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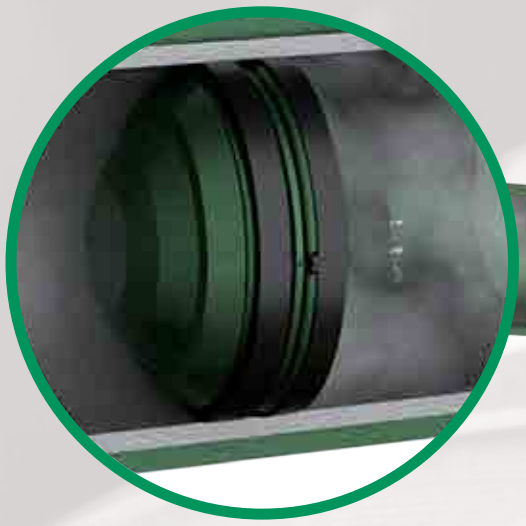

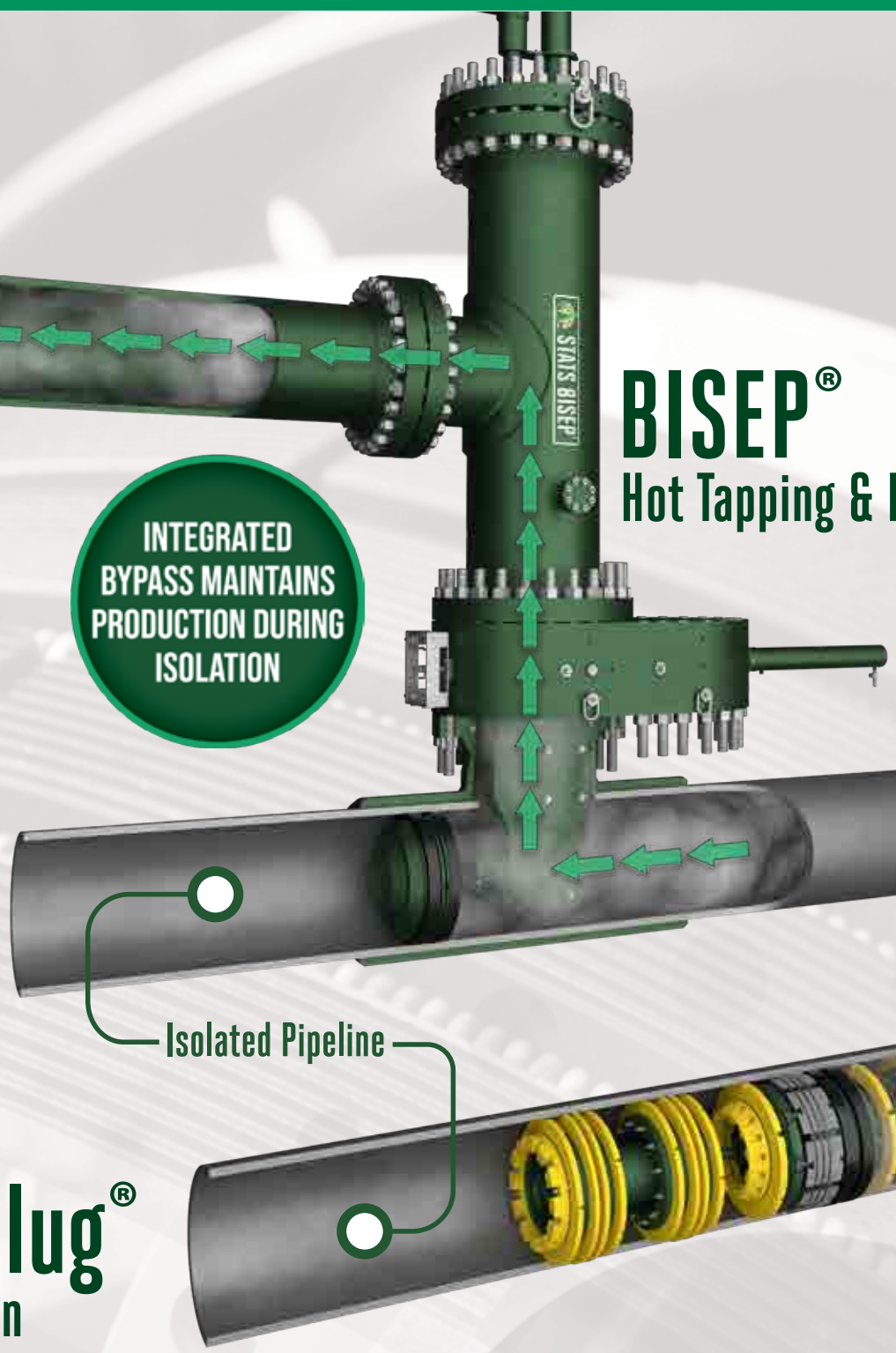

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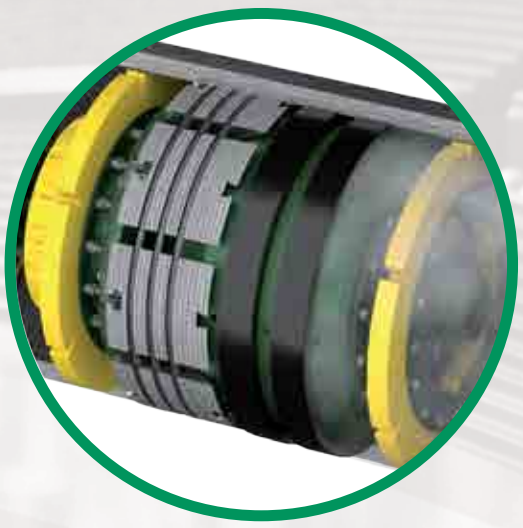

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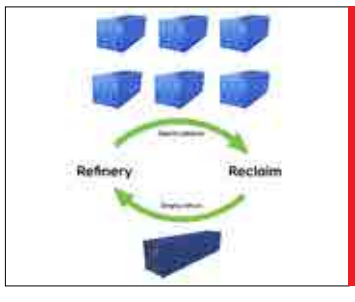


Smart packaging boosts efficiency
Hoover CS's innovative reusable packaging accelerates catalyst unloading, enhances safety, reduces waste, and lowers emissions, helping refiners improve efficiency – Page 14

Marine hose type and STS transfers
Re-evaluating marine hose selection can realise operational and cost benefits in STS transfer operations, Raphael Poquet from Trelleborg tells *OGN* – Page 20

Skills gap threatens global transition
GETI 2025 report highlights the urgent need to address skills gaps in renewable energy, as traditional and transitional sectors adapt to decarbonisation and workforce challenges – Page 24

ENERGY LEADERS EXPOSE 'FLAWS' IN GLOBAL TRANSITION RACE

By ABDULAZIZ KHATTAK

- **'Sustainable progress not possible without access to reliable, affordable and secure energy'**

REGIONAL industry leaders called for a more pragmatic and balanced approach to addressing rising energy demand and the global energy transition.

Dr Sultan Al Jaber, UAE Minister of Industry and Advanced Technology, Managing Director and Group CEO of ADNOC, and Executive Chairman of XRG, emphasised the need for "positive energy" and practical strategies to drive economic growth, artificial intelligence (AI) expansion, and sustainable energy solutions.

Meanwhile, Amin Nasser, President and CEO of Saudi Aramco, issued a stark critique of the current energy transition plan, warning that decades of investment had yielded minimal results.

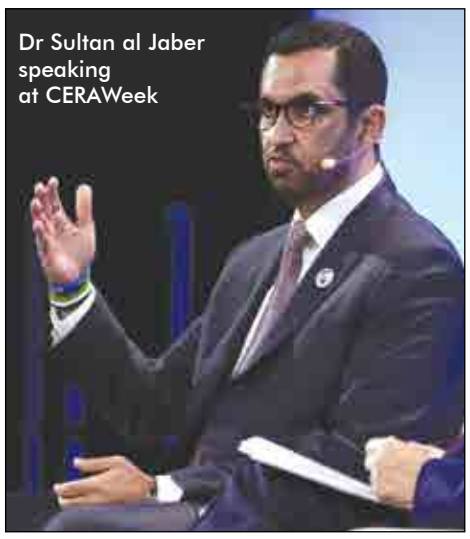
Addressing a global audience of senior energy leaders at CERAWeek 2025 in Houston, Dr Al Jaber called for policies that are "pro-growth, pro-investment, pro-energy, and pro-people".

