

Oil Review

Middle East

VOLUME 26 | ISSUE 2 2023

Pushing the boundaries in pipeline technology

- ➔ The growth in carbon capture and storage
- ➔ The latest in seismic imaging
- ➔ Bahrain progresses energy transition plans
- ➔ The drive for energy efficiency in compressors
- ➔ Transforming the workforce
- ➔ The growth of carbon capture and storage

26
Years

Serving the regional oil & gas sector since 1997



شركة إسمنت عُمان (ش.م.ع.ع.)
Oman Cement Company (S.A.O.G)



P

Pioneer in the Oil Well Cement Industry

رائدة في
صناعة الأسمنت آبار النفط



EXPORTED TO

Qatar, Kuwait, Iraq, Yemen, Libya, Pakistan, Tanzania,
Sudan, Syria, Cameroon, Turkmenistan, India, Bangladesh
and Venezuela.



ABOUT OCC

Tel. (+968) 24437070
Email: occsales@omacement.com
P.O.Box 560, Ruwi, Code 112, Sultanate of Oman

بني عُمان
BUILDING OMAN



Editor: Louise Waters - ✉ louise.waters@alaincharles.com

Editorial and Design team: Prashanth AP, Fyna Ashwath, Miriam Brtkova, Praveen CP, Robert Daniels, Shivani Dhruv, Matthew Hayhoe, Leah Kelly, Rahul Puthenveedu, Madhuri Ramesh, Madhurima Sengupta and Minhaj Zia

Publisher: Nick Fordham

Head of Sales: Vinay Nair
✉ vinay.nair@alaincharles.com

Magazine Sales Manager: Tanmay Mishra
☎ +91 98800 75908
✉ tanmay.mishra@alaincharles.com

International Representatives

Nigeria **Bola Olowo**
☎ +234 8034349299
✉ bola.olowo@alaincharles.com

USA **Michael Tomashefsky**
☎ +1 203 226 2882 ☎ +1 203 226 7447
✉ michael.tomashefsky@alaincharles.com

Head Office:

Alain Charles Publishing Ltd
University House, 11-13 Lower Grosvenor Place, London,
SW1W 0EX, United Kingdom
☎ +44 (0) 20 7834 7676 ☎ +44 (0) 20 7973 0076

Middle East Regional Office:

Alain Charles Middle East FZ-LLC
Office L2-112, Loft Office 2, Entrance B,
P.O. Box 502207, Dubai Media City, UAE
☎ +971 4 448 9260, ☎ +971 4 448 9261

Production: Rinta Denil, Ranjith Ekambaram
Eugenia Nelly Mendes and Infant Prakash
✉ production@alaincharles.com

Subscriptions: ✉ circulation@alaincharles.com

Chairman: Derek Fordham

Printed by: Buxton Press

Printed in: March 2023

© Oil Review Middle East ISSN: 1464-9314

→ Editor's note

CARBON CAPTURE AND storage (CCS) has an important role to play in climate change mitigation and decarbonisation – and the Middle East has the wherewithal and the ambition to lead in CCS deployment. In fact, the GCC currently accounts for around 10% of the CO₂ captured globally. In this issue, Mohammad Abu Zahra, head of MENA at the Global CCS Institute, discusses the drivers for development and what needs to be done to encourage further growth (p23).

Elsewhere, our pipeline feature looks at non-intrusive leak detection for pipelines, the growth in thermoplastic pipes and the latest technology developments (p28); while our compressor feature focuses on the need for energy efficiency and ways to bring down energy costs (p33).

We also look at the latest developments in Iraq, which has the ambitious aim of increasing production to 7mn bpd from around 4.5mn bpd today (p12), and Bahrain's progress in the energy transition (p14).

→ Contents

Calendar

4 Executives' calendar

Listings of regional and international events, and a review of MEOS GEO

News

8 Developments

A round-up of the latest news from across the region

Iraq

12 Iraq's energy industry on the rebound

With production on the rise, Iraq's oil and gas industry is displaying resilience

Bahrain

14 Developments in Bahrain's energy future

As Bahrain gears up for an energy transformation, the oil and gas industries remain pivotal to its future

Workforce Development

17 Diversifying the workforce is key to a successful transition

The importance of having an educated and diverse workforce to provide the backbone for the energy transition

Digitalisation

20 Autonomous operations - the pathway to sustainability

Johan de Villiers, SVP, Global Energy Accounts, ABB Energy Industries discusses the benefits of investing early in automation, digital and electrification technologies

Carbon Capture

23 The growth of CCS in the MENA region

Mohammad Abu Zahra, head of MENA at the Global CCS Institute discusses the Middle East's potential and ambition to lead in CCS deployment

26 Addressing CCUS flow management challenges

CCUS flow management challenges, the selection of the most appropriate flow meter technology and the importance of developing regulations and standards for the implementation of CCUS

Pipeline Technology

28 The growth in demand for thermoplastic pipe

The thermoplastic pipe market is growing, and local production in the Middle East is on the rise

30 Non-intrusive leak detection for pipelines

How non-intrusive leak detection solutions can reduce the impact of leaks and improve pipeline operations

Compressors

33 The drive for energy efficiency in compressors

Energy efficiency is at the top of the agenda for compressors operators as energy costs rocket – and this plays into ESG considerations too

Seismic Technology

38 A cableless alternative to acquiring hi-res seismic data

Nodes are the future for land seismic, according to STRYDE

Innovations

41 The latest product developments in oil and gas

Arabic

4 Analysis

→ Executives' Calendar, 2023

MAY			
1-4	Offshore Technology Conference	HOUSTON	2023.otcnet.org
16-17	OWI MENA	ABU DHABI	www.offsn.net.com/owi-mena
16-18	ME-TECH	DUBAI	https://europetro.com/metech
23-25	OMC Med Energy Conference & Exhibition	RAVENNA	www.omc.it.en
30-1 June	AIEN International Energy Summit	MIAMI	www.aien.org
SEPTEMBER			
5-8	Gastech	SINGAPORE	www.gastechevent.com
5-8	Offshore Europe	ABERDEEN	www.offshore-europe.com
6-7	MENA HSE Forum	DUBAI	www.hse-forum.com
OCTOBER			
2-5	ADIPEC	ABU DHABI	www.adipec.com
NOVEMBER			
27-28	LEWAS Awards 2023	AL KHOBAR	www.lewa-symposium.org

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

OWI MENA 2023 boasts largest roster to date

THIS YEAR'S OWI Middle East and North Africa (OWI MENA 2023) conference promises to be grand affair, as sights are set to broaden the format and shine the spotlight towards operators in the Gulf and North Africa equally.

With the tagline of this year's conference being 'Future-proof your intervention projects to exceed environmental targets and optimise well programmes by utilising transformative digital and downhole technologies', OWI MENA is the only place to offer key learnings to the well intervention community in order to build the best roadmap for future growth.

Constantly evolving and growing, OWI MENA 2023 boasts the largest roster of speakers to date, with 20 operator speakers set to lead discussions on key topics such as market status, sustainable well programmes, well integrity, innovative technologies and end of life. Speakers include Raymond Burke, vice president, Technology (Asset Integrity), ADNOC; Mustafa Adel Amer, well integrity focal point (Egypt), BAPETCO; Asma Al Darai, petroleum engineer, BP Oman; Mohamed Muhiz Kuthubdeen, senior well integrity and intervention engineer, Dubai Petroleum; Osama Radwan petroleum engineer, Petrobel; and Faisal Alnakeeb, senior well integrity engineer, SNOC.

After taking client feedback on board, there is a huge appetite within the



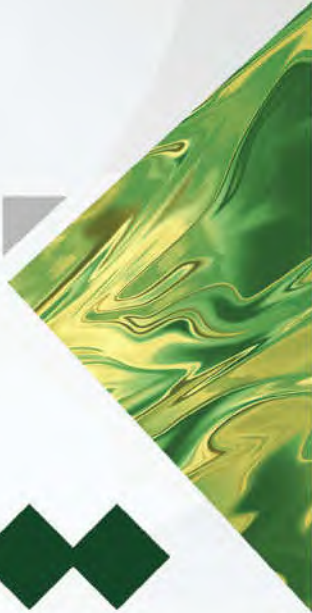
This year's event will focus on North Africa as well as the Gulf.

Image Credit : Adobe Stock

community to hear from North African operators, and this year there is a dedicated spotlight session for the region. OWI MENA 2023 will also exhibit two networking sessions, three breakout workshops and more than 12 demos in the Innovative Technology Showcase Hall in order to further promote collaboration between delegates. 40% of attendance will be from major, independent or national operators, as well as 35% from expert technology providers,

meaning there is ample opportunity to expand individual networks.

OWI MENA 2023 takes place on 16-17 May at Bab Al Qasr Hotel, Abu Dhabi, UAE. For more information and session details, the full brochure can be downloaded at <https://offsn.net.com/owi-mena/conference-brochure>. Any questions regarding the conference, please reach out to Rachael Brand at rbrand@offsn.net.



Open Platform for Innovation

**NESR OILFIELD RESEARCH & INNOVATION
CENTER (NORI)**

DHAHRAN TECHNO VALLEY

WWW.NESR.COM



Bahrain's Deputy Prime Minister, His Excellency Shaikh Khalid bin Abdulla Al Khalifa and the official delegation toured the exhibition.

Image Credit : Informa markets

Bahrain's new exhibition centre hosts first MEOS GEO

The first Middle East Oil, Gas & Geosciences Show (MEOS GEO) which took place in February at the state-of-the-art Exhibition World Bahrain, heralded a new industry era, with more than 17,000 energy professionals registered for the event.

WITH AN EXHIBITOR profile of 180 companies, more than 800 technical presentations, and more than 300 hours of specialised content, MEOS GEO 2023 has become Bahrain's largest-ever oil and gas event, resulting from the merger of the Middle East Oil & Gas Show and Middle East Geosciences Conference & Exhibition.

The event, which will now run every two years, is held under the patronage of the Crown Prince and Prime Minister of the Kingdom of Bahrain His Royal Highness Prince Salman bin Hamad Al Khalifa, and is officially supported by Bahrain's Ministry of Oil & Environment and the Kingdom's energy investment arm, Nogaholding.

The exhibition of upstream oil & gas products and services was inaugurated by

Bahrain's Deputy Prime Minister, His Excellency Shaikh Khalid bin Abdulla Al Khalifa. Spanning 18,000 sq m at the new, state-of-the-art venue in Sakhir, the show attracted exhibitors from more than 20 countries, including sector heavyweights Saudi Aramco, Kuwait Oil Company, Tatweer Petroleum, Baker Hughes, Chevron, Halliburton, SLB and Weatherford.

Opening the conference, Saudi Aramco's vice president and chief drilling engineer and MEOS GEO 2023 Committee chair Faisal N. Al Nughaimish said the merger of MEOS and GEO signified a new era for the region's oil, gas, and geosciences sectors.

"We live in times of rapid and remarkable change. And that calls for a novel approach and fresh kind of thinking. The merger of MEOS and GEO unites different disciplines,

and brings together our industry's entire value chain under a single roof. With the theme of 'Today's Realities, Tomorrow's Energy,' MEOS GEO 2023, fittingly, also recognises the current fast-paced, rapidly evolving industry landscape," he said.

Al Nughaimish added that the exhibition and conference reinforced this by showcasing disruptive innovations, groundbreaking technologies and pioneering methodologies that allow the unlocking of previously unthinkable efficiency gains.

This year's conference, in its new format, acknowledged the demand for a more sustainable energy future, with a series of high-level panel sessions on intersectional topics that addressed today's emerging challenges, unfolding opportunities, and issues of global concern including carbon

emissions, investments, supply chain, geopolitics, integration, 4IR and talent 4.0.

VVIP start

The conference got off to a VVIP start on 19 February with addresses by Bahrain’s Oil & Environment Minister and Special Envoy for Climate Affairs His Excellency Dr. Mohamed bin Mubarak Bin Daina and His Excellency Haitham Al Ghais, secretary general of OPEC, who examined ‘Supply, Demand, and Oil Price: How To Find Balance in a Volatile Market.’

In a rousing speech Al Ghais was unapologetic about the role of oil and gas in global growth, and urged companies to show the world that the industry can transition along with the rest of the world, while at the same time decarbonising and reducing emissions.

“We have an industry we should be proud of. For decades, this industry has been the source of economic development globally, and industrialisation. Just look around you in this room; everything we have today is derivatives of oil and petrochemicals,” he said.

“We are not climate change deniers, but we believe that the transition has to be equitable. I don’t think the industry should be demonised or presented as the cause of the problem. That is a wrong perception; it’s a misguided narrative,” he stated.

Al Ghais noted that investments in the sector have plummeted while geopolitical developments, economic slowdown and market fluctuations challenge a limited pool of resources. To deliver energy to the world safely, responsibly and with greater effectiveness, the global oil sector requires US\$12.1 trillion investment by 2045. “This is critical because we see global energy demand rising by almost 25% from now to 2045,” he said.

Meanwhile, Saudi Aramco and a Japanese consortium of INPEX/JODCO, Nissan Chemical Corporation and OILMIND were the winners of the MEOS GEO 2023 Energy Awards, which



More than 180 companies exhibited at the show.

focused on industrial applications, technology and project implementation to bridge the gap between concept and practice.

“MEOS GEO provides a unique opportunity to learn, share, and exchange ideas and solutions.”

Innovation awarded

The Japanese consortium took the ‘Innovation and Technology’ honours for its new generation chemical water shut-off technology, while Saudi Aramco took two awards across the three categories. The energy giant’s Northern Area Production Engineering Department took the accolade for ‘Transformation and Organisation Performance’ for its POSH 4.0: Gate to Digital Transformation project, while Saudi Aramco

Project Management were the winners of the ‘Sustainability’ award for the SPARK Dry Port Projects.

“These winning applications and technologies recognise the advancements being made in the oil and gas sector, and the innovation which is now permeating the entire sector,” commented Mohammed Ebrahim, director of show organiser Informa Markets.

“As collaboration continues to be key to integrating a wide range of solutions to meet energy demand, MEOS GEO provides a unique opportunity to learn, share, and exchange ideas and solutions,” he added.

Over the three days, the conference organised by the Society of Petroleum Engineers (SPE) and the American Association of Petroleum Geologists (AAPG), also included a CEO plenary session featuring five of the world’s biggest industry names: Saugata Saha, president, S&P Global Commodity Insights; Nasir K. Al-Naimi, executive vice president Upstream, Saudi Aramco; Jeff Miller, chairman, president and chief executive officer, Halliburton; Clay Neff, president, Chevron International Exploration and Production and Lorenzo Simonelli, chairman and chief executive officer, Baker Hughes.

The schedule also featured a Young Professionals & Students programme of events aimed at nurturing the next generation of oil and gas professionals, and a Start-Up Village which provided a global stage for emerging energy technology companies.

On the exhibition floor visitors were treated to a rare display of core sample material from Arabia’s source rock sequences and some of the world’s most fascinating oil and gas play areas, an oil vehicle showcase dedicated to off-road vehicles, trucks and specialised equipment, and a free-to-attend programme of Live Labs and Genius Talks centred on digitalisation, drones, cloud solutions, AI, IoT, cyber security and 3D. ■



MEOS 2023 has become Bahrain’s largest oil and gas event.

Image Credit : informa markets

Image Credit : informa markets

ADNOC delivers first LNG shipment to Germany

ON 15 FEBRUARY, ADNOC and RWE Aktiengesellschaft (RWE) announced the successful delivery of the first shipment of 137,000 cu m of Liquefied Natural Gas (LNG) from Abu Dhabi to the Elbehafen floating LNG terminal in Brunsbüttel, Germany.

The cargo delivery marks an important milestone in developing Germany's domestic LNG supply infrastructure, supporting the country's energy security with natural gas. The cargo is sufficient to produce approximately 900 KWh of electricity, enough to supply approximately a quarter million German homes for a year.

To mark the successful arrival of the LNG cargo, a ceremonial event was held in Brunsbüttel. Speaking at the event, Ahmed Alebri, acting CEO of ADNOC Gas said, "The successful delivery of the Middle East's first LNG cargo to Germany demonstrates how the UAE is continuing to work closely with our strategic partners in responsibly providing secure, sustainable and affordable energy supplies."



Image credit: ADNOC

ADNOC's Ish Vessel Delivering the first LNG Cargo from the Middle East to Brunsbuttel Port in Germany.

Chevron and Egypt sign MoU on methane management

CHEVRON NEW VENTURES Pte. Ltd. and the Egyptian Ministry of Petroleum and Mineral Resources (MOPMR) have signed a Memorandum of Understanding (MoU) to share best practices and expertise related to the reduction of methane emissions.

"Decarbonisation is a core element of the Egyptian Ministry of Petroleum and Mineral Resources' strategy. Due to its significant global warming potential, reducing methane emissions is key to supporting positive climate action," said H.E. Eng. Tarek El Molla, Egypt's Minister of Petroleum & Energy Resources. "Therefore, we are prioritising the reduction of methane emissions from Egypt's oil and gas sector, in line with Egypt's membership in the Global Methane Pledge. Building on the success of COP27 Decarbonisation Day, we will collaborate with our strategic partners like Chevron to further drive emissions reduction and reduce the carbon footprint of our hydrocarbon resources," the Minister added.

The MoU includes methane and decarbonisation study tours and workshops for MOPMR employees at Chevron facilities in the US and other locations, to build awareness of methane control technologies, measurement practices and projects to reduce carbon emissions.



Image credit: Saipem

The signing took place during the Egypt Petroleum Show 2023.

Middle East contracts drive oil and gas contract value growth in Q4 2022

OIL AND GAS industry contract values saw a significant quarter-on-quarter (QoQ) increase of 27% in Q4 2022, reveals GlobalData, a leading data and analytics company, with Middle East contracts driving this increase.

GlobalData's latest report, "Oil and Gas Industry Contracts Analytics by Sector (Upstream, Midstream and Downstream), Region, Planned and Awarded Contracts and Top Contractors, Q4 2022," shows that the overall contract value increased from US\$47.38bn in Q3 2022 to US\$60.36bn in Q4 2022. Contract volume, however, decreased from 1,673 in Q3 2022 to 1,443 in Q4 2022.

Pritam Kad, Oil and Gas analyst at GlobalData, commented, "The key drivers for the value momentum were Saipem's US\$4.5bn contract from Qatargas for the engineering, procurement, and construction (EPC) of the North Field Production Sustainability Natural Gas Compression Complex Project, offshore north-east coast of Qatar; and ADNOC's US\$4bn framework with ADNOC Drilling, Schlumberger, and Halliburton for the integrated drilling fluids services (IDFS) for projects in the UAE.

"Operations and maintenance (O&M) represented 55% of the total contracts in Q4 2022, followed by procurement with 19%, and contracts with multiple scopes, such as construction, design and engineering, installation, O&M, and procurement, accounted for 13%.



Image credit: Adobe Stock

Overall contract value increased from US\$47.38bn in Q3 2022 to US\$60.36bn in Q4 2022.

Saipem renews partnerships

SAIPEM HAS RENEWED its collaboration agreements with Petrojet and Enppi, Egyptian companies with which it has a long history of partnership in the execution of projects in North Africa and the Middle East.

The signing of the agreements took place during the Egypt Petroleum Show 2023, the most important exhibition and conference on oil, gas and energy in Africa and the Mediterranean, which was held in Cairo from 13-15 February.

The Memorandum of Understanding (MoU) signed with Petrojet, which renews the one signed in 2020, relates to the pursuit of potential new initiatives in the oil and gas, infrastructure and new energy sectors in North Africa, where investments are expected to increase sharply in the near future. The MoU will enable Saipem to be more competitive in the region.

The Cooperation Agreement signed with Enppi, which renews the one already signed in 2019, regards the execution of co-engineering services for potential new initiatives to be pursued globally. The agreement will give Saipem access to local expertise and engineering services in Egypt, in an area with high development potential in energy infrastructure, including those related to the energy transition.

Both agreements consolidate Saipem's long-term relationship with leading Egyptian companies and will enable the partners to strengthen their respective competitiveness.

Saipem has always been oriented towards technological innovation and is currently committed, alongside its clients, on the frontline of energy transition with increasingly digitalised tools, technologies and processes that were devised from the outset with environmental sustainability in mind.

It is listed on the Milan stock exchange and operates in 70 countries around the world with 32 thousand employees from 130 different nationalities.

Abraj Energy Services expands regional presence

ABRAJ ENERGY SERVICES SAOC, Oman's leading drilling company, has signed a five-year strategic partnership with Saudi Arabian Chevron and Kuwait Gulf Oil Company for drilling and oil extraction.

The agreement involves building three drilling platforms and providing related services for the Wafra oilfield project located within the Onshore Partitioned Neutral Zone (PZ) in southern Kuwait.

The collaboration will allow Abraj to expand its portfolio of services, exchange experiences and adopt best practices in the fields of drilling, sustainability and technology in the sector.

Saif Al Hamhami, Abraj Energy Services CEO, said, "We are pleased to announce our strategic partnership with Saudi Arabian Chevron and Kuwait Gulf Oil



Image credit: Adobe Stock

The agreement involves building three drilling platforms for the Wafra oilfield.

Company, emphasising our commitment to expand our regional footprint in the Middle East and North Africa region. The company is pre-qualified to provide various services in Kuwait, Saudi Arabia and Algeria, where the company's advanced rigging fleet is linked to long-term contracts with leading national and international companies in the field of exploration and production."

He added, "Abraj Energy Services is uniquely poised for this opportunity as it owns the most modern and advanced drilling fleets in the Middle East and North Africa region. Consisting of 25 drilling rigs and five well maintenance rigs that operate with the latest technology, it offers a competitive advantage to its clients, particularly in Saudi Arabia, Kuwait and Algeria."

In line with its growth strategy, Abraj Energy Services announced the listing of its shares on the Muscat Stock Exchange on 20th February 2023. This was part of the exit plan announced by Oman Investment Authority to facilitate investment opportunities for local and foreign investors in tandem with the goals of Oman Vision 2040.

Luberef signs EPC contract with PETROJET for Yanbu production facility

SAUDI ARAMCO BASE Oil Company (Luberef) has announced the signing of an engineering, procurement, and construction contract with PETROJET Co. for the Yanbu facility expansion (Growth II) at a total value of SAR 555mn (US\$148mn). This aims to expand existing units at Yanbu facility to 1.3mn – their maximum potential production capacity – in 2025, by increasing Group II base oils production or introducing the production of Group III base oils. This expansion will allow flexibility for the production of additional Group II and Group III base oils based on market demand.

From its two facilities, located in Yanbu and Jeddah, Luberef currently has a combined capacity to produce 1.3mn metric tonnes per annum of base oils. Base oils are used in a wide range of applications and help to power functions such as gear oils and transmission fluids. They are used to power vehicles and are an important component for all types of machinery. Base oils are critical across multiple industries, where hydraulic, turbine and transmission fluids are required for production and manufacturing machinery, such as in the steel industry, food production, textiles and clothing.



The signing ceremony.

Image credit: Luberef

Acquisition expands intervention service offering

WELLTEC A/S, a leader in completion and intervention, has acquired Autentik AS, a niche technology provider specialising in electric wireline fishing and intervention solutions. The acquisition is a strategic move by Welltec to expand its downhole well access capabilities and enhance its overall service offerings.

