

VISION 2030: A Story of Transformation

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EPEC revolutionising power electronics

By fulfilling local demand, the nascent company is playing a pivotal role in the future of Saudi Arabia's energy infrastructure, CEO Jacob Thomas tells *OGN* – Page 10



Women can steer growth path

By empowering women as agents of change in clean energy, societies can unlock immense socio-economic benefits while safeguarding the planet – Page 18



Is China redefining energy intensity?

After the energy-intensity target was redefined as 'fossil-energy intensity', the numerical target becomes significantly easier to meet and reflects a lower level of ambition – Page 21

DROP OIL PHASE-OUT FANTASY: NASSER

DHAHRAN: With the current transition strategy visibly failing on most fronts owing to its collision with five hard realities, the world needs a new, realistic pathway for the energy transition that includes oil and gas, said the top official of Saudi oil giant Aramco.

These hard realities include the need to reset global efforts to meet climate ambitions, the inability of alternatives so far to displace hydrocarbons at scale, the costs associated with alternatives, energy requirements of the Global South, and the potential for further emissions reductions from hydrocarbons, stated Amin Nasser, the Aramco President & CEO, in his keynote speech at CERAWEEK by S&P Global 2024 in Houston, US.

CERAWEEK is an annual conference that gathers leaders, ministers, public-policy officials and CEOs from around the world to share insights, innovative ideas and solutions to energy, climate and environmental challenges.

More than 8,000 representatives of the energy, utilities, automotive, manufacturing, policy, financial, and technology fields attend CERAWEEK, which features more than 1,400 expert speakers.

On reducing emissions from oil and gas, Nasser said: "We should abandon the fantasy of phasing out oil and gas and instead invest in them adequately, reflecting realistic demand assumptions. We should ramp up our efforts to reduce carbon emissions, aggressively improve efficiency, and introduce lower carbon solutions."

"And we should phase in new energy sources and technologies when they are genuinely ready, economically competitive, and with the right infrastructure," he stated.



Nasser speaking at CERAWEEK

On the energy transition's impact on consumers, Nasser said: "As the current transition strategy increasingly impacts the majority, not just a tiny minority, consumers around the world are sending powerful messages that can no longer be ignored."

"We know they want energy with lower emissions, and rightly so. But many are struggling to afford the energy they need. And they worry about ample and reliable supply, which the recent energy crisis showed is not guaranteed... Unfortunately, the current transition strategy overlooks these broader messages from consumers. It focuses almost exclusively on replacing hydrocarbons with

alternatives, more on sources than on reducing emissions," he stated.

On the demand outlook for hydrocarbons, the Aramco chief said: "Despite the world investing more than \$9.5 trillion on energy transition over the past two decades, alternatives have been unable to displace hydrocarbons at scale... Global oil demand is expected to reach an all-time high in the second half of this year..."

"Likewise, gas remains a mainstay of global energy, growing by about almost 70 per cent since the start of the century... All this strengthens the view that peak oil and gas is unlikely for some time to come," he added.

OPINION

If oil disappeared tomorrow ...

BY **HAITHAM AL GHAISS**
OPEC SECRETARY GENERAL



IF oil disappeared tomorrow, there would be no more fuel; automobiles, buses, trucks, airplanes, rail, emergency services, including ambulances, fire engines and police cars would all come to a halt.

Phones and computers, which derive their plastic components from oil, would also vanish. You wouldn't be able to get to work or school, and it would be a struggle to communicate.

If oil disappeared tomorrow, the construction sector would come to a standstill; the required machinery would become stationary; asphalt to pave roads, bitumen for roofs, home insulation would and heating, and paint would vanish, and there would be no more furniture or crockery, which are likely made from petroleum-derived products too.

If oil disappeared tomorrow, it would be a challenge to stay clean or keep homes clean; cleaning detergent, soap, toothpaste, body lotion, deodorant, shampoo, shaving cream, eyeglasses and brushes all contain petroleum-derived products.

If oil disappeared tomorrow, food production would be devastated; the vehicles required in agriculture would come to a standstill and you couldn't produce fertilisers. This would lead to food shortages.

If oil disappeared tomorrow, it would affect pharmaceuticals and medical supplies, including syringes, adhesives, hand sanitisers, prosthetics, artificial heart valves, MRI scanners, insulin pens, face-masks, and even aspirin. And it is difficult to conceive of a modern hospital without these products.

If oil disappeared tomorrow, the renewables industry would be impacted; the fibreglass or plastic to make wind turbines and the ethylene to produce solar panels would vanish, equipment used in the mining of critical minerals would come to a stop.

If oil disappeared tomorrow, it would impact the production of electric vehicles (EVs). The separators in lithium-ion batteries are typically made of polyethylene or polypropylene petroleum-based products.

If oil disappeared tomorrow, industrial production would crimp, tax revenues would be depleted, millions of jobs would be lost, and the plight of the poor would worsen.

But this is not even the full list of everything that would be impacted, if oil disappeared tomorrow.

Despite these eventualities, there are calls, such as 'Just stop oil', 'Keep it in the ground', or 'don't invest in new oil and gas projects',

Of course, everybody wants to see greenhouse gas emissions reduced. But Opec believes that technological solutions and efficiency improvements can play a vital role, and the oil industry is already proactive in this regard.

We need to be cautious of endangering the present, in the name of saving the future.

This opinion has been edited for brevity.



Renewables growth faces structural challenges

ABU DHABI: Achieving the global target set at COP28 to triple renewable power capacity by 2030 relies heavily on establishing conducive conditions for such growth.

In a report, the International Renewable Energy Agency (IRENA) said that tripling renewable power capacity by 2030 is technically feasible and economically viable, but its delivery requires determination, policy support and investment at-scale.

The "Tracking COP28 outcomes: Tripling renewable power capacity by 2030" highlights that 2023 has set a new record in renewable deployment, adding 473 gigawatts (GW) to the global



Tripling renewable power capacity by 2030 is a challenge

energy mix.

An average of almost 1,100 GW of renewables capacity must be installed annually by 2030, more than double the record set in 2023. Annual investments in re-

newable power generation must surge to \$1550 billion on average between 2024 and 2030.

Francesco La Camera, Director-General of IRENA, said: "In the wake of the historic UAE Con-

sensus on tripling renewables at COP28, these capacity additions despite setting a new record clearly indicate that achieving the target is far from guaranteed."

Achieving the tripling target is far from assured as an additional 7.2 terawatts (TW) of renewable power would need to be deployed to reach the required 11 TW by 2030. However, current projections indicate the target will remain out of reach without urgent policy intervention.

G20 nations, for example, must grow their renewable capacity from under 3 TW in 2022 to 9.4 TW by 2030, accounting for over 80 per cent of the global total.

VISION 2030: CHARTING A PATH BEYOND OIL

By staying true to the principles of Vision 2030 and harnessing the collective will and ingenuity of its people, Saudi Arabia can overcome obstacles and emerge as a global beacon of progress and prosperity

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KSA Vision 2030

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By **ABDULAZIZ KHATTAK**

IN the realm of national development, a vision serves as more than just a lofty idea; it's a roadmap guiding a nation towards a brighter future.

Saudi Arabia's Vision 2030 epitomises this concept, offering a comprehensive plan to steer the Kingdom away from its dependency on oil towards a diversified, knowledge-based economy.

It is understood that the demand for oil will persist for the foreseeable future, and the Kingdom, being the most cost-effective producer, holds a significant competitive advantage in this industry for the foreseeable future.

While oil, gas and petrochemical sectors, which are projected to maintain decades of productivity and market demand ahead, will remain fundamental to the economy, the focus will be on reducing the carbon footprint of these sectors.

Efforts will be intensified in both upstream and downstream sectors, with a particular emphasis on advancing research in petrochemicals to diversify the range of products derived from crude oil.

But despite its historical association with oil extraction the Kingdom is now on a trajectory towards environmental stewardship and renewable energy, in alignment with the objectives of Vision 2030.

And following with the global trend towards sustainable development, the Kingdom is embarking on an ambitious journey outlined in its national vision.

This vision encompasses a strategic shift towards renewable energy sources, aiming to diminish reliance on conventional energy and foster long-term sustainability.

Under Vision 2030, Saudi Arabia has instituted substantial policy initiatives to bolster renewable energy endeavours.

Recognising the necessity for such a transition, the nation is actively promoting renewable energy sources while endeavouring to lessen dependency on traditional energy reservoirs.

Yet, the transition to renewable energy presents its own set of challenges, notably the necessity for a plethora of critical minerals such as copper, nickel, lithium, and cobalt.