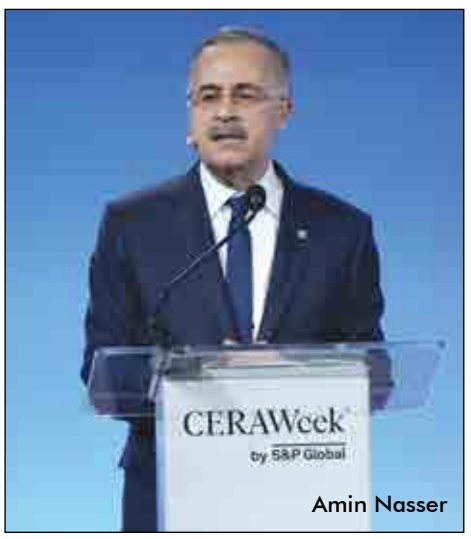
He reinforced the idea that energy remains the "beating heart of economies" and that a pragmatic approach was required to meet surging global demand.

Dr Al Jaber highlighted that by 2035, global oil demand is expected to rise from 103 million to, at least, 109 million barrels per day (bpd), while LNG and chemicals will expand by over 40 per cent. Total electricity demand will surge by 70 per cent, reaching 15,000 GW.

To meet this demand, he called for an "and-and" approach, embracing every viable energy source, from oil and gas to nuclear and renewables.

Dr Al Jaber argued that "sustainable progress is simply not possible without access to reliable, affordable and secure energy."


Dr Sultan al Jaber speaking at CERAWeek



Amin Nasser

AI'S GROWING ENERGY DEMAND

A key theme in Dr Al Jaber's speech was the inextricable link between energy and AI. He underscored the rapid energy demands posed by AI technologies, stating that applications such as ChatGPT consume ten times the energy of a simple Google search.

By 2030, data centre power consumption in the US alone is expected to triple, representing over

ADNOC REVIEW - Pages 2 to 14

10 per cent of national electricity use.

"The fact is you cannot scale AI without access to energy. Simply put, the true cost of AI is not just in code, it's in kilowatts. The race for AI supremacy is essentially an energy play," he said. "Without energy, AI is just potential. With it, AI has the potential to reshape the world," he stated.

NO MEANINGFUL PROGRESS

Nasser took a more critical stance on the energy transition, arguing that the world has spent trillions of dollars on an energy shift that has failed to deliver meaningful progress.

He challenged the notion that conventional energy could be replaced rapidly, citing the continued dominance of hydrocarbons in global supply.

"For over a decade, and along with others from our industry, I have felt a growing responsibility to highlight the inherent flaws in the current energy transition plan," Nasser said.

He noted that despite $10 trillion in transition-related investments over the past two decades, fossil fuels still account for over 80 per cent of US energy, 90 per cent in China, and 70 per cent in Europe.

Nasser also criticised the unrealistic expectations surrounding green technologies. He pointed out that green hydrogen costs between $4 and $12 per kg, which translates to the equivalent of $200 to $600 per barrel of oil. Similarly, long-term energy storage remains prohibitively expensive, with a payback period ranging between 15 and 40 years.

He likened the transition to a misguided treasure hunt, calling it "an energy El Dorado" that was doomed from the start.

To move forward, Nasser proposed a three-pronged framework:

- All energy sources must be part of the solution; renewables should complement conventional energy rather than replace it.
- Investment must be equitably distributed; developing nations must receive a fair share of funding and technology.
- Practical, results-driven strategies must take priority; climate ambitions should align with energy security and affordability.

Renewables, gas meet global energy demand rise

GLOBAL energy demand grew significantly in 2024, driven by a surge in electricity consumption, according to the latest IEA Global Energy Review. Renewables and natural gas covered most of the additional demand.

The report highlights key trends, including the continued rise of clean energy technologies, shifting fossil fuel demand, and the increasing decoupling of carbon emissions from economic growth:

- Global energy demand grew by 2.2 per cent in 2024, outpacing the 1.3 per cent average annual growth (2013–2023).
- Emerging and developing economies contributed over 80 per cent of the increase.
- Electricity consumption rose by 4.3 per cent (1,100 TWh) driven by high temperatures, industrial use, EVs, AI, and data centres.
- Renewables and nuclear met 80 per cent of new electricity demand, contributing 40 per cent of total power generation.
- Natural gas demand rose by 2.7 per cent (115 bcm), the largest increase among fossil fuels.
- Oil's share of global energy demand fell below 30 per cent for the first time in 50 years.
- 25 per cent increase in EV sales.
- Global CO2 emissions rose by 0.8 per cent to 37.8 billion tonnes, largely due to record temperatures.
- Advanced economies' CO2 emissions fell by 1.1 per cent.
- China's per-capita emissions are now 16 per cent above advanced economies, nearly twice the global average.
- Clean energy technologies are preventing 2.6 billion tonnes of CO2 emissions annually.

Aramco targets more China investments

Amin Nasser, Aramco President & CEO, said China occupied a key position in Aramco's global strategy, and that the company continued to identify additional investment opportunities in the Asian nation.

Underlining Aramco's ongoing activities in China in a speech at the China Development Forum in Beijing, he said: "In China, Aramco is actively supporting energy and chemical feedstock security by investing in multiple downstream projects. In fact, China is among our key investment destinations. Our investments are currently in Fujian, Liaoning, Zhejiang and Tianjin. I emphasize 'currently' because we are continuing to identify additional opportunities, which include energy and chemicals, as well as technology."

Nasser said China was already the world's largest consumer and producer of petrochemicals, accounting for nearly half of global demand. "And it is becoming a major hub for the entire chemicals industry value chain, which will be critical to industries of the future," he added.

Orascom JV lands $2.6bn Saudi power plant deal

Orascom Construction's joint venture with leading Spanish contractor Técnicas Reunidas has been awarded an engineering, procurement and construction (EPC) services contract worth $2.6 billion for the Qurayyah IPP Expansion Project in Saudi Arabia.

A global engineering and construction group, Orascom is primarily focused on infrastructure, industrial and high-end commercial projects in the Middle East, Africa, and the US. Orascom Construction said the contract for Qurayyah IPP was awarded by Hajr Two Electricity Company, a consortium comprising key Saudi entities major Acwa Power, Saudi Electricity Company and Haji Abdullah Alireza. Its JV with Técnicas Reunidas has already received the Limited Notice to Proceed.

A large-scale 3GW combined cycle gas-fired power plant, Qurayyah IPP will come up in the Kingdom's Eastern Province.

Greenpeace ordered to pay $660m in damages

A North Dakota jury has found Greenpeace liable for hundreds of millions of dollars in damages to a giant pipeline company in relation to protests against the Dakota Access Pipeline nearly a decade ago.

Dallas-based Energy Transfer Partners sued Greenpeace in 2019, accusing the environmental group of masterminding the protests near the Standing Rock Sioux Reservation in 2016 and 2017, spreading misinformation and causing the company financial loss through damaged property and lost revenues.

After a three-week trial, the 9-person jury took two days to return their verdict, awarding more than $660 million in damages to Energy Transfer. Advocacy groups have called the verdict as a "weaponisation of the legal system" and an "assault" on free speech and protest rights.

ADNOC PIONEERING FUTURE OF ENERGY THROUGH AI

The company's aggressive and comprehensive integration of AI across its operations marks a pivotal shift towards enhanced efficiency, sustainability, and innovation

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By ABDULAZIZ KHATTAK

THE Abu Dhabi National Oil Company (ADNOC), a cornerstone of the UAE's economy and a significant player in the global energy landscape, has demonstrated considerable dynamism over the past year.

While maintaining its position as a leading oil producer with a substantial capacity of 4.85 million barrels per day (bpd), the company has concurrently embarked on a strategic transformation, placing a strong emphasis on technological advancement, particularly the integration of artificial intelligence (AI), and pursuing ambitious growth initiatives across its various subsidiaries.

These developments signal ADNOC's commitment to not only meeting the current global energy demands but also to shaping a sustainable and efficient energy future.

A key highlight of ADNOC's recent activities has been the remarkable success of its ADNOC Gas subsidiary.

The company successfully completed a $2.84 billion market offering, totalling 3.1 billion ordinary shares, representing 4 per cent of ADNOC Gas' total share capital, at a price of AED3.40 ($12.49) each.

The strategic acquisition of Ruwais LNG is a significant step in ADNOC's ambition to become a leading global LNG player, as it is expected to more than double the company's existing LNG production capacity in the UAE.

This move positions ADNOC to capitalise on the increasing global demand for natural gas as a crucial fuel in the energy transition.

AI'S TRANSFORMATIVE POTENTIAL

Beyond its financial achievements and strategic acquisitions, ADNOC has made remarkable strides in integrating artificial intelligence (AI) across its operations, recognising its transformative potential in the energy sector.

The company has developed and trialed ENERGYai, an advanced AI solution hailed as the world's first-of-its-kind agentic AI solution tailored for the energy transformation.

This innovative solution combines large language models with agentic AI, trained on ADNOC's extensive proprietary data, to enhance efficiency and accelerate the transition towards a more sustainable energy industry.

The "agentic" nature of ENERGYai signifies its capacity to operate with a high degree of autonomy, proactively identifying and implementing operational improvements based on pre-set objectives, rather than merely reacting to human commands.

