OIL GAS & PETROCHEMICALS

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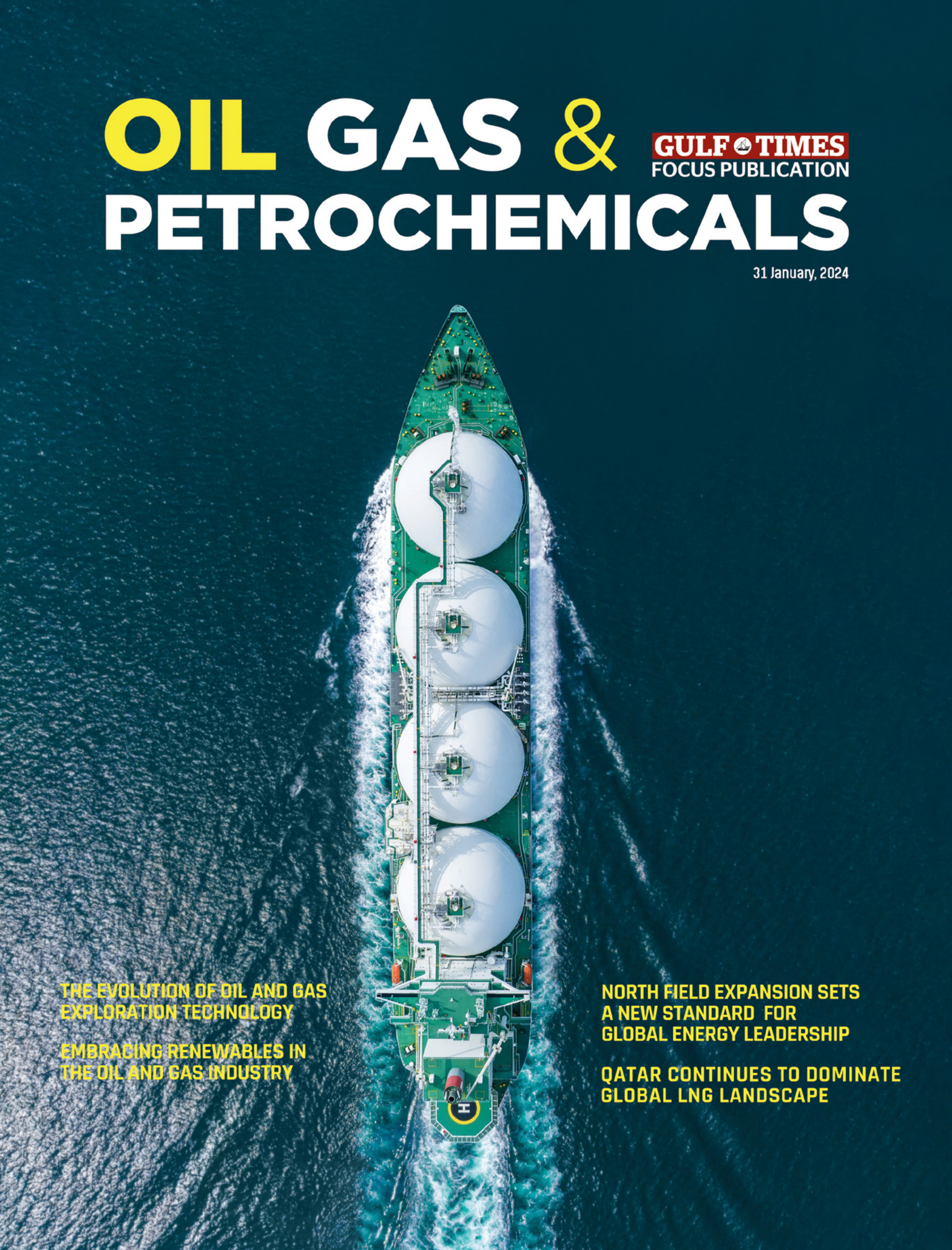

THE EVOLUTION OF OIL AND GAS EXPLORATION TECHNOLOGY

EMBRACING RENEWABLES IN THE OIL AND GAS INDUSTRY

NORTH FIELD EXPANSION SETS A NEW STANDARD FOR GLOBAL ENERGY LEADERSHIP

QATAR CONTINUES TO DOMINATE GLOBAL LNG LANDSCAPE

RASTEC
CHEMICAL DIVISION
RAS Trading & Services Consultancy

In the heart of Qatar's dynamic business landscape, Ras Trading & Services Co.WLL (RASTEC) stands as a distinguished entity within the RASTEC Group, boasting an impressive legacy of over 28 years of invaluable experience. The multifaceted company has carved its niche across diverse sectors, offering comprehensive solutions in ISO Consultancy, Industrial Chemical Cleaning, Oil Field & Marine Supplies, Scrap & Surplus, Real Estate, and Marine Trading.

Founded in 2006, RASTEC's Chemical Cleaning Services division has become a cornerstone of its operations. Over the years, the company has garnered recognition for its exceptional Industrial Chemical Cleaning In Place (CCIP) Services and Specialty Chemical Solutions. Serving a wide spectrum of industries, including Oil & Gas Processing, Petrochemical Plants, and Offshore Platforms, RASTEC has proven its commitment to enhancing operational efficiency.

Specialized Chemical Cleaning Services

RASTEC's success in chemical cleaning programs is a testament to the expertise and professionalism of its partners, onsite supervisors, and technicians. Adhering rigorously to health, safety, and environmental protocols, the company ensures a seamless and secure experience for its clients.

RASTEC CCIP Technology: Optimizing Processes

Industrial processes often generate waste streams and contaminants that hinder the efficiency of production facilities. RASTEC's CCIP Technology addresses this challenge by offering a non-disruptive method for servicing and maintaining equipment between process runs, eliminating the need for dismantling.

Applications of RASTEC CCIP Services:

- Heat Transfer Systems: Shell & Tube, Plate & Frame, Compabloc, Air Cooled Heat Exchangers.
- Process Equipment
- Safe CIP for Amine System

CIP of Heat Exchanger

RASTEC conducts Chemical Cleaning in Place (CIP) to comprehensively remove fouling from the internal surfaces of both the Cold and Hot sides of Heat Exchangers. This proactive maintenance approach optimizes performance and ensures longevity.

CIP of Amine Heat Exchanger

Addressing the unique challenges in the Amine Process within the Oil and Gas industry, RASTEC offers a safe and effective CIP Amine cleaning concept. This alternative chemistry removes fouling without releasing toxic gases, ensuring a secure solution for the industry.

RASTEC Circulation in Place System (CIPS)

In its commitment to innovation, RASTEC introduces the Circulation in Place System (CIPS), a compact and mobile chemical cleaning system. Engineered and designed in compliance with international standards, including DNVGL-ST-271, BS EN ISO 10855, and QP-PAI-STD-005-REV.00, the CIPS SKID is explosion-proof and ATEX certified. Positioned to operate in Zone-II locations, it caters to Offshore Platforms, Gas Plants, Refineries, and Petrochemical Plants, exemplifying RASTEC's dedication to providing cutting-edge solutions for industrial chemical cleaning services.

Offshore Chemical Tanks

RASTEC tanks are designed for transporting corrosive chemicals to offshore platforms. It is built as per DNV GL ST-E271 and ASME VIII Div 1 design standards and codes.

Our goal is to provide our clients with the ability to optimize their process at all times by increasing production and efficiency of process equipment.

The success of RASTEC chemical cleaning programs culminates with the experience and professionalism of our partner and our onsite supervisors and technicians. They ensure that all health, safety, and environmental protocols adhere to all times.

Technical supports and chemical products provided by our business associate Conceptual Technologies Inc. (CTI), Edmonton, Canada. CTI is an approved global CIP Amine service provider for Alfa Laval.

CTI

RASTEC Chemical provides specialty chemicals and Chemical Cleaning In Place (CCIP) Services to Oil & Gas Processing, Offshore Platforms, Petrochemicals in the State of Qatar since 2007. RASTEC integrates strict environmental, health and safety protocols into its QHSCE policy.