These minerals play a pivotal role in the fabrication and operation of renewable energy technologies, including solar photovoltaics (PV), wind turbines, and electric vehicles (EVs).

Consequently, nations endowed with mineral resources are stepping forward to establish renewable energy hubs, capitalising on their resource wealth.

Saudi Arabia stands among these nations, boasting substantial reserves of essential minerals such as copper, nickel, zinc, silicon, and aluminum.

In a notable development, Saudi Arabia in January revised its estimates for untapped mineral resources upwards, highlighting the immense potential valued at \$2.5 trillion.

This revision underscores the nation's commitment to leveraging its mineral wealth for economic advancement and sustainable development.

As part of this initiative, the country plans to issue numerous mining exploration licenses to international investors, signaling its commitment to fostering a conducive environment for sustainable development.



Prince Mohammed ... future-proofing KSA's economy

Furthermore, Saudi Arabia's Ministry of Energy has outlined ambitious plans to attract substantial investments in renewables, aiming to create hundreds of thousands of job opportunities and foster significant income growth by 2032.

With a target to achieve 50 per cent clean energy in its energy mix by 2030, the nation is gearing up for substantial investments in renewable power generation.

In an interview, Marco Arcelli, CEO of ACWA Power, shed light on Saudi Arabia's ambitions to harness renewable energy sources extensively. ACWA Power, a key player in the renewable energy landscape, is poised to play a pivotal role in developing a significant portion of Saudi Arabia's renewable energy capacity.

The envisioned renewable energy portfolio includes substantial contributions from solar photovoltaic (PV), wind, and concentrated solar power (CSP) projects, collectively aiming to reduce carbon emissions significantly.

Moreover, Saudi Arabia's unique geographical and climatic attributes position it favourably for renewable energy deployment.

The Ministry of Energy is actively pursuing a diversification of the energy mix, aiming to increase the share of natural gas and renewables while reducing reliance on liquid fuels.

By fostering a competitive local market for renewable energy, Saudi Arabia aims to capitalise on its geographic advantages to achieve cost efficiencies in solar energy generation.

Furthermore, plans for green hydrogen plants and global expansions underscore the nation's commitment to pioneering sustainable energy solutions on a global scale.

ACWA Power has strategic plans in motion to establish several green hydrogen plants, including a notable \$8.5 billion facility slated for development in Neom, a burgeoning city situated on Saudi Arabia's northwest coast.

DIVERSIFICATION & NON-OIL PROGRESS

The cornerstone of Vision 2030 is the diversification of the Saudi economy, a journey marked by significant milestones.

Non-oil sectors have emerged as engines of growth, bolstered by substantial public spending and strategic investments.

Initiatives such as the National Industrial Development and Logistics Program and the Financial Sector Development Program underscore the commitment to fostering a diversified and resilient economy.

Amidst this transition, Saudi Arabia's non-oil growth trajectory has been robust, fueled by burgeoning domestic demand and private investment.

A defining aspect of Vision 2030 is the elevation of women's role in the workforce, reflecting a broader societal shift towards inclusivity and empowerment.

The vision has surpassed its target of achieving 30 per cent female participation in the labour force, signaling a paradigm shift in traditional gender norms and opening new avenues for economic contribution.

INVESTMENT OPPORTUNITIES & SECTORAL DEVELOPMENT

Vision 2030 has catalysed a wave of investment across diverse sectors, positioning Saudi Arabia as an attractive destination for global capital.

The Kingdom's strategic advantages, including abundant natural resources and a strategic geographic location, underpin its appeal to investors seeking lucrative opportunities.

Key sectors such as mining, tourism, sports, and entertainment have emerged as focal points for investment, leveraging inherent strengths and addressing domestic and regional demand.

Ambitious projects like NEOM, The Line, and the Red Sea holiday destination exemplify the convergence of visionary planning and tangible development, symbolising Saudi Arabia's commitment to innovation and progress.

Central to Vision 2030 are the giga projects, ambitious endeavours aimed at redefining the economic and social landscape of Saudi Arabia.

These transformative initiatives, including NEOM, Red Sea Global, Qiddiya, Roshn, and Diriyah Gate, represent the pinnacle of the Kingdom's development aspirations.

CONCLUSION

In the narrative of Saudi Arabia's evolution, Vision 2030 stands as a beacon of hope and possibility.

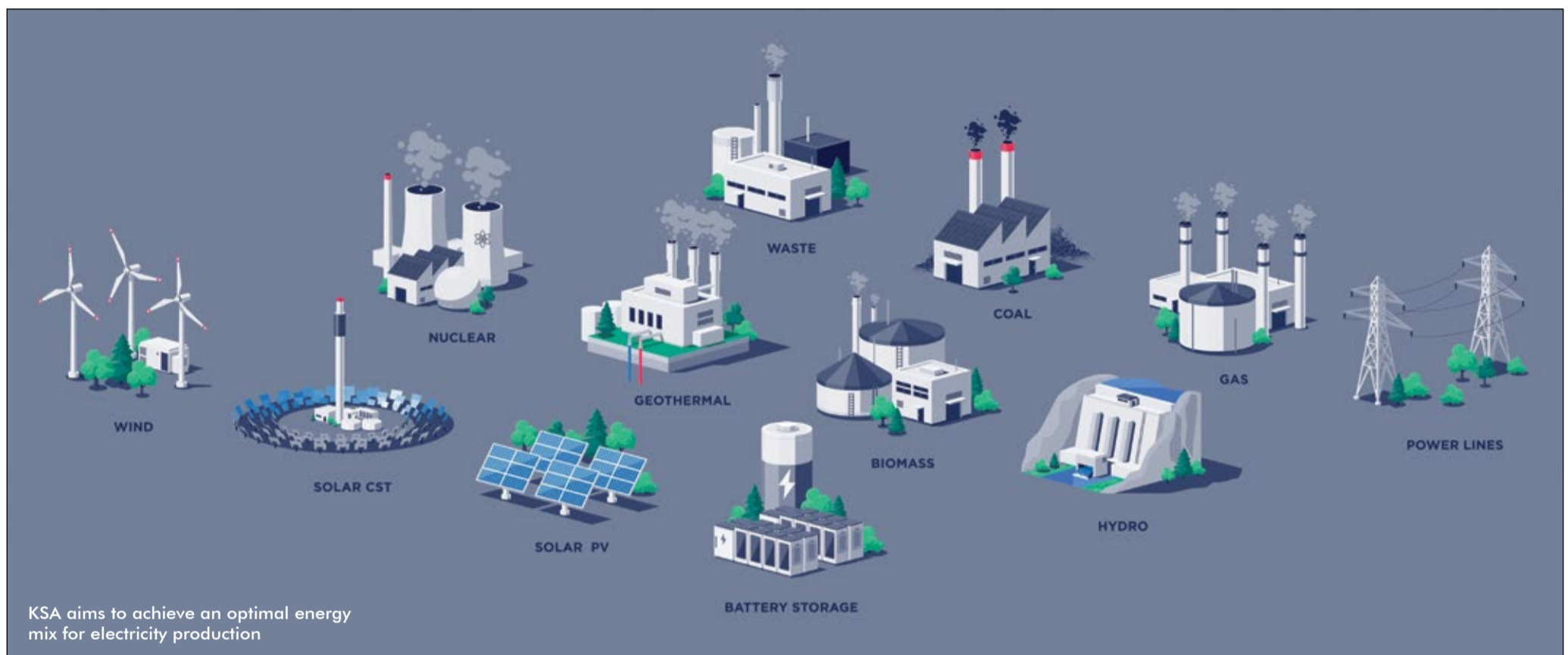
As the Kingdom navigates the complexities of a rapidly changing global landscape, the vision provides a roadmap for resilience, adaptability, and sustainable growth.

The transformative journey outlined in Vision 2030 transcends mere economic diversification; it embodies a societal transformation rooted in inclusivity, innovation, and progress.

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KSA sets on a transformative decarbonisation journey

Moving away from its historical reliance on oil, the Kingdom is forging a path towards a more diversified energy-efficient future, in line with Vision 2030 and SGI, Ronan Tregouet, Vice-President, Energies and Chemicals for Middle East and Central Asia, Schneider Electric, tells **OGN**



By **ABDULAZIZ KHATTAK**

IN its capacity as the leading producer of crude oil among Opec member states, Saudi Arabia has a critical case to build as it attempts to drive an orderly energy transition.

At the start of COP28 last year, Prince Abdulaziz bin Salman, Saudi Arabia's Energy Minister, reiterated that energy is fundamental and there is no value in stigmatising the industry as the global demand for hydrocarbons remains essential.