Autentik has a proven track record of delivering innovative solutions to its clients across North America, Europe, Africa, and the Middle East, and its expertise – particularly in the downhole fishing domain – will greatly complement Welltec's existing portfolio. With this acquisition, Welltec will be better positioned to serve its clients with the latest surface-controlled technology advancements and solutions.

"We are excited to welcome Autentik into the Welltec family," said Tommy Eikeland, CCO Welltec. "This will add tremendous value and momentum to our organisation and enhance our ability to provide our clients with cutting-edge solutions. We have already performed several jobs together and the advantages we can bring are evident. We look forward to working together to drive further growth and innovation in our industry."

Amarinth wins further Iraq contract

AMARINTH HAS WON a further order from Iraq Gates Contracting Company, this time for two bespoke API 610 12th Edition VS4 vertical pumps for the supergiant Rumaila oilfield, southern Iraq. The company previously supplied 10 API 610 OH1 condensate transfer pumps for the Rumaila field.

Space constraints in the tanks called for a particularly small support plate of just 30 inches in length, so Amarith designed a bespoke support plate for the VS4 pumps with a special arrangement that still enables Plan 53B seal support systems to be mounted at the side of the pumps. The motors, seal support systems, and instrumentation will be IECEx certified, inspected and witness tested by Bureau Veritas and supplied with a full legalised Iraq documentation package.

Oliver Briggingshaw, managing director of Amarith, commented, "We are delighted with this latest order of bespoke API 610 VS4 vertical pumps from IGCC which underlines our on-going support and investment in Iraq. With the orders from IGCC, and the other contracts we have fulfilled in Iraq, we have developed an in-depth knowledge of the requirements of the Rumaila Operating Organization, enabling us to design bespoke pumping solutions on short lead times that successfully meet their needs."



Image credit: Amarith

Amarinth API 610 VS4 pump with Plan 53B seal support system undergoing testing.

Baker Hughes and AWS collaborate on automated field production solution

BAKER HUGHES SIGNED an agreement with Amazon Web Services Inc. (AWS) to develop, market and sell the cloud-based Leucipa automated field production solution.

The collaboration leverages AWS services such as advanced analytics and Baker Hughes' expertise in the oil and gas industry to create a solution designed to allow operators to manage field production.

"The Leucipa field production solution is an automated solution that sets a new standard in the industry through its automation and scalability, helping our customers deliver on their production targets and reduce emissions," said Maria Claudia Borrás, executive vice president of oilfield services and equipment at Baker Hughes.

"Through this collaboration, we will help transform oil and gas production operations by combining the domain expertise of Baker Hughes with the most comprehensive set of cloud services in the world from AWS," said Howard Gefen, general manager, energy & utilities, AWS.



Image Credit: Adobe Stock

The collaboration creates an automated field production solution designed to allow operators to manage field production.

Methane emissions remain stubbornly high: IEA

THE IEA'S LATEST update of its Global Methane Tracker finds that methane emissions remained stubbornly high in 2022, and highlights the need for the oil and gas sector to step up to slash emissions.

Today, the energy sector accounts for approximately 40% of total methane emissions attributable to human activity, second only to agriculture. Cutting methane emissions is one of the most effective ways to limit global warming and improve air quality in the near term.

"Our new Global Methane Tracker shows that some progress is being made but that emissions are still far too high and not falling fast enough – especially as methane cuts are among the cheapest options to limit near-term global warming. There is just no excuse," said IEA executive director Fatih Birol. "The Nord Stream pipeline explosion last year released a huge amount of methane into the atmosphere. But normal oil and gas operations around the world release the same amount of methane as the Nord Stream explosion every single day."

QatarEnergy to manage marketing portfolio

THE INTEGRATION OF marketing and related activities from Qatargas into QatarEnergy is expected to be completed by the end of 2023.

The strengthened alignment of LNG marketing activities within QatarEnergy will leverage a combined set of technical, commercial and financial capabilities of both organisations.

Commenting on this occasion, HE Saad bin Sherida Al-Kaabi, the minister of state for energy affairs, the president and CEO of QatarEnergy said, "This move takes QatarEnergy one step closer to achieving our vision to becoming one of the best energy companies in the world, and we are grateful for the support that our trusted international partners have placed in us for delivering on this critical strategic initiative. It goes without saying that we will ensure business continuity and a seamless transition, during which Qatargas will continue to deliver on all its commitments with no interruption."

QatarEnergy currently manages the marketing and sale of all products produced for export by its group of companies / affiliates, with the exception of LNG and Helium.

Once the integration is concluded, QatarEnergy will be the single point of responsibility for all existing and prospective customers interested in the purchase of energy products from the State of Qatar and will be able to provide a diversified products and services offering with a superior integrated portfolio.



Image Credit: QatarEnergy

The integration of marketing activities will create an enhanced centre of excellence for the marketing of all energy products exported from Qatar.

Vallourec chooses Balance for entry into oil and gas eCommerce

VALLOUREC, GLOBAL LEADER in premium tubular solutions for the energy markets and industrial applications, has partnered with B2B eCommerce payments company, Balance for its new online platform, Behub-e. The online marketplace enables global energy and industrial market players to interact and transact online. It allows the companies to securely facilitate payments online with multiple sellers worldwide.

"The ability to include net terms sets Balance apart. Vallourec is continuing to grow our marketplace with this simple, all-in-one checkout experience," said Geoffroy de Roffignac, director of online business at Vallourec.



Image Credit: Adobe Stock

Vallourec launched its Behub-e payment solution in April 2022.

In April 2022, Vallourec launched Behub-e to offer its B2B customers the ability to transact with the ease of everyday consumers.

"Balance is opening the door to global trade for thousands of buyers and sellers like never before. There is an increasing need for payment solutions with real-time net terms so that customers can enjoy instant payouts and zero risk. Balance is committed to owning the entire B2B checkout experience," said Bar Geron, co-founder and CEO of Balance.

Vallourec provides benchmark tubular solutions for the energy sectors and other applications — from oil and gas wells in extreme conditions to next-generation power plants, architectural projects and extremely high-performing mechanical equipment.

Vallourec's new online marketplace opens its top-tier inventory of steel products and equipment to companies – big and small – from around the world.

Oil & gas top choice for energy sector workers

THE OIL AND gas sector is the most popular one for energy workers looking to change roles, and the Middle East is increasingly attractive for oil and gas workers seeking overseas transfers, according to Airswift's Global Energy Talent Index (GETI), the comprehensive energy workforce trends report.

The report reveals that the Middle East has supplanted North America as the second choice destination, as workers are drawn by the lure of low taxes and booming infrastructure development.

The recent gas price crisis has transformed oil and gas into the most popular sector for energy workers looking to change roles, and has sent salaries soaring above pre-pandemic levels. With oil and gas majors posting record profits, 44% of oil and gas workers saw their pay increase last year and two-thirds expect further salary rises next year. Salaries are being inflated by fierce competition for oil and gas talent. Big pay packets are also driving high job satisfaction, with 69% of oil and gas workers declaring themselves satisfied in their current positions.

ESG concerns are now among the top three reasons for choosing employers, according to the report. With just 11% of the oil and gas workforce in the survey composed of women, and female employees also more likely to say their views are ignored at work, improving diversity could also be key to retaining and attracting an ESG-conscious workforce.

Janette Marx, CEO at Airswift, said, "In the wake of the recent sanctions on Russia, soaring fossil fuel profits have made oil and gas the most attractive energy sector and turned this into an employees' market. An increasingly high-paid, in-demand oil and gas workforce is now empowered to choose employers based on their environmental and social performance as well as pay. This is an opportunity for employers to compete for talent on other differentiators beyond salaries, from decarbonisation to diversity."

Ilda Andaluz, executive vice president of Global Human Resources at Varel Energy Solutions, added, "The Covid-19-era 'Great Resignation' combined with the recent resurgence of fossil fuel production and prices has opened major skills gaps across oil and gas and it now takes up to three times longer to fill every position. Yet growing digitalisation has created increasing skills synergies with industries such as technology that could help us grow the workforce and reduce labour costs."

Kongsberg Digital to digitise Chevron's global assets

KONGSBERG DIGITAL HAS entered into a strategic agreement with Chevron to digitise its global assets using Kongsberg Digital's digital twin technology. The agreement includes a multi-year commitment.

The contract, which was signed in January 2023, represents expansions of work performed on contracts signed in 2021, with a committed multiple-asset deployment plan and further applications to enrich Chevron's user experiences. The digital twin solution will aid Chevron in work planning and project execution. The digital twin solution will also enable faster troubleshooting, reduced cost, decision making, and lower personal and process safety risk.

Shane McArdle, CEO at Kongsberg Digital said, "We are proud to support Chevron in adopting digital twins for its global operations. This agreement represents both at-scale delivery of digital twin technology to Chevron's global business units, and beyond that a multi-year journey of innovation. We look forward to continuing this exciting journey with Chevron."



Image credit: Kongsberg

The contract signing.

Eni and ADNOC sign MoU for joint projects

ENI AND ADNOC have signed a Memorandum of Understanding (MoU) to co-operate for future joint projects on energy transition, sustainability and decarbonisation.

Through this agreement, Eni and ADNOC will explore potential opportunities in the areas of renewable energy, blue and green hydrogen, carbon dioxide capture and storage (CCS), in the reduction of greenhouse gas and methane gas emissions, energy efficiency, routine gas flaring reduction and the Global Methane Pledge, to support global energy security and a sustainable energy transition. In addition, they will evaluate areas of cooperation for sustainable development and promoting the spread of a culture of sustainability within the energy industry and its stakeholders.

Eni CEO, Claudio Descalzi, commented, "This agreement leverages the strategic relationship that Eni and ADNOC developed over the years, to strengthen our cooperation for decarbonisation and for a just energy transition. It comes at a crucial time, in a difficult international juncture and in view of the upcoming COP28, where the UAE, as hosting country, is expected to set out its vision for a clean energy transition agenda."

Collaboration for emissions management

HALLIBURTON AND SIGULER Guff & Company have launched Envana Software Partners, which provides critical emissions management software-as-a-service (SaaS) solutions to track greenhouse gas emissions in the oil and gas industry and beyond.

The Envana digital emissions management solution provides a smarter and more accurate picture of emissions, which gives companies actionable information to manage and reduce their total carbon footprint.

The venture's first offering, Envana Catalyst, is an SaaS solution that helps increase transparency of the environmental impact of drilling, completions, and production operations. It can improve the visibility of greenhouse gas emissions tracking and forecasting company wide, and can provide support for actionable recommendations throughout upstream asset life, from planning and design through execution.

"Envana provides breakthrough SaaS emissions management solutions and is the latest example of how innovation adds to sustainability in the oil and gas industry," said Rami Yassine, senior vice president, Halliburton Drilling and Evaluation division. "Envana Catalyst provides digital solutions to generate actionable recommendations for emissions improvement "throughout the asset lifecycle."



Image Credit: Envana

The Envana digital emissions management solution provides a smarter and more accurate picture of emissions.

Iraq's energy industry on the rebound

Image Credit : Adobe Stock



With production on the rise, and the promise of more to come, Iraq's oil and gas sector is displaying the kind of resilience that has helped it regain lost ground after years of chaos and disruption. Martin Clark reports.

DESPITE A NUMBER of significant and ongoing challenges, Iraq's oil and gas industry is optimistic for the coming years as global demand for energy continues to grow. The country is already the second-largest crude oil producer in OPEC after Saudi Arabia – with output now in excess of 4mn bpd – and sits on an estimated 145bn barrels of crude, the world's fifth-largest proved reserves.

Its ambitions are even greater: Iraq hopes to grow production to 7mn bpd by 2027, the head of the state-owned oil marketing arm, SOMO, said recently. That's a huge leap, but given the nation's resilience over recent decades, anything could be possible.

While there is no denying that it has been a struggle to get there, after the tumultuous US-led overthrow of Saddam Hussein in 2003, most of Iraq's big onshore fields are now either in production or in development. Instability still plagues the country of 41 million people, but there is at least hope that sustained higher levels of production, coupled with elevated oil prices, could begin to ease an economy still scarred by decades of conflict and sanctions.

The outlook from industry players on the ground certainly seems broadly positive. Oil

services giant SLB is seeing new contract wins and double-digit growth in the country, driven by capacity expansion projects. Reporting its full-year 2022 results recently, SLB chief executive Olivier Le Peuch said that the fourth quarter especially affirmed a distinctive new phase in an 'upcycle', as the industry regains momentum.

"In the Middle East, revenue increased by double digits sequentially – with growth in Saudi Arabia, Iraq, and the UAE in the solid teens – affirming the much-anticipated acceleration of activity in the region."

“Most of Iraq's big onshore fields are now either in production or development.”

He referred to a solid pipeline of incremental contract awards from the Middle East region generally, and expects to see "record levels of upstream investment by NOCs (national oil companies) to continue in the next few years."

Most of the big international oil operators

have worked hard to secure their positions as partners in Iraq's flagship oil and gas upstream sector, including the likes of BP, ExxonMobil and Shell.

BP has been tasked with the long-term rehabilitation of the super-giant Rumaila field, the world's second-largest oil field, alongside PetroChina, where plateau production is around 2mn bpd. Last year, the two sides established the Basra Energy Company Limited (BECL) to own and manage their interests and a concession that runs through to 2034. China's CNOOC Ltd has similarly been diligently restoring output at its Missan project, where production is now above 300,000 bpd, more than four times the 2010 starting point.

The restoration of Iraq's oil and gas infrastructure has meant plenty of work for contractors. Like SLB, Baker Hughes has enjoyed its own share of success from the region. Most recently, its IET division landed a contract with Basra Gas Company (BGC) to provide in-country field services, a resident team, a provision of local spares, and repair for multiple facilities to ensure asset reliability and support energy independence goals.

BGC was established in 2013 as a 25-year joint venture between Shell, Iraq's South Gas

Company and Mitsubishi Corporation. As Iraq's main gas processing hub and one of the largest flare reduction projects in the world, it captures currently flared gas from the Rumaila, West Qurna 1 and Zubair fields. Again, at the Rumaila field, China Petroleum Engineering & Construction Company (CPECC) last year bagged a US\$386mn contract from BECL, underlining the level of activity on the ground. It involves work on two crude oil processing facilities at Mishrif Qurainat, each with a capacity of 120,000 bpd.

Operator challenges

It certainly hasn't been plain sailing for operators, though, given the huge logistical constraints and volatility in the country that continues today.

Competition, contractual difficulties and political differences continue to thwart investments. TotalEnergies of France has struggled to sign off a US\$27bn plan for four oil, gas and solar projects because of a mix of political disputes as well as questions over what stake Iraq will control in the various projects. Qatar is also now in talks to acquire a stake in the cluster of energy projects, according to reports. Last September, the French multinational sold its non-operated 18% interest in the onshore Sarsang oil field in the Kurdistan region to ShaMaran Petroleum Corp. ExxonMobil also withdrew from its flagship West Qurna 1 project, which has a capacity close to 500,000 bpd, with Iraq and Indonesia's Pertamina extending their ownership.

Other Asian and global investors are also partnering with the country, including Russia's Gazprom and Lukoil, which continue to do business with Iraq despite the Ukraine crisis. Lukoil is developing the West Qurna 2 project, for example, which is gearing up for peak production of around 400,000 bpd, with Baghdad currently discussing new payment mechanisms to replace the US dollar as a result of international sanctions.

It is not only the big multinationals that have picked up on the Iraq opportunity either. In the country's fifth bidding round, launched in 2018, focusing mainly on gas, the successful companies included China's Geo-Jade and United Energy Group, as well as UAE-based Crescent Petroleum.

But the long delays in signing off these contracts illustrates some of the red tape and frustrations that are common to all would-be investors, large or small.

Iraq was also tested recently by the early February earthquake in Turkey, which briefly disrupted pipeline transit via the oil export hub of Ceyhan, about 155 km from the area affected by the disaster. Prior to the quake, Iraq's north had been pumping close to 500,000 bpd to the port, roughly 400,000 bpd from the Kurdistan region and the remainder from the Kirkuk area. The bulk of Iraq's crude oil is exported from the south by



Image Credit : Adobe Stock

The backdrop for the further advance of the industry remains positive.

tanker out of the Gulf. While exports via Ceyhan have now resumed, it again illustrates a greater degree of resilience to the nation's oil industry, a quality that has been painstakingly rebuilt over the past two decades. It is something that will be required for a long time to come as Iraq continues to develop its infrastructure and economy and utilise its natural resources for the good of its people.

“It certainly hasn't been plain sailing for operators.”

The backdrop for the further advance of the industry remains positive, supported by high energy demand, as well as an increased focus on energy security and energy transition in developed markets. It means the outlook for new awards in areas such as engineering, construction and consulting also remains robust, both in Iraq as well as across the wider Gulf region.

Indeed, if Baghdad is to get anywhere near its lofty production target of 7mn bpd over the next few years, that will mean huge investments ahead, as well as the steely dedication of foreign partners.

With so many obvious challenges still facing the country, it would be easy to dismiss

such ambition. Yet the turnaround in fortunes for the energy sector over the past decade or so amply illustrates the grit of Iraq's people and their desire to haul the country back on its feet once more.

Crescent Petroleum to develop three oil and gas fields in Iraq

Sharjah-based Crescent Petroleum has signed three 20-year agreements with Iraq's Ministry of Oil to develop three oil and gas fields in Iraq

Under the agreements, Crescent Petroleum will appraise, develop and produce oil and gas from two blocs in Diyala governorate in eastern-central Iraq, and one in Basra governorate in southern Iraq, the country's main oil-producing region. Crescent Petroleum envisages initially producing 250mn standard cubic feet a day (MMscfd) from the Diyala fields, with first gas expected within 18 months to supply local power plants. Crescent Petroleum will build a processing plant on site, as well as pipelines and infrastructure to supply gas.

The third exploration block in Basra will be explored and developed to add further supplies of oil and gas, Crescent Petroleum said.

“Our new planned investments and operations will create thousands of new jobs and support the local and national economy,” said Abdulla Al Qadi, executive director of exploration and production at Crescent Petroleum. “Gas and oil supplies from these operations will help improve services and local economic development for the people of Iraq.” ■

Developments in Bahrain's energy future

As Bahrain gears up for an energy transformation to bring it to net zero by 2060, the oil & gas industries remain pivotal to its future. Minhaj Zia reports.

WHILE BAHRAIN IS a much smaller hydrocarbons producer than its neighbours, oil and gas continues to be a mainstay of the economy. Although progress on the major Khaleej Al Bahrain offshore oilfield discovery, estimated to hold 80 bn bbl of shale oil and 20 trillion cubic feet of gas, has been limited due to the technical challenges, other discoveries may prove easier to exploit.

In recent developments, Bahrain has made two new natural gas discoveries in the unconventional Al-Jawf and Al-Joubah onshore reservoirs. The discovery was made by The Oil and Gas Holding Company (nogaholding).

Commenting on the discoveries, Shaikh Nasser bin Hamad Al Khalifa, chairman at nogaholding, stated that this has provided the necessary information to continue the progression of evaluating wells to reap the benefits of natural gas resources. "This information available to us paves the way for the future development and production of the natural gas resource in the interest of the Kingdom of Bahrain," he said.

Further drilling operations are planned to go ahead this year and 2024 in which the Al-Taweel and Al-Sara layers will be assessed. This will be on top of the horizontal drilling experience in the Al-Juba well intended to boost productivity.

“We’re gearing up for an energy future which looks much different to where we are now.”

Prior to this, the Prime Minister of Bahrain met with Eni CEO, Claudio Descalzi to discuss the progress of Eni's activities within the country regarding gas production and carbon capture, circular economy, and energy transition, Eni having had a longstanding involvement in the market. The discussion spotlighted the ongoing collaboration targeted



Image Credit : Adobe Stock

at reinforcing the partnership with regards to a sustainable development framework, supplementing oil and gas with decarbonisation incentives such as renewables, particularly the development of a carbon capture usage and storage (CCUS) project.

Deliberations also covered possible joint cooperation initiatives between Eni and nogaholding, comprising solutions for upstream production optimisation in deep gas structures, bio-feed refinery and bio-feed upstream.

Augmenting the daily refining production capacity further, is the Bapco Modernisation project, taking the capacity from 267,000 barrels to 380,000 per day. The programme, which is set to be completed in 2024, will improve energy efficiency while also increasing quantity and quality, making the Bahrain refinery a stand out in compliance among environmental standards around the world.

Speaking at the second Gulf Downstream Association (GDA) International Downstream Conference and Exhibition in February, the Prime Minister Prince Salman bin Hamad Al Khalifa said, "Bapco Refinery Modernisation Project, which is the continuation of many development projects in this vital sector, is considered one of the largest strategic projects aiming at increasing the daily refining production capacity from 267,000 barrels to

380,000 barrels per day."

The Minister mentioned that the GCC region is committed to preserving its leadership and progressive position in the energy market by addressing the energy needs for all partners from different countries without disruption. This would be in conjunction with high-value products that meet the international low-carbon and environmentally friendly standards.

This is in line with a key transitional period for the kingdom of Bahrain which, in common with its neighbours, is pursuing its net zero objectives. Speaking at the International Energy Week Panel which took place on 28 February 2023, Mark Thomas, group CEO at nogaholding, commented, "We're gearing up for an energy future which looks much different to where we are now. One that is more responsible, decarbonised, and energy efficient."

He went on to explain, "The Prime Minister of Bahrain made a commitment that Bahrain would achieve net zero by 2060 and reduce its emissions by 30% by 2035. This commitment underpins everything we do at nogaholding; it is also one of the three main mandates that we have. Those are: securing energy supply for the kingdom, maximising the returns of Bahrain's natural resources, and also moving towards a more sustainable energy future." ■

Bahrain's energy transition plans highlighted at CERAWEEK

HIS HIGHNESS SHAIKH Nasser bin Hamad Al Khalifa, HM the King's Representative for Humanitarian Work and Youth Affairs, and chairman of the board of directors of Bahrain's Oil and Gas Holding Company (nogaholding), delivered a speech at CERAWEEK 2023, organised by S&P Global in Houston, Texas.

HH Shaikh Nasser focused on the transformation process led by the Kingdom in the energy sector, and the future of global energy. While addressing a plenary session, themed 'Accelerating Energy Transition', HH Shaikh Nasser highlighted the kingdom's future aspirations, and efforts to advance investment in the energy sector, with the aim of accelerating the pace of energy transition, noting that the kingdom aims to secure its future energy needs, and achieve net zero.

HH Shaikh Nasser underlined the importance of adhering to the basic principles aimed at achieving sustainability and reducing costs, in order to ensure the provision of uninterrupted energy supplies, in line with the Bahrain Economic Vision 2030. While tackling the energy challenges facing the Kingdom and the world, HH Shaikh Nasser said, "Today the world is facing an unprecedented challenge related to the high costs associated with



HH Shaikh Nasser bin Hamad Al Khalifa delivering the address at CERAWEEK.

the production and extraction of domestic gas, but we believe in the strength and importance of our oil and gas sector. We are confident in our capabilities and the available opportunities that we can exploit. This includes marine resources that will be evaluated through an integrated three-dimensional programme next year. We are well aware of the importance of moving forward in the process of transition and diversification of energy production sources, whether it is in order to

achieve the goals of climate action, or to ensure the security of supplies."

HH Shaikh Nasser affirmed that the Kingdom will be one of the leading countries in the region in generating most of its energy needs through renewable sources.