RASTEC
CHEMICAL DIVISION
RAS Trading & Services Consultancy

"Industrial process generates waste streams and contaminants, which accumulate at points that negatively impact the efficiency of production facilities"

Our goal is to provide our clients with the ability to optimize their process at all times by increasing production and efficiency of process equipment. The success of RASTEC chemical cleaning programs culminates with the experience and professionalism of our partner and our onsite supervisors and technicians.

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Health & Safety Management System	Environmental Management System	Quality Management System
ISO 45001	ISO 14001	ISO 9001

Petrotec: Empowering Qatar's Energy Sector with Three Decades of Excellence

Petrotec, a wholly-owned subsidiary of Al Mahhar Holding, is one of the largest providers of engineered products and services to the energy industry in Qatar. The company specializes in various key disciplines related to energy, including rotating equipment, electrical systems, instrumentation, drilling, process and static equipment.

Established in 1989, Petrotec represents notable world-class equipment manufacturers and service providers. The company provides its clients in Qatar with comprehensive specialized engineering products and services support to the energy spectrum of Qatar's upstream and downstream industries. With an utmost focus on reliable and safe service, Petrotec has grown into a trusted name in Qatar and recently extended further in the Gulf region.

Petrotec enjoys international recognition, holding certifications in Quality Management Systems (ISO 9001:2015), Environmental Management Systems (ISO 14001:2015), and Occupational Health and Safety Management Systems (OHSAS ISO 45001:2018). Additionally, the company is TRACE Certified.

Petrotec's mission is to optimize the safety and service life of customers' assets by establishing service excellence, developing additional capabilities, and delivering genuine customer value along with a steadfast commitment to service.

Their services include:

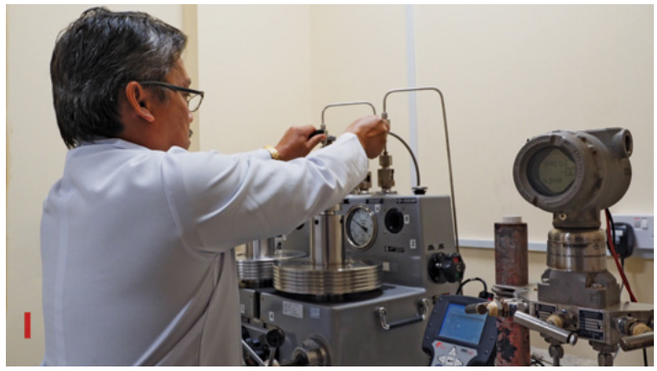
- Maintenance Repair and Overhaul Services

- Turnaround/Shutdown services

- Pre-commissioning and commissioning services
- Manufacturing

- System Integration
- Rental Equipment

- Calibration



- Inspection & Testing Services
- Digital Transformation & Automation

Qatar continues to dominate global LNG landscape, setting records in production and marketing

With a visionary economic strategy and commitment to sustainability, Qatar has become a global economic powerhouse, leading in liquefied natural gas production and pioneering transformative projects like the North Field Expansion Project

The State of Qatar has been keen to build a solid and ambitious economy that deals with reality and looks to the future with confidence and competence.

The State has supported national efforts aimed at promoting and expanding Qatari industries, in a way that contributes to achieving self-sufficiency for the State on the one hand, and supporting the economic growth of non-oil sectors to be in line with its economic diversification plans pursued by the State, on the other hand.

The Qatari economy has become among the world's most promising ones, thanks to the approach drawn up by His Highness the Amir Sheikh Tamim bin Hamad al-Thani to achieve the Qatar National Vision 2030, which aims to diversify the national economy and shift towards a new knowledge-based economy.

In the field of energy, the State of Qatar is atop the world's liquefied natural gas (LNG) production and marketing, and supplies gas to a large number of countries, from Argentina to Japan.

Moreover, QatarEnergy has concluded exploration and production agreements with several countries on various continents, and has awarded contracts worth tens of billions of dollars to implement the North East Field and North South Field expansion projects, which will increase Qatar's LNG production capacity from 77mn tonnes per year to 126mn tonnes per year. The two fields' production is expected to begin in 2026 and 2027, respectively.

QatarEnergy also signed several agreements to increase the size of its fleet of LNG tankers, by building 100 tankers with a total cost estimated at about QR70bn within three agreements with the three major Korean shipyards.

As for clean energy, the "Al Kharsaa" solar power plant project was opened, to produce 10% of the country's electrical energy at peak times. QatarEnergy plans to establish two solar power plants in the industrial cities of Mesaieed and Ras Laffan, with them expected to begin producing electricity by the end of 2024.

With a total cost of approximately QR11bn, the Umm Al Houl station - of which the production capacity is 136mn gallons of water per day and 520 megawatts of electricity - is considered the most prominent project to develop and modernise the energy economy.

The North Field Expansion Project is one of the largest energy industry investments in Qatar over the past few years, in addition to being the largest and most competitive LNG projects ever. The project also contributes to strengthening the national economy of Qatar with huge financial returns over decades. Construction works and other activities related to the project's implementation will also have a significant impact on stimulating economic activity in various local sectors.

The features of the North Field Gas Expansion Project began to materialise on the ground with His Highness the Amir laying its foundation stone in October 2023, for the country's energy sector to have entered new phase of its long history, and has culminated in a phase that began with the announcement of increasing the volume of Qatar's gas production from 77mn tonnes to 110mn tonnes in 2026 as a first stage, and to 126mn tonnes in 2027.

In September 2018, QatarEnergy announced an increase in its production of liquefied natural gas from 77mn tonnes to 110mn tonnes annually, by establishing a fourth production line in addition to the three production lines announced in July 2017, and for the new lines to enter the production phase in 2026.

The expansion of the LNG project is divided into two main parts, eastern and southern, with both parts to be fully built and production starting at its full new capacity by 2027. Discovered in 1971, the North Gas Field, which started production in 1989, is the largest in the world, with reserves of 50.97tn cubic meters of gas.

The State of Qatar intends, according to the above figures, to increase its production capacity of LNG by more than 63%, to reach 126mn tonnes per year, through developing the eastern North Field, which is scheduled to enter production in 2026, and the southern North Field, which will be ready to deliver the first shipment in 2027.

TotalEnergies, ExxonMobil, ConocoPhillips, Eni, Shell and Sinopec have been awarded contracts to develop the Eastern North Field in partnership with QatarEnergy, with a total investments cost of about $28.75bn. TotalEnergies, Shell, and ConocoPhillips also won contracts to develop the Southern North Field in partnership with QatarEnergy.

The International Energy Agency (IEA) confirms that the field contains an estimated 51tn cubic meters of natural gas, and about 50bn barrels (7.9bn cubic meters) of natural gas condensate.

Qatar's increase in the volume of its production of LNG is an important achievement towards ensuring more gas supplies in the future to meet the increasing global demand.

The North Field Expansion Project is one of the largest investments in the energy industry over the past few years, in addition to being the largest and most competitive LNG projects ever.

The project also contains a number of environmental components that support the State of Qatar's strong commitment to achieving the highest environmental standards and providing reliable solutions in the process of transitioning to low-carbon energy. The carbon dioxide collection and injection system is considered one of the most important environmental elements of the project, as it forms part of the integrated construction of carbon dioxide collection and injection in Ras Laffan, which, when fully operational, will become the largest of its kind in the LNG industry, and one of the largest facilities of its kind ever developed anywhere in the world.

In addition to carbon dioxide collection and injection facilities, the project will feature a number of positive and unique environmental advantages, including providing a large portion of the project's electrical energy needs from the national electricity network in Qatar. QatarEnergy seeks to secure these needs from the Al Kharsaa solar power station project, which has a capacity of 800 megawatts, in addition to about 800 megawatts from the solar energy station, which QatarEnergy will soon establish as part of its portfolio plan of solar energy projects that aim to reach about 4,000 megawatts before 2030.

The project also contains a system to recover evaporated gas during shipping, which will reduce greenhouse gas emissions by approximately 1mn equivalent tons of carbon dioxide annually. The project will save 10.7mn cubic metres of water annually by recycling and reusing 75% of industrial wastewater.

