltd .....	43
West African Ventures Ltd.....	7

# FOCUS ON NIGERIA WITH A VIEW TO EXPANSION

Ahonsi Unuigbo, CEO, Petralon Energy, talks to *Oil Review Africa* about the company's big plans in Africa and major ambitions for 2020 to increase production and reserves.

**Oil Review Africa (ORA): Tell us more about Petralon's operations in Nigeria.**

**Ahonsi Unuigbo (AU):** Petralon Energy is an African Exploration & Production company based in Nigeria, established in May 2014 to acquire, develop, and operate assets primarily in the Nigerian oil and gas sector through farm-in opportunities (with indigenous and international oil companies), structured partnerships, bid rounds and concessions.

We have a management team with extensive experience developing and managing upstream assets, which enables us deliver assets to production quickly. In 2014, we acquired interests in our first asset, which we have now developed and are applying the learnings from that pilot, as well as previous development experience, to a broader range of assets and opportunities.

**ORA: Is there an optimistic mood in terms of opportunities in Nigeria?**

**AU:** Certainly. Nigeria has an abundance of reserves with 37 billion barrels unproduced (the 11th largest reserve base in the world), which cuts across different terrains – land, swamp, shallow waters and deep offshore. With the re-aligned focus of the IOC's on deep offshore projects, the recent comments by some Nigerian Government officials



Image Credit: Petralon

*Ahonsi Unuigbo, CEO of Petralon, reflects on a busy year and looks forward to meeting ambitious targets in the new year as part of a five-year plan.*

about bid rounds in the first half of 2020, and the rapidly evolving structure of the industry, which presents advantages for indigenous companies, there are a range of mid-sized project opportunities in the industry, which industry participants such as ourselves will be quite keen to participate in.

**ORA: What prospects do you have in markets outside Nigeria?**

**AU:** While we do have plans for

regional expansion into other African countries, our focus over the next 18 months will be primarily on Nigeria. Having said that, we will continue to look out for strategic opportunities within the region.

**ORA: Tell us about your corporate social responsibility projects.**

**AU:** Social responsibility, for us, is about value creation for our immediate host communities and by extension the larger society,

which is at the heart of everything we do.

For the communities where we operate, despite the current absence of any mandatory provisions, we are committed to improving economic outcomes and investing in community projects.

We employ skilled workers from local communities – over 40 were employed during the drilling campaign and currently provide support.

In addition to carrying out a needs assessment in the Community, we are actively engaged with representatives of the communities on the projects they require; this process drives our social interventions.

**ORA: After a busy 2019, what exciting plans do you have for 2020?**

**AU:** We have a five-year plan, which kicked off this year, to increase production seven-fold and net reserves by 500 per cent.

The objective is to increase our net reserves position by no less than 30 mmbbls in the short-term and attain net production of up to 15,000 barrels per day by the end of 2023.

We are at different stages of maturing asset transactions to achieve this objective and are optimistic that this will be finalised in 2020. This will also be matched by optimal funding at the asset and corporate levels. ♦



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