"In order to reach the goals that we have set, we must draw a clear and thoughtful road map, and employ advanced systems that assist in carbon removal processes, such as supporting the level of energy demand, providing a flexible energy mix, and using carbon capture and storage systems," he explained.

On the role currently played by nogaholding, HH Shaikh Nasser noted that it plays a pivotal role in building strategic partnerships with private and government agencies, which is of paramount importance in accelerating the pace of infrastructure development and optimal utilisation of modern technologies. This, in turn, will contribute to reaching net zero.

Speaking to Reuters, HH Shaikh Nasser said that Bahrain is looking to establish a floating LNG facility to export gas, and plans to develop solar farms to power houses and industries with a view to cutting domestic natural gas consumption.

 An advertisement for Yateem Oxygen Co. W.L.L. The top part shows a large industrial facility with several tall white storage tanks and a building with the company logo and name in Arabic and English. The bottom part is a blue background with white text.

Introducing **Yateem Oxygen Co. W.L.L.**, a Linde company – one of Bahrain's largest manufacturer and supplier of industrial, medical, and specialty gases.

With three operational sites, a dedicated sales showroom for industrial hardgoods and our experts, we are committed to providing quality products and services for our customers.

At Yateem Oxygen, Safety always comes first. Our US Department of Transportation-certified pipeline and hazardous materials safety administration-approved cylinder testing facilities ensure that all our products meet the highest safety standards.

Our extensive portfolio includes a range of cryogenic gases, such as Liquid Oxygen and Liquid Carbon Dioxide, as well as gas cylinders with Oxygen, Nitrogen, or Acetylene.

Additionally, we offer a range of hardgoods, including welding electrodes and consumables, engineering equipment, and services such as nitrogen purging and helium leak detection.

Choose Yateem Oxygen for reliable and safe gas solutions. Contact us today to learn more about our products and services.

www.yateemoxygen.com

“Scraping the barrel” - WoodMac highlights scarcity of “advantaged” barrels

THE ENERGY TRANSITION will require oil and gas for decades to come, but the supply of lower-cost, lower-carbon “advantaged” barrels remain scarce, threatening emissions targets and causing upstream providers to pivot to new strategies, according to “Scraping the Barrel” a new Horizons analysis from Wood Mackenzie.

Wood Mackenzie’s analysis concludes that in terms of overall supply, total discovered and prospective oil and gas resources are more than double projected demand in 2050. However, truly advantaged resources, with low breakeven (resilience to low prices) and emissions (sustainability in scope 1 and 2 terms) are anything but plentiful. Most developed fields have little to offer and only 28% of the resources in commercial undeveloped fields, roughly 49bn barrels of equivalent (boe), are advantaged in terms of breakeven below US\$30 Brent with emissions intensity of less than 20 kgCO₂e/boe.

With few advantaged resources in brownfields and undeveloped fields, exploration could play a key role in locating and increasing this supply.

The industry discovered 22bn boe in new fields between 2012 and 2021, with an average emissions intensity of 16 kgCO₂e/boe, versus the current global average of 23 kgCO₂e/boe (19 kgCO₂e/boe for undeveloped fields), and with a weighted average cost of supply in Brent price terms of just US\$33/bbl.



Image Credit : Adobe Stock

The supply of lower-cost, lower-carbon barrels remains scarce.

Latham added, “We expect high-impact exploration to be an important source of new resource for as long as demand remains at or near our Energy Transition Outlook (ETO) trajectory. Recent results suggest a contribution of around 5-10bn boe of new advantaged barrels a year. Most will be found within energy super basins. Exploration on this scale over the next two decades will add oil and gas supply of around 10-15mn boe a day by 2050.”

Decarbonisation technologies and biofuels could play an even bigger role. Bio-based diesel and aviation fuels from plant-based feedstock could emit

80% less carbon than the crude oil-based products that dominate today’s oil market. Wood Mackenzie projects up to 20mn bpd being possible by 2050.

“This is really a wake-up call for the industry and for the overall energy transition outlook,” said Latham. “These are avenues that help alleviate advantaged supply pressures, but it is definitely going to be an uphill struggle. We are entering an interesting period in the upstream industry. Some companies will double down and hope for less competition in the sector. However, many may begin or accelerate their exit from the sector to pursue low-carbon energies and renewables. If this is the case, security of supply may become threatened, and, unfortunately, we may see companies turning to disadvantaged resources to meet demand.”

Middle East drives offshore growth

THE OFFSHORE OIL and gas sector is set for the highest growth in a decade in the next two years, one of the leading global drivers being the sizable expansion of offshore activities in the Middle East. US\$214bn of new project investments are lined up globally, according to Rystad Energy research, which shows that annual greenfield capital expenditure (capex) will break the US\$100bn threshold in 2023 and in 2024 – the first breach for two straight years since 2012 and 2013.

As global fossil fuel demand remains strong and countries look for carbon-friendly production sources, offshore is back in the spotlight. Offshore activity is expected to account for 68% of all sanctioned conventional hydrocarbons in 2023 and 2024, up from 40% between 2015-2018, before the Covid-19 pandemic and related oil price crash. Offshore developments will make up almost half of all sanctioned projects in the next two years, up from just 29% from 2015-2018.

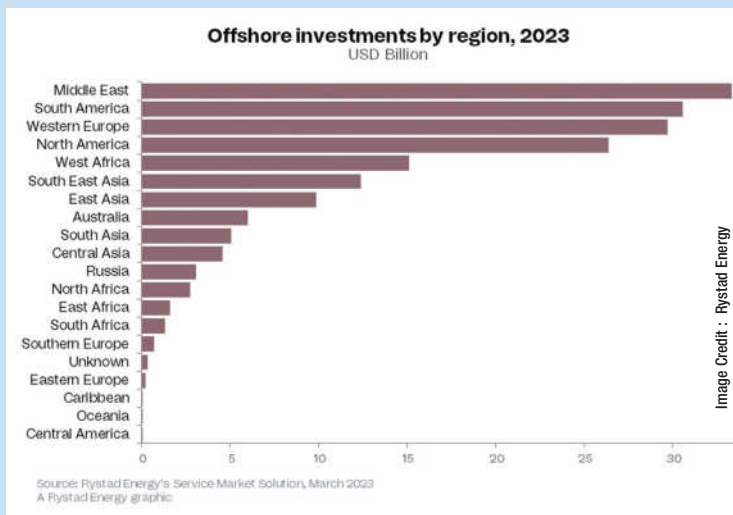


Image Credit : Rystad Energy

These new investments will be a boon for the offshore services market, with supply chain spending to grow 16% in 2023 and 2024, a decade-high year-on-year increase of US\$21bn. Offshore rigs, vessels, subsea and floating production storage and offloading (FPSO) activity are all set to flourish.

For the first time, offshore upstream spending

in the Middle East will surpass all others, lifted by mammoth projects in Saudi Arabia, Qatar and the UAE. The area’s offshore spending growth looks set to continue at least for the next three years, growing from US\$33bn this year to US\$41bn in 2025. These countries are tapping into their vast offshore resources to meet rising global oil demand, backed by the necessary capital and infrastructure to outpace other producers. In long-term forecasts, Middle Eastern growth is set to continue, if not accelerate, according to Rystad.

“Offshore oil and gas production isn’t going anywhere,

and the sector matters now possibly more than ever. As one of the lower carbon-intensive methods of extracting hydrocarbons, offshore operators and service companies should expect a windfall in the coming years as global superpowers try to reduce their carbon footprint while advancing the energy transition,” said Audun Martinsen, head of supply chain research with Rystad Energy.

Diversifying the workforce is key to a successful transition

International Energy Week highlighted the importance of having an educated and diverse workforce to provide the backbone for a successful global energy transition. Leah Kelly reports.



Chris Mahaffey, Petrocare Marine Consultants; Lydia Malley, Energy Institute; Lesley Babb, Ofgem; and Keith Anderson, Scottish Power.

AS THE EYES of the world focus on the energy transition sweeping throughout the industry, it is internally where the true transition is taking place. Workforces are changing amid the global move towards net zero, but the rate at which they are moving could be hindering the transition rather than easing it along.

During the highly anticipated International Energy Week conference, held 28 February – 2 March, 2023 in London, the focus was on the energy transition in the context of the geopolitical and environmental crises facing the energy industry. More than 1,500 participants joined the conference and came together to discuss solutions in the face of industry challenges and present individual findings on the most effective ways to meet global net zero goals by 2050.

People power

One of the key findings presented was the importance of educating the workforce in changing their mind-sets to use their existing knowledge

in oil and gas and moulding it to be able to apply the same skills to the production of renewable energy.

The ‘Bringing Energy Communities Together’ panel of experts discussed the associated challenges presented with transitioning the workforces in ultimately creating the backbone of support for the goal of the transition to net zero. Speakers from Scottish Power, the Energy Institute and Ofgem shared what they believed to be the most poignant and transferable skills the current workforces can bring to the table when the discussion of net zero transition arises, as well as the passion and willingness to combat the effect of global warming present in the younger generations beginning their careers in the industry.

“I think it’s apparent that the global energy transition must be centred on people and their skills, we need so many people to achieve what we’ve set out to do,” said Lydia Malley, head of training, Energy Institute.

“To put some numbers to that, the IEA points to 14mn new clean energy jobs being created globally by 2030, plus 16mn workers shifting to new roles related to clean energy. So the workforce is growing and changing at scale. And we need to attract the right people, and equip them with the right skills to deliver on that transition.”

Emphasis across the energy sector is being put on the acquisition of ‘green jobs’, and what constitutes a green job in the ever-changing

“If we fail on skills, we fail on transition, period.”

landscape the industry finds itself in. Keith Anderson, CEO of Scottish Power, stressed the importance of understanding that green jobs are not just for those skilled in engineering and manufacturing, that instead every single person working within the industry who contributes to the global transition constitutes as having a green job.

“Engineering jobs are incredibly important and they make a large part of it [green jobs], but the mentality we have is everyone within our company is working to net zero. Everybody in our company is working to 100% renewable, which totals 100% of your business.

“It doesn't matter whether there'll be an apprentice, an HR professional or an engineering professional, they have all green jobs, because if you're not helping us maintain 100% renewables and you're helping us get to net zero, then I don't know what you're doing in the company, because there isn't a job in existence that shouldn't be doing that.”

What is apparent is that the future of the global transition to renewables relies heavily on individual workforces, whether that be through re-skilling the current teams, or increasing the talent pool and investing in new hires by tapping into a previously untouched pipeline. One of the key topics of conversation was that of the new talent waiting to enter the industry and prove that diversity within the workforce, covering all manners of different factors, is a key driving point to success.

“We need people from every age group, and from every possible place. Apprenticeships are a fantastic way of recruiting people. We've [Scottish Power] always ran apprenticeship programmes that we're growing, and we're bringing in more apprentices now than probably over our entire history. But, like any organisation, there's a limit to how many apprentices you can bring in at any point in time. So we need skilled engineers as well. We need skilled apprentices and skilled lawyers digital people with digital skills, IT skills as well. We need to recruit them into every entry point,” said Anderson.

Diversifying the workforce

Tapping into those pipelines and recruiting people who have not necessarily been given the opportunity to enter into this industry before is where a lot of attention is currently lying in regards to this topic. The movement to expand diversity within the sector is intertwined with the idea of creating a more educated and reflective workforce that represents the world the transition is trying to save.

Lesley Babb, member of TIDE Taskforce and head of EDI, Ofgem, commented, “I think it's about changing the narrative, that actually equity is about levelling the playing field, it's not about giving someone a bigger slice of the pie. We're still recruiting on merit, we still want the best people for the job, but actually, we need to tap into those pipelines that we haven't seen and actually show the benefits of having



Image Credit : Adobe Stock

Tapping into the previously untouched talent pool is required to ensure a successful transition delivery.

a diverse workforce in terms of innovation and creative thinking, among everything else that we're looking for.

“People need to see people in their own image as well. I look across the energy sector and it is still very male dominated. But what we need to do is get better at promoting energy jobs for everybody so that people can see what a fulfilling career it is, and that it's not just stereotypes of a person that looks a particular way or acts a particular way. Yes, it is a challenge, but what we need to do is give other people the opportunity to get their voices heard.”

“One of the ways that it can attract more people is through connecting to the younger generation's passion for climate change and activism. It is great to see the bigger energy companies bringing in more of a human element to their marketing and communication efforts. But, as the young professionals from our Generation 2050 manifesto made clear, they want to see faster action, and that's the only way we're going to attract them into the industry,” said Malley.

“Tackling diversity in the workforce is an enormous challenge, and we've got lots of work to do there. I'm really proud of the fact the Energy Institute is the home of the Powerful Women initiative, which is helping to shine a light on the better need for female representation in energy boardrooms and across the leadership teams, because it's just not acceptable in today's day and age that almost one quarter of the top UK energy companies have no females on their boards. Because if we're serious about attracting a growing energy workforce, we need to tap into society's diverse talent, not just because it's the right thing to do, but because it makes business sense.

“I think that it's not just in terms of gender either, its ethnicity, nationality, sexuality, neurodiversity, all aspects of society, because diversity of thought and innovation is critical, and only a growing workforce that truly reflects society will be the one that brings about the best mix of technologies and behaviours that we need to tackle the challenges the transition presents.”

Implementing these changes presents a huge challenge, and one that the energy sector needs to stay ahead of if the global transition is going to prove successful for everyone. Having a willing and educated workforce made up of people who are passionate about what they are trying to achieve and encompasses a true reflection on the society we live in, creates a strong foundation moving forward, and builds the backbone for the rest of the world to follow suit. ■

“Diversity of thought and innovation is crucial, and only a growing workforce that truly reflects society will be the one that brings the best mix of technologies that we need to tackle the challenges the transition presents.”

Leveraging Edge Computing

Edge Computing is proving invaluable for offshore oil and gas operations, providing highly reliable compute infrastructure capabilities right at the edge of operations, says Stratus Technologies.

DIGITAL TRANSFORMATION IN oil and gas remains paramount in managing mission-critical operations, enabling operators to gain valuable business insights, improve worker safety, reduce costs, and more. This is especially true for offshore oil and gas production, presenting a unique set of circumstances including – but not limited to – often inhospitable geographically remote locations, 24/7/365 operations, and around-the-clock rotating equipment required to move oil and gas and generate power to simply keep the lights on.

So, where does Edge Computing fit in this digital transformation equation?

Gone are the days of difficult communications and archaic two-way radios. Technology advancements over the years have brought an exciting digital revolution to the oil and gas industry, not only impacting the offshore production setting but also significantly improving the lives of those who leave their families for weeks at a time just to do their jobs. According to McKinsey and Company, “Technology has potential to boost performance across the entire upstream oil and gas value chain by enabling optimisation and automation.”

Many offshore oil and gas organisations have chosen to leverage Edge Computing, providing highly reliable compute infrastructure capabilities right at the edge of operations. This is especially important as many offshore oil and gas companies reside in harsh environments without easy access to IT teams should a problem arise.

Some of the key components that make Edge Computing a trusted ally in digitising the oilfield and to those working in the industry include accurate, real-time data analysis; remote control operation capabilities; new



Edge Computing facilitates real-time data analysis, remote operations and predictive maintenance.

Image Credit: Adobe Stock

levels of reliability and availability; and applications with the ability to predict equipment failures before they happen.

Offshore oil and gas facilities produce an incredible amount of data daily. According to a Cisco report, an oil rig can create 2 terabytes of data in one day, but due to the remote nature of the offshore oil and gas industry, this data is rarely analysed and leveraged for decision making without the support from Edge Computing solutions. In a recent Schneider Electric blog, the reduction of latency is highlighted as one reason many offshore organisations are turning to Edge platforms.

“Excessive latency creates traffic jams that prevent data from filling the network to capacity. The impact of latency on network bandwidth can be temporary (lasting a few seconds) like a traffic light or constant like a single-lane bridge. When Edge Computing is deployed, very few latency issues occur, because the data is analysed locally instead of sent up and back from the cloud.”

With zero-touch Edge Computing, data can be managed in real time, allowing for improved communications, storage and analysis, which in turn can improve business-critical decisions.

With an autonomous Edge Computing solution, those working in offshore oil and gas production have enhanced visibility of operations from a distance – especially with extremely limited support staff and access. Operators require the power of Edge Computing to manage and remotely run

software and equipment continuously. Not only that, but workers can also remotely handle health monitoring, alerting, patching, and issue resolution that would often require IT teams.

In the upstream environment, many high value and mission-critical applications are run with basic IPCs, which do not deliver the level of reliability needed for geographically remote assets. By leveraging zero-touch Edge Computing, organisations find ruggedised fault tolerance, protecting these assets from downtime without the need for IT maintenance and support.

As technology continues to evolve, new analytical tools leveraging the accurate and real-time data provided by Edge Computing platforms are proven to optimise performance and safety. These tools play a key role in improving critical decision-making keeping assets at peak operation conditions. They also raise any concerns or anomalies that may need to be investigated further. This autonomous monitoring system identifies and releases software patches and updates, restores and backs up individual machines, and predicts failures and recovery.

To conclude, the Edge Computing platform is simple to install, deploy, and manage across applications and infrastructure. It protects your physical assets, data and security, reducing both operational and financial risk. It operates autonomously – at the Edge – with constant availability, even in the harshest offshore production environments. ■

Autonomous operations: pathway to sustainability

By investing early in automation, digital and electrification technologies, the oil and gas sector can benefit from reduced carbon emissions, lower costs and safer work environments, according to a recent ABB study. Oil Review Middle East sat down with Johan de Villiers, SVP, Global Energy Accounts, ABB Energy Industries to learn more.

HYDROCARBONS ARE SET to continue to play a significant role in the energy mix for some time to come to meet the growing global energy demand – but they need to be produced with reduced emissions. Automation and electrification technologies can enable the industry to do just that, as de Villiers explains.

“Automation and electrification solutions are some of the foundational technologies enabling energy production, across the full spectrum of energy. And a key sector for us is offshore oil and gas production.

“For offshore oil and gas production, you’ve not only got the challenge of producing energy reliably, but also of keeping people safe and maintaining those offshore assets. So over several decades, we’ve been working at refining our automation solutions and building digital solutions, that can make those installations more reliable, more efficient, and less dependent on people being present in those sites. What’s now changed is that there’s now a very strong drive towards more sustainable operations – something that we can enable with exactly the same technology.”

De Villiers highlights the encouraging results from ABB’s recent report ‘Energy Transition Equation’ for the offshore oil and gas sector. It finds that automation, digitalisation, and electrification technologies that enable autonomous operations can deliver savings of more than 300,000 tons of carbon emissions per annum for an average offshore site, a reduction of around 25%. This is the equivalent of removing 150,000 combustion cars from the road. It also shows how early integration of technology in new autonomous sites (fixed and floating) can deliver production efficiencies, with annual operational savings up to US\$30mn per site.

“The ideal case is where we can build this into the project design right from the start, ie design the platform with a view to it being a low man or unmanned facility, so that everything in the design takes that

“Automation and electrification solutions are some of the foundational technologies enabling energy production.”

Offshore Oil & Gas:
Minimizing emissions on the journey towards autonomous operations

UN target: **Net Zero Emissions by 2050**

Hydrocarbons will be a necessary bridge to a low carbon energy future.

But hydrocarbon production needs to become more sustainable.

The offshore oil and gas sector must strike the right balance.

Global energy demands ↑ Carbon footprint ↓ CO₂

How? | By investing early in automation, digital and electrification technology, the oil and gas sector can:

- Reduce carbon emissions (CO₂)
- Cut costs
- Enable safer work environments

Autonomous oil and gas facilities can improve your carbon footprint.
Based on independent modelling, oil and gas operators could achieve:

320,000+ TONS
Average carbon savings per site per year for offshore facilities

Carbon savings equivalent, averaged across fixed and floating platforms of:

- Removing up to **160,000** passenger cars from the road each year
- Reducing amount of CO₂ responsible for up to **5 billion kg** of glacier mass lost each year
- Powering up to **210,000** homes every year

Better for your financial goals:
Based on independent modelling, oil and gas operators could achieve:

- 30-50%** Average annual operating cost savings
- \$118,500** Average net increase in annual revenues

Better for your workforce:

- Reskill existing workforce
- Redeploy to new, non-hazardous roles onshore
- Deliver better work/life balance

Image Credit: ABB



MENA CONSTRUCTION 4.0 FORUM 2023

24 - 25 MAY | DUBAI - UAE

150+ DELEGATES

30+ EXPERT SPEAKERS

10+ CASE STUDIES

15+ CONSTRUCTION TECH DEMOS

EXPLORE HOW CONSTRUCTION DIGITALISATION IS SET TO TRANSFORM THE FUTURE OF PROJECT DELIVERY

SPEAKERS INCLUDE



AZIZI



DAMAC



EMAAR

energy
institute

شركة القابضة
FAM HOLDING P.S.C

KEO



OMNIUM

Red Sea
Global

SELECT
GROUP

Turner

SOBHA

FOR SPEAKING AND SPONSORSHIP OPPORTUNITIES CONTACT
VINAY NAIR on **+9714 448 9260** or **vinay.nair@alaincharles.com**

into consideration. That's when you get the maximum benefit," explains de Villiers.

"But we can also deploy this technology on existing platforms and get some of the benefits. So we're working on both those cases. And I think we should, because if you look at the challenge we have in reducing emissions, every opportunity needs to be leveraged."

Safety benefits

In addition to the savings and reduction in carbon footprint from the oil and gas production process, the report finds there are several other benefits. De Villiers continues, "One relates to the safety of personnel, a key concern for the oil and gas industry – the fact that you can take people out of those difficult environments. The oil and gas industry has done an incredible job in ensuring safety – but why have people in a difficult, hazardous situation when you don't have to? That's clearly one of the benefits that we see. On top of that, you don't have to transport people backwards and forwards to the platform all the time, which has its own emissions footprint. When you need fewer people permanently on a platform, the platform can be much smaller. And as steel is one of the most carbon intensive products that we have on the planet, the smaller you can make the platform and the less steel you need to use, the lower the embedded carbon footprint in these facilities.

"So these are all very positive and encouraging signs to adopt autonomous operations technology."

What is the state of play with regards to autonomous operations in the Middle East?

"We see interest across the globe, but different geographies have different dynamics," says de Villiers. "In the Middle East, you typically have shallow water. So it's easier to access offshore production facilities, and they are much closer to shore. The platforms are generally not as complex as those in the North Sea, for example, where you have very long distances from shore. In the Middle East, most of these platforms are, to a high degree, autonomous or unmanned already, and they see more to do and further advantages to gain from full autonomous operations. This region is leading, for various reasons."

De Villiers goes on to highlight the key role that electrification can play in reducing emissions from offshore platforms.

"The fundamental issue with oil and gas production is the energy to produce oil and gas," says de Villiers. "In the production process, typically, offshore platforms use gas turbines, because of space constraints – mainly single cycle gas turbines, which are some of the least efficient in terms of carbon footprint. If you can connect these platforms to shore-based power, that is typically cleaner by default, and you then have the opportunity to have that as renewable. Norway, for example, has a lot of hydropower and is leading power from shore connections, removing gas turbines on the platform, and then supplying the platform up to 180 kilometres from shore. We are doing studies with several customers around the world to deploy power from shore, adopting the same technology. And in addition to that, there are some offshore platforms far from shore where customers are looking at integrating renewable energy offshore into the platform. We've just completed a study for a customer where we will integrate floating offshore wind into a floating production platform offshore."