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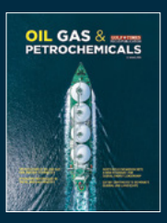

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North Field Expansion sets a new standard for global energy leadership

Qatar's energy sector saw a quantum leap in October last year when His Highness the Amir Sheikh Tamim bin Hamad al-Thani laid the foundation stone of the North Field expansion project, which will raise the country's LNG production capacity from the current 77mn tonnes per year (mtpy) to 126mtpy by 2026.

The project includes six mega trains, each with a production capacity of 8mtpy of liquefied natural gas, four of which are part of the North Field East expansion project, and two part of the North Field South expansion project, contributing a total of 48mtpy to the global LNG supplies.

QatarEnergy is partnered in this global project by TotalEnergies, Shell, ConocoPhillips, ExxonMobil, Eni, Sinopec, and CNPC, whose contributions will play a pivotal role in ensuring the project's success and achieving its goals by producing LNG that is the best in the world in terms of safety, reliability, and carbon footprint.

In addition to LNG, the project will produce 6,500 tonnes per day of ethane gas, which will be used as a feedstock in the local petrochemical industries.

The project will also produce about 200,000 barrels per day of liquefied petroleum gas (propane and butane), and about 450,000 barrels per day of condensates, in addition to large quantities of helium and pure sulphur.

Speaking at the ground breaking ceremony, HE the Minister of State for Energy Affairs, Saad bin Sherida al-Kaabi, said: "On the local level, this project will have short- and long-term impacts that will be reflected across all sectors of the Qatari economy and will significantly enhance the country's revenues.

"This major expansion comes at a crucial time, as natural gas occupies a pivotal position in the energy mix in a world facing geopolitical turbulences and is in dire need of clean energy sources that are in line with the global environmental goals."

In October, QatarEnergy signed the following agreements with Eni, Shell and TotalEnergies.

Affiliates of QatarEnergy and Eni signed a long-term LNG sale and purchase agreement (SPA) for the supply of up to 1mn tonnes per year of LNG from Qatar to Italy.

Affiliates of QatarEnergy and Shell signed two long-term LNG sale and purchase agreements (SPAs) for the supply of up to 3.5mtpy of LNG from Qatar to the Netherlands.

Affiliates of QatarEnergy and TotalEnergies signed two long-term LNG sale and purchase agreements (SPAs) for the supply of up to 3.5mn tonnes per annum of LNG from Qatar to France.

In the same month, QatarEnergy was awarded a new exploration block offshore the Arab Republic of Egypt as part of the 2022 EGAS International Bid Round.

In September, Qatargas changed its name to 'QatarEnergy LNG', emphasising a future vision for Qatar's liquefied natural gas (LNG) industry.

With a new name and logo, QatarEnergy LNG will continue to deliver on its commitment to safety, environmental protection, flawless project delivery and the reliability and efficiency of its production facilities.

The landmark came as part of the increasing international recognition of Qatar's role in meeting the world's growing need for energy, particularly natural gas – the cleanest of all fossil fuels.

It also reflects QatarEnergy's continued commitment to LNG as a critical source of energy for decades to come and a vital enabler of the energy transition.

QatarEnergy announced the successful integration of all marketing and marketing-related activities formerly managed by QatarEnergy LNG.

This is a major move towards consolidating QatarEnergy's position as a global energy leader and an important milestone to enhance the effectiveness of LNG marketing and sales from Qatar.

In November, QatarEnergy LNG delivered the 1,000th LNG shipment to the South Hook LNG Terminal at Milford Haven in the United Kingdom.

The landmark delivery was made by the Q-Max LNG carrier 'Mozah', which already has another landmark achievement to its name: the 10,000th LNG cargo from Ras Laffan Port in 2006.

In October, QatarEnergy and Chevron Phillips Chemical Company (CPChem) announced they have secured $4.4bn financing for the Ras Laffan Petrochemicals project, a world scale integrated polymers complex in Ras Laffan Industrial City, Qatar.

The senior debt financing package is comprised of commercial and Islamic facilities as well as Export Credit Agency (ECA) financing.

The Ras Laffan Petrochemicals project is a joint venture between QatarEnergy (70%) and CPChem (30%) and is considered the largest petrochemical project in Qatar for which Final Investment Decision (FID) was announced in January.

In September, QatarEnergy signed an agreement with South Korea's HD Hyundai Heavy Industries (HHI) for the construction of some 17 ultra-modern LNG carriers.

The deal, valued at QR14.2bn, marks the start of the second phase of QatarEnergy's LNG ship acquisition program, which will support its expanding LNG production capacity from the North Field LNG expansion and Golden Pass LNG export projects as well as its long-term fleet replacement requirements.

Together with the 60 ships that were contracted for by QatarEnergy in the first phase of the programme, which will be built at Korean and Chinese shipyards, the agreement brings the total number of confirmed new LNG vessels to be delivered to QatarEnergy and its affiliates to 77, with more to follow.

It was announced in July that Qatar will host the 21st International Conference & Exhibition on Liquefied Natural Gas "LNG 2026", a preeminent world event in the LNG industry that showcases the continued growth and development of the sector worldwide.

The hosting of this unique platform for the global LNG industry will coincide with the historic start-up of the North Field LNG expansion project and the commissioning of one of the largest Carbon Capture and Storage schemes in the world by Qatar - the world's largest LNG producer.

In June, QatarEnergy signed definitive agreements with China National Petroleum Corporation (CNPC), covering the long-term supply of LNG to China and partnership in the North Field East LNG expansion project (NFE).

The two parties signed an LNG Sales and Purchase Agreement (SPA) for the delivery of 4mn tons of LNG per year from the NFE project to CNPC's receiving terminals in China over a span of 27 years, marking the industry's longest term SPA commitment.

QatarEnergy celebrated (in June last year) the steel cutting of the first of its new generation of chartered LNG vessels to be constructed in a South Korean shipyard.

Building upon an already successful global maritime initiative, QatarEnergy joined Samsung Heavy Industries, and JP Morgan Asset Management in a special ceremony on Geoje Island in South Korea to celebrate this milestone, which is part of QatarEnergy's historic LNG Fleet Expansion Project.

In the same month, QatarEnergy's LNG trading arm, QatarEnergy Trading, entered into a long-term LNG Sale and Purchase Agreement (SPA) with Bangladesh Oil, Gas and Mineral Corporation (Petrobangla) to supply about 1.8mn tons per year (MTPY) of LNG to Bangladesh for 15 years, starting in 2026.

QatarEnergy entered into a farm-in agreement with ExxonMobil Canada in March this year for two exploration licenses offshore the province of Newfoundland and Labrador in Canada.

Pursuant to the agreement, QatarEnergy holds a 28% working interest in license EL 1167, where the Gale exploration well and associated activities are planned.

ExxonMobil Canada (operator) holds 50% while Cenovus Energy holds 22%. QatarEnergy also holds a 40% working interest in license EL 1162, while ExxonMobil Canada (operator) holds the remaining 60%.

In March, QatarEnergy and Chevron Phillips Chemical Company (CPChem) marked the ground breaking of the Golden Triangle Polymers Plant in Orange County, in the US State of Texas, marking the beginning of construction of the $8.5bn world-scale petrochemical facility.

In the same month, QatarEnergy announced a light oil discovery in the Jonker-1X deep-water exploration well drilled in the PEL-39 Exploration License, offshore Namibia.

Upstream, Midstream, and Downstream Activities in the Oil and Gas Industry

The oil and gas industry is a complex and multifaceted sector that involves a series of interconnected activities crucial for meeting global energy demands. Understanding these activities requires delving into the three main segments: upstream, midstream, and downstream. Each segment plays a distinct role in the journey from the extraction of raw resources to the delivery of refined products. This article aims to unravel the intricacies of upstream, midstream, and downstream activities within the oil and gas industry.

