

A full-page background image showing a worker in a blue uniform and orange helmet, wearing white gloves, operating a large industrial valve. The worker is positioned in the center, with their hands on the valve handle. The background is a blurred industrial setting with gravel and pipes.

OIL GAS & PETROCHEMICALS

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THE RISE OF
SMART ENERGY
OPERATIONS

INNOVATIONS IN
PETROCHEMICAL
MANUFACTURING

CARBON CAPTURE,
HYDROGEN, AND THE
ENERGY TRANSITION

Supporting Oil & Gas Operations with Proven Industrial Solutions:

بن عرييد
BIN ARBAID
HOLDING القابضة

WHAT WE OFFER

Industrial Maintenance & Technical Support:

- Precision Fabrication & Installation for field operations
- Certified Welding Services for pipelines and structures
- Critical Turnaround & Shutdown Crew Services
- Industrial Cleaning & Equipment Decontamination

Security & Risk Solutions:

- 24/7 CCTV Surveillance & Remote Monitoring
- Industrial Risk Assessment & Security Consultancy
- Trained Security Personnel for Site & Asset Protection

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Manpower & Facility Support:

- Skilled Industrial Manpower (Mechanical, Civil, Electrical)
- Site Technicians & Support Staff for Remote Operations
- Facility Management for Camps and Work Zones



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Al Khor, Qatar



BIN ARBAID HOLDING

Setting the Standard in Qatar's Energy & Industrial Growth

For more than 35 years, Bin Arbaid Holding has played a consistent and trusted role in Qatar's industrial development. Founded in 1987, the company has become an active and reliable project support partner, working alongside leading contractors, infrastructure developers, and international joint ventures. It helps vital sectors such as energy and construction. The services also cover logistics, along with workforce solutions. The group stands apart for the reason that it approaches tasks in a practical way, maintains client relationships that are long-standing, and commits strongly to both quality and accountability in all of the things it does.

A Legacy of Excellence

Under the vision of CEO Ali Khamis Al Shahwani, President Mohammad Khamis Al Shahwani, and Vice President Khamis Mohd Al Shahwani, Bin Arbaid Holding has developed into a diversified conglomerate with strategically aligned core subsidiaries.

Driving Qatar's Vision

In line with Qatar National Vision 2030, Bin Arbaid Holding seeks to drive economic sustainability through cohesive industrial services and enduring partnerships. With more than 5,000 professionals, several of whom are in oil, gas, and petrochemicals, and recent awards for its community contributions, it is steadfast in long-term growth and national development.

Growing Through Strategic Subsidiaries

Bin Arbaid Holding's success is complemented by its group companies, specifically:

Bin Arbaid Transportation & Equipment:

A reliable provider of Fresh, Demineralized & Treated water supply, Hazardous & Non Hazardous waste transport & disposal, sewage disposal and heavy equipment rental services to government and private entities. The team also manages hydro jetting cleaning and environmental & recycling services for all industries including O&G.



Al Aqaria Trading & Contracting:

The company is a dependable source for all things regarding infrastructure, landscaping, waterproofing, MEP solutions, civil construction, and facility management. Al Aqaria has established for itself a presence of repute in Qatar. It is in fact a provider for smart and environmentally friendly infrastructure and construction solutions. Involved in projects with Qatar Energy, Kahramaa, and various additional clients.



Bin Arbaid Industrial Services:

Renowned for its trained manpower for shutdowns, civil and mechanical works, industrial cleaning, and general operational support. Clients rely on the division for quick mobilization, adherence to HSE protocols, and consistent delivery. It also provides event staffing, hospitality services, and commercial cleaning, always going beyond customer expectations.



Bin Arbaid Technical & Engineering:

This division provides important support to both the energy and construction sectors through customized steel solutions, tank manufacturing, and structural fabrication. The team has strong experience managing complex technical project scopes, including installations for refineries, processing plants, also for industrial facilities. The division is also a pioneer in tensile shade car parks, playgrounds, pergolas, and modular tent solutions.



Qatar Security Services:

QSS delivers professional-grade security services to corporate environments, government facilities, and industrial sites. With trained personnel, surveillance systems, and on-site security management, the division ensures a safe and controlled working environment. They offer customized services for construction zones, critical infrastructure, and oilfield



B A Rental Car & Bus:

A workforce mobility solutions leader to industrial and energy clients. Its fleet includes executive and staff transport vehicles, operated by trained drivers familiar with shift-based environments, also supports project logistics with vehicle patrol services and site-based transport planning.



A Vision for the Future

Bin Arbaid Holding remains committed to executing the work that truly matters whether it entails supporting the LNG expansion, a shutdown operation, or developing infrastructure in a distant industrial zone reliably, safely, and with long-term value kept in mind. With its unyielding commitment to excellence and innovation, the company is creating a new blueprint for the future of Qatar.