This level of independent decision-making promises to significantly enhance the speed and efficiency of various critical tasks across ADNOC's value chain.

The development of ENERGYai is a collaborative effort between ADNOC, its AI-focused subsidiary AIQ, and technology giants Microsoft and G42, highlighting a strategic approach to leverage cutting-edge AI expertise and infrastructure.

A successful proof-of-concept trial of ENERGYai has already demonstrated its potential, achieving a remarkable 70 per cent improvement in accuracy in key aspects of seismic interpretation for upstream exploration.

ADNOC has outlined a clear strategic vision for growth and sustainability

This tangible outcome underscores the power of AI to revolutionise exploration activities, leading to faster discoveries and reduced costs.

ADNOC is implementing a suite of AI-powered solutions across its various operations:

- RockInsight utilises AI to provide detailed analysis of oil and gas reservoirs, visualising subsurface rock structures with high precision, thereby accelerating analysis and optimising resource management.
- AR360 serves as an intelligent reservoir management tool, consolidating data from multiple platforms to optimise field development planning by strategically balancing new well drilling, enhancing the performance of existing wells, and maximising overall production.
- In the challenging environment of the Shah Field, Remal, an AI-powered solution, forecasts sand accumulation patterns, enabling proactive resource allocation, cost reduction, and enhanced safety.
- The company's Well Digitalisation Program is a key initiative to automate operations across its value chain, equipping wells with sensors and control valves to collect real-time data, transmitted via a private 5G network to control rooms, enabling remote monitoring and autonomous operation through AI tools like AIQ's RoboWell. This program promises to enhance efficiency, improve safety, and minimise operational downtime.
- Furthermore, ADNOC's Integrated Logistics Management System (ILMS) employs AI to optimise vessel scheduling for product delivery, providing optimal route options and facilitating proactive, data-driven decisions for vessel planners.
- Lastly, the Centralised Predictive Analytics and Diagnostics (CPAD) system uses AI to continuously monitor operations, track historical and real-time data, diagnose anomalies, and proactively address maintenance challenges, ensuring smoother operations and reduced downtime.

These comprehensive AI deployments underscore ADNOC's overarching ambition to become the world's most AI-enabled energy company.

FUTURE GROWTH & STRATEGY

Looking towards the future, ADNOC has outlined a clear strategic vision for growth and sustainability.

The company aims to increase its oil production capacity to 5 million bpd by 2027, with a focus on its lower carbon-intensive Murban crude oil.

ADNOC Drilling, a key subsidiary, has announced ambitious growth plans, projecting over $1 billion in investments for 2025.

This investment is expected to drive growth across its onshore, offshore, and oil field services segments, with plans to acquire additional rigs and oil field service equipment, aiming to reach a rig count of over 148 by 2026 and more than 151 by 2028.

ADNOC Drilling is also exploring potential regional expansion opportunities in Jordan, Kuwait, and Oman, signaling its intent to broaden its operational footprint.

Strategic joint ventures, such as Turnwell with SLB and Patterson-UTI, are being established to unlock Abu Dhabi's unconventional energy resources, maximising the utilisation of the UAE's energy potential.

ADNOC L&S, the company's shipping and logistics arm, anticipates a significant "mid-to-high" 40 per cent year-on-year increase in its shipping revenue for 2025, driven by favourable charter rates and the addition of new dual-fuel very large crude carriers (VLCCs) to its fleet.

In a move towards international diversification of its gas assets, ADNOC is reportedly considering purchasing natural gas fields in the US, which would provide access to both fuel and feedstock for its expanding chemicals and LNG export facilities.

ADNOC is also strongly committed to sus-

Continued on page 3

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With AI revolutionising drilling operations, predictive maintenance, and oilfield services, ADNOC Drilling is well-positioned to integrate new technologies and expand its global footprint

ADNOC Drilling's AI-driven expansion fuels record growth

ADNOC Drilling is accelerating its expansion with a strong focus on artificial intelligence (AI) and digital transformation, positioning itself as a leader in energy services.

With record-breaking financial performance in 2024 and a commitment to further growth, the company is leveraging AI-driven efficiency, expanding its fleet, and targeting strategic acquisitions across key global markets.

In 2024, ADNOC Drilling achieved record revenue of $4.034 billion, a 32 per cent increase year-on-year, while EBITDA surged 36 per cent to $2.01 billion. Its net profit doubled since its 2021 listing, reaching $1.30 billion in 2024.

Abdulrahman Abdulla Al Seiari, CEO ADNOC Drilling, attributed this success to the company's strategic investments and its embrace of AI-powered drilling technology.

"Our targeted expansion across the region, AI-powered rigs and cutting-edge oilfield services position us for even greater success. As we accelerate innovation through Enersol and unlock Abu Dhabi's unconventional energy potential through Turnwell, ADNOC Drilling remains at the forefront of the industry – driving efficiency, sustainability and long-term progressive returns for our shareholders."

AI has become a critical tool in ADNOC Drilling's expansion strategy, enhancing drilling efficiency, predictive maintenance, and automation.

The company has integrated AI into its rigs, optimising performance and reducing operational costs while maintaining high safety and sustainability standards.

The integration of AI across ADNOC Drilling's operations is expected to drive predictive maintenance, reducing downtime and improving rig efficiency; automation of drilling processes, lowering costs and enhancing safety; and advanced data analytics, optimising oilfield services and well completion.

An ADNOC Drilling hybrid rig

Beyond the region, ADNOC Drilling is targeting the US and European markets, where AI-driven solutions are transforming energy services.

The company has earmarked $1 billion in investments for 2025, with $700 million allocated to AI-centric acquisitions in the US and Europe.

In an interview with *AGBI*, Youssef Salem, ADNOC Drilling's Chief Financial Officer, highlighted the strategic importance of these investments. He said: "We are focusing on technologies related to the completion side after the well has been drilled. This will allow the execution of oilfield services from start to finish without third parties."

ADNOC Drilling's Enersol joint venture with Alpha Dhabi is leading the charge in AI-powered acquisitions.

Two of Enersol's recent acquisitions, Gordon and Deep Well Services, are US-based companies that have seen an uptick in activity following energy policy shifts under President Donald Trump's administration.

With AI revolutionising drilling operations, predictive maintenance, and oilfield services, ADNOC Drilling is well-positioned to integrate new technologies and expand its global footprint.

Through Turnwell, ADNOC Drilling's joint venture with SLB and Patterson-UTI, the company has already completed 30 unconventional wells and is leveraging AI-driven techniques to maximise Abu Dhabi's untapped energy potential.

Salem also underscored the shift in revenue sources, with global investments expected to contribute 7 per cent of net income by 2026.

REGIONAL PRESENCE

ADNOC Drilling has expressed commitment to Saudi Arabia, highlighting its collaboration with Saudi Aramco and its subsidiaries operating in the Kingdom, including EV (smart camera technology for 3D visualisation) and NTS (a manufacturing business producing drilling equipment).

"For us, Saudi Arabia continues to be very strategic for our actual underlying operation, and we continue to find ways to build even deeper relationships," Salem told *Arab News*.

With operations in Jordan and Saudi Arabia, ADNOC Drilling is expanding into Oman and Kuwait, capitalising on growing energy demands. The company's prequalification with major operators in these countries is expected to lead to new contracts.

ADNOC Drilling plans to expand its fleet to 151 rigs by 2028, up from 142 at the end of 2024, reinforcing its position as the largest drilling operator in the Middle East and North Africa.

For 2025, ADNOC Drilling expects revenue between $4.6 billion and $4.8 billion and a net profit from $1.35 billion to $1.45 billion, with a 28 per cent to 30 per cent margin.

The capital expenditure for 2025 is estimated to be between $350 million and $550 million.

... pioneering future of energy through AI

Continued from page 2

tainability, demonstrated by its comprehensive 2030 sustainability goals.

These goals include achieving near-zero methane emissions by 2030, planting 10 million mangrove seedlings, increasing female representation in technical positions to 25 per cent, and ultimately reaching Net Zero emissions by 2045.