I. Upstream Activities: Exploration and Production

Upstream activities encompass the initial phases of the oil and gas industry, focusing on the exploration and extraction of raw materials. Key components of upstream operations include:

Exploration

Exploration involves the search for potential oil and gas reserves beneath the Earth's surface. Advanced seismic surveys, drilling technologies, and geological studies help identify promising locations.

Drilling

Once a potential reserve is identified, drilling operations commence to extract crude oil or natural gas. Exploration wells transition to production wells, with drilling rigs employing sophisticated equipment.

Production

Extracted raw materials undergo initial processing at production facilities. Crude oil is separated from natural gas and other impurities.

Well Maintenance and Enhancement:

Continuous monitoring and maintenance of wells to optimize production efficiency.Implementation of enhanced oil recovery (EOR) techniques to extract more hydrocarbons from reservoirs.

II. Midstream Activities: Transportation and Storage

Midstream activities involve the transportation, storage, and wholesale marketing of oil and gas products. Key elements of midstream operations include:

Transportation

Pipelines, ships, trucks, and rail are used to transport crude oil, natural gas, and refined products. Pipelines, in particular, form an extensive network, ensuring the efficient movement of resources.

Storage

Large storage facilities, including tanks and caverns, store crude oil and natural gas. Storage serves as a buffer, ensuring a consistent supply even during fluctuations in demand.

Wholesale Marketing

Midstream companies engage in wholesale marketing, selling products to downstream entities. Pricing strategies and contracts play a vital role in the competitive midstream landscape.

III. Downstream Activities: Refining and Distribution

Downstream activities involve refining crude oil into marketable products and distributing them to end consumers. Key facets of downstream operations include:

Refining

Crude oil undergoes refining processes to separate and transform it into valuable products. Distillation, cracking, and other refining techniques produce refined products such as gasoline, diesel, and jet fuel.

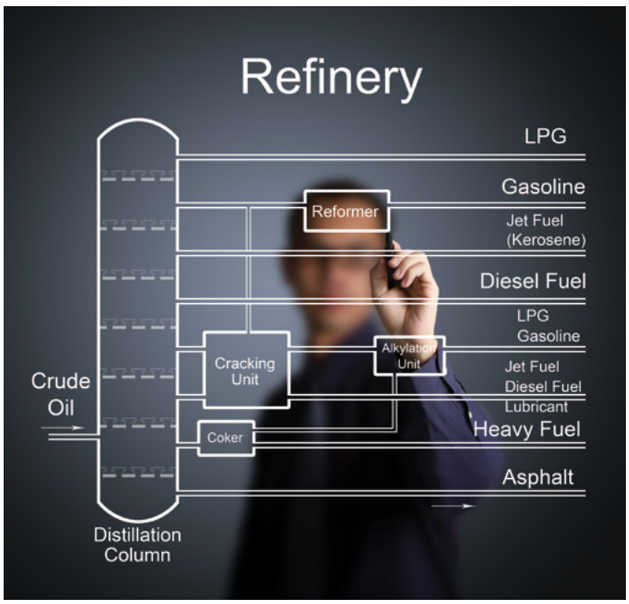
Distribution

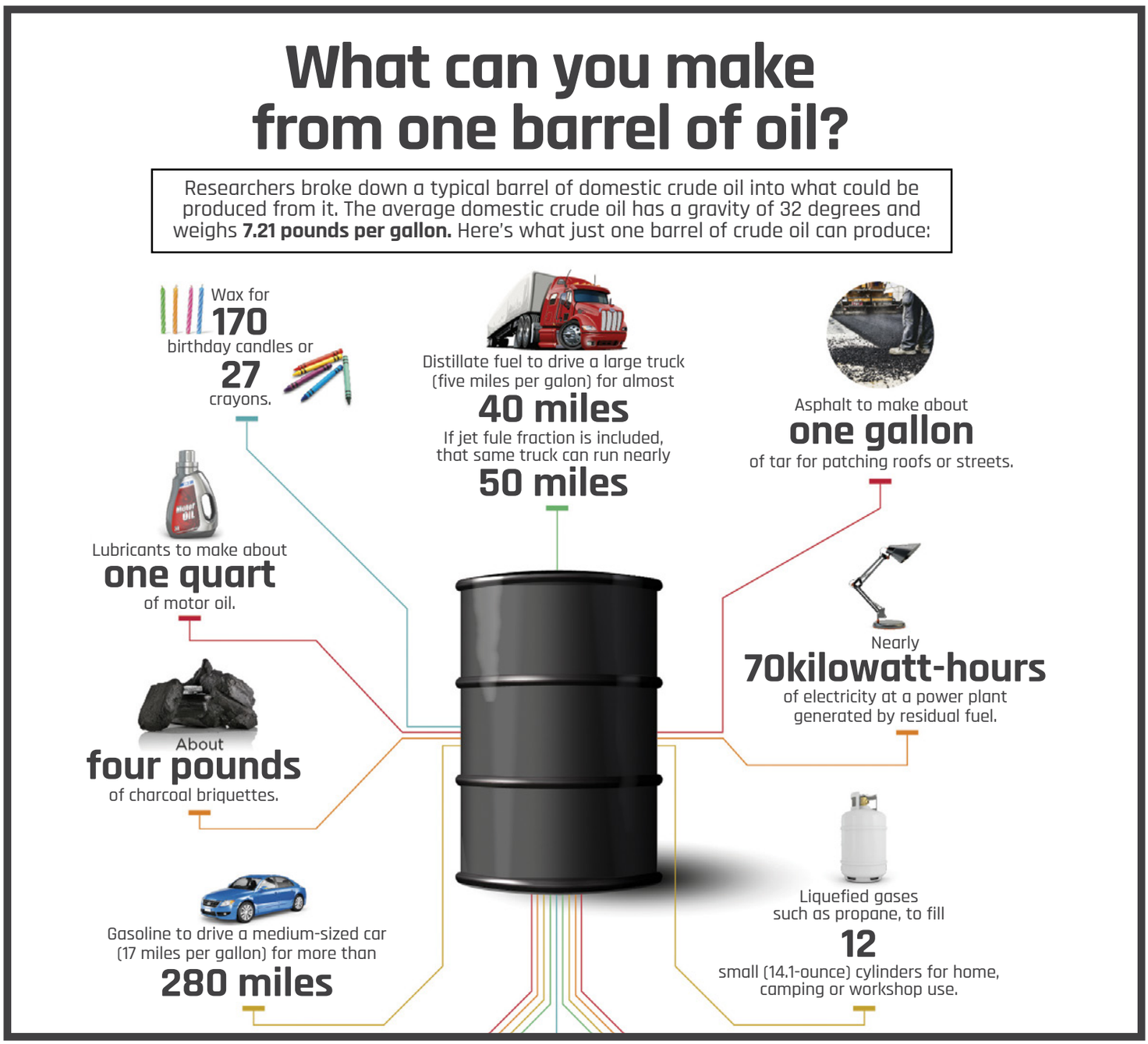
Refined products are distributed through an extensive network of pipelines, trucks, and ships. Terminals and retail outlets ensure the availability of products to end consumers.

Retail Marketing

Gas stations and retail outlets represent the final stage in the downstream segment. Marketing strategies, brand differentiation, and consumer engagement are crucial in this phase.

In conclusion, the oil and gas industry's upstream, midstream, and downstream activities form a seamless and interdependent chain. Successful coordination across these segments ensures a reliable supply of energy products to meet the world's growing demands. As the industry continues to evolve, technological advancements and a focus on sustainability are reshaping each segment, ushering in a new era for the oil and gas sector. Understanding these activities provides a foundation for appreciating the industry's complexities and the critical role it plays in powering our global economy.





National Industrial Gas Plants (NIGP)

Leading the Way in Industrial Gas Solutions

In the ever-evolving landscape of industrial solutions, one name stands out as a beacon of innovation and reliability – National Industrial Gas Plants (NIGP). Established in 1952, NIGP has been a pioneering force in the industrial gases industry, shaping the trajectory of progress in Qatar and beyond for over seven decades.