Relocating the workforce

Another benefit of moving to autonomous operations, is that companies can move their workforce from hazardous roles and reskill them to take on new roles onshore, thereby helping to bridge the industry's talent gap and supporting a data-led approach to oil and gas exploration and production.



Image Credit : ABB

Johan de Villiers, SVP, Global Energy Accounts, ABB Energy Industries.

"If you think about safety and wellbeing of individuals, it's a very tough environment to work offshore and be away from your family and from your other interests and hobbies," remarks de Villiers. "There's a clear benefit to have people onshore operating these offshore assets. Another interesting consideration is that it makes the industry more attractive to young people. The industry is desperate for talent in digital and automation technology, and we need to attract more young people. To have a facility like an oil and gas platform operate autonomously, you have to connect and use data in a completely different way. The data that's produced to enable autonomous operations is now made available through robust telecommunication links and so on onshore, so hopefully we can bring in new talent and redeploy talent that will analyse this data and look at how we can improve operations. We have an opportunity, with all this data available, to drive improvements and to do things in a better way. So I see a tremendous opportunity for the workforce, and also for the operators of these platforms. The total profile of talent that this industry would have access to as we drive this change is fantastic.

"One of the advantages I see for ABB as we go through the energy transition, is the way in which process automation and electrical integration are coming together," continues de Villiers. "Energy transition means electrification in many cases. Whether you talk about hydrogen, carbon capture, or improving the efficiency of existing hydrocarbon production, you need process control, electrical control and electrical integration working closer together.

"So when we talk about autonomous operations, we look across this whole spectrum of automation, digitalisation and electrification. That challenges business models; we have very interesting discussions about how these projects are conceived and how they are executed. You don't only want to deploy digital technology in the operations of the client, but also in the project design and engineering. It is when that flows through the entire value chain, from conception of the design through to decommissioning at the end of the life of the project, that you reap the maximum benefits."

De Villiers concludes by commenting that while the ABB study focused on autonomous operations for offshore oil and gas, the same technologies will be deployed in and will enable renewable power generation.

"If you place an offshore wind farm in the middle of the ocean, fixed or floating, you want it to be unmanned by design," he says.

Clearly, automation, digitalisation and electrification technologies have a big role to play in enabling the sustainable production of both today's and tomorrow's energy. ■

“ I see a tremendous opportunity for the workforce.”

The growth of CCS in the **MENA** region

Carbon capture and storage (CCS) can play an important role in climate change mitigation and decarbonisation – and the Middle East has the potential, as well as the ambition, to lead in CCS deployment; in fact the GCC currently accounts for around 10% of the CO₂ captured globally. Oil Review Middle East spoke to Mohammad Abu Zahra, head of MENA at the Global CCS Institute, to find out more.

CCS facilities, Middle East

Facility	Country	Status	Operational date	Industry	Capture capacity (Mtpa CO ₂)	Storage code
Abu Dhabi CCS (Phase 1: Emirates Steel Industries)	UAE	Operational	2016	Iron & steel production	0.8	EOR
Qatar LNG CCS	Qatar	Operational	2019	Natural gas processing	2.2	Dedicated geological storage
Uthmaniyah CO ₂ - EOR Demonstration	Saudi Arabia	Operational	2015	Natural gas processing	0.8	EOR
North Field East Project CCS	Qatar	In construction	2025	Natural gas processing	1	Under evaluation
Abu Dhabi CCS (Phase 2: Natural gas processing plant)	UAE	Advanced development	2025	Natural gas processing	2.3	EOR
Ghasha Concession fields	UAE	Advanced development	2025	Natural gas processing	Under evaluation	Dedicated geological storage

Source: Global CCS Institute

CARBON CAPTURE AND storage captures CO₂ emissions at the source and from the atmosphere, making it a critical tool for addressing the climate crisis. The IPCC and IEA, among others, have outlined a critical role for CCS in achieving net zero emissions by mid-century.

The momentum for CCS is building globally, with 61 new facilities added to the project pipeline in 2022, according to the Global CCS Institute, bringing the current total to 30 CCS projects in operation, 11 under construction and 153 in development. In 2022, the total capacity of CS projects in development was 244mn tonnes per annum of CO₂.

Discussing the role of CCS in mitigating climate change and decarbonising the fossil fuel sector, Mohammad Abu Zahra explains, “We still rely heavily on fossil fuels for power generation and the hard to abate industries, with fossil fuels still accounting for 78% of power generation. Hopefully that will change as more renewable and nuclear and other



Image Credit : Global CCS Institute

Mohammad Abu Zahra, head of MENA, Global CCS Institute.

technologies are deployed in the future, but we are expecting in the coming years to continue to be relying on fossil fuels if not for power, for the hard to abate industries such as steel, cement petrochemicals etc.

“Not only can CCS make a major contribution in decarbonising the power sector, but more importantly it can contribute to cutting emissions for the hard to abate industries such as steel and cement, for example, where CO₂ emissions arise not only from the power generation or heat requirement but from the production process itself. So this justifies the use of CCS as a technology to decarbonise the fossil fuel sector.”

There is no single solution for decarbonisation, he stresses. “We have a whole portfolio of technologies and solutions for reducing emissions – renewables, energy efficiency, alternative materials, nuclear, CCS, hydrogen – we need all of these. The contribution of each of these technologies will vary by industry and geographical location.

A criticism often levelled at carbon capture

is it can be seen as prolonging the use of fossil fuels. How does it tie in with a world moving towards renewables and net zero?

“The questions is, when will fossil fuels be eliminated?” Abu Zahra responds. “If it happens relatively soon, maybe we won’t need fossil fuel-based CCS. But even if we manage to move into renewable energy and electrification rapidly and eliminate fossil fuel power plants, there is still the question of CO₂ emissions from industrial production processes. Finding alternative materials will take time. We need to work on different policies and codes for steel in buildings, which will become a major element of longterm deployment of CCS. So while CCS will fill in the gap until we replace conventional power with renewables, it is still definitely a necessity in the long term for industrial decarbonisation.” He adds, “Furthermore, we will still need CCS or carbon removal to achieve net zero from the emissions we already have in the atmosphere. That leads into the question of direct air capture technology to get us to negative emissions.”

Moving on to the current state of play and potential for CCS in the Middle East, Abu Zahra explains that CCS started a few years ago in the region and has resulted in three large-scale projects in the UAE linked to the steel industry, in Saudi Arabia connected to natural gas, and in Qatar related to LNG.

“These three projects account for around

3.7mn tonnes of CO₂ being captured a year, which is around 8-10% of the current global CO₂ captured capacity,” he notes.

Drivers in the Middle East

So what are the drivers for these projects and the upcoming commitments?

The prevalence of the oil and gas industries in the region is a major factor. “The deployment of CCS often relies on re-purposing infrastructure once used by the oil and gas industry. The region is an oil and gas hub, so it has the potential to become a leader in CCS.” Moreover, the region has extensive experience in CO₂ injection and storage.

The 2050 and 2060 net zero targets and emissions reduction commitments announced by many countries in the region are another factor, Abu Zahra comments, adding that a number of countries, such as Saudi Arabia, the UAE, Bahrain, Egypt, Iraq, and Iran have explicitly included CCS in their nationally determined contribution (NDC) registry maintained by the United Nations Framework Convention on Climate Change (UNFCCC).

“There have been some commitments and targets specifically for CCS in the region. Saudi Aramco published their sustainability report last year, with a target of 11mn tonnes CO₂ captured per annum by 2030, ADNOC has published a target of 5-7mn tonnes by 2030, and Qatar Energy also has a target of around 11mn tonnes by 2030.”

In fact, the MENA region shows a very high potential for CCUS hubs. A recent study conducted by AFRY and GaffneyCline on behalf of the Oil and Gas Climate Initiative (OGCI) found that with current carbon capture facilities, industrial facilities, available natural CO₂ sinks and future plans in the GCC countries, the GCC countries could be a world-class hub for CCS. In addition, CCUS has promising applications across multiple industrial activities in the GCC countries and will play a role in the decarbonisation of hard-to-abate industries. Such hubs could leverage economies of scale involving the shared use of transport and storage infrastructure.

One such example is the CCS hub planned in Jubail, Saudi Arabia, announced in November 2022. Saudi Aramco signed a joint development agreement with SLB and Linde to establish the facility, which will be able to store up 9mn tons of carbon dioxide a year by 2027, with an eventual capacity of 44mn tons of CO₂ by 2035, making it one of the largest planned CCS hubs in the world. Some of the carbon dioxide captured in the hub will be used to maximise production from selected Aramco-operated fields.

“So there is momentum, and serious commitments and projects in the region,” stresses Abu Zahra.

How realistic are the targets set? “I think the targets are realistic, given the

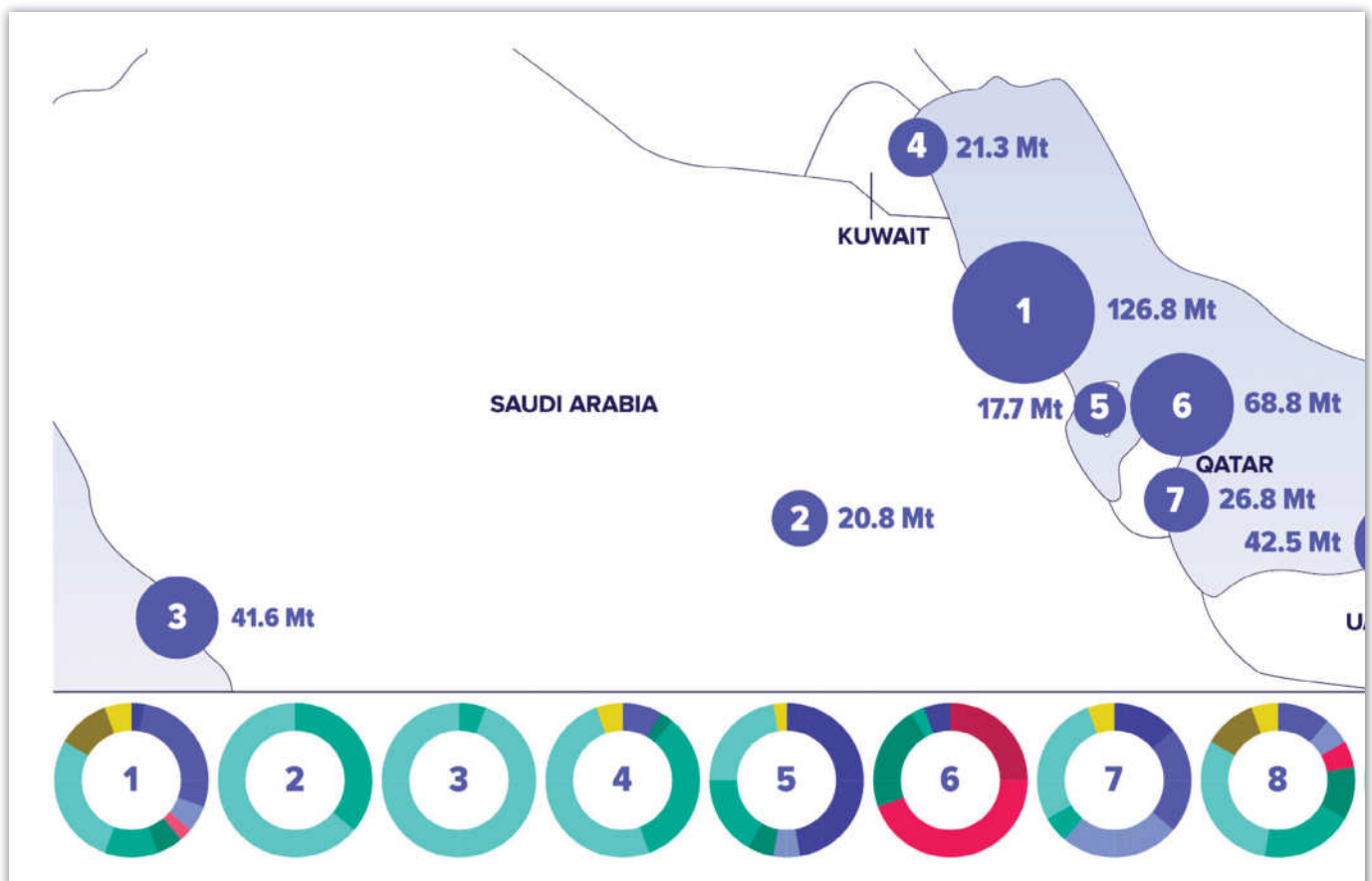


Image Credit : Global CCS Institute

infrastructure potential available to store significant amounts of CO₂ across the energy sector," he says. "There's a stark awareness that CCS is needed to mitigate CO₂ emissions from the oil and gas sector. With the announcements of CCS hubs in the region, that awareness is not just being tied to ambition, but action," he says. "There is also a target to key in CO₂ emissions from others sectors; the steel and cement industries as major sources of CO₂ could be a low hanging fruit for an initial project for carbon capture with a higher concentration of CO₂, so these projects would become cheaper than other sources.

"However, we need to start seeing projects under construction, we need investment decisions to be made promptly and be supported with policy, regulatory frameworks and incentives."

While Saudi Arabia, UAE and Qatar are currently the leaders in CCS, other countries within MENA also offer good potential for major growth in CCS, he comments. "Oman for example has potential with the link with EOR, and the mineralisation of CO₂ has potential in Oman as well as the UAE. In the Mediterranean area, Egypt and Israel offer potential for an industrial CCS hub which could be integrated with the embryonic hydrogen industry and the current natural gas and LNG industries. Other countries, such as Morocco and Algeria, have started to look into a potential link to Europe."

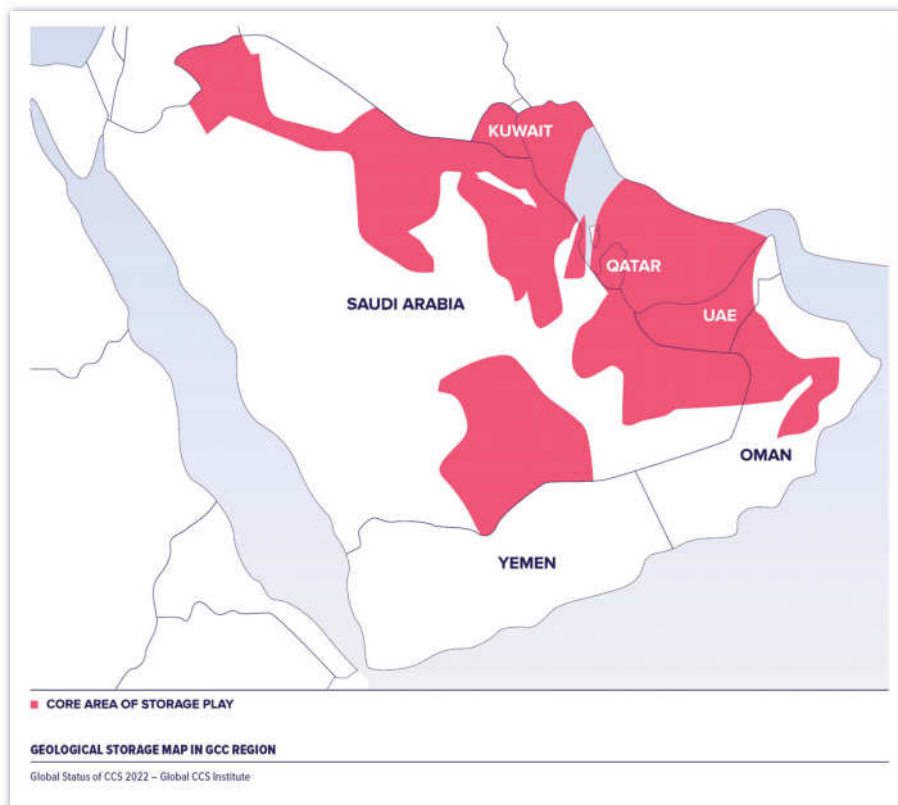
The region's potential to become a low carbon hydrogen hub, with a number of hydrogen projects now in development, also feeds into the CCS growth story.

"CCS is directly connected with blue hydrogen production; without CCS we don't have blue hydrogen," explains Abu Zahra. "They need to go hand in hand and to be established in an integrated industrial hub. The region has great potential for hydrogen; we are seeing every other day major announcements on hydrogen projects, whether green or blue. That will help push CCS technology deployment further if there is a hydrogen market, and if the regional market can achieve its target of contributing 20% of the global hydrogen market. A major part of that should come from natural gas or blue hydrogen, and then CCS will be pushed for larger-scale deployment in the region."

Technology evolution

How does he see CCS technologies evolving?

"We talk about CCS technologies as a chain," says Abu Zahra. "As far as the capture technologies are concerned, many technologies are readily available and have been tested for a long time on a large-scale, so the capture technology is mature and is commercial. What we need is to duplicate more of these plants. The challenge with capture technology is to make it less energy



intensive, and less costly. There are some alternative technologies being demonstrated, looking at alternative materials, and more efficient processes and power cycles. These technologies will bring a reduction in the capture cost.

“The storage of CO₂ still needs more de-risking.”

"As for the transportation of CO₂, by pipelines or ships, CO₂ has been transported by pipelines in the US and other parts of the world for a long time. We need to look at regulating cross-border transportation, particularly if we want to make it easier for those interested in collaborating on CCS projects to do so. The storage of CO₂ still needs more de-risking to build more trust and define long-term availabilities, and long-term monitoring technologies will be required to build trust and confidence. That said, CCS has been around for 50 years and has been proven to reduce a significant amount of industrial emissions. What's needed now, are clear policy and regulatory supports to ensure CCS can play its needed role in the low-carbon transition. The Middle East has exceptional potential to be a leader in the up and coming market, given the ambition exhibited so far."

Clearly it is an exciting time for CCS development, and for the Global CCS Institute, established and mandated to accelerate the large-scale deployment of

CCS. Elaborating on its role, Abu Zahra says, "The Global CCS Institute is a member-based international think tank. We serve more than 185 members globally, ranging from governments, international organisations and major companies from the oil and gas, power and industrial sectors, to small companies and start-ups, services and technology suppliers.

"For our members and the community we provide services relating to the whole supply chain of CCS, from technology assessment, economic assessment, advice, developing policies and regulatory frameworks. We're an accredited observer with the UNFCCC, participating in the COP conferences and climate change negotiations and discussions. We submit our input with other NGOs on the global stocktakes and how decarbonisation needs to move forward, and part of that decarbonisation is CCS.

"So we are building a community globally, we advocate for CCS and other decarbonisation options and provide the necessary support for government and industry in defining the challenges and how to resolve them."

For the MENA region it is an active time, with COP27 having taken place in Egypt and COP28 taking place in the UAE in November.

"The level of discussions around CCS and hydrogen at events such as ADIPEC and Abu Dhabi Sustainability Week, and upcoming events, shows the great momentum in the region for these two industries," he concludes. "We're looking to see more CCS deployment in the coming years." ■

Addressing CCUS flow management challenges

Dr Chris Mills, senior consultant engineer at TÜV SÜD National Engineering Laboratory, discusses carbon capture, utilisation and storage flow measurement challenges, the selection of the most appropriate flow meter technology and the importance of developing comprehensive regulations and standards to underpin the successful implementation of CCUS.

AT EACH STAGE in the Carbon Capture, Utilisation and Storage (CCUS) infrastructure, accurate measurement of the carbon dioxide (CO₂) flow rate is required. These measurements can occur over a range of temperatures, pressures, flow rates and fluid phases, and must be validated through a credible traceability chain.

The traceability chain provides the underpinning confidence required to verify meter performance, financial and fiscal transactions, and environmental compliance. Unfortunately, there is currently a lack of

traceable gas CO₂ and liquid CO₂ flow measurement facilities and associated flow measurement standards, which is a significant barrier to the successful implementation of CCUS projects worldwide.

Fluid properties of CO₂

Carbon dioxide is a fairly unique fluid, and its properties present several measurement challenges. At ambient temperature and pressure, CO₂ is in a gaseous state and its flow measurement is relatively straightforward. However, above the critical point of 31.1 C, and 73.9 bar CO₂ becomes supercritical,



Image Credit : TÜV SÜD National Engineering Laboratory

Dr Chris Mills, senior consultant engineer at TÜV SÜD National Engineering Laboratory.

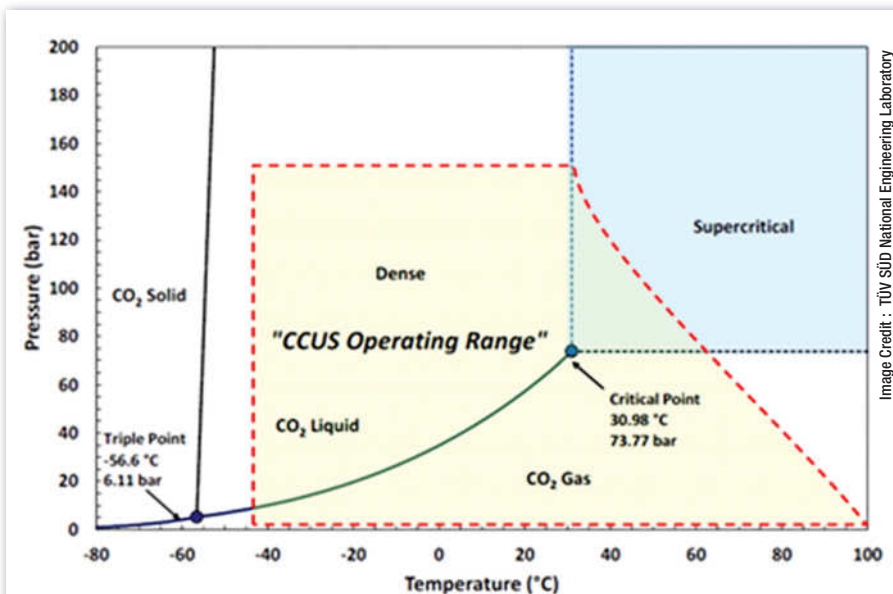


FIGURE 1 PURE CO₂ PHASE DIAGRAM ("CCUS OPERATING RANGE" HIGHLIGHTED IN YELLOW)

“Carbon dioxide is a fairly unique fluid, and its properties present several measurement challenges.”

exhibiting properties which are hybrid between gas and liquid.

Operating near the critical point can present significant technical challenges as small changes in temperature and pressure may result in large changes in fluid properties. The phase diagram for CO₂ and the anticipated operating range for the CCUS chain are shown in Figure 1. Each of the four phases may present different measurement challenges and maintaining the desired fluid phase may also be problematic.

The possibility of phase change is further exacerbated by the likelihood of impurities being present in the CO₂ stream, which may cause significant shifts in phase boundaries, the critical point, and specifically the two-

Image Credit : TÜV SÜD National Engineering Laboratory

phase region. Traces of impurities may also influence the density and compressibility of the process stream. Thus, CO₂ streams across the CCUS chain will require careful modelling and regular sampling to ensure the desired operating conditions and/or fluid phase are maintained.