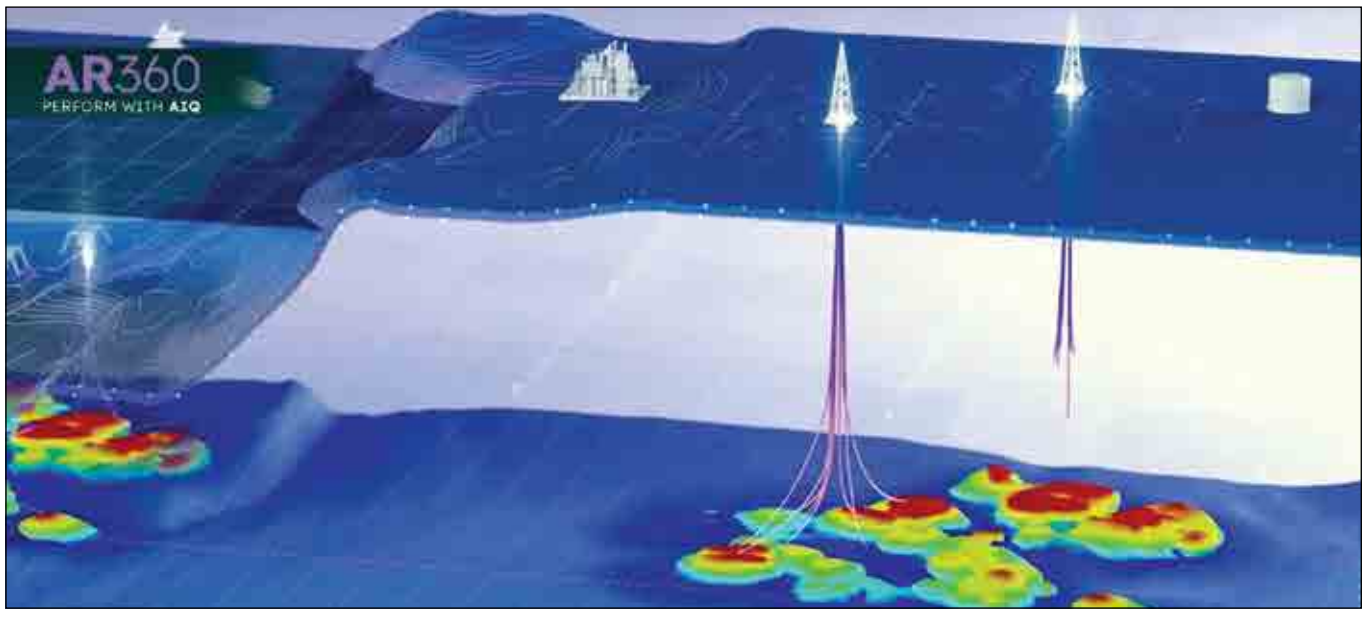
The strategic partnership between ADNOC Gas and Emirates Water and Electricity Company (EWEC) for the long-term supply of flexible natural gas underscores the crucial role of natural gas in facilitating the UAE's energy transition.

Furthermore, the launch of XRG, a new international lower-carbon energy and chemicals investment company with an enterprise value exceeding $80 billion, signifies ADNOC's commitment to investing in and developing a diverse portfolio of lower-carbon energy solutions on a global scale. This strategic direction reflects a broader understanding of the evolving global energy landscape, where balancing energy security with environmental responsibility is paramount.

The leadership of the UAE and ADNOC have consistently emphasised the importance of technology and strategic partnerships in achieving these ambitious goals.

Suhail Mohamed Al Mazrouei, the UAE's Minister of Energy and Infrastructure, has stated that the Gulf state intends to play "a key role" in AI in the Middle East and worldwide, indicating a national-level commitment to technological advancement that strongly supports ADNOC's AI-driven strategies. This governmental focus on AI provides a strong impetus for ADNOC to continue its pioneering efforts in this field within the energy sector.

Dr Sultan Al Jaber, ADNOC Managing Director and Group CEO, has been a vocal advocate for the integration of AI within the company.



AR360 consolidates data from multiple platforms to optimise field development planning

Speaking at CERAWeek in March 2025, he highlighted the significant progress ADNOC has made in this area: "We first applied AI to our operations 5 years ago. Today, we have integrated AI comprehensively across the value chain...source world".

This statement underscores the tangible benefits ADNOC is already realising from its AI investments and its firm commitment to leading the industry in this transformative technology.

Combined with ambitious growth plans across its various business segments and a strong commitment to sustainability, ADNOC is not only solidifying its position as a major global energy provider but also actively shaping the future of the energy sector through technological leadership and strategic foresight.

Its aggressive and comprehensive integration of AI across its operations marks a pivotal shift towards enhanced efficiency, sustainability, and innovation.

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ADNOC, OMV deal to reshape global polyolefins market

Part of ADNOC's global chemicals strategy, the partnership with OMV will create a new industry powerhouse, with a portfolio of premium products, cutting-edge technologies and worldwide market access

A major realignment in the global chemicals industry is underway as the Abu Dhabi National Oil Company (ADNOC) and Austria's OMV agree to merge their stakes in Borouge and Borealis, creating a $60 billion polyolefins powerhouse.

The move, which includes the acquisition of Canadian firm Nova Chemicals, is set to position the new entity as the fourth-largest producer of polyolefins worldwide.

It will reshape the polyolefins landscape, creating a more competitive and resilient industry leader.

Under the agreement, Borouge Group International will be established as the newly combined entity, headquartered in Austria but maintaining key regional bases in the UAE, North America, and Asia.

With ADNOC and OMV each holding equal 46.94 per cent stakes, the structure ensures joint control over what is being billed as a transformational industry player.

The Borouge petrochemical complex

NORTH AMERICA EXPANSION

In a bold step to extend its global reach, ADNOC has secured a $13.4 billion deal to acquire Nova Chemicals, a leading polyethylene producer with substantial production capacity in North America.

Upon completion of the merger, Borouge Group International will absorb Nova, solidifying its footprint in a key market and expanding its supply capabilities across multiple continents.

Dr Sultan Ahmed Al Jaber, ADNOC Managing Director and Group CEO, described the deal as a defining moment for ADNOC's chemical ambitions.

He said: "These transformative transactions mark a pivotal milestone in ADNOC's global chemicals strategy as we deliver on our international growth mandate. Building on our 25-year strategic partnership with OMV, we will create a new industry powerhouse, with a portfolio of premium products, cutting-edge technologies and worldwide market access."

GROWTH STRATEGY

With an expected annual polyolefins production capacity of 13.6 million tonnes, Borouge Group International aims to be a leader in premium polymer products.

Underscoring the strategic importance of the deal, Alfred Stern, OMV CEO, said: "Together with ADNOC, our strategic partner of 25 years, we are creating a global polyolefins leader, exceptionally positioned for value creation by accessing the largest and most cost-advantaged markets."

The company also plans to raise $4 billion in primary capital by 2026, seeking inclusion in the MSCI index and reinforcing its investment-grade credit rating.

Beyond sheer scale, Borouge Group International is set to prioritise sustainability, building on existing initiatives within Borealis, Borouge, and Nova.

The new entity has committed to ambitious circular economy goals, with both Borealis and Borouge already targeting net zero Scope 1 and 2 emissions before 2050.

The merger and Nova acquisition are expected to be finalised by early 2026, pending regulatory approvals.

Upon completion, ADNOC's stake will be transferred to its chemicals investment arm, XRG, integrating the new giant into its broader global chemicals strategy.

Energy major focus of UAE's $1.4trn investment in US

THE UAE has announced a landmark $1.4 trillion investment framework in the US over the next decade, with a major emphasis on energy infrastructure and natural gas.

The investment, unveiled after a high-profile meeting between Sheikh Tahnoon bin Zayed, Deputy Ruler of Abu Dhabi and National Security Adviser, and US President Donald Trump, will significantly expand the UAE's presence in key US industries, including artificial intelligence (AI), semiconductors, manufacturing, and energy.

A substantial portion of the UAE's new investment strategy will focus on the US energy sector, particularly natural gas and infrastructure.

Earlier in March, UAE energy giant ADNOC's international investment arm, XRG, announced plans for major investments in US gas, targeting projects across the supply chain, including exploration and production, distribution and exports.

Speaking at the CERAWeek energy conference in Houston, Sultan Al Jaber, ADNOC CEO, confirmed XRG's commitment to large-scale investments in American natural gas. "Over the next few months and foreseeable future, you will see very large and significant investment by XRG in the US," he said.

Sheikh Tahnoon bin Zayed Al Nahyan with President Donald Trump

In line with this strategy, XRG has already committed capital to the NextDecade LNG export facility in Texas, with additional investments planned in US gas fields, chemicals, energy infrastructure, and low-carbon solutions.

Reports also indicate ADNOC is actively looking to acquire producing natural gas fields in the US, a move that would deepen its foothold in the market while securing feedstock for its expanding chemicals and LNG operations.

Additionally, Abu Dhabi's state-owned investment fund ADQ and its US partner Energy Capital Partners have launched a $25 billion initiative to invest in energy infrastructure and data centers across the country.

The UAE has long been a key player in the global energy market, and this investment underscores its intent to solidify its presence in the US while supporting its own economic diversification goals.

The country has been aggressively expanding into AI, semiconductors, and advanced manufacturing, sectors also included in the broader $1.4 trillion commitment.

Beyond energy, the UAE is investing heavily in AI infrastructure and critical industries. Abu Dhabi-based MGX, alongside BlackRock, Microsoft, and Global Infrastructure Partners (GIP), has joined forces with NVIDIA and xAI to establish the AI Infrastructure Partnership (AIP), aiming to mobilise up to $100 billion for next-generation data centers and energy-efficient AI facilities.

Additionally, Emirates Global Aluminum has committed to building the first new aluminum smelter in the US in 35 years, nearly doubling domestic aluminum production.