Foundations of Pioneering Success

NIGP's journey began in 1952, marking the inception of the first Industrial Gases company in Qatar and the UAE. Over the years, the company's unwavering commitment to excellence and innovation has propelled it to the forefront of the industry. Today, NIGP is synonymous with the production and supply of Industrial, Medical, High Purity, and Specialty Gas Mixtures, making it a trusted name in the market.

The company's legacy extends beyond borders, with operational footholds in Saudi Arabia, Egypt, and the UAE. This strategic expansion reflects NIGP's responsiveness to the growing demands of its valued customers across the region. Rooted in a culture of quality and responsibility, NIGP proudly holds international certifications, including ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, ISO 17025:2017 & ISO 18001:2018.

State-of-the-Art Facilities

At the heart of NIGP's operations is a commitment to technological advancement. The company has invested substantially in state-of-the-art facilities for the manufacturing of cryogenic liquids. This investment ensures a reliable supply of essential gases such as Nitrogen, Oxygen, Argon, CO2, and more. NIGP's cryogenic gas solutions encompass a comprehensive range, including wide vacuum-insulated ISO tanks, containers, semi-trailers, and skid-mounted tanks, all complete with vaporizers to meet diverse flow rate requirements.

Diverse Gas Solutions

Beyond cryogenic capabilities, NIGP takes pride in supplying packed gases to major clients throughout Qatar. The product range encompasses an array of cylinder sizes, ranging from 1 litre to 68 litres in water capacity, with grades varying from 2.5 to 6 Grade. This extensive product offering ensures that NIGP can tailor its solutions to meet the precise needs of a wide array of industries, spanning healthcare, research, industrial, and beyond.

unwavering in its commitment to delivering high-quality and reliable gases, including oxygen, nitrogen, argon, carbon dioxide, and specialized mixtures. NIGP's overarching goal is to power progress, efficiency, and sustainability across various sectors through continuous innovation, a steadfast dedication to quality, and operational excellence.

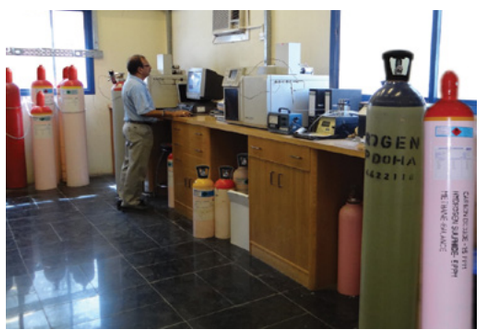
The vision driving NIGP is to position itself as a pioneer in its field of operations while concurrently implementing effective methods to provide a safe and healthy working environment for its employees. Additionally, NIGP aims to raise awareness about environmental protection within the industry, aligning its vision with broader global sustainability goals.

Ensuring Timely Deliveries

NIGP recognizes the critical importance of timely deliveries in the industrial gases sector. To this end, the company boasts a diverse fleet, catering to small, medium, and large-scale transportation needs. Rigorous monitoring of drivers and vehicles is facilitated through a fleet tracking system, ensuring online assistance and providing customers with confidence in the reliability and punctuality of their deliveries.

Fueling Progress and Sustainability

Embedded in NIGP's ethos is a mission to lead the industrial gas manufacturing frontier, catering to the diverse needs of industries. The company is



Beyond Gases

NIGP's influence extends beyond gas production; the company proudly serves as a major importer of Abrasive Garnet. This versatile and essential material finds applications across various industrial sectors, and NIGP ensures a consistent supply sourced from reputable corners of the world, including Australia, India, and China.

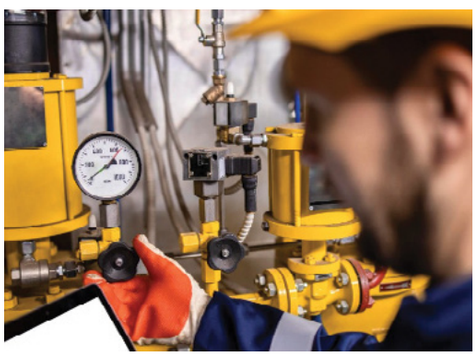
For over 40 years, NIGP has been a key partner with GMA, producing the highest-quality almandine garnet abrasives globally. In addition to the import of Abrasive Garnet, NIGP offers a comprehensive range of welding and gas cutting equipment. From consumables to cutting machines and kits, the company's offerings are engineered to meet the diverse needs of industries requiring precision in cutting and surface preparation tasks.

Safety at the Core: Trading of PPE

NIGP's commitment to safety is not limited to its products. The company has expanded its offerings to include a wide range of Personal Protective Equipment (PPE) and firefighting gear. Safety is paramount, and NIGP ensures that individuals working in demanding environments have access to protective gear such as coveralls, Nomex clothing, and gloves. These items provide full-body protection, flame-resistant properties, and an extra layer of safety, allowing workers to carry out their tasks with confidence.

Laboratory Excellence: ISO 17025 Accreditation

In 2003, NIGP inaugurated a state-of-the-art facility designed to manufacture precision gas mixes using gravimetric techniques. Within a year of its establishment, the facility achieved certifications for ISO 9001, ISO 14001, and ISO 45001. NIGP's laboratory is accredited under ISO 17025:2017, adhering to international standards of excellence.



The laboratory's capabilities are extensive, ranging from the production of calibration gases with levels from PPB to %, up to 36 components mixes, ultra-pure synthetic air, diving gases, medical gases, breathing air, reactive mixes, and welding gases. This level of precision and versatility ensures that NIGP can cater to the specialized needs of a wide range of industries, maintaining the highest standards of quality.

A Pillar of Industry Innovation

In conclusion, National Industrial Gas Plants (NIGP) has etched its name as a pillar of innovation and excellence in the industrial gases sector. With a legacy spanning over seven decades, NIGP has evolved to meet the dynamic needs of industries across the region and the globe. From state-of-the-art cryogenic facilities to a diverse product portfolio and a steadfast commitment to safety and environmental responsibility, NIGP stands as a testament to the transformative power of dedication, innovation, and a relentless pursuit of excellence. As the industry continues to evolve, NIGP remains at the forefront, shaping the future of industrial gas solutions.

EMPOWERING INDUS
LEADING GAS SOLU

Delivering precision gases for industrial growth.
Your trusted partner in the world of industries solutio

ACETYLENE
AMMONIA
ARGON
CO2 - CO_2 & N_2O
CHLORINE
AIR
R22, R134A
R141B
R404A, R407C
R408A, R409A
R410A, R123
HELIUM
HYDROGEN
PROPANE
NITROGEN
N2O
OXYGEN
MEDICAL GASES
SPECIALTY GAS & LIQUID MIXTURES
DRY ICE

NIOP
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The Crucial Role of LNG in the Global Energy Mix

In the dynamic and ever-evolving landscape of global energy, liquefied natural gas (LNG) has emerged as a transformative force, reshaping the contours of how we meet the escalating demands for energy in our modern world. This in-depth exploration aims to unravel the intricacies of LNG's pivotal role in the broader energy mix, delving into its multifaceted contributions to global energy demands, market dynamics, and the far-reaching implications it holds for sustainable energy practices.

LNG, derived from the natural gas extracted from the Earth's reserves, has risen to prominence owing to its exceptional versatility and its reputation as a cleaner alternative within the energy spectrum. The adaptability of LNG spans a diverse array of applications, ranging from its use in electricity generation to serving as a reliable source of heating and a cleaner fuel for various modes of transportation. What sets LNG apart is its ability to offer a more environmentally sustainable option compared to conventional energy sources, aligning seamlessly with the global imperative to address climate change.

On the global stage, the LNG market has become a dynamic arena with major exporting nations, including stalwarts like Qatar, Australia, and the United States. Importing nations, especially those in Asia and Europe, are increasingly turning to LNG to diversify their energy portfolios, thereby bolstering energy security. The intricate dynamics of this market are shaped by a delicate balance between supply and demand, influenced by factors such as geopolitical events, regional considerations, and emerging market trends. This has given rise to the establishment of both spot markets and long-term contracts, playing a pivotal role in determining the pricing and trade of LNG.