For organizations seeking a capable, experienced, and trusted partner in Qatar's energy and infrastructure sectors, Bin Arbaid Holding welcomes the opportunity to collaborate.



GECF Annual Gas Market Report 2025

The Gas Exporting Countries Forum (GECF) has announced the release of the Annual Gas Market Report (AGMR) 2025. This flagship publication offers a comprehensive and insightful analysis of the key trends and developments that shaped the global gas

market in 2024, while also providing short-term projections for the natural gas industry.

Eng. Mohamed Hamel, Secretary-General of the GECF, stated in the Foreword, "GECF Annual Gas Market Report captures a moment of renewed strength and resilience for natural gas.

In a year when global primary energy demand surged, natural gas reaffirmed its central role, with consumption reaching an all-time high and contributing 35% to the incremental growth in primary energy demand — the highest share among all fuels."

The following are some key findings of the AGMR 2025:

- Global gas consumption grew by 2.5% in 2024, reaching a record high of 4,170 bcm, driven regionally by Asia Pacific and sectorally by the power generation and industrial sectors, supported by steady global economic growth, increased demand for heating and cooling, and lower gas prices.
- Global gas production kept pace with rising gas demand, with supply growth driven by Eurasia, the Middle East, and Asia Pacific and GECF member countries continuing to play a key role in meeting global gas needs.
- Global gas trade rebounded by 4% to 1.17 tcm, supported by increased volumes in both pipeline gas and LNG segments, with Asia reinforcing its position as the leading gas-importing region.
- Pipeline gas trade expanded by 6% to 606 bcm, ending a two-year decline, with growth observed across most major regions, including Asia Pacific, Europe, and North America.
- The global LNG market remained relatively tight, with LNG trade growing by just 1% to 412 Mt, as the Republic of Congo and Mexico emerged as new LNG exporters, while global liquefaction capacity is projected to expand by significant 206 Mtpa between 2025 and 2028.
- Spot gas prices stabilized, contrasting sharply with the extreme volatility of the previous four years, as TTF spot prices averaged \$11/MMBtu in 2024, down from \$13 in 2023, \$38 in 2022, and \$16 in 2021.
- Global gas demand is projected to grow by 2% in both 2025 and 2026; however, risks to this outlook are tilted to the downside, particularly in light of the sweeping and unprecedented tariffs announced by the United States on April 2, 2025 and their subsequent adverse impacts, which are not factored into the current report.



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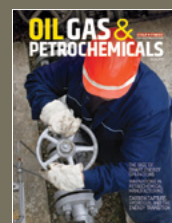
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KBF: A Trusted Leader in Energy Solutions Since 1975

KBF Trading & Contracting Co. W.L.L., a premier enterprise in Qatar, has played a pivotal role in the country's industrial and energy development since its establishment in 1975. Founded under the visionary leadership of the late **Sheikh Khalifa bin Fahad Al-Thani**, the company began its operations with a focus on the oil and gas sector and has since grown into a multifaceted enterprise. Today, under the stewardship of **Sheikh Abdullah Bin Khalifa Al-Thani**, Chairman and CEO, KBF continues to stand as a cornerstone of Qatar's economic progress.

Over the decades, **KBF** has strategically diversified its operations to mirror

Qatar's rapid socio-economic evolution. While retaining its strong roots in oil and gas, the company has expanded into **trading, contracting, and industrial systems**, earning a reputation for quality, innovation, and reliability. KBF's contributions span energy, construction, infrastructure, and education, aligning its business goals with Qatar's national development priorities.

KBF is a trusted partner to several international firms involved in key energy projects within the country. Renowned for its timely delivery, exceptional customer service, and dependable after-sales support, KBF's operations are underpinned by a commitment to excellence and long-term partnerships. By sourcing **top-tier global materials and expertise**, the company consistently delivers solutions that enhance customer satisfaction and contribute to Qatar's development goals.

Maintaining high standards is central to **KBF's philosophy**. The company operates a robust quality management system certified under **ISO 9001:2015, ISO 14001:2015, and ISO 45001:2018**.

In the oil and gas sector, KBF's portfolio is both extensive and impactful. A key partner is Merichem Technologies, a global leader in gas treatment. With more than 20 years of collaboration, Merichem's advanced technologies—including sulfur removal and caustic treatment—are operational in



14 treatment units within Qatar, the highest such concentration in a single industrial zone. These solutions benefit major clients such as QatarEnergy, Shell, and Dolphin Energy.

Approved Tawteen Supplier

Over the past few years, **KBF** has been awarded two key **Tawteen investment opportunities**, reinforcing its role as a trusted and approved local partner in the energy value chain.

Jetty Bulk Plant for NOC (Tawteen Investment Opportunity):

KBF successfully executed—and is currently operating—a strategic **Mud Mixing Plant** located in the Jetty Area,

Ras Laffan, spanning a total area of 2,310 sq.m. This facility was developed for North Oil Company (NOC) in collaboration with Halliburton under a Tawteen investment opportunity. The plant plays a critical role in supporting upstream drilling operations by ensuring efficient and reliable drilling fluid services.