ADQ and Orion Resource Partners have also launched a $1.2 billion mining partnership focused on securing critical minerals essential for modern industries.

كانو للطاقة

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Innovative temperature measurement in Claus process

Innovative solutions from Endress+Hauser enable accurate temperature measurement in the Claus process, ensuring reliable sulfur recovery, operational efficiency and environmental responsibility in refineries, writes Michele Pietroni, Industry Manager - Oil & Gas and Chemical, Endress + Hauser

THE Claus process is the industry standard for recovering elemental sulfur from hydrogen sulfide gas, crucial for refineries processing sour crude oil.

Conducted in a Claus furnace or Sulfur Recovery Unit (SRU), this process efficiently removes pollutants and prevents the emission of harmful gases.

The Claus process involves two steps:

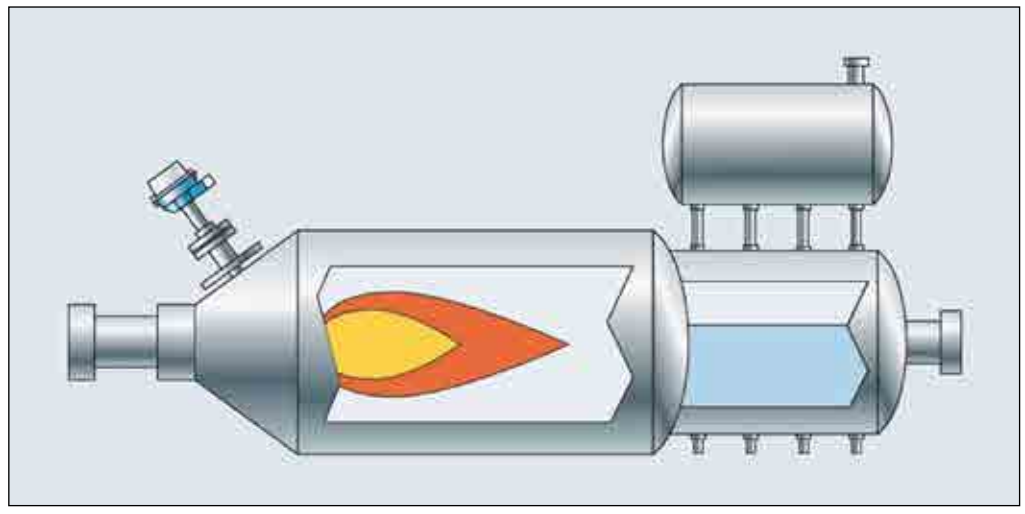
- Burning a portion of H_2S to form SO_2 in the reaction furnace.
- The reaction of H_2S and SO_2 in a 2:1 ratio forms elemental sulfur.

These reactions are turbulent and aggressive, with the acid gas stream being partially oxidised with a low amount of O_2, releasing significant exothermic energy.

Temperature control is challenging as the feedstock temperature often exceeds 1600 deg C (2912 deg F), making thermocouple temperature measurement technology essential for monitoring this process.

The inner temperature of the reactors during the sulfur reaction must be continuously and accurately monitored to prevent plant shutdowns and optimise the energy consumption:

- It must be high enough to sustain the reactions.
- It must not be too hot to avoid damaging the refractory lining, which protects the structure against quenches and destruction caused by severe thermal conditions and aggressive process media.
- It must be steady and homogeneous to maintain the plant's efficiency.



The Claus process

THE CHALLENGE

This application is highly corrosive and combines numerous high temperature phenomena, making it exceptionally challenging and requiring a highly experienced and knowledgeable supplier for design and installation.

The long-term accurate temperature measurement combined with high mechanical and thermal strength of the instrument is crucial to ensure plant integrity and optimised process.

Three thermometers are normally installed in each reactor, and all the units must be able to operate in particularly aggressive environments with vibrations and with significant thermal displacement of the refractory wall, which generates high forces on the instrument.

- Thermal expansions and rapid temperature changes contribute to:
  - o Thermowell breakage.
  - o Thermocouple wire breakage.
- Sulfur dioxide and hydrogen sulfide cause contamination of TC wires due to the increased porosity of ceramics of the thermowell at high temperatures.
- High risk of thermowell breakage from falling refractory bricks.
- Thermocouple drift and damage increased by:
  - o Corrosive vapours and gases penetrating the ceramic thermowell.
  - o High hydrogen sulfide content, which attacks the platinum wires inside the thermowell, causing faster drift and embrittlement.

INNOVATIVE TEMPERATURE MEASUREMENT SOLUTION

A modified version of the iTHERM FlameLine TAF12D high-temperature thermometer including a ceramic thermowell, TC type B,R,S and further technical modifications is used:

- Thermowell material selection to withstand the harsh environment (1st layer): C799 high purity alumina ceramic with high hardness, mechanical strength, wear and chemical resistance.
- Internal protecting sheathes in special metal alloy and ceramic (2nd and 3rd layer) to protect platinum TC sensor wires from polluting substances and to stop and contain toxic flu ds leakages.
- Protection of the thermowell against the mechanical forces from thermal displacements of the bricks is achieved by a protective Nickel-Chromo super alloy sleeve. Precise clearances between the sleeve and installation passage protect the ceramic tip from mechanical loads, minimising mechanical failure risks.
- Atex 2014/34/EC compliance can be reached by certified components according to the requirements ruling the Ex d type of protection for Gas and Dust hazardous atmospheres.
- Limitation and prevention of permeating contaminants by up to three ceramic barriers with different performances installed into the thermowell tip. The materials range from alumina to silicon carbide to zirconia, with different grades depending on the percentages of the compounds Al2O3, SiC, MgO.
- Avoidance of TC contamination: using a hydrogen flame to weld the TC hot junction ensures high temperatures for melting platinum wire and prevents contamination, as hydrogen is very clean when burnt.
  To protect the most important component of the measurement, the thermocouple itself, two solutions have been proven in practice. The choice depends on whether there is an N2 line near the installation area.
- Instrument with purging system with inert gas N2/argon gas is supplied continuously or periodically from a line at site with an average flow rate of 2 to 6 l/min to not affect the reading of the TC. The gas will purge and clean any contaminants present inside the ceramic thermowell. This solution may even include a cutoff valve. If the tip is broken and the purge system is useless, the valve can be activated to cut the insert and separate the external environment from the process itself.
- Pressurised instrument N2 / argon gas is injected at installation with a holding pressure of 1-2 bar higher than the process pressure. The customer must periodically check the pressure level and recharge if necessary. The higher pressure suppresses the migration of contaminants inside the ceramic thermowell.

END-TO-END CUSTOMER SUPPORT

We support customers from the design and conception phase to the correct installation, with or without pre-heating, to reduce the risk of thermal shock and prevent the thermowell from failure or breakage.

We also assist with calculations to determine the perfect installation depth of the thermometer, defining how far inside the reactor it should be to achieve the desired accuracy, but with the least risk of thermowell damage.

The Endress+Hauser modularity concept ensures that different spare parts are available and can be ordered as standard components.

Specifically, the insert is replaceable and can be removed from the instrument under working conditions after an accurate check of any eventual leakages. It can be replaced for calibration purposes or because of ageing due to thermal stress.

For data visualisation, the thermometers located at different points of the reactor can be connected to the RIA15 process indicator or the Memograph M RSG45 to read the data conveniently from anywhere at any time.

RESULT & BENEFITS

The Endress+Hauser solution achieves the highest accuracy and significantly improves the durability of the thermowell and the thermocouple.

This improvement is due to the elimination of factors that lead to contamination of the thermocouple wires and the significant reduction of the negative effects of thermal expansion and mechanical forces on the thermowell.

The adjustable immersion length leads to accurate temperature mapping, contributing to reliability.

CONCLUSION

Temperature measurement in the Claus process is one of the most challenging tasks in sulfur recovery due to high temperatures, corrosive gases, and mechanical stress.

With innovative solutions like the iTHERM FlameLine TAF12D thermometer, Endress+Hauser provides refineries with reliable, long-lasting, and accurate temperature monitoring, ensuring operational efficiency, regulatory compliance, and environmental responsibility.

Before and after (right)

Installation

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Kanoo Energy drives innovation, empowers communities

With a strong foundation built on trust, expertise, and forward-thinking strategies, Kanoo Energy is well-positioned to shape the future of energy and create lasting value for generations to come

Mishal Kanoo (second from left) receiving the Gold Tier Award

FOR decades, Kanoo Energy has been at the forefront of industrial innovation, sustainability, and community engagement.

As a key player in the energy sector, the company continues to set new benchmarks through cutting-edge technologies, strategic partnerships, and a commitment to corporate social responsibility.

In recognition of its unwavering pursuit of excellence, it has been awarded the Gold Tier Award in the UAE Innovation Award Category (UAEIA) at the Dubai Quality Group Awards 2024-2025.This prestigious accolade, presented by Sheikh Ahmed bin Saeed Al Maktoum, underscores the company's leadership in digital transformation, operational efficiency, and sustainable solutions that are shaping the future of the industry.