Energy transitions take time, effort, and judicious use of resources at our disposal; and, Saudi Arabia brings to the table a compelling action plan for decarbonisation.

Decarbonisation in Saudi Arabia is not just a policy shift, it's a paradigm shift.

Moving away from its historical reliance on oil, the Kingdom is forging a path towards a more diversified energy-efficient future, in line with forward-looking strategies such as the Saudi Vision 2030 and the Saudi Green Initiative (SGI).

DIVERSIFYING ITS ENERGY MIX

The Kingdom has set in place an ambitious objective to diversify its energy mix and reduce its carbon footprint, aiming to produce 50 per cent of its electricity from renewables by 2030.

Furthermore, Saudi Arabia has launched a series of initiatives to stimulate renewable energy and reduce reliance on oil.

An example is the National Renewable Energy Program, which aims to add 27.3 gigawatts (GW) of renewable energy capacity by 2024, with a final target of 58.7 GW by 2030, in line with the Kingdom's goal to reach 130 GW of renewable energy.

This target is backed by more than 80 initiatives in the public and private sectors, with investments exceeding \$188 billion.

Net-zero by 2060 is an ambitious yet achievable plan for Saudi Arabia. However, achieving decarbonisation in the Kingdom involves more than just switching from fossil fuels to renewables, as it calls for a significant overhaul of our entire energy system.

The Kingdom, while fully aware of the substantial challenges that lie ahead, is undeterred in its commitment to forge a path that aligns with the evolving global discourse on environmental responsibility.

Saudi Arabia plans to invest approximately \$266 billion in cleaner energy, encompassing a range of initiatives to not only generate renewable energy but also to add transport lines and distribution networks, with an aim to eventually export energy globally and produce clean hydrogen.

This investment is a cornerstone in the country's strategy to diversify its energy mix and move towards a more sustainable future.

The remarkable pace and progress of Saudi Arabia's decarbon-



Tregouet ... decarbonisation in KSA is a paradigm shift

isation efforts showcase a powerful intent and strong commitment towards climate action.

This rapid transformation, spearheaded by visionary projects such as NEOM, Qiddiya and The Red Sea Project, signifies a deep commitment to climate initiatives and a shift towards sustainable urban living.

Saudi Arabia's vision is not just about adopting renewable energy but also about reimagining the future of urban living and energy consumption.

These initiatives reflect a deep understanding of the urgent need for environmental stewardship and a clear vision for a sustainable future.

For companies operating in the Kingdom and the broader region, this shift brings about a new era of opportunities.

The move towards renewable energy and sustainable practices isn't just a policy change; it's a paradigm shift that redefines the business landscape.

Companies that align with this green vision will likely find themselves at the forefront of innovation and growth.

In fact, Saudi Arabia's overall GDP is forecasted to expand by 4.4 per cent in 2024, driven primarily by the non-oil sector.

This growth is attributed to higher consumer spending and other non-oil activities, indicating a healthy economic condition for the kingdom.

The Kingdom is also focusing on achieving an optimal energy mix for electricity production, aiming for a 50 per cent renewable energy mix by 2030.

This strategy includes replacing up to one million barrels of equivalent liquid fuel currently used for power generation.

Schneider Electric Sustainability Research Institute's report puts forth 12 energy service transformations to decarbonise the energy landscape of Saudi Arabia, including digitalisation of living environments, disruptive changes in construction, electrification of mobility and industrial processes, and circularity.

Schneider Electric has taken significant steps to support Saudi Arabia's Vision 2030 and its goal to diversify its economy and reduce its dependence on oil.

The company recently acquired a license from the Saudi Ministry of Investment and Commerce to set up its regional headquarters in Saudi Arabia.

The Kingdom's commitment to decarbonisation, including the goal to generate 50 per cent of its electricity from renewables by 2030, is creating substantial opportunities in the renewable energy sector.

The country's focus on solar energy, exemplified by the construction of the world's biggest single-site solar-power facility, signals a significant shift towards renewable energy sources.

DECARBONISATION

This shift is part of a larger strategy that includes a circular carbon economy, aiming to reduce emissions from oil and gas production, and a significant investment of at least \$270 billion in low-carbon energy projects by 2030.

While the country is making strides towards decarbonisation, it also plans to increase oil production and export.

This dual approach highlights the complex nature of transitioning from a fossil fuel-dependent economy to a more diversified one.

For energy companies, the transition to a low-carbon future involves more than just switching from fossil fuels.

It includes measures like reducing carbon emissions through non-emergency flaring elimination, electrifying upstream facilities with low-emissions electricity, and expanding the use of carbon capture, utilisation, and storage (CCUS) technologies.

These steps are part of a broader strategy to diversify company portfolios with various assets related to sustainable energy sources and innovative technology.

The transition to a sustainable future is challenging yet crucial. The industrial sector, accounting for nearly half (around 46 per cent) of the country's total emissions, plays a pivotal role in this shift.

Saudi Arabia's journey towards decarbonisation sends a powerful message that even the most oil-reliant nations can pivot towards a more sustainable future through collaboration at the global level and substantial investments towards renewables - with the private sector as a crucial catalyst in this transformative journey.

Kingdom drives CCUS growth to reach net-zero by 2060

With ambitious targets for emissions reduction, the Kingdom is not only investing in diverse energy sources and technologies like CCUS, but also pioneering regulatory frameworks and fostering collaboration

By ABDULAZIZ KHATTAK

SUSTAINABILITY is a key part of Saudi Arabia's Vision 2030 as the Kingdom strives towards a net-zero future by 2060. With a commitment to clean energy and sustainability, the Kingdom is leading the charge in the Middle East and North Africa (Mena) region in tackling energy and climate challenges with innovative solutions such as the Circular Carbon Economy (CCE) and an increasingly diverse energy mix, in which 50 per cent of energy will come from renewable sources by 2030.

Two new reports published by the International Energy Forum (IEF) say the region can achieve this by developing regulatory and incentive frameworks, promoting research and development, strengthening policy dialogue, and facilitating regional integration.

The 'CCUS Regulatory and Policy Landscape: A Global and Mena Perspective' report found that there was a wide divergence of CCUS regulatory maturity between countries.

Meanwhile, the 'Market Assessment for CCUS in Mena Region' report found that the cost of CCUS is projected to decline significantly due to technological advancements, economies of scale and standardisation.

It highlights the importance of regional collaboration to bring CCUS projects to fruition at the required scale for cost reductions to materialize.

Governments and industry can facilitate investment in CCUS technologies and scale deployment by enhancing collaboration in the Mena region and beyond, the two reports found.

The reports on carbon management in the Mena region will support countries in expanding the deployment of CCUS and achieving their climate goals.

Published in collaboration with the Circular Carbon Economy Regional Collaboration, the reports explore opportunities and challenges for expanding the role of CCUS in the Mena region through the lenses of regulatory frameworks and market growth.

"The IEF is pleased to contribute to the development of carbon management technologies by providing member governments with objective research on regulatory systems and market growth of carbon capture use and storage," said Joseph McMonigle, Secretary General of the IEF.

CCUS deployment must reach at least 5.6 Gigatons of CO₂ by 2050 globally from 40 million tons today to meet the Paris Agreement and UN Sustainable Development Goals, according to the IEF.

KSA DRIVES CCUS GROWTH IN MENA

Through initiatives like Saudi Green Initiative (SGI), the Kingdom, which is the largest economy in the region, aims to reduce carbon emissions and to protect the environment.

Under the Saudi Green Initiative (SGI), the country is taking a multidimensional approach to emissions reduction.

Beyond a domestic energy mix transformation, SGI is steering a range of ambitious initiatives that will reduce emissions. These include investing in new energy sources, improving energy efficiency, and developing a carbon capture and storage programme.

The initiative also includes plans to plant 10 billion trees and reduce carbon emissions by 278 million tons per annum (Mtpa) of CO₂e by 2030, while going net-zero by 2060.

Considering carbon capture, use and storage (CCUS) is seen as a key tool for mitigating climate change particularly in regions that are rich in oil and gas, such as Mena, Saudi Arabia is investing significantly in CCUS solutions in removing heavy emissions from hard-to-abate sectors.

The timeline of these initiatives began in 2021 when the Public Investment Fund (PIF) announced the development of a dedicated platform for the exchange of carbon credits.

In 2022, the PIF Voluntary Carbon Market company was established, focusing solely on operating carbon exchange.