Flow meters for CCUS applications

Orifice meters have been used for measuring CO₂ injection in a variety of Enhanced Oil Recovery (EOR) projects. Orifice meters are also widely used for single phase gas flow and liquid flow applications. If the fluid properties are accurately known, then orifice meters may provide low flow measurement uncertainty. At the time of writing, no published claims have been made for orifice plate flow measurement performance with supercritical CO₂. However, if the composition, density, and viscosity are known, it is possible that orifice meters might be suitable across the CCUS chain, the only issue being the lack of traceable flow data.

Turbine flow meters are still one of the most commonly used flow meters for low uncertainty measurement of high value liquids and gases. They have been used extensively for measuring both liquid and supercritical CO₂ flow in pipelines and have also been used for CCUS EOR applications.

There is not sufficient data for ultrasonic meters (USM) in CO₂ gas applications due to ultrasound signal attenuation. As the density can vary significantly in supercritical CO₂, the ultrasonic transducer frequency required to maximise the signal might extend beyond the USM's frequency. Furthermore, the flow profile is important for a USM and requires adequate corrections, which are dependent on the density and viscosity of the fluid. Despite these difficulties, recent developments in transit-time USMs have shown potential for providing a low measurement uncertainty system for CCUS, but further research is required.

Coriolis mass flow meters can be utilised for nearly all types of flow applications and show significant potential for CO₂ processes as the devices should be able to operate across the full range of phase conditions in CCUS applications

In all cases, the selection of the most appropriate flow meter technology must be complimented by appropriate calibration and operation, which in turn requires appropriate test and calibration facilities, best practice guidance, and regulations.

International CCUS regulations

The International Energy Agency (IEA) has repeatedly stated the need for clear legal and regulatory frameworks to underpin the successful implementation of CCUS. Its Model Regulatory Framework document disseminates best practice for the development of CCUS



Image Credit: Adobe Stock

Flow measurement will play a fundamental role in CCUS schemes.

legal and regulatory frameworks.

Some of the main drivers for improved traceability, R&D investment, reduced measurement uncertainty and flow measurement innovation are regulations and international standards. While CCUS has been a focus of policy development for several decades, legal requirements remain limited and vary around the world.

At the time of writing, there are approximately 30 commercial CCUS schemes operating in nine countries. In the Middle East, there are currently three CCUS schemes in operation and one in development. These schemes are Enhanced Oil Recovery (EOR) operations and sequester the captured CO₂ into the reservoir to increase hydrocarbon production.

“ Legal requirements remain limited and vary around the world.”

The majority of the CCUS schemes are located in the USA. The USA is therefore at the forefront of international CCUS efforts. Recent CCUS legislation enables US taxpayers to elect to receive a payment in lieu of the tax credits for carbon dioxide sequestration. However, at present there are no stipulations on the measurement uncertainty required.

There are two main European regulative frameworks. The CCS Directive concerns CO₂ geological storage and creates a legal framework for the safe and environmentally sound sequestration of CO₂ to enable the reduction in anthropogenic carbon dioxide emissions. The Emissions Trading System (ETS) specifies a maximum uncertainty value for CO₂ flow measurement.

Meanwhile, the Global CCS Institute has commented that China's lack of a regulatory framework for CCUS, alongside its 'Five-year Plan' for CCUS policy is "a key barrier for large-scale CCUS deployment." No measurement uncertainty stipulations have been published at present and, at current emission rates, China has storage potential for more than 40 years of emissions.

According to the IEA, appropriate guidelines and regulations on CCUS implementation in Southeast Asia and the Middle East have still to be developed.

Flow measurement will play a fundamental role in CCUS schemes. Developing comprehensive regulations, standards, and a detailed traceability chain will be pivotal in ensuring the successful deployment of CCUS systems worldwide. Investment is required from governments, funding agencies and industry to ensure that the underpinning science for flow measurement of CO₂ on a global scale is provided. ■

TÜV SÜD National Engineering Laboratory is a global centre of excellence for flow measurement and fluid flow systems and is the UK's National Measurement Institute for Flow Measurement. As an international technology services organisation and provider of pipeline fluid management services to the global petroleum industry, the company has an impressive track record in the development, design and application of new technologies.

TUV SUD National Engineering Laboratory is a trading name of TUV SUD Ltd, a company of the TÜV SÜD Group, an international service organisation.

www.tuvsud.com/en-gb/nel
www.tuvsud.com/en-gb/industries/clean-energy/carbon-capture-usage-and-storage

The advantages of deploying flexible composite pipes in deep- and ultra-deep-water applications could drive growth in the thermoplastic pipe industry.

Image Credit - Adobe Stock

The growth in demand for thermoplastic pipe

The thermoplastic pipe market is growing, and local production in the Middle East is on the rise.

THE THERMOPLASTIC PIPE market is forecast to grow at a rate of 4.5% during 2022-2032 to reach an estimated valuation of US\$8.5bn by 2032, from US\$2.5bn in 2021, according to a new report from Future Market Insights.

"An increase in the number of applications for thermoplastic pipes with enhanced features leads to market expansion," comments the report, *Thermoplastic Pipe Market Outlook 2022-2032*.

The flexibility of the pipes, which may be transported to the site in long coils, and the possibility of using no-dig technology to install them aid in eliminating jointing and traffic interruption. The advantages of deploying flexible composite pipes in deep- and ultra-deep-water applications are also expected to drive growth in the thermoplastic pipe industry.

Other significant aspects projected to drive demand for the market over the forecast period include more acceptance of thermoplastic materials in engineering processes and large diameter pipe applications. The thermoplastic pipe market is also likely to benefit from increasing the number of horizontal wells used in oil and gas activities, says the report. However, it does note the relatively high raw material and fabrication costs.

Stroh, the Netherland-based leading producer of Thermoplastic Composite Pipes (TCP), has completed a plant expansion in The Netherlands, as it sets out to accelerate

growth and support the energy transition.

The expansion is the biggest capital investment the company has undertaken since originally setting up its facility. With this investment, Strohm triples its capacity for production to 140km of normalised pipe per annum, allowing it to better support existing and future contracts, with plans to increase the capacity even further after implementing current efficiency gains.

“The thermoplastic pipe market is forecast to grow at a rate of 4.5% during 2022-2032.”

The company's plant now boasts a production environment equipped with a dedicated production line for research and development; extrusion line for liner, coating and weight coating materials; and two large production lines using state of the art, composite tape winding and proprietary melt fusion technology. The company is looking to expand its TCP solutions to offshore green hydrogen and carbon capture and utilisation and storage (CCUS) markets, while continuing to support its current clients towards their net-zero goals.

TCP is a strong, non-corrosive, spoolable,

lightweight technology which is delivered in long lengths, resulting in a significant reduction of transportation and installation costs. It is installed using small vessels or subsea pallets, significantly reducing CO₂ emissions. It is also 100% recyclable. It does not fatigue or suffer from issues associated with using steel pipe for hydrogen, such as embrittlement.

Non-metallics growth in the Middle East

In the Middle East, with the prevalence of H₂S and increased use of corrosive fluids in EOR operations, non-metallics are gaining in popularity due to their corrosion resistance and ability to withstand harsh environments, and local manufacture of these products is encouraged.

In early 2022, Future Pipe Industries, a leader in composite piping solutions, extended its manufacturing facility in Dammam, Saudi Arabia by adding two new production lines of Flexstrong – High Pressure Spoolable Pipe, with diameter up to six inches. The facility can now produce an additional capacity of 600 km per year. Flexstrong is a spoolable, non-corrosive, fully bonded Reinforced Thermo-Plastic (RTP) pipe. It combines a thermo-plastic High-Density Polyethylene (HDPE) liner, reinforced by a helically wrapped tape containing continuous fibre (uni-directional) in a HDPE matrix, and protected by a thermo-plastic

outer coating. All three layers are melt-fused together, ensuring a faultless bond. This results in a very robust, flexible light and corrosion resistant pipe. It is fully bonded and resists permeation and liner collapse, making it an effective solution for highly corrosive oil and gas applications. Future Pipe – Saudi Arabia received an award from Saudi Aramco at the 2022 Local Manufacturers Quality Excellence Awards in December 2022, for its commitment to continuous improvement and quality management system implementation, as well as efforts to achieve zero non-conformities and zero rework.



Image Credit : Soluforce

“ This collaboration will play a prominent role in ADNOC’s non-metallic initiatives.”

SoluForce, technological leader in development and production of long length Reinforced Thermoplastic Pipes, which has more than 3,500 km of SoluForce RTP installed around the world, signed a strategic

SoluForce is the technological leader in manufacturing Spoolable Flexible Composite Pipes (FCP), also known as Reinforced Thermoplastic Pipes (RTP).

collaboration agreement with ADNOC in June 2022 to set up local manufacturing facility for reinforced thermoplastic pipes and non-metallic solutions. This collaboration will play a prominent role in ADNOC’s non-metallic initiatives, and strives to contribute to lowering their TCO, lowering their carbon footprint and accelerating increasing production capacity.

SoluForce pipes are built out of three

layers: a liner pipe made from HDPE (High-density Polyethylene), a reinforcement layer and a HDPE outer cover layer. SoluForce Gas Tight features an additional aluminium layer to prevent permeation of light components.

The SoluForce FCP system has additional benefit of being completely bonded, with all the layers bonded together to form one strong unit. ■

شركة الرشيد درسر للأجهزة والصمامات المحدودة
Dresser Al Rushaid Valve & Instrument Co. Ltd



NB, UV and VR certified 'safety relief valve'
Manufacturer and repair centre in KSA

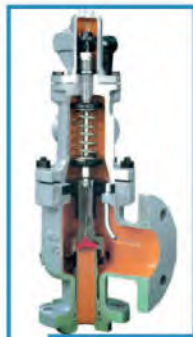


ISO 9001 - 2015 CERTIFIED



ASME CERTIFIED

• Control Equipment
Largest manufacturer of
Valves, Instruments,
Transmitters and Regulators
in Saudi Arabia



Consolidated
a Baker Hughes business
Safety Relief Valve

Masoneilan
a Baker Hughes business
Control Valve

P.O. Box 10145, Tareeg 124, Jubail Industrial City 31961, Kingdom of Saudi Arabia

Tel: +966 13 3410278, Fax: +966 13 3417624

Branch: P.O. Box 70, Tareeg 3, Yanbu Industrial City. Tel: +966 14 3573777, Fax: +966 14 3571234

Email: sales@darvico.net – www.darvico.com

Non-intrusive leak detection for pipelines

From corrosion to pipeline theft, there are many risks to pipeline operations in the Middle East which if left unaddressed, can worsen the impact of a leak. Kaidy Kho, Atmos International's vice president of business development for the Middle East looks at how non-intrusive leak detection solutions can reduce a leak's impacts in this region and improve pipeline operations.

WHEN IT COMES to transporting any gas or liquid, there will always be debate over the safest option. In the Middle East, this debate recently resurfaced in relation to tankers versus pipelines. Conversations around adjusting fuel export routes to bypass the Strait of Hormuz have found that pipelines carry less risks than shipping via tankers.

Commitment in the Middle East to pipelines as the preferred mode of fuel transportation can also be seen in some countries' planned oil and gas transmission pipeline length additions. For example, Saudi Arabia has seven planned and announced pipelines between 2022 and 2026 totalling 1,559 km of additional pipeline. Likewise, Qatar has the installation of several pipelines over 250 km planned to increase their liquefied natural gas output. While pipelines continue to be the safest and most preferred means of fuel transportation in the Middle East, they are not without their challenges, so a leak detection system is vital to reduce the consequences of a leak.

The inevitability of corrosion

Corrosion on a pipeline is the equivalent of what wrinkles signify: the inevitable sign of ageing. Corrosion is the gradual degradation of metal, and while pipelines with outdated infrastructure are more susceptible to the environmental properties of soil, air and water, that can cause and accelerate corrosion, there isn't a pipeline in existence which can escape the process itself. The annual cost of corrosion globally is thought to have totaled more than US\$60bn in the past few years, and it is one of the leading causes of pipeline leaks.

As well as being a naturally occurring process, corrosion can be caused by a range of other factors. For example, some points on a liquid pipeline are more vulnerable to over-pressure, meaning there is a risk that the maximum allowable operating pressure



Atmos Eclipse installed on a customer's pipeline.

Image Credit : Atmos

(MAOP) could be exceeded or under-pressure, which is when the lowest allowable operating pressure (LAOP) is reached. Both pressure violations have the potential to cause a leak, but LAOP in particular presents a risk of corrosion when vapour bubbles form inside the pipeline through a process called column separation. If the bubbles collapse, they can emit shockwaves throughout the pipeline, and over time this recurring event can cause corrosion.

Pipelines experiencing corrosion, or which are at risk of corrosion, have an increased likelihood of leak or rupture, which can cause

collateral damage to the environment and human, animal and plant life if the pipeline runs through a high consequence area (HCA). Fines and clean-up costs for leaked product can end up costing more than the lost product itself, and a pipeline company's reputation can also suffer. Corrosion on pipelines in the Middle East is inevitable, which is why leak detection is crucial.

Non-intrusive leak detection solutions are best suited to pipelines at risk of or experiencing corrosion because they can be retrofitted to the pipeline without the risk of damaging the pipeline's integrity further. For example, Atmos Eclipse has a clamp-on design which removes the need to drill, weld or cut the pipeline for tapping points (see Figure 1) while still being able to measure flow, pressure and temperature data for detecting leaks.

“ Pipelines experiencing corrosion have an increased likelihood of leak or rupture.”

Oil pipelines and security of supply

Another challenge facing Middle Eastern pipelines involves sustaining the supply of

crude oil. At one point, the Middle East and North Africa regions made up 50% of global oil reserves. Increase in demand and rising prices for oil have brought significant economic growth to the Middle East via their oil pipelines.

But now, there is a risk to the security of supply of oil from the Middle East when climate change and decarbonisation are considered. Paired with the fact that considerable investment is required from the Middle East to meet its reduction in carbon emissions targets, the implementation of a non-intrusive leak detection solution has never been more useful, because it can help ensure the amount of product lost is reduced to a minimum when a leak occurs, and environmental standards are less likely to be violated.

“ Many of the region’s pipelines pass through a remote location at some point in their journey.”

Remote power to remote locations

Because more than 80% of the Middle East is desert, many of the region’s pipelines pass through a remote location at some point in their journey. For example, Abu Dhabi’s Habshan-Fujairah Pipeline is a crude oil pipeline spanning 380 km and travels through deserts and mountains before reaching the Gulf of Oman.

Many challenges can impact pipelines running through remote locations too, making leak detection an essential solution. For example, performing site visits for a pipeline in the Middle Eastern desert can be a dangerous and costly process if done regularly, and the effects of Covid-19 have resulted in reduced staff numbers when it comes to pipeline operations, so there is now a need for pipelines in remote locations to be monitored with effective remote operations.

Non-intrusive instrumentation such as Atmos Eclipse benefits areas with limited power or communications because it can be powered by wind and solar energy for zero downtime. It has a flash memory available in case of power outages too, making it ideal for use on pipelines with power supply challenges at their installation site.



Image Credit : Atmos

A selection of tapping points located by Atmos Odin in Congo.

Pipeline theft

With the price of fuel being affordable in some Middle Eastern countries and not in others, this presents a risk of pipeline theft because thieves are known to see an oil pipeline as a theft opportunity that can feed their ongoing fuel smuggling or other criminal operations.

To detect pipeline theft while remaining inconspicuous, self-contained data acquisition units such as Atmos Odin can be installed to identify and locate even the tiniest leaks while being easily concealed due to their size.



Go green.
Go Boldly™

Emerson’s reliable fluid and pressure control technologies provide scalable solutions while maximizing safety and efficiency in your green hydrogen applications.

Learn more at [Emerson.com/Hydrogen-Production](https://emerson.com/hydrogen-production)



TotalEnergies Marketing Belgium: a case study

Atmos Eclipse can be buried to a depth of two metres, reducing the likelihood of it being spotted by pipeline thieves. It was recently used by TotalEnergies Marketing Belgium to detect more than 12 separate theft events on their multi-product pipeline.¹³

The customer's pipeline network spans more than 100 km and transports diesel, gasoline, heating oil and jet fuel. A challenge the customer faced was that they needed a theft detection solution but intrusive pressure transmitters were not compatible at some of the locations on their pipelines and presented

a risk to the pipelines' integrity.

They opted for Atmos Eclipse because of its clamp-on design, ability to be easily retrofitted and compatibility with pipelines up to 24 inches in diameter.

Atmos Eclipse supported their multi-method theft detection solution to detect more than 12 theft events and support their ongoing commitment to safe operations.

Non-intrusive leak detection is the future of pipeline operations

Pipeline operations in the Middle East can only be effective when they mitigate as much risk as possible. Although many leak detection options

are available to pipelines running through this region, non-intrusive leak detection instrumentation is typically less expensive, can be easily installed to operational pipelines and is proven to support leak detection and theft detection systems to deliver high sensitivity, high location accuracy and short response times, all the while minimising false alarm rates. ■

https://www.atmosi.com/en/solutions/leak-detection/?utm_source=PR&utm_medium=ORME+Feb+2023&utm_campaign=How+non-intrusive+leak+detection+can+improve+pipeline+operations+in+the+Middle+East&utm_content=Editorial

DNV to launch second phase of offshore hydrogen pipelines JIP

DNV IS LAUNCHING the second phase of H2Pipe, a joint industry project (JIP) aiming to develop a new code for the design, re-qualification, construction and operation of offshore pipelines to transport hydrogen – either pure or blended with natural gas

DNV's Hydrogen Forecast to 2050 anticipates that more than 50% of hydrogen pipelines globally (and as much as 80% in some regions) will be repurposed from existing natural gas pipeline networks, as it is expected to cost less than 35% of new builds.

Industry players are exploring ways of transporting hydrogen as an additive or replacement for natural gas, but currently, offshore pipeline codes insufficiently cover the transport of hydrogen or hydrogen blends by offshore pipelines. A special concern in this respect is the potential detrimental influence of hydrogen on resistance to cracking in carbon steels. To support the uptake of hydrogen as an energy carrier, it is imperative to update the standard, to reach design and material requirements that do not compromise pipeline integrity and safety.

Phase 2 of H2Pipe is planned to start in Q1 2023 and last two years. It will consist of a comprehensive experimental test programme to enhance the understanding of the governing hydrogen embrittlement mechanisms and how hydrogen affects the integrity of the line pipe material. In addition to the experimental test campaign, Phase 2 will also include tasks such as a feasibility level design of offshore hydrogen pipelines and a risk assessment study to look at safety aspects of offshore hydrogen pipelines. The primary outcome of Phase 2 of the JIP is expected to be a detailed guideline offering specific guidance for use in design and re-purposing of offshore pipelines for hydrogen transport.

Saipem's new pipeline repair technology achieves DNV qualification

SAIPEM'S GRIP & Metal Seal Connector, a patented technology for subsea pipeline repair, has received the Statement of Qualified Technology for sour service applications from DNV.

The Grip & Metal Seal Connector has been developed by Sonsub, Saipem's centre of excellence for underwater technologies, automation and digital solutions. It is a unique diver/diverless solution for pipeline repair interventions as well as for pipeline ties at a water depth of up to 2,000 m. The technology has been specifically developed for clad/lined pipelines with highly corrosive fluids and can also be used on carbon steel pipes with corrosion allowance. Its key features, including permanent repair, restoration of the pipe's full structural integrity, no internal diameter reduction, a lightweight design and the ability to manage pipelines with multiple wall thicknesses, are characteristics not available in any other commercial product on the market.

A full-scale test programme on a prototype connector is presently underway in accordance with DNVGL-RP-F113, the recommended practice for subsea pipeline repairs. Upon completion of this programme, a DNV type approval certification will be issued, thus allowing Sonsub to commercialise the Grip & Metal Seal Connector in key prospective areas, primarily in the Eastern Mediterranean Sea, Black Sea and the Middle East.



Sonsub is looking to commercialise the Grip & Metal Seal Connector in the Eastern Mediterranean Sea, Black Sea and the Middle East.

Image Credit : Saipem

Crack assessment methods for pipelines

THROUGH THE YEARS, a number of methods have been used to assess the significance of crack-like defects in pipelines. Some methods have been developed from first principles and fracture mechanics, but other, more empirical methods have been developed to better account for observable complex mechanisms.

In an article on its website, Rosen examines the different methods currently available and outlines the underlying assumptions upon which each method relies, to help readers select the most appropriate method to assess their pipeline.

It concludes that one method is not necessarily "better" than another. Each method has its advantages and disadvantages, which may depend on the particular material and type of crack. Constrained by the data available and the set of assumptions made, a decision choosing one method over the other is eventually made. If time-dependent growth is to be considered, further complexities and considerations are required for the assessment of crack-like anomalies in a pipeline. It is good practice to always seek expert advice prior to assessing crack-like anomalies, to ensure that the most appropriate method is chosen and the inputs used are the most suitable for that method.

<https://www.rosen-group.com/global/company/insight/news/2022/Decisions-Which-Choice-to-Make.html>

The drive for energy efficiency in compressors

Energy efficiency is at the top of the agenda for compressor operators as energy costs rocket – and this plays into ESG considerations too.

OPERATORS IN THE industrial and process industries are experiencing substantial increases in electricity prices, and many customers are looking for new ways to lower the impact of their compressed air energy consumption and mitigate for further price increases.

Leading compressor manufacturer CompAir estimates that with the global rise in electricity prices, the energy costs of compressed air have increased to as much as 91% of the total cost of ownership, with the result that customers now need to re-evaluate the way they assess their compressed air energy costs.

"Total running costs over the last 10 years for a 160-kW compressor have more than doubled. Put simply, for every 100,000 Euros spent on compressed air previously, around

82,000 Euros of this was the energy costs. Now, this figure has risen to 91,000 Euros – with energy costs doubling in the last two years alone," says Graham Read, product manager Industrial Compressors Europe at CompAir.

"Many customers are talking to us about how they can future-proof their compressed

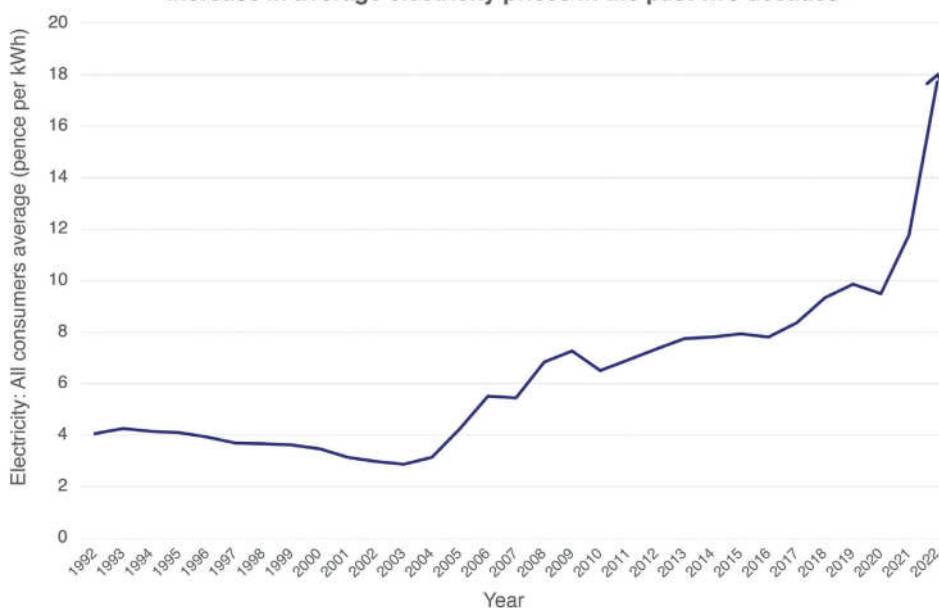
air installation to help mitigate any further price increases."