"Innovation isn't just about technology, it's about reimagining possibilities, adapting to evolving needs, and leading the way forward," says Mishal Kanoo, Chairman of The Kanoo Group. "We don't just follow industry trends; we set them."

DRIVING TECHNOLOGICAL ADVANCEMENTS IN ENERGY

Remaining committed to energy efficiency, sustainability, and digital transformation, the company continues to play a pivotal role in transitioning towards cleaner and more efficient energy systems.

By embracing advanced technologies such as AI-driven predictive maintenance, remote monitoring, and carbon capture solutions, it ensures that clients remain competitive in an evolving global landscape.

This forward-thinking approach aligns with the UAE's vision for a greener, more sustainable future, reinforcing its role as a key enabler of progress.

INVESTING IN PEOPLE: SPORTS & COMMUNITY DEVELOPMENT

Beyond industrial contributions, the company recognises that true progress extends beyond business. Investing in people, talent, and communities is central to its mission, with initiatives that foster growth, resilience, and inclusivity.

One such initiative is the partnership with Al Jazira Sports and Cultural Club, where it serves as the Official Training Partner. This collaboration reflects a commitment to nurturing discipline, teamwork, and excellence values that are equally vital in sports and business.

Raman Marwaha and Mishal Kanoo (right)

"Success in any field whether in business or sports requires dedication, adaptability, and a relentless drive to improve," says Raman Marwaha, General Manager of Kanoo Energy UAE and Oman. "Through our partnership with Al Jazira Club, we aim to empower young athletes to achieve their full potential."

A LEGACY OF PROGRESS & PURPOSE

As the company expands its influence across industries, it remains guided by a singular mission: to drive meaningful progress while staying true to its heritage of excellence.

Its unwavering dedication to innovation, sustainability, and social impact reinforces its position as a leader in the energy sector.

With a strong foundation built on trust, expertise, and forward-thinking strategies, Kanoo Energy is well-positioned to shape the future of energy, empower communities, and create lasting value for generations to come.

The journey continues, and for Kanoo Energy, the best is yet to come.

Kanoo Energy is the Al Jazira Sports & Cultural Club's Official Training Partner

As refiners continue seeking ways to maximise efficiency, minimise downtime, and improve sustainability, radiometric multiphase level measurement system comes as a game-changer

Radiometric measurements deliver ROI, sustainability

IN today's competitive oil and gas landscape, process optimisation, equipment reliability, and sustainability are critical for maintaining profitability.

Among the many challenges refiners face, monitoring separation processes effectively is particularly complex yet essential.

Multiphase level measurement technologies, especially nuclear density profiling systems like Berthold's EmulsionSENS, provide superior reliability, performance, and environmental benefits.

THE SEPARATION CHALLENGE

Separation processes are vital across oil and gas operations from separators and storage tanks to desalters and alkylation units.

In desalters, for example, ensuring a clear distinction between the oil, water, and emulsion layers is critical to prevent salt and water carryover, which can cause corrosion and fouling in downstream equipment.

Additionally, the occurrence of rag layers stubborn, semi-stable emulsions that resist separation can further complicate the process.

Without proper monitoring, these rag layers can lead to inefficiencies, increased chemical consumption, and potential process upsets.

Measurement technologies fall into two categories: Direct and indirect methods. Direct methods like differential pressure and RF absorption physically contact process fluids but struggle with emulsion height changes and buildup interference.

Indirect methods, such as nuclear density profiling systems, offer more reliable monitoring under challenging conditions.

NUCLEAR DENSITY PROFILING: HOW IT WORKS

Radiometric measurements employ a simple yet sophisticated principle radiation attenuation.

A typical system consists of a radioactive source and detector positioned on opposite sides of the vessel.

As gamma radiation from the source penetrates the vessel and its contents, the radiation intensity decreases based on the density of the materials it passes through.

This attenuation allows for accurate density determination of the vessel contents through appropriate calibration.

Different configurations exist in the market, but many utilise one or more internal sources inside dip tubes, with detectors positioned either on the vessel exterior or within internal dip tubes.

Berthold Technologies' EmulsionSENS exemplifies an effective implementation of this technology, featuring internal sources in a curved dip tube and externally mounted detectors.

This design ensures that the electronics are always accessible, while providing multiple density measurements at different heights to create a comprehensive density profile of vessel contents.

PRACTICAL ADVANTAGES FOR OPERATORS

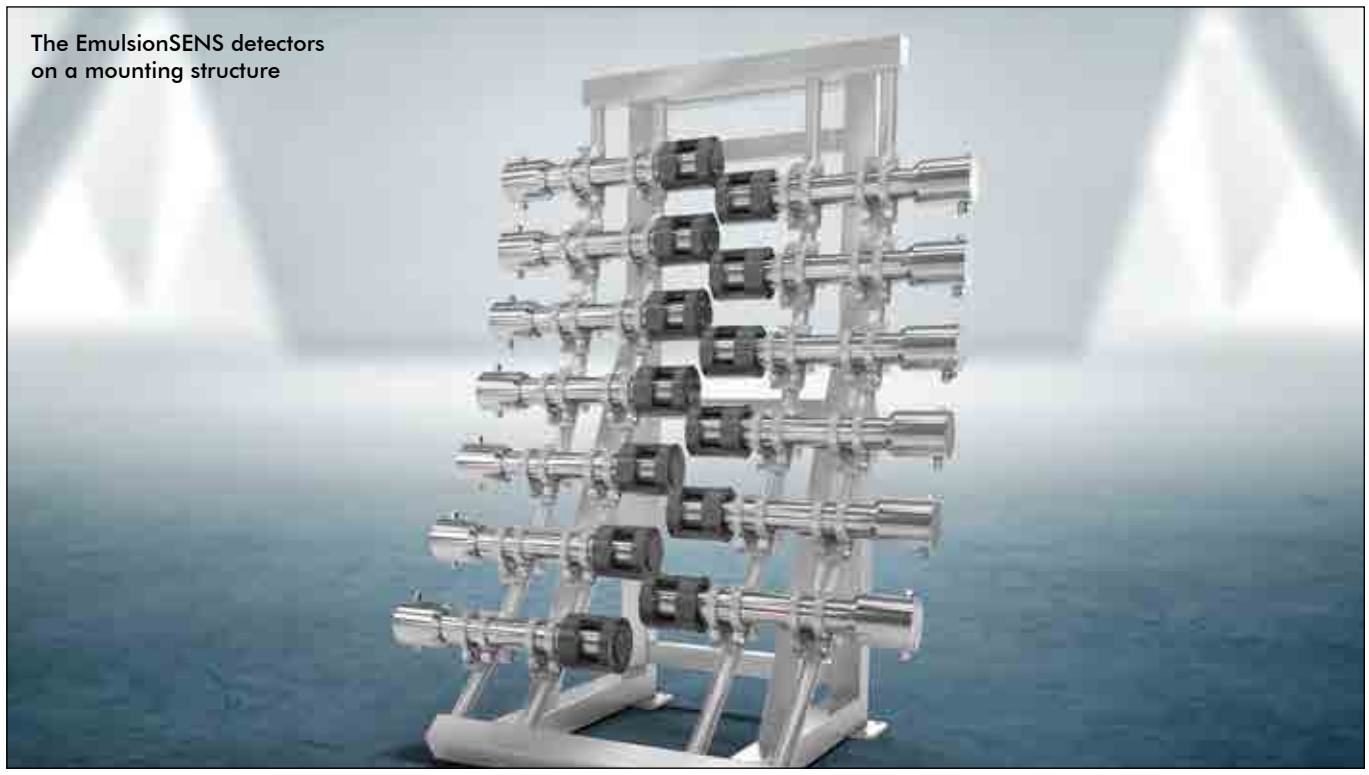
The EmulsionSENS system offers several practical benefits that translate to operational advantages:

- **Extended measurement range:** By using multiple sources in a single dip tube, EmulsionSENS offers an almost unlimited measurement range, whereas some competing systems are limited to 1-1.5m ranges per dip tube.
- **Advanced algorithms:** Sophisticated algorithms not only output density values but determine individual layer filling levels, providing redundant measured values through independent outputs.
- **Compact, permanent shielding:** A permanently mounted, small shield enhances safety, especially during maintenance.
- **Simplified source exchange:** All sources can be pulled into the shield and replaced together, reducing radiation exposure.
- **Fault tolerance:** Even with detector failures, EmulsionSENS continues providing level readings, unlike competitors that fail with a single malfunction.
- **Buildup resistance:** The configuration with detectors outside the vessel and sources inside a dip tube creates longer, more consistent measurement paths that are neglectable influenced by process buildup.