Additionally, Saudi Arabia implemented its certificate issuance mechanism, the Greenhouse Gas Crediting and Offsetting Mechanism (GCOM), which was designed to cater to KSA's national circumstances and enable the development of technologies that play a pivotal role in Saudi Arabia's strategy to address climate change, including CCUS technologies.

GCOM aims to incentivise entities within Saudi Arabia by rewarding them for their activities that successfully reduce emissions beyond the standard environmental regulations and best practices.

Ongoing and planned projects in Saudi Arabia, Qatar, the UAE, and Kuwait are setting the basis for the development of a

| # | Project name | Country | Operational year | Carbon point source | Use type | Capacity [Mtpa] |
|---|---|---------|------------------|--|-----------------------------|-----------------|
| 1 | Ras Laffan Qatar CCS Project Phase 1 | | 2019 | Energy generation – Natural gas processing | Dedicated storage | 2.1 |
| 2 | Uthmaniyah CO ₂ -EOR Demonstration Project | | 2015 | Industry – Iron and steel | EOR | 0.8 |
| 3 | Al Reyadah CO ₂ -EOR Project Phase 1 | | 2016 | Energy generation – Natural gas processing | EOR | 0.8 |
| 4 | SABIC Carbon Capture & Utilisation Project | | 2015 | Industry – Chemicals | Chemicals | 0.5 |
| 5 | Peshkabr Gas Capture and Injection Project | | 2020 | Energy generation – Natural gas processing | EOR | 0.3 |
| 6 | Qatar Fuel Additives Company Methanol Project | | 2015 | Industry – Methanol | Feedstock to boost methanol | 0.2 |

Source: IEA, desk research, Roland Berger

Figure 1 ... Top six largest operational CCUS projects by capacity in Mena

| # | Project name | Country | Commissioning | Carbon point source | Use type | Capacity [Mtpa] |
|---|---|---------|---------------|--|---------------|-----------------|
| 1 | Jubail CCS Hub ¹⁰ | | 2027 | Not specified | Not specified | 9.0 |
| 2 | Ras Laffan Qatar CCS Project Phase 2 | | 2025 | Energy generation – Natural gas processing | EOR | 5.0 |
| 3 | Al-Zour CCS Project | | 2025 | Energy generation – Oil | EOR | 2.5 |
| 4 | Shah Adnoc CCUS Project | | 2025 | Energy generation – Gas | EOR | 2.3 |
| 5 | Al Reyadah CO ₂ -EOR Project Phase 2 | | 2025 | Industry – Iron and steel | EOR | 2.0 |
| 6 | Habshan & Bab Adnoc CCUS Project | | 2025 | Energy generation – Gas | EOR | 1.9 |
| 7 | Bahrain CCUS Pilot Project | | 2025 | Energy generation – Oil | EOR | 0.5 |

Source: IEA, desk research, Roland Berger

Figure 2 ... Top 7 largest planned CCUS projects by capacity in Mena



A CO₂ capturing plant in Hawiyah, KSA

CCUS market in the region.

CCUS capacity in the Mena region has grown faster 19 per cent between 2015 and 2030 than the expected growth (2 per cent) in emission levels during the same period.

Despite this growth, it is estimated that only 1.5 per cent of the potential market will be captured in 2030 with the current operational and planned CCUS capacity, indicating the potential for significant additional investments in CCUS projects in the region.

The MENA region's market share is projected to decline from 8 per cent in 2022 to 6 per cent in 2025, mainly due to the high number of CCUS projects planned in Europe.

Globally, the Americas are projected to lead the CCUS market by 2025 with a share of 66 per cent, followed by Europe with 18 per cent share.

There are six CCUS projects currently operational in the Mena region. These are located in Qatar, Saudi Arabia, the UAE and Iraq (Figure 1).

Qatar has two CCUS projects in operations with a total capacity of 2.3 Mtpa, followed by Saudi Arabia with a total capacity of 1.3 Mtpa divided over two projects.

The UAE and Iraq both have one project with a capacity of 0.8 Mtpa and 0.3 Mtpa, respectively.

Some 71 per cent of the planned CCUS projects in the Mena region are large-scale (1– 5 Mtpa) projects, compared to c.17 per cent of the projects in operation.

While other countries have not specified long-term CCUS targets, Saudi Arabia says it will develop 44 Mtpa by 2035.

Saudi Arabia's Jubail CCS hub, with a total capacity of 9.0 Mtpa, will be commissioned by 2027 (Figure 2).

COLLABORATION TO ADVANCE CCUS

In 2020, Saudi Arabia launched the Circular Carbon Economy Regional Collaboration (CCERC) that aims to foster regional collaboration for the implementation of CCE technologies across four cooperation pillars: Technical knowledge building, human capability building, policymaking and joint investments.

The kingdom is also part of the Carbon Management Challenge along with 21 other nations. This ambitious initiative centers around accelerating the development and deployment of CCUS technologies.

The primary objective of the challenge is to set mid and long-term capacity targets to strengthen predictability and foster innovation and collaboration in the field of CCUS, accelerating deployment and encouraging the development of cutting-edge technologies that can significantly reduce carbon emissions.

In February, speaking at the 14th Symposium on Energy Outlooks in Riyadh, McMonigle warned that unprecedented uncertainty over the energy transition is eroding investor confidence and undermining energy security and transition goals.

He also said: "There is no single linear path for energy transitions," adding that transitions would be multi-dimensional, operating at different speeds, from different starting points and driven by national priorities.

REGULATORY FRAMEWORKS

In terms of CCUS-specific regulations, Saudi Arabia, the UAE, Qatar, and Egypt have not implemented any specific laws or regulations yet. However, there are positive developments in these countries towards the development of CCUS technologies.

Through the National Circular Carbon Economy Program, Saudi Arabia is creating a favourable environment for CCUS.

The Kingdom provides financial support through channels like the Aramco Future Investment Initiative and the Public Investment Fund Green Finance Framework.

In conclusion, Saudi Arabia's commitment to sustainability, exemplified through initiatives like the SGI and CCERC, underscores its pivotal role in driving CCUS growth in the Mena region.

With ambitious targets for emissions reduction and net-zero by 2060, the Kingdom is not only investing in diverse energy sources but also pioneering regulatory frameworks and fostering collaboration.

Reports from the International Energy Forum highlight the necessity of regional integration and policy dialogue to accelerate CCUS deployment.

As global energy transitions evolve, Saudi Arabia's proactive approach sets a precedent for meaningful action towards a cleaner, more sustainable future.

TAQA: Charting the course for Saudi energy in Vision 2030

Serving as a catalyst for Vision 2030, TAQA is driving transformative change through energy innovation and women's empowerment in line with the kingdom's development goals, Rayed Eskandrani, Vice President - North Middle East (NME), tells **OGN**

SAUDI Arabia's Vision 2030 is meant to be a roadmap that enhances the Kingdom's national strengths, including its strategic location, investment strength, and its important position in the Arab and Islamic worlds.

Launched in April 2016 by His Royal Highness Prince Mohammed bin Salman bin Abdulaziz, Crown Prince, Prime Minister, and Chairman of the Council of Economic and Development Affairs, under the guidance of the Custodian of the Two Holy Mosques, King Salman bin Abdulaziz Al Saud, it is built around three primary themes: A vibrant society, a thriving economy, and an ambitious nation.

From these pillars, a total of 96 strategic goals have branched out that will be achieved through multiple programmes and initiatives and undertaken by all stakeholders including the public, private, and non-profit sectors.

Essentially, Vision 2030 has targeted all sectors through revolutionary reforms to achieve comprehensive and sustainable development in the Kingdom of Saudi Arabia.

For example, when it comes to the oil and gas industry, the vision aims to increase the percentage of local content in the industry from 40 per cent to 75 per cent.

The reduction of greenhouse gas (GHG) emissions is also a key objective, and the target is to achieve net-zero emissions by 2060 in addition to generating, at least, 50 per cent of local power consumption from renewable energy sources by 2030.

TAQA, A TRUE BELIEVER IN THE POWER OF SAUDI VISION 2030

TAQA, a Saudi joint stock company, is mainly owned by the Public Investment Fund (PIF). Its other shareholders, which collectively represent almost half of the ownership, are joint stock companies and several private and industrial investors, such as Saudi Aramco Development Company (SADCO), the Arab Energy Fund (formerly Arab Petroleum Investment Corporation), General Organization for Social Insurance (GOSI) and Riyadh Bank. Directed by its board of directors and executive management, TAQA has paid unparalleled attention to the Saudi Vision 2030, and has in this regard taken many key decisions and implemented new programmes and initiatives.