Within the realms of power generation and industrial processes, LNG's clean-burning attributes have positioned it as a preferred and sustainable choice. LNG-fired power plants have emerged as flexible and reliable sources of electricity, playing a pivotal role in facilitating the integration of renewable energy sources into existing grids. Moreover, the industrial sector has embraced LNG as a vital feedstock for various processes, particularly in petrochemicals and steel manufacturing, contributing not only to enhanced efficiency but also to a substantial reduction in environmental impact.

The adoption of LNG in the transportation sector represents another significant stride towards sustainability. The maritime industry, in particular, is increasingly turning to LNG as a cleaner fuel, thereby reducing emissions in shipping operations. Similarly, the use of LNG in heavy-duty vehicles, such as trucks and buses, has gained traction as an environmentally friendly substitute for traditional diesel. This shift towards LNG in transportation is supported by ongoing developments in infrastructure, including the establishment of bunkering facilities and refueling stations, coupled with continuous technological advancements in LNG engines that enhance overall efficiency and performance.

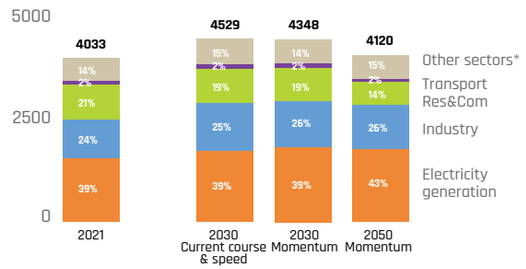
However, even as the potential benefits of LNG unfold, the industry faces notable challenges that necessitate strategic attention for sustained and responsible growth. Foremost among these challenges is the imperative for substantial infrastructure

development, encompassing the establishment of liquefaction plants, terminals, and extensive transportation networks to meet the burgeoning demand for LNG. Additionally, environmental considerations, particularly the reduction of methane emissions during the entire lifecycle of LNG production and transportation, remain a focal point for the industry as it strives to uphold the highest standards of sustainability.

In summation, the importance of LNG in the global energy mix is profound and transformative. Its clean-burning characteristics, unmatched versatility, and pivotal roles in power generation, industrial processes, and transportation mark it as a linchpin in the ongoing transition towards a more sustainable and diversified energy future. As the industry confronts challenges and continues to innovate, the influence of LNG is poised to expand further, contributing to the realization of a cleaner, more resilient, and interconnected global energy landscape for generations to come.

Natural gas demand by sector, excluding gas for Blue H_2

Bcm

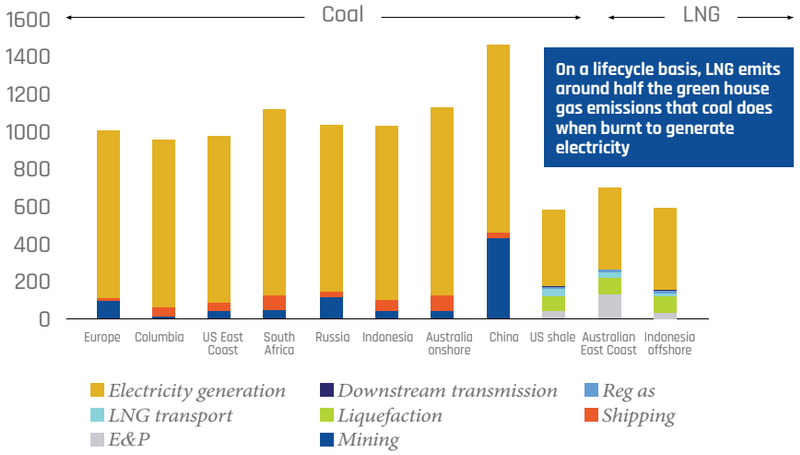


Courtesy: globallnghub.com

NATURAL GAS EMITS BETWEEN 45% AND 55% LOWER GREEN HOUSE GAS EMMISSIONS THAN COAL WHEN USED TO GENERATE ELECTRICITY

Full cycle carbon savings LNG vs coal

GHG emissions from LNF and coal in a full life cycle basis for power generation



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Established in 2004 in Doha, Qatar, Field Industrial Supplies has emerged as a prominent player in the realm of industrial solutions. Specializing in products tailored for Water and Waste Water, Oil & Gas, Power, and HVAC Industries, the company has consistently delivered excellence since its inception.

Field Industrial Supplies prides itself on offering a diverse range of industrial products, sparing its clients the challenges of supplier scouting, equipment procurement, and intricate delivery planning. With nearly two decades of experience, the company has meticulously curated its offerings, striving to provide exceptional value by guiding clients to innovative and cost-effective solutions tailored to their project needs.

The superior quality of products and services rendered by Field Industrial Supplies has catapulted it to the status of approved suppliers for various prestigious project sites. Noteworthy among these are affiliations with Qatar Water Authority - Kahramaa, Public Works Authority-Ashghal, Manateq, and Qatar Armed Forces, underscoring the company's credibility and commitment to excellence.

Vision

Field Industrial Supplies aspires to ascend to leadership in client servicing for industrial supplies, achieving this through comprehensive one-stop-shop solutions that consistently deliver unparalleled value for money.

Mission

The company is dedicated to ensuring mutual success through its commitment to competitive, best-in-class product offerings and the delivery of high-quality client services. Field Industrial Supplies strives to be a driving force in the industrial sector, aligning its mission with the long-term success of its clients.

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Unraveling the Dynamics: The Economics of Oil Prices

In the vast tapestry of the global economy, few elements command as much influence and attention as oil prices. Their inherent volatility serves as a barometer for economic stability, exerting a profound impact that ripples across industries, markets, and nations. From the fuel that propels transportation systems to the intricacies of inflation rates that shape consumer purchasing power, the fluctuations in oil prices create a delicate dance that directly shapes the economic landscape.

In an era where energy serves as the lifeblood of industrialization and economic growth, understanding the intricate web of factors that determine oil prices is not merely an academic pursuit—it is an imperative. For policymakers crafting economic strategies, businesses navigating market conditions, and consumers adjusting to the ebb and flow of costs, a nuanced comprehension of the dynamics influencing oil prices is indispensable.

This article embarks on a comprehensive exploration of the multifaceted economics of oil prices, delving into the intricate interplay of factors that govern this essential commodity and unraveling the complexities inherent in its pricing mechanisms. By dissecting the influences of geopolitical events, examining the delicate equilibrium between supply and demand, and scrutinizing the impact of market speculation, we aim to provide a nuanced perspective on the forces shaping oil prices in our interconnected global economy.

Supply and Demand Dynamics

One of the primary drivers of oil prices is the fundamental law of supply and demand. The delicate equilibrium between the two forces shapes the pricing landscape:

Global Demand Trends

Economic growth, industrial activities, and transportation needs directly impact oil demand. Periods of robust economic growth tend to increase demand, while economic downturns can lead to a decrease.

OPEC Influence

The Organization of the Petroleum Exporting Countries (OPEC) plays a pivotal role in oil prices. OPEC's decisions on production quotas significantly affect global oil supply and prices, while contributions from non-OPEC countries influence overall oil supply. Advances in extraction technologies, like shale oil production, impact the global supply-demand balance.

Geopolitical Events

Geopolitical events have a profound and immediate impact on oil prices, often leading to sudden fluctuations:

Regional Conflicts

Political instability and conflicts in major oil-producing regions can disrupt supply chains. The Middle East, with its geopolitical tensions, remains particularly susceptible to supply interruptions.

Sanctions and Trade Relations

Economic sanctions on major oil-producing nations can restrict their ability to export oil. Changes in international trade relations can also influence the flow of oil.

Natural Disasters

Natural disasters, such as hurricanes and earthquakes, can disrupt oil production and refining infrastructure. The Gulf of Mexico, for instance, is vulnerable to hurricanes that can disrupt oil platforms and refineries.