SUSTAINABILITY IMPACT IN DESALTER OPERATIONS

Beyond operational improvements, EmulsionSENS technology delivers significant sustainability benefits, particularly in desalter applications:

- **Reduced energy consumption:** Traditionally, desalters require substantial energy to achieve necessary separation temperatures. With the improved level control provided by EmulsionSENS, operational temperatures can be significantly reduced, directly lowering energy requirements. Industry reports suggest a 10 per cent reduction can save approximately $500,000 annually in a medium-sized refinery, based on typical energy costs and consumption rates.
- **Minimised equipment Fouling:** Better separation reduces salt, mineral, and metal carryover, preventing heat exchanger fouling. Studies on refinery maintenance costs estimate potential savings of up to $200,000 per year.
- **Extended equipment life:** By limiting salt carryover and corrosion, refineries can extend equipment lifespan by 20 per cent, with material replacement costs reduced by an estimated $300,000 annually.
- **Catalyst protection:** Reducing iron (Fe) and other contaminants extends catalyst life, cutting replacement costs by approximately $150,000 per year, according to operational case studies.
- **Improved heat recovery efficiency:** Less fouling means better heat exchanger efficiency, contributing to estimated energy savings of $100,000 annually, based on performance benchmarks in similar refineries.



The EmulsionSENS detectors on a mounting structure

The EmulsionSENS system offers several operational advantages

REAL-WORLD IMPACT: CUSTOMER SUCCESS STORIES

The business impact of these systems extends far beyond technical specifications. Refineries implementing nuclear density profiling systems report remarkable operational improvements:

- **Eliminated desalter upsets:** One refinery experienced a decrease from 2-6 desalter upsets annually to zero in two years after implementation.
- **Automated process control:** Continuous adjustment of water outlet valves maintains proper control and minimise oil or mineral carryover
- **Optimised chemical usage:** Precise monitoring enables significant cost savings in chemical dosing

A refinery using EmulsionSENS reported transformative results, exclaiming, "Bye-bye iron! Thanks for making it happen!"

Prior to installation, the operator had little visibility into vessel conditions. The new insights allowed them to adjust operational parameters to improve efficiency regarding iron carryover.

By maintaining lower interface levels in the vessel, they leveraged turbulence from the mud washing system to agitate the emulsion layer, assisting with iron dropout.

The operator praised the implementation and said: "Perfect design and great result. It is performing like a dream!"

As refiners continue seeking ways to maximise efficiency, minimise downtime, and improve sustainability, the radiometric multiphase level measurement system comes as a game-changer.

The ability to "see" inside vessels with precision transforms operational decision-making, enabling proactive adjustments that prevent upsets, optimise chemical usage, and extend equipment life.

The sustainability benefits are equally compelling reduced energy consumption, minimised fouling, extended equipment life, and improved catalyst performance all contribute to a smaller environmental footprint while simultaneously improving financial performance.

For operations dealing with multiphase separation challenges, these systems represent not just improved measurement capability, but a strategic investment in operational reliability, profitability, and environmental responsibility.

FURTHER APPLICATIONS IN THE REFINERY INDUSTRY

- Multiphase level measurement for monitoring the oil/emulsions/water interface in desalters.
- Level measurement in distillation bottoms.
- Level and high / low level alarm the catalyst regenerator and hoppers (CCR).
- Level and density in fluid catalytic cracking processes (FCC).
- Phase level, continuous level, and level switches in alkylation units.
- Level and density on resid hydrocracking processes.
- Continuous level and high-level alarm in delayed coking units.
- Measuring the level in solvent deasphalting units (SDA).

Growing pessimism in industry about net-zero timeline

Energy executives are sceptical about the ability to achieve net-zero and unless significant breakthroughs occur, and fast, net-zero will remain a distant, and possibly unattainable, goal, say Bain & Company experts

DESPITE record-breaking global investment in clean energy last year, the very leaders responsible for driving the transition are growing increasingly doubtful about when – or even if – the world will reach net-zero carbon emissions.

This stark shift in sentiment is revealed in Bain & Company's 2025 Energy and Natural Resources (ENR) Executive Survey.

Nearly half (44 per cent) of ENR executives now believe net-zero emissions will not be achieved until 2070 or later, a sharp increase from 31 per cent in 2024.

Even more concerning, only 32 per cent still expect it by 2050, marking a significant reversal from previous years when 40 per cent to 50 per cent saw 2050 as a feasible target.

On average, oil and gas executives predict peak oil will not occur until around 2038, further underscoring the expectation that fossil fuels will continue to play a dominant role in global energy supply for decades to come.

Eric Beranger-Fenouillet

Bain's annual survey, which gathers insights from over 700 executives across oil and gas, utilities, chemicals, mining, and agribusiness, provides a crucial reality check on the industry's outlook.

It paints a clear picture of leaders increasingly struggling to balance the pressures of the energy transition with financial and operational constraints.

Raja Atoui

FINANCIAL BARRIERS THREATEN TO DERAIL ENERGY TRANSITION

Optimism about the energy transition is giving way to a more hard-nosed financial reality.

The once-booming enthusiasm for environmental, social, and corporate governance (ESG)-driven investment is fading, replaced by a heightened focus on return on investment (ROI).

Tighter budgets, constrained balance sheets, and soaring capital costs are forcing companies to make difficult decisions about where to allocate resources.

Executives overwhelmingly cite financial viability as the biggest roadblock to scaling up transition-oriented growth energy (TGE) businesses.

A major concern is the difficulty in securing customers willing to pay premium prices to generate sufficient ROI.

Additionally, a growing number of executives point to a lack of shareholder support as a critical issue this year.

Other major obstacles include unpredictable government policy, regulatory uncertainty, and a lack of available capital.

"Energy leaders are facing a stark reality: The transition to net-zero is proving more financially and operationally complex than many anticipated. Rising capital costs, policy uncertainty, and shareholder hesitancy are forcing executives to make difficult trade-offs. However, the growing optimism around AI and emerging technologies suggests that innovation will play a crucial role in overcoming these challenges," said Eric Beranger-Fenouillet, Head of Energy, Natural Resources and Sustainability and Responsibility Practices at Bain & Company Middle East.

SOARING CAPITAL COSTS ADD TO GROWING CONCERNS

Capital costs are rising at an alarming rate. More than three-quarters of executives report that their capital project costs have increased in the past 12 months, with one in ten facing extreme cost hikes exceeding 20 per cent. As a result, companies are urgently reassessing their strategies to control spending.

Executives are now prioritising tighter capital allocation, refining project scopes, and improving engineering and project design to maximise efficiency.

Nearly half plan to deploy emerging technologies, including AI, to enhance project execution and mitigate cost overruns.

HOPE IN AI & EMERGING TECHNOLOGIES

Despite the growing pessimism surrounding net-zero timelines, there is a notable rise in optimism around AI and other emerging technologies.

Executives increasingly believe these innovations could provide a much-needed boost to the business case for the energy transition.

Enthusiasm for AI and digital tools is surging, with 72 per cent of executives expressing confidence in their five-to-ten-year potential.

"Emerging technologies like AI and energy storage are offering a bright spot amid the challenges. While we may have to adjust our timelines for net-zero, the continued development and adoption of transformative technologies could be the key to overcoming the financial and regulatory obstacles hindering the energy transition," said Raja Atoui, Partner, Energy, Natural Resources and Sustainability & Responsibility Practices at Bain and Company Middle East.

However, the industry is running out of time to delay critical technology investments.

Executives are increasingly aware that failure to act now could have severe long-term consequences.

Most plan to implement technology-enabled improvements across multiple key functions, with over 60 per cent expecting to overhaul their ERP systems within the next three years.

Energy executives believe net-zero emissions will not be achieved until 2070 or even later

Confidence in the business case for energy storage (47 per cent), renewables (45 per cent), circularity (39 per cent), and carbon capture, utilisation, and storage (43 per cent) is rising. But whether these technologies can scale quickly enough to change the trajectory of net-zero targets remains an open question.

Bain estimates that global energy consumption from data centres could more than double by 2027, accounting for 2.6 per cent of the world's power usage and requiring over $2 trillion in new energy generation investment.

While utility executives acknowledge the challenge, many remain cautious. A substantial 43 per cent believe they can manage the surge in demand but only if everything goes according to plan.

To meet this growing need, utilities are focusing on expanding renewables, extending the lifespan of existing assets, and increasing natural gas capacity.

Although nuclear power is emerging as a potential solution in North America, it remains a low priority for executives in other regions.

THE OUTLOOK: A GROWING DIVIDE BETWEEN AMBITION & REALITY

The findings of Bain & Company's survey paint a sobering picture. Industry leaders are becoming increasingly sceptical about the world's ability to achieve net-zero emissions within the previously accepted timelines.

Financial, regulatory, and technological barriers continue to mount, and many executives now expect fossil fuels to remain a major part of the energy mix for decades.

While AI and other innovations offer a glimmer of hope, they are far from a guaranteed solution.