TAQA'S JOURNEY IN WOMEN'S EMPOWERMENT

Vision 2030, which heavily emphasises empowering women in Saudi Arabia, launched many initiatives to increase female economic participation from 22 per cent to 30 per cent by 2030.

These initiatives have been embedded in all the relevant government bodies, social organisations, and industry sectors.

As a result of Saudi Arabia's serious commitment to women empowerment, Saudi women these days are active in many areas within the public roles and occupy leadership positions in both the government bodies and the Shura Council. They are contributing greatly to the economic sector and social spheres.

On its part, TAQA has orchestrated several programmes to enforce and ensure the successful deployment of competent women in the organisation while launching several women empowerment initiatives under the principles of diversity, equity and inclusion.

TAQA's focus on women in leadership has driven a blend of strategy and operational steps on the ground to achieve a consistent global approach in the way it can lead its internal community towards the objective of women's empowerment.

TAQA'S ENDEAVOUR TO A GREENER WORLD - UNLOCKING GEOTHERMAL ENERGY IN THE KINGDOM

The Paris Agreement of 2016 fostered a new culture creating a global behavioural trend targeting the elimination of GHG emissions.

This is not strange at all when you think of the risk that human race faces, a risk that can change the face of our planet and drastically affect the human race.

Under the Paris Agreement and in line with Vision 2030, Saudi Arabia has set aggressive nationally determined contribution (NDC) targets to reduce its GHG emissions and has identified clear roadmaps for achieving those targets.

NDC targets is to reduce GHG emissions by 278 million tonnes by 2030. To achieve such an ambitious goal, the Saudi NDC plan took many measures, including increasing the share of renewable energy to reach 50 per cent of the national energy mix by 2030.



TAQA has launched several initiatives to empower women



Eskandrani ... embracing ambitious goals

In this regard, geothermal energy is one of the main targeted sources of renewable energy.

According to the Saudi NDC report, Saudi will also seek to localise a significant portion of the renewable energy value chain, including research and development and manufacturing.

Zooming in on Saudi Arabia's geothermal energy development initiative, which is mainly driven by Saudi NDC Targets and Vision 2030, several key local government bodies, academic institutions, and industry sectors have started to fulfill their role of responsibility as per the vision.

Realising the strategic importance of perusing geothermal energy, TAQA, has entered a joint venture with a leading Icelandic company, Reykjavik Geothermal Company (RG), globally recognised as a pioneer in sustainable geothermal power development.

This collaboration, named TAQA Geothermal, is anticipated to play a crucial role in enabling Saudi Arabia to achieve its carbon reduction objectives.

TAQA Geothermal aims to initiate geothermal development

projects that will produce, at least, 1 GW of electricity or its equivalent in the foreseeable future.

The most recent TAQA Geothermal project was signed with King Abdullah University of Science and Technology (KAUST) in December 2023 to deliver a pilot well for research on geothermal energy utilisation.

KAUST researchers will use data obtained from this well to optimise the development of geothermal energy resources within the Kingdom.

With this project, TAQA Geothermal is already heavily engaged in exploring, evaluating, and harnessing geothermal resources in the Kingdom, with the aim of reducing the country's carbon footprint and move towards greener energy.

TAQA'S INNOVATION - LOCALISING OILFIELD SOLUTIONS AND HIGH TIER TECHNOLOGIES

Due to the logarithmic growth TAQA went through in the last decade, the company currently offers a wide spectrum of services and solutions that cover most of the oilfield upstream service sector.

In line with Vision 2030, which aims to increase the percentage of local content in the oil and gas industry, TAQA has worked instrumentally on localising industries and high-tier oilfield solutions and technologies.

Utilising its research and development (R&D) capabilities, the company has developed organic and inorganic growth strategies underpinned by the ambitious desire of localising oilfield services technologies over a short span of time.

TAQA today runs one of the biggest laboratories in the Middle East region that specialises in providing the most innovative solutions for cementing, acidising, and stimulation operations.

It also works on developing many innovative software solutions utilising Artificial Intelligence (AI) to optimise the workflow and increase output accuracy.

In conclusion, TAQA's commitment to Saudi Arabia's Vision 2030 is evident through its multifaceted initiatives spanning women's empowerment, renewable energy, and innovation in the oil and gas sector.

By partnering with leading entities and embracing ambitious goals, TAQA embodies the spirit of national development outlined in the Vision.

From unlocking geothermal energy to localising high-tier technologies, TAQA exemplifies the transformative potential of public-private collaboration in realising a sustainable and prosperous future for Saudi Arabia, and thus paving the way for a brighter, greener, and more inclusive Kingdom.

EPEC revolutionising power electronics in the Kingdom

By fulfilling local demand, the company is playing a pivotal role in the future of Saudi Arabia's energy infrastructure, CEO Jacob Thomas tells **OGN**

ERAM Power Electronics Company stands as a pioneering force in the power electronics sector, proudly headquartered in Dammam, Saudi Arabia.

Founded in 2011, it has carved a distinguished path through its relentless pursuit of innovation, commitment to excellence, and dedication to driving technological advancement.

In an exclusive interview with **OGN** energy magazine, Jacob Thomas, the company's CEO, delves into the company's strategic direction, key initiatives, and vision for shaping the future of power electronics.

Briefly, what led to the establishment of Eram Power Electronics Company and what is its mission in the power electronics industry?

When we were exploring the industry landscape, it became apparent that there was a notable absence of a local power electronics manufacturer in Saudi Arabia.

Fueled by a desire to address this need and contribute to the nation's energy self-sufficiency, Eram Holdings embarked on the entrepreneurial path to establish Eram Power Electronics Company (EPEC), the first of its kind in the Kingdom.

Ours has been a journey of passion, innovation, and a deep-seated commitment to contribute to the energy sector in this region.

The process of establishing EPEC was marked by challenges, strategic planning, and unwavering determination.

It was a bold venture aimed not only at fulfilling the current demand for power electronic solutions but also at playing a pivotal role in the future of Saudi Arabia's energy infrastructure.

Today, as the company's CEO, I take pride in leading a team of passionate individuals dedicated to advancing the field of power electronics, promoting local innovation, and fostering economic growth in Saudi Arabia through sustainable energy solutions.

Our mission is to revolutionise the power electronics industry in Saudi Arabia and beyond.

We want to be more than a market player. We want to be a contributor to a brighter and more sustainable future, where innovative power electronics solutions play a pivotal role in meeting the energy challenges of today and tomorrow.

How does EPEC stay at the forefront of innovation in the power electronics industry, and what are some recent technological advancements?

We maintain our leadership in innovation within the power electronics industry by con-



EPEC's state-of-the-art production area



Thomas ... innovation focus

tinuously striving to anticipate and surpass technological trends.

EPEC allocates significant resources to ongoing research and development (R&D) efforts.

This investment allows the company to explore emerging technologies, test new concepts, and develop innovative solutions that address the evolving needs of the power electronics industry.

Understanding the unique challenges and requirements of the Saudi market, EPEC tailors its innovations to address specific local needs.

This approach ensures that the company's technological advancements align with the Kingdom's energy goals and contribute to its economic development as envisioned in Vision 2030.

Semiconductors serve as the essential foundation for power electronics, constituting the central focus of our R&D team's efforts that delves into fundamental research on semiconductors and explore their diverse applications.

EPEC has made a breakthrough in developing silicon carbide (SiC) based systems suitable for industrial applications, such as charge controllers for solar power systems.

This will soon be followed by EV chargers, utility grade AC and DC systems and variable frequency drives.

Given the increasing focus on sustainability, how does EPEC contribute to the development and implementation of sustainable energy solutions?

EPEC is deeply committed to contributing to sustainability in the energy sector. The company recognises the importance of addressing environmental challenges and actively pursues initiatives that promote a greener and more sustainable future.

The company's multifaceted approach to sustainability encompasses ecofriendly product design, renewable energy integration, use of energy-efficient components, greener energy storage solutions, compliance with environmental standards, employee training, and community engagement.

Through these initiatives, we remain dedicated to advancing sustainable energy solutions and fostering a more environmentally conscious energy sector.

EPEC boasts a substantial clientele spanning various countries. How do you navigate the complexities of different markets, and what strategies contribute to your success on such a scale?

Our success in serving a diverse clientele across various countries is driven by a set of strategies designed to navigate the complexities of different markets.

EPEC places strong emphasis on understanding and addressing the unique needs of its customers in different markets.

This customer-centric approach involves active engagement, feedback collection, and a commitment to delivering solutions that align with the specific requirements of each client.

We conduct thorough market research in each region to understand the local dynamics, including customer preferences, regulatory frameworks, and industry trends.