High-performing energy-efficient compressors can help bring down energy costs, while reducing emissions. CompAir's new L160e, 200e and 250e kW FourCore compressor range, for example, offers all the capabilities of an oil-lubricated two-stage compressor with the footprint of a single-stage unit. The compact, two-stage airend uses four gears rather than three, to deliver flexible rotor speed adjustment at both low and high pressure, as well as the best possible performance at different discharge pressures and shaft speeds. When compared with previous single-stage compressors in the size range, the new models are up to 8% more efficient, saving up to 12,000 Euros a

“High-performing energy-efficient compressors can help bring down energy costs, while reducing emissions.”



Increase in average electricity prices in the past two decades



The same rise in energy prices in one year as in the previous ten years!



Some customers paying as much as 30 pence (35 Euros) per kWh

year. The range also offers integrated heat recovery, enabling the heat generated from the compressor to be re-purposed to heat water, for space heating, or for application processes in other areas of the installation.

"While not every site will have the available capital expenditure to invest in a new energy-efficient compressor, significant savings can still be made by adopting a 'measure, manage and improve' approach," says Read. He adds, "By understanding how the cost of ownership balance has shifted, and adopting a system-based approach, customers can achieve rapid payback on any investment made."

Compair offers an air assessment service which looks at all aspects of a compressed air system's performance, including power and flow data, pressure measurements, leak detection and heat recovery. Using data logging, precise measurements are taken to give a comprehensive overview of energy performance. Suggestions can then be made on potential equipment upgrade or investment through to simple equipment optimisation and low-cost elements, such as fixing leaks, reducing pressure and switching off compressors when not in use.

Compressor manufacturer FS-Elliott estimates that in the case of a 500HP compressor system, a 3% efficiency improvement could equate to an 11kW power reduction, saving almost US\$12,000 yearly in net profits, and reducing carbon dioxide emissions by up to 69,080 kg.

As the company points out, "Energy saving is more than saving money for factory operations, it is also about protecting, sustaining, and contributing to a better environment for us and our society. Environmental, Social, and Governance (ESG) initiatives are more critical in today's daily production activities than before."

According to FS-Elliott, studies have concluded that industrial plants waste around 30% of compressed air. Many different factors

can contribute to this. Clogged air filters can cause pressure drops or higher pressures, which turn into costly wasted energy. Random leaks in air delivery can generate false artificial demand and create more wasted energy.

FS Elliott suggests that air end rerates are the most economical and efficient way to offer new operating conditions, while an air end derate is another energy-saving option when an air compressor is too large for a specific application.

Condensate drains which remove moisture (condensate) from intercoolers and aftercoolers prevent over-draining and under-draining, preserving your system pressure and stopping wasted compressed air.

“ Studies have concluded that industrial plants waste around 30% of compressed air.”

The right control panel for your air compressor will make it easy to monitor the compressor, and adjust settings when needed, FS-Elliott adds.

For example, FS-Elliott's Regulus line of control panels, including the R1000, R2000, and R400, offer precise air system pressure control, maximised turndown capability, advanced adaptive control permits, protected operations for surges, built-in control modes that adapt to changing conditions, and multiple compressor energy management.

The R2000 offers the Energy Advisor and Maintenance Notification System as standard features. The Energy Advisor allows the user to monitor the efficiency level of their compressor operation and provides recommendations for improved efficiency.

Compressor manufacturers are increasingly

offering digital solutions for remote monitoring, providing full visibility of systems in real time and thus facilitating performance optimisation and energy savings. In August 2022, FS-Elliott announced the launch of FS-Connect, a 4G web-based connection designed to provide visibility of the operation status, performance compressor activity, and remote troubleshooting support. FS-Connect provides a live report of compressor status, including operational and maintenance notifications, monthly summary reports, and monitoring pressure/vibration/temperature. It also provides maintenance tracking and energy-saving recommendations.

"We believe that this new remote monitoring solution can be a powerful addition to any of FS-Elliott's Regulus Control Panels, as it provides our users the ability to not only monitor the operational status of their compressed air system but will also help improve efficiency and compressor uptime through remote notifications and reporting. As an addition to FS-Connect, we are also excited that the FS-Connected Services option will provide a new level of service offerings to FS-Connect users, helping them troubleshoot on-site issues in a productive and timely manner," said Justin Johnson, product manager, Controls at FS-Elliott.

Similarly, Compair's i-Conn digital cloud platform supplies compressed air users with comprehensive machine data in real time, which is required for precise production planning and to protect their investment. It enables service teams to monitor the compressed air system remotely and predict when maintenance or service is required, to avoid the likelihood of any equipment downtime. ■

For further information see:
<https://www.compair.com/en-gb/sustainable-compressed-air>
<https://www.fs-elliott.com/Blog-Item-The-Importance-of-Energy-Efficiency>

Operators in the industrial and process industries are looking for new ways to lower the impact of their compressed air energy consumption and mitigate further price increases.



Image Credit : Adobe Stock

Revamp optimises energy efficiency and reduces emissions

IN A CASE study on its website, Burckhardt Compression describes how a customer, a global chemicals company, experienced optimised energy efficiency and fewer emissions after a compressor revamp. The company was operating two vertical process gas compressors at its petrochemical plant, and was experiencing high leakages, reduced gas flow, temperature issues and a very short lifetime of wear parts, leading to frequent compressor shutdowns and wasteful energy consumption.

Burckhardt Compression conducted a detailed system integrity analysis, which showed that the cylinder liner was damaged due to inappropriate piston ring material. Burckhardt Compression's solution involved the upgrade of piston/packing rings to Persisto 850, a material specially developed for sealing applications in dry-running reciprocating compressors. The piston rod was repaired and packing and other components refurbished at Burckhardt Compression's local service centre.

"Burckhardt Compression's solution with the right selection of material helped us to increase compressor availability significantly," said the customer. "Thanks to their analysis, we now better understand the component failure modes. Our second compressor, which was plagued by the same issues, is now being revamped by Burckhardt Compression, too."

https://www.burckhardtcompression.com/wp-content/uploads/2022/11/315_Success_Story_Revamp_Energy_Efficiency.pdf

CompAir introduces new DX series

COMPAIR HAS LAUNCHED the DX series range of oil-free screw compressors, which it says offers the lowest total cost of ownership on the market, with up to 8% higher flow rates, up to 7% energy reduction and guaranteed air purity. Available in both fixed and variable speed, with models ranging from 200 kW up to 355 kW, the new compressor range offers both air and water-cooled variants.

A completely redesigned air end delivers up to 8% better efficiency and improved flow. The optimised radial inlet design reduces pressure drop across the package, while cooling jackets on both stages of compression maximise heat transfer, keeping the rotors running at low temperatures compared to other designs. Premium models in the range use water in the cooling jackets for even greater efficiencies.

The air end also prioritises equipment reliability and longevity and can withstand even the harshest operating conditions. Ambient temperatures up to 46 °C can be managed easily as standard. All models are Class Zero certified according to ISO 8573-1:2010.

Variable speed models offer best-in-class turndown rates of up to 71%. This technology enables the compressor to be optimised to meet the demand for plant air, adjusting automatically to peaks and troughs in demand. For even higher levels of energy efficiency, a range of heat recovery options are available enabling customers to reclaim as much as 94% of the heat that would otherwise be wasted to the atmosphere.

An intelligent IP55 electric motor on the fixed speed models and an IP54 variant on the variable speed packages is fitted as standard. This is matched precisely to the requirements of the compressor, which



Image credit: Adobe Stock

The new DX series from CompAir.

enables the motor to develop peak efficiency and power factor at full load. The motor design also permits a lower temperature rise, for enhanced reliability.

All models in the range are monitored, controlled and protected by the Xe microprocessor controller. The user-friendly interface helps operators to monitor compressor parameters continuously, with full web connectivity. In addition, all models are compatible with the CompAir's iConn digital cloud platform.

David Bruchof, product manager Europe for oil-free rotary compressors said, "Our new DX series is the latest enhancement to our proven range of two-stage, oil-free rotary compressors and has been designed to prioritise efficiency at every stage. From the completely redesigned air end to the unparalleled energy efficiency improvements of the whole compressor package, the new DX series will deliver substantial energy savings, with the lowest cost of ownership for rapid return on investment."

To find out more, please visit <https://www.compair.com/en-gb/oil-free-compressors>

Sauer Compressors presents new gas compressors

AT THIS YEAR'S Hannover Messe, to be held from 17-21 April, Sauer Compressors will be introducing several new types of gas compressors. The first standard types of the SAUER Orkan series will celebrate their premieres. The SAUER Orkan series is suitable for the compression of many gases and a variety of applications. The first standard types of the series are two high-pressure air compressors with a final pressure of up to 350 and 500 barg respectively, a high-pressure helium compressor with a final pressure of up to 350 barg, and a high-pressure nitrogen booster with a final pressure of up to 350 barg and an inlet pressure of 4 to 8 barg.

Sauer Compressors will also demonstrate expansions of the aircooled SAUER Hurricane series. The new nitrogen boosters SAUER Hurricane WP4366LH B3-8 and



Image Credit : Sauer Compressors

The high-pressure compressors of the SAUER Orkan series are suitable for many gases and applications.

WP4399LH B3-8 provide a final pressure of up to 350 barg and an inlet pressure of 3 to 8 barg. They are specially designed for the

compression of nitrogen and are based on the robust platform of the series, that has proven itself under the toughest operating conditions for years.

The new launches complement Sauer Compressors' portfolio of gas compressors, also including oil-free, dry-running and hermetically gas-tight types of the HAUG product line, which will be exhibited at the fair as well.

Sauer Compressors is also expanding its selection of accessories for high-pressure applications, such as refrigerant dryers, adsorption dryers, and gas cylinder bundles. The intelligent compressor control system Sauer ecc 4.0 is one of those.

Sauer Compressors will also show its newest solutions for the hydrogen industry from the product lines SAUER and HAUG at Hydrogen + Fuel Cells Europe.

Advancing the scope of cable testing

BASEC's new MV cable testing facility in Dubai will serve numerous industry sectors, including oil and gas.

BASEC's new facility is the first specialised MV laboratory for cable testing in the Middle East.

BAS
BRITISH APPROVALS SERVICE

Image Credit : BASEC

FOLLOWING A PHASE 2 investment of UK£1.2mn (approximately US\$1.4mn), BASEC, a global leader in product testing and certification services for the cable industry across numerous sectors, has announced that its fully-equipped medium voltage cable testing facility in a new regional laboratory in Dubai is now fully operational.

The new medium voltage testing laboratory will significantly increase BASEC's scope of testing to further complement the recent investments made in solar, EV, data communication and compound analytics testing and support manufacturers in the competitive MV cable market to verify competitive designs and raw materials to ensure that quality is not compromised. This facility continues BASEC's roadmap in becoming the preferred testing and certification partner to the worldwide cable industry and builds upon other recent investments to add capability, technology, and global reach.

Tony Lioveri, BASEC's CEO, stated, "BASEC has been working in partnership with cable manufacturers for more than 50 years and has a strong brand and heritage of being the mark of quality and safety. Phase 2

investment and extension into medium voltage testing is another milestone in this journey. The Dubai facility is strategically located to support the global market, as seen from the opening of the LV lab in 2021. We continue to push our roadmap to establish BASEC as a worldwide partner delivered through our regional offices of dedicated teams of technical experts and superior customer care. Our goal is to give end users and manufacturers confidence that by using the BASEC mark, they can be assured of guaranteed quality and safety throughout the supply chain. When quality matters, use BASEC."

“ The Dubai facility is strategically located to support the global market.”

Akram Abdelwahab, BASEC's group technical manager and medium voltage expert, said, "With the increase in demand for

manufacturing higher volumes of MV cable, BASEC MV laboratory will enhance the quality of the MV cable industry by helping both cable manufacturers and stakeholders. BASEC offers a full testing solution for the MV cable industry by bringing European quality and cable testing speciality to the Middle East. The unique location will make it easier for all cable manufacturers worldwide, especially those in the Middle East, to send their heavy MV cable samples to Dubai; it will save time and money."

BASEC purposebuilt the lab to achieve the objective of the highest quality testing in its new MV facility with four earth electrodes to get a low PD sensitivity in the presence of background noise (< 1 pC). Its construction is one of many enhancements to ensure the laboratory's wiring layout is optimised with power isolation. Improved grounding provides effective noise suppression with market-leading lab equipment to improve its offering.

BASEC is the global leader in product testing and certification services for the cable industry across numerous sectors, including construction, electrical installation and power distribution, rail, marine, oil and gas and renewables. ■



OWI 2023 MENA Abu Dhabi, UAE MAY 16-17

THE MIDDLE EAST'S WELL INTERVENTION CONFERENCE



The Middle East's
Leading Well
Intervention
Conference is
back in
Abu Dhabi in
May 2023

EXPERT SPEAKERS FROM:



FAYEZ ISSA
Well Integrity Advisor
ADNOC



ANDREY YUGAY
*Specialist, Well Integrity
(Ops & Control)*
ADNOC



MOHAMMED REHAN
*Senior Contracts and
Procurement Advisor*
Aramco



ASMA AL DARAI
Petroleum Engineer
BP



TAIMUR AL SHIDHANI
Wells C, I&I Engineer
BP Oman



DAVE RINGROSE
*Well Engineering
Manager*
Dana Gas



JOHN MOFFATT
*Head of Abandonment
and Decommissioning*
Dragon Oil



**MOHAMED MUHIZ
KUTHUBDEEN**
*Senior Well Integrity
and Intervention
Engineer*
Dubai Petroleum



**MENNA LOTFY
MUHAMMAD**
Petroleum Engineer
ENAP Sipetrol



**ESRAA OSAMA
IBRAHIM**
Reservoir Engineer
Petrobel



OSAMA RADWAN
Petroleum Engineer
Petrobel



FAISAL ALNAKEEB
*Senior Well Integrity
Engineer*
SNOG

If you need to meet, learn and do business with
well intervention's most innovative well service companies and operators, contact
Rachael Brand on the below details to secure your place at **OWI MENA**

CONTACT FOR GENERAL ENQUIRIES AND ANY INVOLVEMENT IN OWI MENA 2023

RACHAEL BRAND | Project Manager | Offshore Network
t: +44 (0) 20 3409 3041 | e: rbrand@offsnet.com | www.offsnet.com

The STRYDE compact node management system.

Image Credit : STRYDE



A cableless alternative to acquiring hi-res seismic data

Operating across the globe on large-scale oil and gas projects, STRYDE Nodes have been ground-breaking for oil and gas exploration and reservoir optimisation in the Middle East, says Kevin O’Connell, head of field operations at STRYDE.

ONSHORE SEISMIC SURVEYS, utilising STRYDE’s cableless receiver technology and the company’s fast-track data processing services, deliver high-resolution images of the subsurface, faster than ever before and at a significantly reduced price point. This is providing operators in the Middle East with the lynchpin to delivering the mega surveys of the future required to map the subsurface and fuel the growing demand for energy.

Traditionally, within the Middle Eastern oil and gas market, seismic data has been acquired using cable-based recording systems with strings of analog geophones. Cabled telemetry systems with analog geophone arrays are notoriously complex, expensive, and heavy to deploy, operate and maintain. The density of the receiver sampling is limited due to constraints caused by difficulties in moving (rolling) large amounts of channels due to excessive weight and telemetry failures causing lost time. Due to these legacy issues, cabled telemetry systems with analog geophone arrays are often operated with receiver intervals of 50m.

The excessive weight and bulkiness of

cabled telemetry systems with geophone arrays has been proven to impact the operational efficiency and costs of the seismic acquisition in the following ways:

- Increased crew/project operating costs due to the increased number of people required to deploy, move, and retrieve cabled systems with geophone strings
- Increased technical downtime due to cable telemetry errors and limitations

“ There is no doubt that nodes are the future for land seismic.”

- Higher equipment costs
- Significant maintenance costs to fix and maintain the huge amount of copper and fibre optic cables deployed in the field
- Many more heavy vehicles are required to transport the equipment and people
- Additional logistical equipment and services to support a large crew (accommodation,

food, water, generators, etc)

- Additional and unnecessary exposure to health and safety risks associated with more vehicles and people carrying heavy objects.

By comparison, STRYDE’s cableless seismic sensor system is lightweight, significantly lower-priced and agile, enabling high-density, large-scale seismic surveys to be a viable option for oil and gas operators in the Middle East. With over 400,000 STRYDE Nodes being used in the Middle East over the last two years, it has been proven to enable the seismic contractors to take advantage of vastly improved survey operational efficiencies, lower crew operating costs with fewer logistical constraints, while minimising exposure to HSE risks. The end clients can benefit from using the STRYDE system with higher-resolution imaging of the subsurface at reduced cost.

There is no doubt that nodes are the future for land seismic, and the use of this technology is a critical success factor in delivering value to end users of the data, in a more efficient and cost-effective way than ever before. ■

Imaging for carbon storage

THE SCHOOL OF Computational Science and Engineering's (CSE) Seismic Laboratory for Imaging and Modeling (SLIM) at Georgia Institute of Technology, led by Professor Felix J. Herrmann, has been devoting imaging research towards Geological Carbon Storage (GCS), an emerging solution to help combat climate change.

"SLIM has been widely recognised as a world leader in the next generation of seismic acquisition, data processing, imaging, and monitoring for the oil and gas industry," said Herrmann, "SLIM has recently made developments in the fields of compressive sensing and machine learning to drive innovations in wave-based inversion with applications in seismic monitoring."

GCS is a process of removing carbon dioxide from the atmosphere and storing it in deep, underground reservoirs. SLIM's research in seismic imaging assists engineers to monitor carbon dioxide dynamics stored in the Earth's subsurface. This includes detecting potential leaks in underground reservoirs, which minimises risks in GCS projects.

One obstacle inhibiting GCS is difficulty in conducting large-scale seismic imaging that is accurate, timely and cost-effective. SLIM provides a novel approach that maps seismic images associated with one background model to another through velocity continuation. SLIM's velocity continuation method is cheaper and faster than existing algorithms because it avoids creating new images from scratch. This potentially opens the way for large-scale, uncertainty-aware monitoring.

Another challenge in monitoring GCS is predicting how stored carbon dioxide will behave underground due to reservoir fluid properties like temperature and pressure. To address this problem, SLIM developed a model that uses a neural operator in place of a fluid-flow simulator. According to this study, the neural operator can forecast behaviour of stored carbon dioxide at a fraction of computational cost of conventional numerical simulations.

"By gradually shifting gear to carbon storage monitoring with seismic techniques, SLIM aims to be part of the solution to climate change," said CSE Ph.D. student Ziyi (Francis) Yin. "With the recent innovations, we want to lower the risk of carbon storage projects."

Another SLIM initiative involves a simulation-free seismic survey design using an annealing algorithm that provides accurate wavefield reconstruction with minimal seismic survey data.

New AI seismic interpretation software launched

GLOBAL ARTIFICIAL INTELLIGENCE (AI) seismic interpretation experts Geoteric have released Geoteric 2023.1 including structurally-aware AI Horizons, building on its cutting-edge AI Fault Interpretation that accurately detects faults invisible to the human eye.

The technology identifies every event from surface to region of interest in hours, and comes at a crucial time for operators facing demands to fast-track production, enabling them to de-risk well placement, reduce their environmental impact and increase profitability by better predicting future production, the company says. The software enables 100% interpretation of the data in a seismic volume, even in complex geology, in a very short time frame.

Geoteric 2023.1 continues to leverage the combination of geoscientist expertise with the guidance of AI. The new user-friendly workflows bring together AI Faults and AI Horizons, reducing the time it takes to make accurate volumetric calculations or create structural models with the automatic fault surface extraction tool and one-click transfer to third party modelling software.

Nicola Blanshard, CEO at Geoteric said, "We're proud to be the first AI seismic interpretation provider to deliver these innovative capabilities to our customers around the world. Users will now be able to complete projects faster than ever before with no compromise on accuracy or quality, whether they need to understand compartmentalisation of their reservoir for better production prediction, de-risk future well placement or be able to quickly identify suitable and safe locations for carbon capture and storage (CCS) sites. We believe that seismic interpretation is at its most powerful when human and artificial intelligence are combined, and this is true now more than ever. By reducing the time to complete tasks with no reduction in accuracy, our software enables companies to make better business decisions. We're literally expanding their horizons."

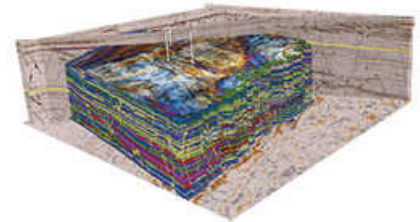


Image credit: Geoteric

The software enables 100% interpretation of the data in a seismic volume, in a very short time frame.

Ikon Science issues software updates

IKON SCIENCE HAS introduced updates to its subsurface knowledge management software, Curate 2023.2, and RokDoc 2023.2.

Curate 2023.2 offers greater flexibility, efficiency, and a more user-friendly data organisation and visualisation experience. It includes several new features, such as a preview option for datasets, the ability to colour-code wells on map views and an upgraded search and filter function in the Data Explorer app. Curate's comprehensive and easy-to-use platform provides users with quick and easy access to all subsurface data, enabling them to have a greater understanding of the subsurface to make well-informed business decisions.

Curate 2023.2 also features significant enhancements allowing teams to work collaboratively and share data effortlessly.

"These improvements to the Curate platform are expected to deliver immediate benefits to all users," said Monica Beech, product manager of Data Management and Visualization at Ikon Science. "Our goal is for every Curate user to access data quickly and create knowledge from it, leading to improved business decisions."

RokDoc 2023.2 expands functionalities in machine learning (ML), rock physics, and provides new visualisation measurement tools to document success. The new release features the addition of Extreme Gradient Boosting (XGB), one of the most popular and best algorithms for regression and classification problems. XGB is built using supervised machine-learning (ML) decision trees, ensemble learning, and optimised gradient boosting techniques. It focuses on speed, flexibility, and model performance. The latest developments improve ML workflow results while providing data statistics plots to support geoscience workflow documentation.

In this release of RokDoc, Ikon Science has made inversion QC easier with a track manager to ensure user-made track-ordering changes occur across all wells. Vertical zoom and user-added tracks are preserved upon re-calculation of the inversion for results comparison and documentation. Work becomes more efficient, with less time focused on visual settings and more time spent refining results.

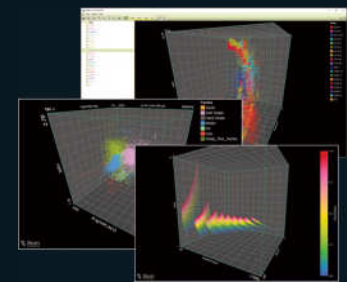


Image credit: Ikon Science

RokDoc 2023.2 3D Crossplotter.

Cannon Artes awarded contract to build desalination plant in Egypt

CANNON ARTES, A Cannon Group company, has been awarded a turnkey contract by the Suez Oil Processing Company (SOPC) to build a desalination and demineralisation plant in Egypt.