Market Speculation

Financial markets and speculative activities contribute to short-term volatility in oil prices:

Futures and Options Trading

Traders engage in futures and options contracts, betting on future oil prices. Speculative activities can amplify short-term price movements.

Market Sentiment

Public perceptions, news, and rumors can influence market sentiment and impact trading decisions. Speculative bubbles or panics can lead to exaggerated price movements.

Currency Fluctuations

Oil prices are denominated in U.S. dollars, and currency fluctuations can impact the purchasing power of oil-producing and consuming nations. Changes in exchange rates can contribute to price volatility.

Economic Indicators

Certain economic indicators provide insights into future oil price trends:

Inflation and Interest Rates

Inflation rates and central bank interest rate policies influence the real cost of oil. Higher inflation and interest rates can increase the nominal price of oil.

Global Economic Outlook

Projections of global economic growth or recession impact expectations for future oil demand. Economic indicators, such as GDP growth and employment rates, are closely monitored.

In the intricate tapestry of the global economy, oil prices are a dynamic thread that responds to a myriad of interconnected factors. The delicate balance between supply and demand, the sway of geopolitical events, the speculative currents in financial markets, and the pulse of economic indicators collectively shape the economics of oil prices. Navigating this complex landscape requires a comprehensive understanding of these factors, as they collectively dictate the trajectory of oil prices and, consequently, influence economies worldwide.

Embracing Renewables in the Oil and Gas Industry

In the dynamic and ever-evolving landscape of the global energy sector, a notable and transformative shift is underway as traditional oil and gas companies recalibrate their strategies to incorporate renewable energy into their portfolios. This article embarks on an in-depth exploration of the multifaceted endeavours undertaken by these industry stalwarts, shedding light on the intricacies of their journey towards sustainability and a more diversified energy future.

The Imperative for Change

The contemporary landscape of the energy sector is marked by an increasingly urgent call for environmental sustainability and a fundamental shift towards a low-carbon economy. This has spurred traditional oil and gas companies to reevaluate their long-standing business models. Recognizing the imperative for change, these industry giants are now actively embracing renewable energy solutions, aligning their operations with evolving market dynamics and addressing the growing expectations of stakeholders worldwide.

Diversification through Renewable Investments

Strategic diversification of portfolios has become a hallmark of oil and gas companies seeking to fortify their positions in an ever-changing energy market. Investments in renewable energy projects offer a pathway to not only enhance resilience against market volatility but also actively contribute to the global energy transition.

Solar Power Ventures

Among the avenues explored, oil and gas companies are increasingly investing in solar power projects. These initiatives leverage vast expanses of land adjacent to existing infrastructure, establishing solar farms as a sustainable and scalable energy source that seamlessly complements traditional oil and gas operations.

Wind Energy Initiatives

Harnessing the power of the wind has emerged as another avenue for diversification. Companies are exploring the potential of offshore wind farms, tapping

into the abundant and consistent renewable energy sources provided by the ceaseless motion of the wind across open waters.

Hybrid Energy Systems

A pioneering approach involves the creation of hybrid energy systems that seamlessly blend traditional fossil fuel operations with renewable energy components. This innovative integration allows companies to optimize energy production while concurrently reducing overall carbon emissions, marking a step towards a more sustainable energy future.

Sustainable Operations

In a bid to enhance operational efficiency and reduce environmental impact, oil and gas companies are incorporating renewable energy directly into their core operations.

Renewable Power for Operations

A notable strategy involves utilizing renewable energy to power essential oil and gas operations. This proactive approach not only reduces carbon footprints but also positions these companies as champions of sustainable practices by investing in on-site renewable generation.

Energy Efficiency Measures

Simultaneously, companies are implementing a range of energy efficiency measures to augment their commitment to sustainability. Leveraging advanced technologies, these measures optimize existing processes and significantly reduce overall energy consumption, contributing to a more sustainable operational framework.

Research and Development Initiatives

Investments in research and development have become integral to the endeavors of oil and gas companies seeking to innovate within the renewable energy space.

Advanced Technologies

Ongoing research and development efforts are directed towards advancing technologies that enhance the efficiency of renewable energy production. Innovations in solar panel technology, energy storage solutions, and wind turbine design exemplify the commitment to continuous improvement.

Carbon Capture and Storage (CCS)

Exploration into Carbon Capture and Storage (CCS) technologies signifies a proactive stance in addressing environmental concerns. By capturing and storing carbon emissions generated from traditional oil and gas operations, these technologies offer a viable means of mitigating environmental impact while sustaining the use of fossil fuels.

Corporate Sustainability Goals

Oil and gas companies are increasingly setting ambitious sustainability goals, encompassing targets for renewable energy adoption and carbon neutrality.

Emission Reduction Targets

Central to corporate sustainability initiatives are commitments to reducing greenhouse gas emissions. The integration of renewable energy sources emerges as a pivotal strategy in achieving these ambitious targets, reflecting a commitment to a cleaner energy mix.

Renewable Energy Procurement

As part of a broader sustainability approach, companies are proactively procuring renewable energy from external sources. Engaging in power purchase agreements (PPAs) with renewable energy providers not only diversifies their energy mix but also actively supports the growth of the renewable energy sector.

> The companies worldwide are implementing a variety of energy efficiency measures to enhance their commitment to sustainability. By leveraging advanced technologies, these measures optimize existing processes and substantially decrease overall energy consumption, thereby contributing to a more sustainable operational framework

Partnerships and Collaborations

Collaborative efforts with renewable energy firms, technology providers, and government agencies have become instrumental in fostering a seamless integration of renewables into oil and gas portfolios.

Joint Ventures

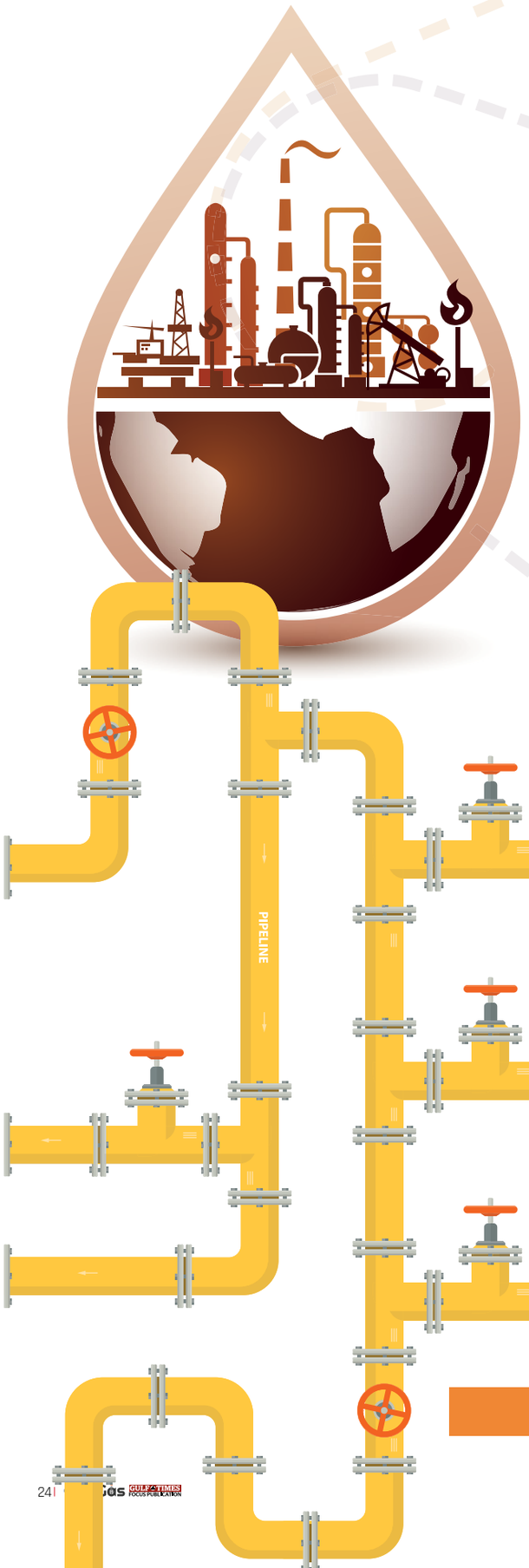
Strategic joint ventures with renewable energy companies facilitate the pooling of expertise and resources. This collaborative approach accelerates the transition to a sustainable energy future, allowing for shared knowledge and mutual support.