The harsh reality is that unless significant breakthroughs occur and fast the world may be forced to confront a future where net-zero remains a distant, and possibly unattainable, goal.

Hoover CS boosts efficiency at refineries with smart packaging

The company's innovative reusable packaging accelerates catalyst unloading, enhances safety, reduces waste, and lowers emissions, helping refiners improve efficiency and drive sustainable operations, Joey Berkhout tells *OGN*

REFINERIES seeking to optimise operations and reduce downtime are turning to Hoover CS's advanced packaging solutions for spent hydroprocessing catalysts. The company's specialised, reusable packaging modules not only speed up catalyst unloading but also enhance safety, sustainability, and cost efficiency.

By increasing volume capacity and improving loading design, Hoover CS's solutions allow reactors to be emptied up to 20 per cent faster.

"This reduction in downtime translates directly into revenue gains for refiners. Beyond efficiency, the packaging also minimises onsite movements, improves storage, and reduces waste through a circular, reusable system," Joey Berkhout, Business Development EMEA, tells *OGN* energy magazine in an exclusive interview.

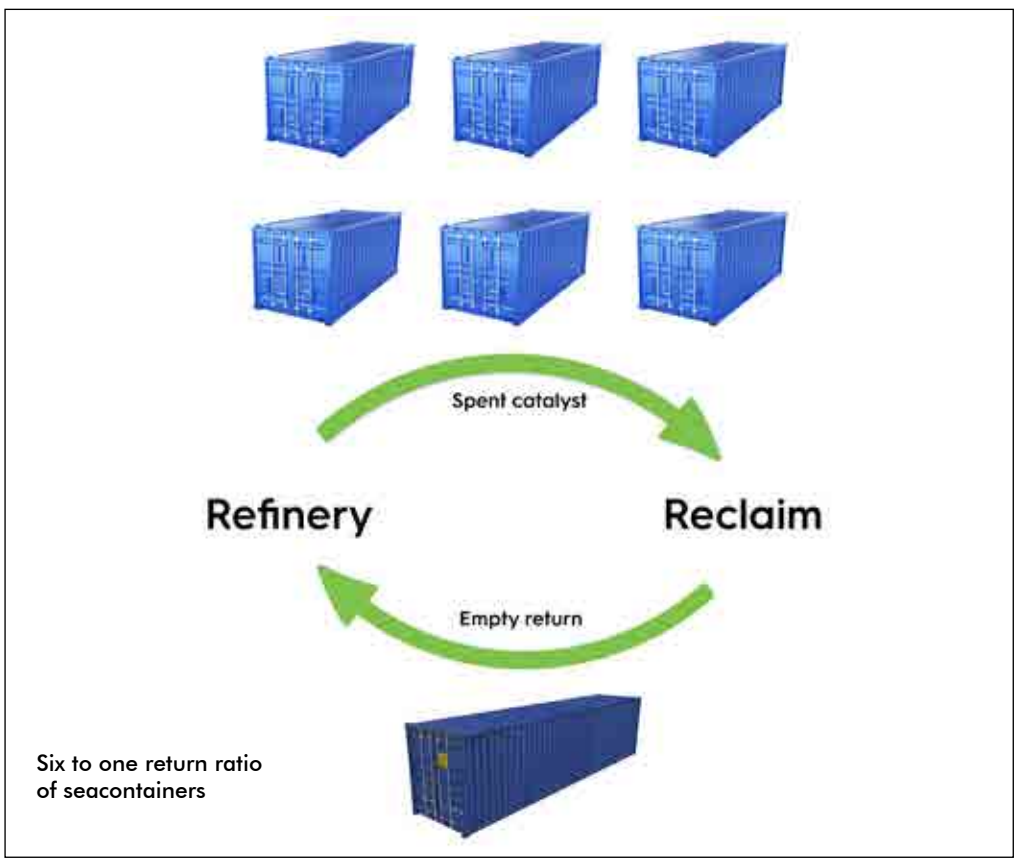
With sustainability a key driver of this innovation, each module replaces hundreds of single-use drums, pallets, and liners, preventing significant CO_2 emissions and water waste.

A newly designed bin even addresses logistical challenges in the Gulf region, ensuring cost-effective returns and further lowering environmental impact.

Below are excerpts from the interview:

Chris Winkler

Joey Berkhout



Six to one return ratio of seacontainers

Can you describe what is unique about Hoover CS's specialised packaging solutions for spent hydroprocessing catalysts?

We are more than just a supplier of packaging modules; we are a strategic partner to the refining sector. We're the link between refineries and reclamation and regeneration parties, while also contributing to the efficiency of catalyst handling companies. And packaging is something more than simply a means to bundle material for storage and transportation.

What I mean by this is that more operations are impacted by packaging than one might think.

When we think about packaging, it's limiting and often detrimental to view it as simply a way to move goods from point A to point B. Where does packaging originate before arriving at point A? What happens to it after point B? More importantly, packaging influences key operational processes at both ends of the journey.

What do you mean by "packaging influences key operational processes…"?

Imagine the challenge of emptying a swimming pool filled with sand. You could use a small cup or a large bucket. Clearly, you'd choose the bucket. It allows you to move more material, more quickly, and with less effort. Packaging solutions work on the same principle.

So, with regard to spent catalyst, how does the impact of packaging contribute to refinery operations?

In many ways. Just as the bucket expedites emptying the pool, our specialised packaging solutions allow reactors to be unloaded up to 15-20 per cent faster due to increased volume capacity and efficient loading design. This directly reduces downtime, which can potentially translate into revenue gains for refiners.

Additionally, the type of packaging impacts the number and nature of onsite movements, which has a direct effect on operational safety. It also affects cleanliness, storage space, the ability to drain liquids, and much more.

When you tailor the packaging solution to the specific operational challenge, all these areas can be optimised.

And something else happens as well. Tailoring packaging often leads to the use of a reusable fleet of packaging modules, designed specifically for the application.

Instead of continually buying and discarding single-use packaging, like oil drums, operators can implement a circular, reusable solution that's more efficient and sustainable.

"Circular and sustainability", these are words we hear a lot in the industry these days. How do your solutions support this?

With sustainability now a critical focus across the refining industry, our circular packaging solutions help operators reduce waste, lower emissions, and improve operational efficiency.

As mentioned, a reusable circular solution eliminates the need for continuously purchasing and manufacturing drums, pallets, and liners. Over its lifecycle, each of our packaging modules replaces around 750 drums, 750 liners, and approximately 185 pallets.

This translates to preventing roughly 7,500 kg of CO_2 emissions and saving 1.3 million litres of water per module over its lifecycle.

And because the packaging is fully reusable, there's no waste generated. On the frontend, we reduce the demand for raw materials and energy; on the back end, we eliminate the need for disposal of drums and plastic liners.

What can you say about the implementation of solutions, such as yours, in the Gulf region?

Historically, one of the key challenges in the Middle East region has been the lack of local metals reclamation capacity, which makes returning empty reusable packaging to the region costly and complex. Without an efficient return loop, reusable packaging systems were difficult to sustain, both economically and environmentally.

It's similar to a car rental model. Imagine renting a car in Abu Dhabi and leaving it in Manama. If more people do this than the other way around, Abu Dhabi's fleet is depleted, and the whole model grinds to a halt.

Rental companies solve this by charging drop-off fees to manage their fleet. In the case of reusable packaging, without a balanced flow, operators face the logistical and financial burden of shipping hundreds of empty containers back to the region, something that's neither cost-effective nor sustainable.

Have you figured out how to deal with this challenge?

Yes! We identified this issue and developed a solution that largely overcomes it: We have a new packaging module which mitigates this precise issue. Our newest bin delivers an optimised footprint return ratio. For every six containers shipped full out of the region, the return leg requires the footprint of one empty container. This dramatically reduces both transportation costs and emissions.

Can you tell us more about this packaging module?

It has been specifically designed with resid catalysts in mind (ARDS and Ebulating bed applications). And it is a gamechanger.

Implementing the bin will not only cut the catalyst discharging time by 15-20 per cent, but it also has a liquid drain, meaning that the oil and water – which the catalyst is soaked in – can be syphoned off without ever taking catalyst out of the packaging it is unloaded into.

There are a lot of other features, which add value, but these are the main ones. We would love to share details of the bins and the solutions we offer with refiners in the region.

Do you want to add anything else?

A quote from our Senior Vice-President, Chris Winkler: "The Middle East region continues to lead the world in refining innovation, and there's a tremendous opportunity for refiners here to unlock even greater value. By reducing catalyst unloading times and optimising onsite logistics, our solutions directly translate into minimised downtime and significantly higher revenue potential. We're already seeing forward-thinking operators in the region embrace these efficiencies, and we're ready to support others looking to do the same. If maximising throughput and profitability while advancing sustainability is a priority, Hoover CS is ready to be your partner in achieving those goals."

A picture of an old-fashioned drum filled with ARDS catalyst; this is what Hoover displaces