This insight guides the customisation of products and services to align with specific market needs.

We also place a strong emphasis on compliance with international standards and certifications.

How does EPEC actively promote the development of the supplier ecosystem, while also contributing to the overall economic progress of the Kingdom?

We have played a pivotal role in advancing the supplier ecosystem in the Kingdom by actively fostering collaboration and development within the industry.

Through strategic initiatives and partnerships, EPEC contributes to the growth and enhancement of the supplier network in several ways.

We actively engage with local suppliers, fostering a mutually beneficial relationship.

The company prioritises the establishment of long-term partnerships with local suppliers. This commitment provides stability and encourages suppliers to invest in continuous improvement and innovation, ultimately contributing to the economic sustainability of the Kingdom.

How does EPEC foster employee engagement and development within the organisation?

Our success is driven by our talented team. We prioritise a culture of continuous learning, providing opportunities for professional development and growth.

Our team is strategically composed of a diverse blend of youthful energy and seasoned expertise, creating a harmonious synergy within our organisation.

To enhance collaboration and skill diversification, we facilitate cross-functional training.

Employees are provided with opportunities to learn about different departments and roles within the organisation, promoting a well-rounded skill set and fostering a deeper understanding of the company's overall operations.

What do you see the upcoming trends in the power electronics industry, and how is EPEC preparing for these changes?

The power electronics industry is undergoing rapid evolution, driven by technological advancements, regulatory shifts, and the global push towards sustainability.

As we anticipate future trends in the sector, we are proactively preparing for these changes through strategic initiatives.

The industry is witnessing a shift towards wide-bandgap semiconductors, such as silicon carbide (SiC) and gallium nitride (GaN) due to their superior performance.

Exceeding industry standards, we introduced a groundbreaking innovation in the power electronics field last year with the LB Series solar charge controllers.

These cutting-edge controllers utilise SiC semiconductors to achieve high power density, minimise electromagnetic emissions, and excel in challenging operational environments.

We are expanding our product portfolio to include innovative solutions for EV charging stations aligning with the growing EV market.

We are rapidly embracing digitalisation and realigning our strategies to match the evolving landscape of power electronics.

Today, EPEC stands as the embodiment of our vision a leading force in the power electronics industry in Saudi Arabia.

The journey continues, fueled by a commitment to excellence, sustainability, and the belief that innovative solutions born in Saudi Arabia can have a global impact on the future of energy.



EPEC's offices in the Kingdom

Adopting digital technologies across distributed manufacturing systems drives powerful efficiency and flexibility gains, Keith Chambers, Vice President, Manufacturing, AVEVA, tells **OGN**

Connected factory networks are future of manufacturing

GLOBAL manufacturers are battling supply chain headwinds and rampant competition, all the while striving to slash expenses and adopt more sustainable operating practices.

Amid this pressurised backdrop, organisations are addressing the challenge by running multiple plant facilities in various locations, enabling them to respond to local demand and supply chain fluctuations.

This type of distributed manufacturing, or multi-site production, also promotes economies of scale and enables easier access to new markets.

Digital solutions like manufacturing execution systems (MES) have proven a powerful enabler for manufacturers – both before and during the pandemic.

From raw materials to finished products, MES software can monitor the entire manufacturing process and oversee manual and automated workflows in real-time.

By leveraging these value chain insights, organisations are able to elevate plant efficiency, quality control, waste reduction, cost-efficiency, and sustainability.

Factories have long gleaned competitive gains from MES, such as automated production processes, paperless manufacturing, and data-driven continuous improvements.

However, these benefits traditionally tended to

be derived from individual, separately-deployed MES systems, which can be hindered by information silos.

The good news is technologies such as cloud and edge computing now make it possible to centrally host a single MES across multiple plants.

Known as 'enterprise MES', this approach promotes consistent manufacturing practices by standardising technologies and processes. Enterprise MES enables seamless production reporting, continuous improvement, efficiency measurement, and regulatory compliance enforcement across multiple locations.

The latest MES systems support running application services and data storage in the cloud, as well as remote connections for plant workers and automation systems – yielding powerful value, efficiency, and sustainability gains throughout the plant network.

The concept of industrial Intelligence as a Service (IIaaS) leverages the cloud to eliminate data silos between information technology, operational technology, and engineering technology, fostering a powerful network effect.

This interconnected approach forms the basis of a connected industrial economy, enabling enterprises to share data and analytics insights both internally and externally, collaborate on new opportunities, and address critical industry and envi-



Chambers ... efficiency focus

ronmental challenges.

In the post-pandemic era, a manufacturer's success hinges on its agility and resilience in the face of change.

In this context, having a global overview of manufacturing operations offers competitive advantages, unequivocally leading to improved profitability and sustainability outcomes.

Multisite MES systems provide the necessary standardisation for consistent visibility and data-driven decision-making in distributed manufacturing operations.

Put simply, making rich and contextualised operational data available from edge to enterprise can critically enhance business agility and resilience.

What's more, operational best practices can be captured and scaled across all plants, optimising operational efficiency, reducing waste, energy consumption, and carbon emissions, while mitigating quality and consumer safety compliance risks through consistent product genealogy record-keeping and end-to-end material traceability across the plant network.

Consumer goods company Henkel realised just this sort of gain when it built a digital backbone for its laundry and home care production business.

The company deployed MES to meet its sustainability and efficiency goals. As a result, it was able to improve supply-chain resource efficiency on the production side by 5-6 per cent annually.

With such a demonstrable impact on the manufacturing value chain at all levels, the harmonisation of operational technology and data across multi-site manufacturing businesses is essential for gaining competitive advantage and delivering on sustainability goals.

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Endress+Hauser leverages data for operational excellence

In an era where data reigns supreme, Endress+Hauser is harnessing the power of artificial intelligence (AI) and digital transformation to revolutionise industrial process engineering. Speaking to **OGN**, Jan Strohmeier, Digitalization Manager, underscores the shift towards a data-centric future

THE process industry is undergoing a significant transformation as it rapidly embraces a data-centric future.

Traditionally, this sector has relied heavily on manual processes and conventional methods for monitoring and controlling operations.

However, with advancements in technology and the rise of Industry 4.0 principles, there is a growing recognition of the immense value that data can bring to the industry.

One of the key drivers behind the shift towards a data-centric future is the increasing availability of sensors, connected devices, and Industrial Internet of Things (IIoT) technology.

These advancements enable the collection of vast amounts of real-time data from various stages of the process, including equipment performance, environmental conditions, and product quality metrics.

As Jan Strohmeier, Digitalization Manager, Endress+Hauser, states: "More than 40 million Endress+Hauser instruments in use worldwide are constantly creating a huge amount of data and valuable information for the users. And Endress+Hauser is constantly developing new and enhanced measuring devices for the process industry."

With the new generation of devices, there is more intelligence inside and more data generated.

"With the additional information about the device and the application, new outcomes can be generated. This will ensure our products are future ready," says Strohmeier.

By leveraging this data, companies in the process industry can gain valuable insights into their operations, identify patterns and trends, and make informed decisions to optimise efficiency, reduce costs, and improve overall performance.

For example, companies can deploy predictive maintenance strategies by monitoring equipment performance and identifying signs of potential failures before they occur.

This proactive approach helps minimise unplanned downtime, improves equipment reliability, and extends asset lifespan, ultimately reducing maintenance costs and enhancing overall operational efficiency.

Strohmeier says: "Endress+Hauser is committed to supporting its customers along the road to digitalisation. The Endress+Hauser cloud solution Netilion makes use of specific data from production processes and serves to increase efficiency alongside conventional plant topology."

One example is the cloud connected IIoT ra-



Strohmeier ... data focus

dar FWR30 level sensor from Endress+Hauser and the Battery Magnetic Flow Meter that sends data directly via 3G/LTE into the company's Netilion ecosystem.

Strohmeier says: "We have thought about brownfield installation and have solutions to enable any field device to be connected securely to the cloud using digital field protocols like Hart to send the data into the cloud via an Edge device."

Alternatively, Bluetooth or Wireless Hart connection can be used when installing new cables but that is not feasible.

When developing a cloud solution, it is of the highest importance to ensure cybersecurity from the device till the cloud.

Endress+Hauser has developed the Netilion Ecosystem with security and data privacy as the backbone of the solution.

"Users can empower themselves and their teams with the right data. With just two steps – registering and connecting devices – customers can digitalise their plants and start benefitting immediately," says Strohmeier.

Another significant aspect of the data-centric future in the process industry is its impact on quality control and regulatory compliance.