Government Incentives

Oil and gas companies are actively leveraging government incentives and subsidies to bolster their renewable energy projects. By forming strategic partnerships with government agencies, these companies tap into a supportive ecosystem that facilitates a smoother transition and incentivizes sustainable practices.

The integration of renewable energy into the portfolios of oil and gas companies represents a monumental shift towards a more sustainable and diversified energy future. By embracing innovative strategies such as diversified investments, sustainable operations, and ambitious sustainability goals, these industry leaders are not merely adapting to changing market dynamics but actively contributing to the global energy transition. The synergy emerging between traditional and renewable energy sources fosters a harmonious coexistence, holding the promise of a cleaner, more resilient, and interconnected global energy landscape for generations to come.

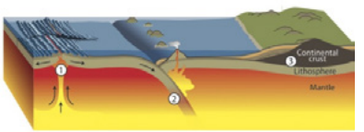
The evolution of oil and gas exploration technology



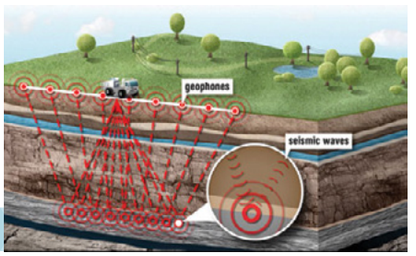
The quest for oil and gas resources has driven the continuous evolution of exploration technologies, transforming the industry and pushing the boundaries of what was once thought possible. This article explores the fascinating journey of oil and gas exploration technology, from its humble beginnings to the cutting-edge innovations propelling the industry into the digital age.

Early Exploration Techniques

In the early days of oil and gas exploration, the industry relied on basic geological knowledge and surface-level observations. The discovery of hydrocarbons was often a result of chance rather than systematic exploration. As demand grew, the need for more reliable and efficient methods became evident.



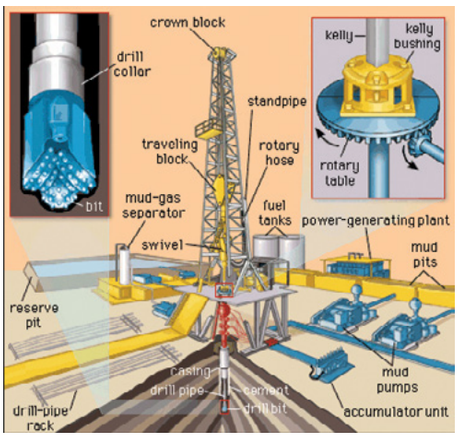
Seismic Revolution



The seismic revolution marked a significant turning point in exploration technology. Introduced in the early 20th century, seismic surveys allowed geologists to "see" beneath the Earth's surface by analyzing sound waves' reflections. This technology greatly enhanced the accuracy of identifying subsurface structures and potential reservoirs, leading to more targeted drilling efforts.

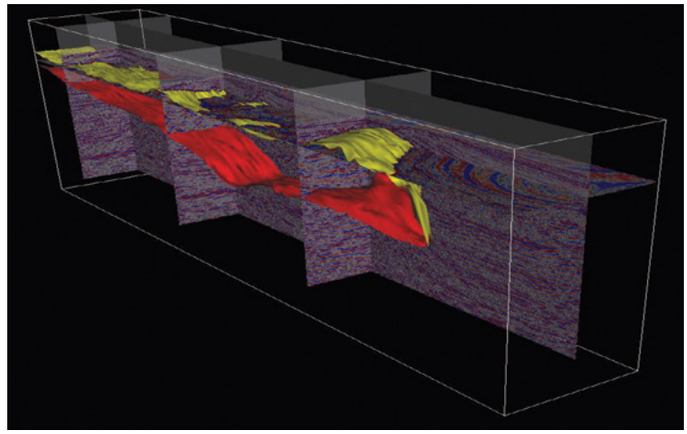
Drilling Innovations

Advancements in drilling technologies revolutionized the exploration process. Rotary drilling, introduced in the early 20th century, allowed for deeper and more precise drilling. Over time, improvements such as directional drilling and horizontal drilling further expanded the industry's capabilities, enabling access to previously inaccessible reserves.



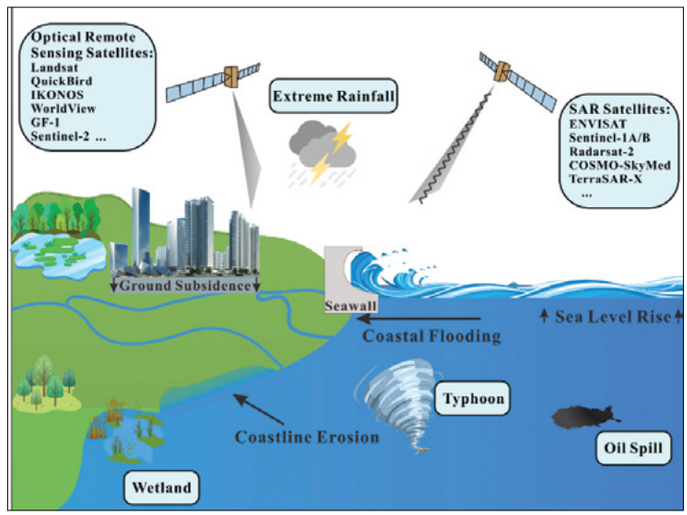
3D Seismic Imaging

The introduction of 3D seismic imaging in the latter half of the 20th century marked another leap forward. This technology provided a three-dimensional view of subsurface structures, offering unprecedented detail and accuracy. The ability to visualize reservoirs in three dimensions significantly improved reservoir characterization, reducing exploration risks.



Remote Sensing and Satellite Technology

With the advent of satellite technology and remote sensing, oil and gas exploration entered a new era. These technologies allow for comprehensive mapping, monitoring, and analysis of large areas. Satellite imagery provides valuable data on geological features, vegetation, and environmental conditions, aiding in preliminary assessments of exploration sites.



Machine Learning and Artificial Intelligence

In the digital age, machine learning (ML) and artificial intelligence (AI) have become powerful tools in oil and gas exploration. These technologies analyze vast datasets, including seismic data, well logs, and geological information, to identify patterns and predict subsurface characteristics. ML and AI enhance decision-making processes, improving the efficiency and success rates of exploration endeavours.

Data Integration and Collaboration Platforms

Modern exploration is characterized by the integration of diverse data sources and collaborative platforms. Data analytics platforms allow geoscientists and engineers to integrate and analyze data from multiple disciplines, facilitating a holistic understanding of subsurface conditions. Collaborative tools enable real-time information sharing among teams spread across the globe.

The evolution of oil and gas exploration technology is a testament to human ingenuity and the relentless pursuit of energy resources. From seismic surveys to the integration of artificial intelligence, each technological leap has propelled the industry forward, making exploration more accurate, efficient, and environmentally conscious. As the industry continues to embrace digitalization, the future holds exciting possibilities, with innovations that promise to reshape the landscape of oil and gas exploration in ways previously unimaginable. The journey from traditional methods to cutting-edge technologies exemplifies the dynamic and ever-changing nature of the oil and gas sector.

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Almuftah Contracting Co. W.L.L. established the **AMC - Oil and Gas Division (AMCOG)** in 1977 in a concerted effort to provide specialized solutions across a range of Qatari industry sectors, such as oil and gas, fertilizer, petrochemical, steel, and other hydro-carbon sectors.

Our team is composed of exceptional engineering professionals and outstanding technicians who take great pride in applying their distinctive skills and expertise to serve every project, from dynamically partaking in the design development and installation to maintenance and the remodeling of specialized solutions. Our wealth of knowledge and experience in this arena has propelled us to the forefront and established our performance, reliability, and stability as industry benchmarks.

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