Cannon Artes is a leading global engineering and construction company which provides tailored water and wastewater treatment plants for the oil & gas industry. The Suez Oil Processing Company (SOPC) has awarded Cannon Artes the contract as part of the modernisation of the company's Suez refinery. The contract is valued at an estimated €28.5mn (US\$31mn) and the plant is expected to come onstream by the end of 2024.

Established in 1921, the SOPC refinery, located at the entrance of the Suez Canal and near the city of Suez, has a capacity of 3mn tonnes annually or 68,000 barrels of oil per day (BOPD). In a bid to boost sustainability through reduced environmental impact and energy efficiency, SOPC secured a €200mn (US\$212mn) loan from the European Bank for Reconstruction and Development (EBRD).

The plant will be fed with water from the Red Sea and will be treated to provide high-purity demineralised water to feed high-pressure steam boilers as well as low-salinity make-up water for cooling towers. It will occupy an area of 7,140 sq m (76,900 sq ft) – the size of a football stadium – with an overall capacity for 30,000 m³/day (more than 1mn cu ft) and will rely on Cannon Artes' capabilities and experience in both desalination plants and customised solutions for refineries.

"Cannon Artes will be responsible for all stages of this huge assignment from detailed engineering design, construction and delivery of the entire water



Image Credit : Adobe Stock

The plant is expected to come onstream by the end of 2024.

treatment infrastructure including pre-commissioning and commission, and start-up," said Pasquale Punzo, CEO of Cannon Artes.

"The scope of this major project provides our team unique engineering challenges and calls upon our vast expertise, technology and know-how to realise this milestone facility for the Suez Oil Processing Company."

Parker releases new catalogue for its range of Bestobell cryogenic valves

PARKER HANNIFIN, THE global leader in motion and control technologies, has launched a new comprehensive catalogue detailing its range of Bestobell high-performance cryogenic valves used in applications for the transportation, storage, and processing of ultra-low temperature liquefied gases.

As a market-leading manufacturer of cryogenic valves, Parker's 70-page catalogue offers extensive technical information on its products, materials of construction and detailed information on design conformance, certifications and approvals. Parker Bestobell valves are designed and manufactured in accordance with ASME B31.3, BS EN 1626, and BS ISO 21011 and are compliant with Pressure Equipment Directive (EU PED 2016): 2014/68/EU.)

The catalogue also benefits from detailed ordering sections for each valve type with simplified part numbering, allowing users to easily configure the product to the required specification. A complete list of spare parts has been added to the catalogue, also with



Image Credit : Parker Hannifin

Parker Bestobell Cryogenic Valves

Low Temperature Valves for Storage, Transportation and Production of Industrial Gas and LNG



ENGINEERING YOUR SUCCESS.

simplified part numbering for customer ease. All part numbers contained in the new catalogue form part of Parker's core range and are available to manufacture.

Installation guidance has been provided for each valve type to ensure correct valve orientation. Detailed instructions can be found in the Installation, Operating and Maintenance Instructions (IOMs) for each product series, available to download from Parker's website.

Parker Bestobell's range includes cryogenic manual and actuated globe, gate and ball valves, as well as check valves, safety and thermal relief valves, strainers, fill manifolds, and pressure regulators. Each valve has been designed to meet industry requirements to withstand temperature changes, possible expansion or contraction, and avoid deformation of its mounting.

To view the full range, download the catalogue at <https://www.parker.com/content/dam/Parker-com/Literature/Instrumentation-Products-Division/Catalogs/Cryogenic-Valves-for-Industrial-Gas-Applications.pdf>

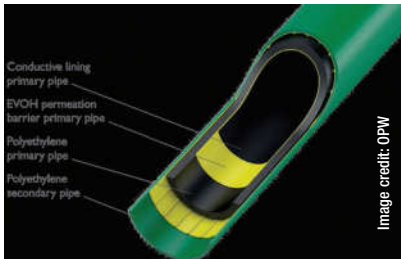
The catalogue details the range of Bestobell high-performance cryogenic valves.

KPS introduces innovation to streamline high-flow fuel and chemical transport

KPS, A GLOBAL innovator in HDPE (High Density Polyethylene) piping, introduced the world's first 6" (160/200mm) double wall conductive HDPE piping system.

This new system has been designed to combine KPS piping's industry-leading safety and installer-friendly qualities with a high flow rate of up to 2,500 litres/minute to meet demand from applications including depots, fuel distribution, ports, mining, rail, data centres and many more.

A conductive inner layer allows static



A conductive inner layer allows static electricity to safely dissipate into the earth.

electricity to safely dissipate into the earth, while a secondary pipe provides an extra layer of protection and enables interstitial monitoring.

"When fuel flows through a pipe, it creates friction which creates an electrical charge on the pipe wall. If the material is not conductive, the charges (free electrons) can't flow anywhere and consequently accumulate until a rapid discharge can occur: a spark!

In 1997, we developed the world's first conductive HDPE piping to combine the lightweight, corrosion-free benefits of HDPE with the conductive safety of metal. A conductive inner layer allows static electricity to dissipate into the earth.

Now, a number of countries, including China, Germany, Slovenia, Croatia and the Baltic States, require conductive piping to be used for filling stations, as well as a number of major oil companies, including BP, OMV, PetroChina, Q8, Aral, Total and Esso. As future fuels containing oxygen which generate more friction are increasingly used, conductive piping becomes ever more important," said Staffan Helleday, technical director, KPS.

Jo Scott, marketing director, OPW, said, "We're excited to launch another KPS world first: the 6" piping range centred around making fuel transport safer and installation easier."

PROTON wins industry award for the second time

NDT GLOBAL ANNOUNCED the recently launched phased array ultrasonic service, PROTON has won its second industry award – the 2023 Innovation Award at the 35th International Pipeline Pigging and Integrity Management Conference.

The PPIM Innovation Award highlights new and exciting developments in the industry and is presented to companies whose technologies have made a significant contribution to the advancement of pipeline integrity. Finalists for the award are selected by a panel comprised of thought leaders across the industry and the winner is selected by a public vote.

PROTON is a highly configurable phased array inspection platform. Multi-angle sampling allows the best depth tool tolerance available in the market by means of multiple indirect crack measurement techniques and direct crack tip measurement for critical features. The multiple angles cover a wide range of crack features such as hook cracks, lack of fusion, lack of penetration, weld anomalies, and SCC, amongst other linear indications.



This is the second award PROTON have won.

Aager unveils Domeroof for storage tanks

ÄAGER, A LEADING engineering and manufacturing company, has announced the release of their new product, the Domeroof. Designed as a unique, innovative solution for storage tanks, the Domeroof boasts exceptional strength, durability and reliability.

The Domeroof is designed to provide a superior storage tank solution for customers in various industries, including oil and gas, water treatment, food and beverage, and pharmaceuticals. It features a patented geodesic dome design that offers exceptional strength, stability, and reliability, even in the harshest of weather conditions.

One of the key benefits of the Domeroof is its ability to withstand extreme weather conditions, such as high winds, heavy snow loads, and earthquakes. Its unique design allows it to distribute weight evenly across the tank, providing maximum protection against external factors. In addition, the design of the Domeroof allows for easy maintenance, cleaning, and inspection, which reduces downtime and maintenance costs.

"Äager's mission has always been to provide our customers with innovative and reliable solutions that meet their specific needs," said Riza Altunergil, VP of Äager.

SLB introduces EcoShield for low-carbon well construction

SLB HAS INTRODUCED the EcoShield geopolymers cement-free system that minimizes the CO₂ footprint of a well's construction. This innovative technology eliminates up to 85% of embodied CO₂ emissions compared with conventional well cementing systems, which include portland cement. The EcoShield system has the potential to avoid up to 5 million metric tons of CO₂ emissions annually — the equivalent of removing 1.1 million cars from the road each year.

In addition to its embodied CO₂ emissions, portland cement creates significant transportation-related emissions from manufacture to deployment. The EcoShield system uses locally sourced natural materials and industrial waste streams in its composition, making this a far more sustainable well integrity method.

The cement-free system can be deployed throughout various phases of the well life cycle including abandonment. It can also be deployed across a range of field applications, including corrosive environments.

The EcoShield system is part of the SLB Transition Technologies portfolio, which includes proven technologies that drive high performance while reducing CO₂ emissions



Baker Hughes unveils new digital solutions at Annual Meeting

BAKER HUGHES ANNOUNCED at its Annual Meeting in Florence, Italy, the introduction of multiple new digital solutions and investments to advance more intelligent and energy-efficient operations. They focus on improving efficiency and performance while reducing emissions, helping to drive the long-term sustainability of customer operations.

“Digital is redefining the limits of how the energy and industrial sectors can increase efficiency, operate predictably and ensure lower emissions in a sustainable manner,” said Lorenzo Simonelli, chairman and CEO of Baker Hughes. “We have long recognised digital is a critical capability in taking energy forward and leading in the energy transition, and we are continuing to invest and innovate for our customers. Our latest solutions are a testament not only to the power of digital enablement but also to our ongoing commitment to driving more efficient, informed and sustainable operations for our customers and ourselves.”

Leucipa is a public and private cloud-based automated field production software solution designed to help oil and gas operators proactively manage production and reduce carbon emissions. Leucipa focuses first on the specific outcome an operator wants to achieve, harnessing and leveraging data to drive intelligent operations. By automating production processes, Leucipa will eliminate inefficiency, ensure more environmentally sound operations, and enable customers to help recover the millions of barrels that would have otherwise remained in the ground. Leucipa will be released to the global market by mid-2023.

Cordant is an integrated suite of solutions supporting industrial asset performance management and process optimisation. Building on Baker Hughes’ broad and established rotating equipment, critical sensors, valves, pumps, gears, and inspection service domain expertise, Cordant will combine existing digital offerings for hardware, software and services capabilities into one integrated and simplified user interface. Customers’ digital assets, tools and insights will converge within Cordant and can easily integrate with existing Baker Hughes technologies as well as technologies from other equipment manufacturers.

In addition, Baker Hughes announced it is collaborating with Corva, which offers an open solution for well construction digital offerings to enhance rig visualisation and decision making in the oil and gas industry. Corva’s analytics and real-time data capabilities will improve well construction operations and reduce costs. Its open development platform allows innovation by the operator and/or service providers. Baker Hughes is a minority investor in Corva, becoming an international reseller and introducing new applications to the Corva App Store for access to its oilfield expertise. The collaboration aims to create a digital accelerator for improved efficiency in rig operations.



New digital solutions were featured at the Baker Hughes Annual Meeting.

Image credit: Baker Hughes

INPEX wins joint award at MEOS GEO

JAPAN’S INPEX CORPORATION (INPEX) won the Innovation and Technology Award at the Middle East Oil, Gas and Geosciences Show (MEOS GEO) on February 19, 2023, with Nissan Chemical Corporation and OILMIND LLC for their development of new generation chemical water shut-off (WSO) technology based on emulsion with nanoparticles.

This innovative technology results from a multi-year cooperation between the three companies and was recognised as having considerable potential for being efficiently applied to carbonate oil formations in the Middle East.



Image credit: Adobe Stock

The technology inhibits water cut.

The new WSO technology was developed to overcome issues posed by existing technologies and inhibit the water cut that causes the reduction in production and economic efficiencies. The MEOS GEO committee commended the technology for its contribution to improving oil recovery, minimising CO₂ footprint during water shut-off operations, and reducing the intensity of CO₂ emissions associated with the treatment of produced water.

The technology is expected to address issues of water encroachment in geologically complex carbonate oil formations in the Middle East characterised by high temperature and salinity. The technology deploys a water shut-off agent with ideal pseudoplasticity and can be easily handled during make-up and injection operations. When injected, the agent is practically selective wherein it works only in areas predominantly saturated with water and disperses in the oil zone, avoiding damage to oil columns. Its reversible physical properties enable it to be neutralised when injected into unintended targets. Due to these characteristics, the technology does not require temporary mechanical isolation work to protect oil columns as with existing technology, enabling the significant reduction of operating costs and CO₂ footprint.

LYTT joins with AWS to scale sensor fusion-enabled solutions

LYTT, A PROVIDER of real-time, sensor analytics platform and applications suite, and Amazon Web Services (AWS) have collaborated to enrich and scale LYTT’s sensor fusion insights platform using AWS’ industry-leading cloud infrastructure.

LYTT offers a cloud-based, end-to-end data analytics platform that transforms petabytes of sensor data into connected and actionable insights visualised via an intuitive user interface. Industrially proven in oil and gas, LYTT has helped customers across the globe address flow, solids, integrity, and seismic operational challenges, unlocking millions of dollars in value. LYTT’s sensor fusion-enabled solutions are applicable across sectors and are currently also being applied to carbon capture and storage (CCS) and water utilities.

Ian Setterfield, sales and business development manager, LYTT, said, “Our latest agreement with AWS unlocks the next level of scalability by underpinning LYTT’s sensor fusion-enabled solutions with a robust, secure cloud architecture. Cloud technology enables our real-time monitoring platform to grow in step with our customers’ needs, and we’re looking forward to developing further relationships in this space to ensure our users can reliably access instant insights on their asset health and performance from anywhere in the world.”



LYTT’s sensor fusion-enabled solutions are applicable across sectors including oil and gas.

Image credit: Adobe Stock

Project Databank

Compiled by Data Media Systems

OIL, GAS AND PETROCHEMICAL PROJECTS - IRAQ

Project Name	City	Facility	Budget	Status
Bashneft - Block 12 Exploration and Production	Najaf	Development Drilling & Production	150,000,000	Construction
Basra Oil Company - Nahr Bin Umar Field Development - Flare Gas Project	Basra	Gas Gathering	300,000,000	Feasibility Study
Basrah Gas Company - Basra Gas Flare Recovery Project	Basra	Gas Gathering	17,200,000,000	Feasibility Study
Basrah Gas Company - Basra Natural Gas Liquids (NGL) Facility	Rumaila	Natural Gas Liquefaction (NGL)	5,000,000,000	Construction
BECL - Rumaila Oil Field Development - Crude Oil Processing Facilities	Basra	Oil Train, Pipeline	400,000,000	Engineering & Procurement
BECL - Rumaila Oil Field Development - Overview	Basra	Oil Field Development, Development Drilling & Production, Oil Train	25,000,000,000	Construction
BGC - Basra Gas Gathering Project - Ar Ratawi Natural Gas Liquids (NGL) Plant - Train 3	Basra	Natural Gas Liquefaction (NGL)	150,000,000	Feasibility Study
BOC - Basra Oil Export Terminal	Basra	Crude Oil Terminal	500,000,000	EPC ITB
BOC - Common Seawater Supply Project (CSSP) - Pipeline	Southern Iraq	Welded, Water	1,500,000,000	EPC ITB
BOC - Crude Export Pipelines - Al-Faw to Basra Export Terminal	Various	Pipeline	1,000,000,000	EPC ITB
BOC - Luhais Oil Field - Degassing Station	Basra	Onshore Oil Field	50,000,000	Engineering & Procurement
BOC - Majnoon Oil Field Development - Central Processing Facility (CPF2)	Basra	Production Platform	400,000,000	Construction
BOC - Majnoon Oil Field Development - Overview	Basra	Development Drilling & Production	4,700,000,000	Commissioning
BOC - Majnoon Oil Field Development - Sour Gas Treatment Facility	Basra	Gas Treatment Plant	300,000,000	Commissioning
Chevron - Sarta Block - Appraisal and Further Development Campaign - Phase 1B (Appraisal Programme)	Kurdistan Region	Onshore Oil Field	80,000,000	Construction
CNOOC - Missan Oil Fields Development - Overview	Missan	Development Drilling & Production	375,000,000	Construction
DNO International - Peshkabir Oil Field Development	Kurdistan Region	Development Drilling & Production	600,000,000	Construction
ENI - Zubair Oil Field Redevelopment - Degassing Station Trains	Basra	Gas Transmission	800,000,000	Engineering & Procurement
ENI - Zubair Oil Field Redevelopment - Overview	Basra	Development Drilling & Production	6,000,000,000	Construction
ExxonMobil - West Qurna Oil Field Development - Phase 1 - DS6	Basra	Development Drilling & Production	120,000,000	Construction
ExxonMobil - West Qurna Oil Field Development - Phase 1 - Major Tie-ins DS7Facilities	Basra	Development Drilling & Production	150,000,000	Construction
ExxonMobil - West Qurna Oil Field Development - Phase 1 - Major Tie-ins DS8 Facilities (AWQ0303)	Basra	Development Drilling & Production	200,000,000	Construction
ExxonMobil - West Qurna Oil Field Development - Phase 1 - Oil Trains 2 and 3 (OT2&3)	Basra	Oil Train	350,000,000	Engineering & Procurement
Genel Energy - Kurdistan Regional Government - Kurdistan Qara Dagh Block	Kurdistan Region	Development Drilling & Production	75,000,000	Construction
Genel Energy International Limited - Miran Block Oil Field Development - Pipeline	Kurdistan Region	Welded, Gas Pipeline	250,000,000	FEED
GKPI - Kurdistan Region Shaikan Block - Gas Management Project	Basra	Production Platform, Gas, Gas Gathering	250,000,000	EPC ITB
GKPI - Kurdistan Region Shaikan Block - Overview	Kurdistan Region	Oil Field, Gas Field	300,000,000	Construction
GKPI - Shaikan Oil Field - Phase 2 - Jurassic Gas Re-injection	Kurdistan Region	Gas Field	450,000,000	Project Announced
GKPI - Shaikan Oil Field - Phase 2 - Triassic and Cretaceous Pilot	Kurdistan Region	Gas Field	715,000,000	Feasibility Study
Honeywell UOP - Haditha Oil Refinery	Anbar	Refining	350,000,000	Feasibility Study
Hunt Oil - Ain Sifni PSC (Simrit Oil Discovery)	Kurdistan Region	Onshore Oil Field	400,000,000	Engineering & Procurement
KAAI - Wataniya Group - Naphtha Hydrotreating Unit (NHT)	Samawah	Naptha	600,000,000	Construction
LUKOIL - West Qurna Oil Field Development - Phase 2 - Overview	Basra	Development Drilling & Production	4,000,000,000	Construction

LUKOIL - West Qurna Oil Field Development - Phase 2 - Wellpad	Basra	Development Drilling & Production	90,000,000	Construction
LUKOIL - West Qurna Oil Field Development - Phase 2 - Yamama Pilot Production Facilities	Basra	Development Drilling & Production	80,000,000	Construction
LUKOIL - West Qurna Two Oil Field - Phase 3 - Mishrif and Yamama Production Plateau	Basra	Onshore Oil Field	2,000,000,000	Project Announced
LUKOIL- Block 10 Exploration and Production	Dhi Qar	Development Drilling & Production	100,000,000	Engineering & Procurement
Ministry of Oil - Diwaniya Oil Refinery (Shanfaniah)	Al Diwaniyah	Refining	350,000,000	Design
Ministry of Oil - Nassiriyah Oil Field Development	Dhi Qar	Development Drilling & Production	353,000,000	EPC ITB
MOO - Ninawa Oil Refinery (Qayara Oil Refinery)	Al Diwaniyah	Refining	2,000,000,000	Engineering & Procurement
MOO - Al Faw Crude Oil Storage Expansion	Basra	Storage Tanks	350,000,000	Feasibility Study
MOO - Faw Oil Refinery	Basra	Petroleum Oil	8,000,000,000	Engineering & Procurement
MOO - Iraq to Jordan Crude Oil and Gas Pipeline - Overview	Various	Welded, Oil, Gas	8,500,000,000	Feasibility Study
MOO - Iraq to Jordan Crude Oil and Gas Pipeline - Phase 1 (Basra to Haditha)	Basra - Haditha	Welded, Oil, Gas	4,000,000,000	EPC ITB
MOO - Kirkuk to Ceyhan (Iraq to Turkey) Oil Pipeline - Rehabilitation and Reopening Project	Various	Oil Pipeline	400,000,000	EPC ITB
MOO - Samawah Independent Grassroot Oil Refinery	Samawah	Refining	2,000,000,000	FEED
NOC - Kirkuk Oil Fields Redevelopment	Kirkuk	Oil & Gas Field	500,000,000	Construction
NRC - Baiji Refinery Complex (Al-Samoud Refinery)	Baiji	Fluid Catalytic Cracker (FCC)	200,000,000	Construction
Pearl Petroleum - Khor Mor Gas Field Development - KH250A Gas Processing Facility	Sulaimaniyah	Gas Processing	700,000,000	Construction
Pearl Petroleum - Khor Mor Gas Field Development - Overview	Sulaimaniyah	Gas Field	2,000,000,000	Construction
PetroChina - Halfaya Oil Field Redevelopment - Gas Processing Plant (GPP)	Missan	Gas Processing	1,100,000,000	Construction
PetroChina - Halfaya Oil Field Redevelopment - Overview	Missan	Development Drilling & Production	10,000,000,000	Construction
PETRONAS - Gharraf Oil Field Development - Overview	Dhi Qar	Oil & Gas Field	8,000,000,000	Construction
PETRONAS - Gharraf Oil Field Development - Phase 2 - Gas Processing Plant	Dhi Qar	Gas Processing	8,000,000,000	Engineering & Procurement
Rania International Company - Kirkuk Refinery	Kirkuk	Refining	5,000,000,000	Engineering & Procurement
SCOP - Al Fao Oil Depot - Pumping Station	Basra	Oil Field	300,000,000	Engineering & Procurement
SCOP - Karbala Refinery	Karbala	Refining	6,500,000,000	Commissioning
Shamaran Petroleum Corporation - Atrush Block	Kurdistan Region	Oil Field, Gas Field	1,140,000,000	Construction
Shell - Nibras Petrochemical Complex	Basra	Acetic Acid, Chloromethane, Polymers	8,000,000,000	Pre-FEED
Sinopec - Mansuriyah Natural Gas Field Development - Overview	Diyala	Gas Field	2,700,000,000	EPC ITB
Sinopec - Mansuriyah Natural Gas Field Development - Gas Processing Facilities	Diyala	Gas Processing	500,000,000	EPC ITB
SOC - Nasiriyah And Al Gharraf Oil Fields Flare Gas Recovery - Natural Gas To Liquids (GTL) Plant	Nasiriyah	Gas to Liquids (GTL)	400,000,000	Engineering & Procurement
SRC - Basra Refinery Upgrade - Basra Fluid Catalytic Cracking (FCC)	Basra	Fluid Catalytic Cracker (FCC)	4,000,000,000	Construction
SRC - Basra Refinery Upgrade - CCR & NHT Units Project	Basra	Continuous Catalytic Cracker (CCR)	400,000,000	Engineering & Procurement
SRC - Basra Refinery Upgrade - Overview	Basra	Petroleum Oil	7,350,000,000	Construction
State Company for Oil Projects - Nasiriyah Refinery	Nasiriyah	Petroleum Oil	5,000,000,000	EPC ITB
TotalEnergies - Ar Ratawi Gas Processing (Ar Ratawi Hub)	Ar Ratawi	Gas Processing	1,000,000,000	Design
TotalEnergies - Ratawi Gas Field Development	Basra	Gas Field	3,000,000,000	FEED
UEG - Block 9 - Faihaa Field Yamama Reservoir - Oil and Gas Central Processing Facility (CPF) Phase 1 - 100,000 BPD	Basra	Production Platform, Gas Processing	600,000,000	Engineering & Procurement
UEG - Block 9 - Faihaa Field Yamama Reservoir - Overview	Basra	Oil Field	700,000,000	Construction
WesternZagros Resources - Gazprom Neft - Kurdistan Region Kalar Bawanoor Block (Garmian and Kurdamir)	Kurdistan Region	Oil & Gas Field	400,000,000	Construction
ZhenHua Oil - East Baghdad Oil Field Development	Baghdad	Development Drilling & Production	3,000,000,000	Construction

Stay one step ahead of your competitors with the DMS Projects Matrix

A Critical and essential **business intelligence** tool, updated daily to ensure you are constantly at the top of your **commercial strategies**, allowing you to **maximise your returns** in today's ever **growing global market**

REGIONS COVERED

- Middle East
- North Africa
- South Africa
- East Africa
- West Africa
- Russia & CIS
- South East Asia
- India
- China
- Europe
- North America
- Latin America

SECTORS COVERED



SUBSCRIBE TODAY

or contact us for further information

CONTACT

Sundeep Narula

Chief Commercial Officer

UAE Cell &  +97150 6518010

Email - snarula@dmsglobal.net

+971 249 161 71 (UAE Office)

+973 17 405 590 (Bahrain Office)

Project Databank

Compiled by Data Media Systems

Project Focus

Compiled by Data Media Systems

ExxonMobil - West Qurna Oil Field Development, Iraq - Phase 1 - Major Tie-ins DS8 Facilities (AWQ0303)

Name of Client	ExxonMobil Corporation
Estimated Budget (US\$)	200,000,000
Contract Value (US\$)	121,000,000
Award Date	2018-Q3
Main Contractor	China Petroleum Engineering & Construction Corporation (CPECC)
Facility Type	Development Drilling & Production
Sector	Exploration & Upstream Production
Status	Construction
Location	Basra, Iraq
Project Start	2019-Q1
End Date	2023-Q4
Last Updated	2023-02-20 13:14:38

Background

ExxonMobil is planning to implement the major tie-ins DS8 facilities. The project is located in the DS8 degassing station of West Qurna-1 oil field around 65 km northwest of Basra. After the project is completed, the existing ongoing and planned major projects in the DS8 station will be connected and integrated, the existing facilities in the station will be upgraded and the bottleneck will be removed, and the new facilities in the station will be put into operation, thereby increasing the production capacity of the entire West Qurna-1 oil field. DS8 was built in 1999. The current crude oil output of the oil field is around 480,000 barrels per day.