With stringent quality standards and regulatory requirements, companies must ensure that their products meet specified criteria and adhere to regulatory guidelines.

By implementing data analytics tools and systems, companies can monitor product quality in real-time, identify deviations from standards, and take corrective actions to maintain compli-



The Micropilot FWR30 is a cloud connected radar level sensor

ance and uphold product integrity.

A good example here would be the Memosens technology from Endress+Hauser that has revolutionised liquid analysis technology.

It converts the measured value to a digital signal and transfers it inductively to the transmitter, eliminating the problems associated with moisture at the sensor connector.

With the digital sensor, the sensor cable is not part of the measuring loop anymore and, therefore, makes sensor replacement in the field fast and easy.

With this decoupling of sensor and cable, it will be possible to perform any calibration in the laboratory under controlled condition rather than in the harsh and sometimes hazardous field environment.

Version 2.0 has increased the memory size within the sensor to be able to store eight times more data, such as calibration histories and load matrices, paving the way for true predictive maintenance and enhanced IIoT services.

Additionally, the data-centric approach facilitates collaboration and integration across the entire value chain, from suppliers to customers. By sharing relevant data and insights with partners and stakeholders, companies can improve supply chain visibility, enhance communication, and foster innovation, leading to greater efficiency and sustainability across the industry.

Strohmeier adds: "While digitalising plants, customers can create digital twins of all their assets and build the initial connections with them. This will be the first step to many future functionalities and improvements. Users get an over-

view of what equipment is currently installed, create lists, organise assets the way they like and increase their knowledge about their installed base and make their plants transparent."

There are several benefits to this for users, including:

- Reducing their maintenance efforts by getting evaluations of obsolescence and standardisation possibilities of their equipment and reduce the complexity in the field and reduce spare part stock.

- Get to know which assets are not available anymore and automatically receive replacement recommendations; act consequently and increase reactivity thereby reducing risk and increasing plant's uptime. Netilion analytics use present and past information to reveal improvement potential that users would have never thought of before.

- Handling documentation becomes effective as there will be less supporting documentation to manage.

- Once users have collected the data of an asset, it is instantly available on all their devices and wherever they are.

In conclusion, Strohmeier says: "Endress+Hauser strives to create a unified and memorable journey for the customer from the first contact till the after sales support. And data has emerged as a game changer for this, paving the way for unprecedented levels of efficiency, quality, and innovation. Organisations harnessing the power of data will not only thrive but also lead the way towards a more sustainable, agile, and interconnected future."



The Memosens technology has revolutionised liquid analysis technology



Netilion ... an award-winning cloud-based IIoT ecosystem designed for industrial processes

Lamprell's pivotal role in KSA's Vision 2030 is underscored by its strategic investments and partnerships, driving economic expansion and sustainability initiatives

Lamprell commmits to growth in the Kingdom

By ABDULAZIZ KHATTAK

LAMPRELL'S growth in Saudi Arabia closely aligns with the Kingdom's Vision 2030 through strategic investments and the forging of key partnerships to drive economic expansion and bolster sustainability efforts.

Launched by His Royal Highness Prince Mohammed bin Salman bin Abdulaziz, Crown Prince, Prime Minister, and Chairman of the Council of Economic and Development Affairs, Vision 2030 aims for economic diversification and advancement across various sectors including health, education, infrastructure, recreation, and tourism.

A key success strategy by Lamprell and its owner Alghihaz Holding is collaboration with major Saudi entities like Aramco and International Maritime Industries (IMI) yard to drive progress.

Alghihaz Holding, a leading Saudi-owned investment company and the majority shareholder of Lamprell, invests in key sectors like energy, utilities, and infrastructure.

Its focus on sustainable energy solutions, including renewable energy projects, aligns with Saudi Arabia's goal of diversifying its energy solutions.

Through Lamprell, which has oil and gas and offshore wind business streams, Alghihaz creates job opportunities, supports local talent, and encourages technological innovation, which aligns with Vision 2030.

STRATEGIC INVESTMENTS

Lamprell's 2017 investment in IMI, alongside Aramco, Bahri, and Hyundai Heavy Industries, is vital for Saudi Arabia's maritime sector.

Located in Ras Al-Khair, IMI is set to be the region's largest maritime facility, boosting job creation, skill development, and technology transfer.

This supports Saudi Arabia's goal to enhance its position in global maritime trade and industrial growth.

In 2018, Lamprell's selection as one of the few contractors in Aramco's LTA programme for offshore facilities marked a significant achievement.

This allowed Lamprell to participate in major projects for the Kingdom, with several currently ongoing in its UAE facilities and destined to reach various locations in Saudi Arabia in the coming months and years.

In partnership with Aramco and in support of the Saudi Green Initiative (SGI), Lamprell commenced a sustainable endeavour in Q1 2024 and planted 10,000 mangroves along the Arabian Gulf coastline on Abu Ali Island, northeast of Jubail.

The ceremonial planting event, attended by representatives from Lamprell and Aramco, took place in early March 2024.

Lamprell's establishment of a Saudi office in 2018 (LKSA) further cements its commitment to Saudi Arabia.

Located in Dhahran, LKSA enhances Lamprell's local presence, supports the IMI joint venture, and strengthens connections with sister companies under Alghihaz's umbrella in Saudi Arabia.

This positioning enhances Lamprell's ability to support Aramco's In-Kingdom Total Value Add (iktva) programme targets effectively.



A computer generated image of the IMI yard



Employees at Lamprell's KSA office

In February 2024, Lamprell's senior management alongside Alghihaz participated in the International Petroleum Technology Conference (IPTC), which was held at the Dhahran Expo.

Alghihaz was a principal sponsor at the event. In essence, Lamprell's multifaceted involvement in the Kingdom's industrial sector, from manufacturing offshore products to nurturing local talent, solidifies its dedication and role in contributing to Vision 2030.

- Saudi Aramco Approved 9 COM Manufacturer with highest number of API licenses in region
 - 600007215: Flow Meter: Venturi Tube
 - 600002865: Manifolds & Instrumentation fittings
 - 600002742: Flowmeter: For Reduce Piping
 - 600002792: Orifice; Assembly: Plate; Flange
 - 600002845: Thermowell; DWG AB-036019
- API 4F: Crown Block Assemblies, Derricks, Masts, Substructures
- API 6A: Gate, Ball, Plug valves, Spools and Pressure Control accessoriess
- State-of-the-Art Fabrication and Machine shop in the region
- In Kingdom Engineering and Design capabilities
- One stop shop for local manufacturing & services
- Choke and Kill Manifolds
- Frac Equipment
- DNV Certified Offshore Equipment
- Repair and Recertification of Pumps, Compressors, Engines, Valves and Associated Plants
- Rental Services
- Rig Inspection services
- ASME U & ASME R Stamped products



Lamprell's mangrove tree plantation 2024 campaign in KSA

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Oil and gas operators need to develop greater system flexibility, delivered through digital technology



Circularity positively impacts ownership cost, sustainability

Embracing circularity in asset management processes fosters sustainability, reduces costs, and extends equipment lifespan, while AR streamlines servicing, minimising emissions, Mateusz Zajac, Sustainability Lead, ABB Electrification Service, tells **OGN**

KEEPING costs low, reducing total cost of ownership and improving sustainability doesn't need to be a trade-off, if circularity is front and centre of your asset management processes.

The circular economy is an economic concept that prioritises, amongst other factors, the life-time extension, material reduction and reuse and recycling of products.

Contrary to the traditional linear model of 'take-make-dispose', in a circular economy, we keep resources in use as long as possible, extracting the maximum value from them, and then recovering and regenerating products and materials at the end of their useful life.

The efficacy of circularity is already well documented, with The World Economic Forum (WEF) estimating that the global material cost savings of adopting a more restorative economic structure could be over \$1 trillion per year by 2025.

A large proportion of this saving would be a result of industrial supply chains reusing materials, eliminating waste and reducing resource dependency.

By extending the life of equipment in service, you can avoid emissions, replace capex investments with opex costs, and improve the sustainability of your operations.

There are several factors at play driving this change: Regulatory, economic and competitiveness.

For example, running equipment to the point of failure may cost up to 10 times more than investing in a program of regular maintenance.

Likewise, there are increasing opportunities and incentives for businesses to decarbonise, such as the Corporate Sustainability Reporting Directive (CSRD) from the EU and Inflation Reduction Act (IRA), providing incentives for clean energy in the US.

Using circular economics to avoid operational emissions with circularity is an increasingly popular way of doing business sustainably for those managing power distribution assets.