Contractor

Contract Type	Pre-Qualified	Bidders	Awarded
EPC	<ul style="list-style-type: none">BonattiCCC - Consolidated Contractors CompanyChina Petroleum Engineering & Construction Corporation (CPECC)	<ul style="list-style-type: none">BonattiCCC - Consolidated Contractors CompanyChina Petroleum Engineering & Construction Corporation (CPECC)	<ul style="list-style-type: none">China Petroleum Engineering & Construction Corporation (CPECC)
FEED	<ul style="list-style-type: none">China Petroleum Engineering & Construction Corporation (CPECC)	<ul style="list-style-type: none">China Petroleum Engineering & Construction Corporation (CPECC)	<ul style="list-style-type: none">China Petroleum Engineering & Construction Corporation (CPECC)

Project Scope

The scope of the project includes:

- Mechanical completion (MC)
- On-site interface works
- Trial operation and start-up
- Construction of control room
- Installation of safety and security systems
- Infrastructure works
- Civil works
- Electrical works

Project Finance

ExxonMobil is the client of the project.

Middle East & North Africa

The Baker Hughes Rig Count tracks industry-wide rigs engaged in drilling and related operations, which include drilling, logging, cementing, coring, well testing, waiting on weather, running casing and blowout preventer (BOP) testing.

Country	FEBRUARY 2023			VARIANCE From Last Month	JANUARY 2023		
	Land	Offshore	Total		Land	Offshore	Total
Middle East							
ABU DHABI	36	7	43	-8	36	15	51
DUBAI	0	1	1	0	0	1	1
IRAQ	62	0	62	+7	55	0	55
JORDAN	0	0	0	0	0	0	0
KUWAIT	24	1	25	+2	22	1	23
OMAN	50	0	50	-1	51	0	51
PAKISTAN	10	0	10	0	10	0	10
QATAR	4	8	12	+3	4	5	9
SAUDI ARABIA	65	12	77	-2	62	17	79
SUDAN	2	0	2	0	2	0	2
SYRIA	0	0	0	0	0	0	0
YEMEN	1	0	1	0	1	0	1
TOTAL	254	29	283	+1	243	39	282

North Africa

ALGERIA	31	0	31	0	31	0	31
EGYPT	26	7	33	0	25	8	33
LIBYA	11	1	12	0	11	1	12
TUNISIA	2	0	2	0	2	0	2
TOTAL	70	8	78	0	69	9	78

Source: Baker Hughes

بينما من المتوقع أن يكون حقلاً المنصورية وعكاس جاهزين للبدء في العمل. بل إن هناك مجالاً لإصدار تراخيص أخرى للمزيد من مشاريع الغاز.

التنقيب والتراخيص: ستهيمن مسابر الغاز الكبرى على المجال

ستشهد عمليات التنقيب البحرية في شرق البحر الأبيض المتوسط طفرة، مع إمكانية تغيير ديناميكيات الغاز في المنطقة. وقد يزداد عدد جولات العطاءات، حيث تستفيد الحكومات من الأسعار المرتفعة والتحول بعيد المدى عن التبعية الروسية.

ترشيد المحافظ المالية المركزة يزيد من حركة الأصول

انخفض نشاط الاندماج والاستحواذ في عام 2022، سواء من حيث عدد الصفقات (سنة مقابل تسعة) أو الإنفاق على الصفقات (أقل بمقدار 2,9 مليار دولار أمريكي). ويمكن أن يوائم سعر النفط المستقر بين توقعات البائع والمشتري بشكل أفضل في عام 2023. كما سيؤدي ترشيد المحافظ المالية إلى تغذية تلك المشروعات بالاستثمارات الكبرى، متخلصاً من الأصول الهامشية الخارجية. إذ يتوقع بشكل عام، أن تؤدي توجهات عام 2022 نحو تقليل المديونية في مختلف مناحي هذه الصناعة، إلى تحرير رأس المال لعمليات الاندماج والاستحواذ الانتقائية. ومن المرجح أن يتولى المستقلون وشركات النفط الوطنية الشراء، وأن تكون قيمة الأسهم المتداولة صغيرة.

دول مجلس التعاون الخليجي تضاعف جهودها

في خفض الكربون وجهود التنمية المستدامة:

يعد خفض الكربون والتنمية المستدامة من أهم الموضوعات المهيمنة هذا العام. فقد التزمت خمس دول من أصل ست دول في مجلس التعاون الخليجي بتحقيق نسبة انبعاثات صفرية، وهي: المملكة العربية السعودية والإمارات العربية المتحدة وعمان والبحرين والكويت. هذا، ومع استضافة الإمارات العربية المتحدة للدورة 28 من مؤتمر تغير المناخ في نوفمبر/تشرين الثاني 2023، يحتل الشرق الأوسط صدارة المشهد. حيث تتمثل رؤية الشرق الأوسط لإمدادات الطاقة المستدامة في التطوير المستمر للمواد الهيدروكربونية، مع التركيز بشكل كبير على انبعاثات الكربون المنخفضة. وستطبق العديد من الإجراءات الاستكشافية الرئيسية بحزم لدعم هذه الرؤية. ويقول التقرير: «تتوقع خطوات كبيرة في دول مجلس التعاون الخليجي للقضاء على تسرب غاز الميثان وتوسيع نطاق احتجاز الكربون وتخزينه». مضيفاً: «تولت المملكة العربية السعودية والإمارات العربية المتحدة وقطر زمام المبادرة في مجال احتجاز وتخزين ثاني أكسيد الكربون بنسبة 5,1 مليون طن سنوياً من مشاريع احتجاز ثاني أكسيد الكربون التشغيلية. ويقول: «تتوقع تطورا سريعا، والمضي قدما نحو اتخاذ قرارات الاستثمار في العديد من المشاريع الجديدة».

هذا العام، فمن الواضح أن الغاز لا يزال قابلاً للاستثمار وسوف يلعب دوراً مهماً في مضي شركات التنقيب والإنتاج قدماً. وسيعمل المشغلون هذا العام على أن تصبح عوائد مشروعات الغاز أكثر تنافسية مع مثيلاتها في مشروعات النفط. هذا مع تقييم استخدام وتخزين الكربون المحتجز للحقول ذات المحتوى العالي من ثاني أكسيد الكربون وحتى مفاهيم الهيدروجين الأزرق.»

الاستكشافات في الشرق الأوسط وشمال إفريقيا:

5 أشياء نتطلع إليها في عام 2023

يشير التقرير إلى أن الاستثمار سيرتفع في عام 2023 مدعوماً بالأسعار المرتفعة وخزائن شركات النفط الوطنية المتخمة. وسوف يهيمن الغاز والغاز الطبيعي المسال على التنمية. كما سيجتهد الإنفاق بشدة نحو تطوير الغاز والغاز الطبيعي المسال. وسيتم التركيز على الغاز في عمليات التنقيب في جميع أنحاء المنطقة لتستغل الحكومات الأسعار المرتفعة والتحول بعيد المدى بعيداً عن اعتماد أوروبا على روسيا.

علماً بأن النفقات الرأسمالية ستتجاوز 100 مليار دولار أمريكي، بزيادة 7 في المائة عن مستويات عام 2022. وسيصل ما يقرب من 15 مشروعاً كبيراً إلى مرحلة اتخاذ القرار النهائي بالاستثمار العام المقبل، مع تركيز معظمها على الغاز والغاز الطبيعي المسال. حيث يحتل الشرق الأوسط الصدارة من خلال 14 مشروعاً، متابعاً مسار نموه القوي ومدعوماً بالتدفقات النقدية القياسية وطفرة في الطلب. هذا ومن المتوقع أن تجيز قطر للطاقة حقلاً الشمال الجنوبي، وهو ثالث مشروع ضخم لها في مجال التوسع في الغاز الطبيعي المسال. بينما في الإمارات العربية المتحدة، قد توافق شركة أدنوك على مشروع الفجيرة للغاز الطبيعي المسال بسعة 9,6 ملايين طن متري في السنة. ومن المتوقع أن تحصل حائل وغشا، على الموافقة المسبقة لمشروع تطوير الغاز البحري فائق الحموضة بقيمة 15 مليار دولار أمريكي. هذا وقد نشهد أيضاً نمواً أكبر للغاز الطبيعي المسال في عمان.

أما قطاع الطاقة العراقي، فقد أصبح مستعداً للعمل بعد عام من الركود السياسي، «عام ضائع» في أعقاب انتخابات أكتوبر/تشرين الأول 2021، إذ شكّل العراق حكومة جديدة بقيادة رئيس الوزراء محمد شياع السوداني. فبعد تعليق جميع القرارات التشريعية والاستثمارية الكبرى خلال فترة حكومة تصريف الأعمال السابقة، تظل هناك قائمة طويلة من الأولويات. ومع عائدات تصدير النفط القوية وتنصيب وزير النفط الجديد، حيان عبد الغني، صار العراق الآن قادراً على معالجة قضايا الطاقة الحساسة. فقد صار بإمكان الاستثمار في مشروعات الغاز والطاقة ومشاريع توسيع النفط المهمة، أن يروي أخيراً ظمأً طال أمده. حيث سيبدأ العمل في محطة البصرة للغاز الطبيعي المسال، التي طال انتظارها والتي تبلغ طاقتها 400 مليون قدم مكعب في اليوم. هذا،

يمكنك مطالعة التقرير كاملاً وتقارير الاستكشافات الإقليمية لشركة وود ماكنزي على الموقع الإلكتروني والجزء المعني بمحتوى التنقيب والإنتاج:

<https://www.woodmac.com/news/opinion/upstream-oil-and-gas-2023-outlook/#form>

← مفكرة الفعاليات 2023

مارس/آذار

16 - 19 معرض البصرة للنفط والغاز البصرة www.bsraoilandgas.com

مايو/أيار

1 - 4 مؤتمر تقنية الحقول البحرية هيوستن otcnet.org.2023
16 - 18 منتدى الشرق الأوسط لتقنية التكرير والبتروكيماويات - MET-TECH دبي <https://europetro.com/metech>
23 - 25 مؤتمر ومعرض البحر المتوسط للتكنولوجيا رافينا - إيطاليا www.omic.it.en

سبتمبر/أيلول

5 - 8 مؤتمر ومعرض تقنية الغاز - Gastech سنغافورة www.gastechevent.com



سيزداد الإنفاق في المنطقة على تطوير مشروعات الغاز والغاز الطبيعي المسال

قطاع التنقيب والإنتاج العالمي: ماذا نتظر في عام 2023؟

أصدرت شركة وود ماكينزي Wood Mackenzie التابعة لشركة فيريسك Verisk، تقرير قطاع التنقيب والإنتاج العالمي: خمسة أشياء نتطلع إليها في تقارير عام 2023. يشير التقرير إلى أن الاستثمار سيرتفع في عام 2023 مدعوماً بالأسعار المرتفعة وخزائن شركات النفط الوطنية المتضخمة. وسوف يهيمن الغاز والغاز الطبيعي المسال على التنمية. كما سيتجه الإنفاق بشدة نحو تطوير الغاز والغاز الطبيعي المسال. وسيتم التركيز على الغاز في عمليات التنقيب في جميع أنحاء المنطقة لتستغل الحكومات الأسعار المرتفعة والتحول بعيد المدى بعيداً عن اعتماد أوروبا على روسيا.

إذا أردنا تجنب نقص الإمدادات. ولكن ليس بالقدر أو للمدة الطويلة التي توقعها العديد من مراقبي السوق. وسيفسح اكتمال عملية التخلص من المديونية في الشركات المجال إلى حد كبير لكل من العودة التدريجية للاستثمار واستمرار توزيع فوائد الحصص للمساهمين. من سيزيد الإنفاق وأين وبأي مقدار؟ كلها أسئلة سيدور حولها نقاشات كبيرة في عام 2023.

سيحد تضخم التكلفة من تأثير زيادات الإنفاق وستهدد عوائق سلسلة التوريد وأوجه القصور المكاسب التي تحققت بشق الأنفس خلال فترات الركود السابقة. وسيتم استهلاك حوالي نصف الزيادة العالمية في الإنفاق من خلال توسيع هوامش سلسلة التوريد.

إزالة الكربون يشغل مكانه في قلب «استكشافات 2,0»

ستحاول الحكومات وشركات النفط الوطنية في البلدان الرئيسية المنتجة أن تعمل على الربط بين مصداقية خفض الكربون وبين زيادة الاستثمار في قطاع التنقيب والإنتاج في عام 2023. وستحتاج شركات النفط العالمية التي تتطلع إلى أن تكون جزءاً من «استكشافات 2,0» إلى إثبات المزيد من تخفيضات الانبعاث والكشف عنها. واستطرد مكاي قائلاً: «ستجبر اللوائح الشركات على الاستثمار في القياس والمراقبة والتخفيف. حيث صار يتعين على من اعتادوا التعامل مع السهل القريب المنال، إلى بذل جهود أكبر من توصيل للكهرباء والشبكة الإنترنت، حيثما كان ذلك ممكناً. وتخصيص مصادر طاقة متجددة، حيثما ينقص تواجدها. وبحلول نهاية عام 2023، سيكون من الصعب للغاية على المشغلين العاديين إجازة مشاريع بدون خطط لتخفيف الانبعاثات».

نماذج أعمال الغاز ستبدأ في التغيير

تسببت أزمة الغاز الأوروبية في تفاوت الأسعار، الأمر الذي سيدفع الشركات العاملة في قطاع التنقيب والإنتاج إلى إعادة تقييم نماذج أعمالهم في مجال الغاز. إذ سيركز الاستثمار القصير الأجل على زيادة الإنتاج الأوروبي المحلي ومفاهيم التنمية الجديدة لإطلاق الغاز العالق. وقال مكاي: «لن نرى الصناعة تنفق على الغاز أكثر من النفط

قطعت شركات التنقيب عن النفط والغاز خطوات كبيرة في عام 2022، وذلك في سعيها نحو استعادة الثقة وإصلاح ميزانيتها العمومية. إلا أن التحديات التي تواجهها صناعة النفط ستتفاقم في عام 2023، وفقاً للتقرير الصادر عن شركة وود ماكينزي. وتشمل الموضوعات الرئيسية التي يتعين الانتباه إليها، إدارة الضرائب غير المتوقعة والتضخم، والنمو الاستثماري المقيد، وتضخم التكلفة، وإزالة الكربون وتغير نماذج الأعمال المتعلقة بالغاز.

المفاجآت غير المتوقعة والحوافز

تصاعدت حدة المخاطر القطرية لتحول صدارة اهتمامات المستثمرين. فإذا ارتفعت الأسعار، ستتحذد المزيد من الدول لإجراءات أخرى نحو تحديد سقف للأسعار أو فرض ضرائب غير متوقعة، مما سيفرض على الشركات العاملة إعادة تقييم الفرص الحالية والجديدة، حتى في البلدان التي كان يُعتقد - سابقاً - أنها منخفضة المخاطر. وقد صرح فريزر مكاي، رئيس قسم تحليل الاستكشافات في شركة وود ماكينزي، قائلاً: «سنرى العديد من المنهجيات المختلفة من ضرائب غير متوقعة لتخفيف الضغط على الوضع المالي العام للدول، إلى الحوافز التي ترفع من وتيرة إمكانات النفط والغاز المحتملة. كما ستبدأ العديد من تلك الإجراءات في عكس تطلعات الحكومات المضيفة فيما يتعلق بالتحول في مجال الطاقة. كما أننا نؤيد السياسات الذكية التي تسعى إلى توفير العدالة والقدرة على التنبؤ، بغض النظر عن السعر السائد».

النمو الاستثماري المقيد

سينخفض التدفق النقدي للصناعة إلى 1,3 تريليون دولار أمريكي بنسبة 9 في المائة في عام 2023، بينما سترتد معدلات إعادة الاستثمار (الاستثمار مقسوماً على التدفق النقدي التشغيلي) إلى 28 في المائة، مسجلة ارتفاعاً عن أدنى مستوى لها على الإطلاق في عام 2022 حيث سجل 24 في المائة. سيرتفع معدل الإنفاق على التطوير أيضاً بنسبة 10 في المائة على الأقل لتصل إلى ما بين 460 مليار دولار أمريكي و480 مليار دولار أمريكي. وقد علق مكاي قائلاً: «يجب أن يرتفع الاستثمار أكثر في عام 2023 والسنوات اللاحقة

المحررة: لويز ووترز

فريق التحرير والتصميم:

براشانت إيه بي، ميريام بروتوكوفا، راؤول بوتنفيدو، برفين سي بي، روبرت دانيلز،
ماتيو هايهو، فينا آشوات، تولانا نايك، الأمير كاريابا، شيفاني دروف.

الناشر: نك فوردهام

مدير مبيعات: بريتشارد روزيلر

مدير مبيعات المجلة: تانمبي ميشرا

هاتف: +918-2678444 - بريد إلكتروني: tanmay.mishra@alaincharles.com

Country	Representative	Telephone	Fax	Email
India	Tanmay Mishra	(91) 8065684483	(91) 8040600791	tanmay.mishra@alaincharles.com
Nigeria	Bola Olowo	(234) 8034349299	-	bola.olowo@alaincharles.com
South Africa	Sally Young	+27(0)824 906 961	-	sally.young@alaincharles.com
UK	Richard Rozelaar	(44) 2078347676	(44)2079730076	richard.rozelaar@alaincharles.com
USA	Michael Tomashefsky	(1) 2032262882	(1) 2032267447	michael.tomashefsky@alaincharles.com

المكتب الرئيسي:
Alain Charles Publishing Ltd
University House, 11-13 Lower
Grosvenor Place
London SW1W 0EX UK
هاتف: +44 (0) 7834 7676
فاكس: +44 (0) 7834 7676

مكتب الشرق الأوسط الإقليمي:
Alain Charles Middle East FZ-LLC
Office 112, Loft 2B
صندوق بريد: 0-2307
مدينة دبي للإعلام
دبي - الإمارات العربية المتحدة
هاتف: +971 4 448 9360
فاكس: +971 4 448 9361

الإنتاج: نيلبي وينديز

بريد إلكتروني: production@alaincharles.com

الإشتراكات: بريد إلكتروني: circulation@alaincharles.com

رئيس مجلس الإدارة: دريسك فوردهام

المترجم: عز الدين م. علي - ezeddinmali@gmail.com
التصميم والإخراج الفني: محمد مسلم النجار - alnajjar722@gmail.com
الطباعة: مطبعة الإمارات - دبي



Serving the world of business
© Oil Review Middle East ISSN: 1464-9314

← محتويات القسم العربي



تحليلات

قطاع التنقيب والإنتاج العالمي: ماذا ننتظر في عام 2023؟ ٤

ملخص محتويات القسم الإنجليزي:

تقارير خاصة: العراق، البحرين.

استطلاعات: التعليم والتدريب، تقنيات استخراج الكربون وتوظيفه وتخزينه.

تقنيات: الرقمنة، تقنيات مد خطوط الأنابيب، المكثفات.

ADVERTISERS INDEX

Company.....	Page
DMG World Media (Abu Dhabi) Ltd (ADIPEC 2023).....	51
DMS Global WLL.....	45
Dresser Al Rushaid Valve & Instr. Co Ltd.....	29
Emerson Automation Solutions.....	31
NESR.....	5
Oman Cement Company.....	2
Yateem Oxygen.....	15

تحت رعاية صاحب السمو الشيخ محمد بن زايد آل نهيان، رئيس دولة الإمارات العربية المتحدة
Under The Patronage of H.H. Sheikh Mohamed Bin Zayed Al Nahyan, President Of The United Arab Emirates



2 - 5 October 2023
Abu Dhabi, United Arab Emirates

Supported by



Call for Papers for the world's largest energy Technical Conference is now open

Why submit abstracts for the Technical Conference?

- ADIPEC hosts the world's biggest and most important technical conference, attracting 9,000+ international delegates
- Present your technical thought leadership and experience to global peers and potential clients
- Extend your influence as part of an exceptional Technical Programme
- Raise your company's profile at the world's leading energy event

SUBMIT YOUR ABSTRACT ONLINE:
www.adipec.com/cfp

SUBMISSION DEADLINE EXTENTION:
MONDAY 17 APRIL 2023

2023 Technical Conference categories:

- AI and digital transformation
- Completions **NEW**
- Drilling
- Energy transition and decarbonisation
- Field development
- Geoscience
- Marine operations and logistics **NEW**
- Health and safety
- Operational excellence
- People development and diversity
- Project management
- Unconventional resources development

Partners



ExxonMobil



NMDC
NMDC Group



Gold sponsors



Host city



Venue partner



Knowledge partner



Strategic insights partner



Technical Conference organised by



ADIPEC brought to you by



تُعنى بالنفط والغاز والبتر وكيمائيات

النشرة النفطية

المجلد 26 العدد الثاني 2023

الشرق الأوسط

قطاع التنقيب والإنتاج العالمي:
ماذا ننتظر في عام 2023؟

أشياء رئيسية نتطلع إليها في تطوير قطاع
التنقيب والإنتاج هذا العام