Thanks to advancements in technology and a more granular understanding of the role industries must play in circular economics, there is now a wealth of tools and techniques to make circularity easier to achieve.

REDUCING DOWNTIME KEEPS WASTE TO A MINIMUM AND PROFITS HIGH

To operate in an everchanging and volatile environment, oil and gas operators need to develop effective resilience strategies, with greater system flexibility, delivered through digital and emerging technology.

The downtime required to replace or upgrade an outdated component is significantly less than the time it takes to install an entirely new system or troubleshoot unknown issues.

By identifying the problem before it happens, predictive maintenance also enables engineers to accurately calculate how much downtime will be required to correct the issue.

Less downtime means less waste, especially in certain applications like the food and beverage sector, as well as time savings that equate to increased profit.

Let's use switchgear as an example. Extending equipment life using component retrofits when needed results in 80 per cent less downtime (equivalent to one day, instead of one working week), around 40 per cent cost savings, and a remarkable 60 per cent carbon emission avoidance compared to a total switchgear replacement.

UPGRADING TECHNOLOGIES WITHOUT REPLACING SYSTEMS

By leveraging new technologies and retrofitting dated components with digital upgrades, oil and gas providers can achieve improved resilience, as well as helping deliver performance improvements, investment optimisation and new levels of sustainable efficiency.

Industry 4.0 and IoT connectivity are key drivers for system upgrade programmes.

Subsequently, businesses are investing heavily in automation and digitalisation – cutting short the operational life of many systems that are no longer compatible with future business objectives.

For facilities working towards circular economics, choosing a system specialist that offers retrofits and upgrades of key components rather than the complete replacement of entire systems, can help strike the right balance.

Retrofitting or upgrading technology can not only help organisations to work towards

a more circular economy but can also deliver significant cost savings compared to replacing entire systems.

By only upgrading parts of a system that deliver connectivity and advanced digital functionality, not only can much of the equipment remain in service, minimising costly downtime, but it also saves on natural resources – such as copper – and avoids carbon emissions as only the components require manufacturing, transportation and end-of-life disposal.

EXTENDING LIFECYCLE OF EQUIPMENT BY UP TO THREE DECADES

With this approach, ABB customers have reduced the cost of operating equipment by a third while extending the lifetime of electrical infrastructure by as much as 30 years.

In terms of best practice, early adopters are taking a preventative approach, replacing older, nondigital circuit breakers with more intelligent, digitally enabled breakers linked to cloud-computing platforms that enable the seamless provision of value-added services.

These can provide real-time data analysis on asset condition, performance and potential

safety issues, helping operators prevent potential hazards before they arise and minimising disruptions to production.

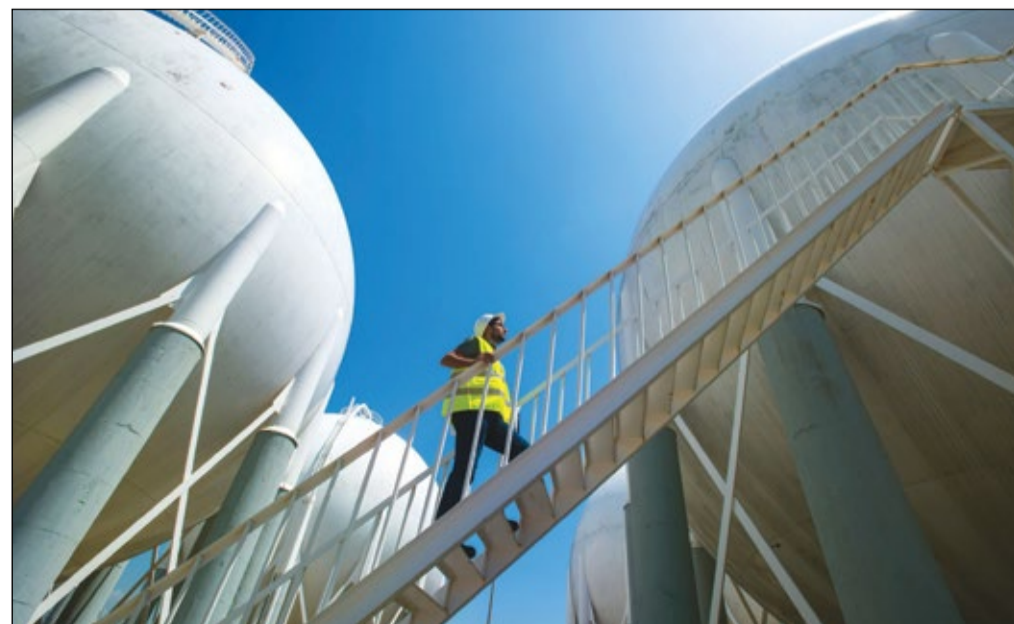
AVOIDING EMISSIONS IN SERVICING WITH AUGMENTED REALITY

Using the latest augmented reality (AR) technologies, servicing equipment is now more efficient and more accurate than ever before, but without the emissions associated with servicing technicians visiting site – saving up to 171 gm of CO2 per passenger-kilometre.

Unlike virtual reality (VR), which replaces physical reality with a computer-generated environment, AR superimposes digital information on the physical world.

Augmented servicing removes the need for an engineer to travel to site, by providing them with a remote real-time view of the equipment via a smart device like an Android or iOS phone.

Information and servicing guides can be overlaid (augmented) into the view of the technician carrying out the service, to provide simple instructions and diagnostic guidance that can provide solutions in hours, not days.



Retrofitting can help deliver significant cost savings compared to replacing entire systems

Aujan is a key step in ECG's portfolio to create national champions in energy and energy-related technologies in line with Vision 2030 and the iktva programme, says Ali Alturki

Acquisition fits in national plan

ENERGY Capital Group (ECG) continues to invest in reliable industrial and technology businesses across the energy sector in line with Saudi's Vision 2030 and Aramco's In-Kingdom Total Value Add (iktva) programme.

Last month, the Saudi Arabia-based investment group, completed the successful acquisition of Aujan Industrial Supplies and Services (AIS), a leading provider of solutions to the oil and gas, petrochemical, metals and mining and water markets.

This marks the fourth investment of the company's ECG2.0 Fund-II, which announced a first close in Q3 2023. The fund plans a further five investments in 2024.

AIS brings 30 years of experience and expertise in delivering solutions to the oil and gas, petrochemical, metals and mining, power, and water markets.

The company is a channel to market for the strongest global brands focused on safety and reliability including MSA, BH, Rotating Machinery Services, Honeywell and 3M.

The end goal for ECG is to invest in businesses that can capitalise on the significant investment going into regionally relevant value chains and driving the need for technology-based services and turnkey solutions across the industrial supply chain.

It aims to strengthen current supply market constraints to the energy and industrial value chain and asset base to further the industrial growth of Saudi Arabia and the wider GCC.

Accordingly, the acquisition of AIS is an important



AIS marks ECG's fourth investment

part of ECG's investment strategy, providing a powerful growth platform to further build the industrial services and solutions champion.

ECG plans to grow the business significantly through strategic expansion of existing business lines into new segments and geographies, and integrating the AIS business into to the ECG portfolio, building on synergies and adjacencies and driving operating leverage.

The company's focus on technology deployment through localised services and solutions along with its diversified revenue sources, will enable it to achieve significant revenue growth and become a leading player in the industrial services and solutions market.

Vision driver PIF swells after Aramco stake



THE Public Investment Fund (PIF), Saudi Arabia's sovereign wealth fund and the major catalyst for economic and social transformation in support of the Vision 2030, has grown to become the fifth largest state-owned investment organisation in the world.

As per the fund's website, it has \$925 billion worth of assets under management, \$68 billion behind Abu Dhabi Investment Authority's assets of \$993 billion.

This came about after His Royal Highness Prince Mohammed bin Salman bin Abdulaziz Al-Saud, Crown Prince, Prime Minister, Chairman of the Council of Economic and Development Affairs and Chairman of the PIF Board of Directors announced the transfer of 8 per cent of Saudi Aramco's shares from the govern-

ment's ownership to PIF's fully owned companies.

The Crown Prince had in 2021 said the PIF would reach \$1 trillion in assets by 2025.

In 2023, PIF invested \$31.5 billion to become the world's top spending sovereign wealth fund, Reuters said.

The PIF's mandate includes launching new sectors, building new strategic partnerships, localising technologies and knowledge, and creating more direct and indirect job opportunities in the local market.

The fund's key investments include NEOM, ACWA Power, Arcelormittal Tubular Products, Industrialization and Energy Services Company (Taqa), Saudi Electricity Company (SEC), EV make Lucid, among nearly a hundred companies.



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