Onshore Cementing Job Award:

In partnership with Halliburton, KBF has been awarded the **Onshore Cementing Services** project by QatarEnergy - Dukhan. This achievement highlights KBF's expanding technical capabilities and its alignment with Qatar's national strategy to localize and elevate high-quality oilfield services.



KBF
Trading & Contracting Co.

45+ YEARS
OF EXCELLENCE IN
ENERGY SOLUTIONS

Your Trusted Partner

Core Capabilities:

- Oil & Gas Products, Equipment & Services
- Technology Solutions
- Drilling Support (Mud Services, Chemical Storage)
- Onshore/Offshore Cementing Ancillary Services



Email: sales@kbf-co.com | Website: www.ikbf.com



GECF Global Gas Outlook 2050



The GECF Global Gas Outlook 2050 remains one of the comprehensive assessments of the future of natural gas, analysing the evolving energy landscape, shifting supply and demand trends, and the investment needs required to sustain long-term energy security. This 9th Edition presents a forward-looking view on how economic growth, demographic shifts, technological advancements, and climate policies will shape the role of natural gas in a rapidly changing world.

Key Insights from the GECF Global Gas Outlook 2050

1. The World in 2050: A Transforming Global Landscape

The world in 2050 will look vastly different from today. Global population is projected to increase by 1.6 billion people, surpassing 9.7 billion. Rapid urbanisation will drive nearly 70% of people into cities, particularly in Asia and Africa. Demographic ageing will reshape societies, with 30% of the population in high-income countries aged 65 or older, influencing energy demand patterns and economic structures.

2. A Shifting Global Economy, Powered by AI

The global economy is expected to double in size by 2050, driven by growth in Asia Pacific, which will contribute more than 50% of the total expansion. Artificial intelligence (AI) will transform all sectors, increasing productivity but also leading to a surge in electricity demand. AI-driven data centers are expected to become a major energy consumer, further reinforcing the role of natural gas in ensuring stable power supply.

3. Natural Gas Gains Policy Support in Energy Transitions

Governments worldwide are increasingly recognising natural gas as a key solution to the energy trilemma, ensuring energy security, affordability, and sustainability. Natural gas is gaining policy backing as a cleaner alternative to coal and oil, supporting grid stability, emissions reduction, and economic development in both advanced and developing economies.

4. Global Energy Demand Continues to Rise with No Peak in Sight

By 2050, global primary energy demand will increase by 18%, with Asia Pacific and Africa leading the growth. As developing economies expand, urbanise, and industrialise, energy consumption will continue rising. Despite the rapid expansion of renewables, natural gas remains essential for meeting the world's growing energy needs.

5. Natural Gas Demand is Growing Steadily, with No Peak Expected

Unlike coal and oil, which are expected to decline, natural gas demand is projected to grow by 32% by 2050, surpassing 5,300 bcm. Power generation will remain the largest driver of natural gas use, while industrial applications, including hydrogen production, will see strong growth, reinforcing natural gas as a critical energy source for hard-to-abate sectors.

6. The Center of Gravity for Natural Gas Production is Shifting

The Middle East, Eurasia, and Africa will be responsible for nearly 90% of global natural





gas production growth by 2050. Africa is emerging as a major LNG supplier, leveraging its vast untapped reserves, while North America and Europe are expected to see production declines, reinforcing the changing landscape of gas supply.

7. Global Natural Gas Trade is Undergoing a Structural Shift

Natural gas trade is experiencing a fundamental transformation, with LNG trade set to more than double, surpassing 800 Mt by 2050. By mid-century, LNG will overtake pipeline gas as the dominant mode of global gas trade, increasing flexibility, energy security, and supply diversification. Asia Pacific will account for 76% of LNG imports, reinforcing its position as the primary gas-importing region.

8. USD 11.1 Trillion Investment Needed to Sustain Global Gas Supply

To meet future demand, USD 11.1 trillion in investment will be required by 2050, with 94% allocated to upstream gas development. With a significant share of future production coming from yet-to-find (YTF) resources, continued investment in exploration and advanced production technologies will be crucial for securing a long-term energy supply.

9. Natural Gas + Advanced Decarbonisation = Balanced Energy Transitions

Natural gas, combined with Carbon Capture, Utilisation, and Storage (CCUS), offers a practical and scalable pathway toward emissions reduction. CCUS has the potential to capture up to 90% of CO₂ emissions from gas-fired power plants, enabling gas to remain a reliable and sustainable energy source in a low-carbon future. The integration of blue hydrogen and CCUS will further strengthen natural gas's role in balancing economic growth and environmental commitments.

The Future

The 9th Edition of the GECF Global Gas Outlook 2050 reaffirms that natural gas will remain central to the global energy mix, balancing economic growth, energy security, and climate goals. As the world transitions to a more diversified and sustainable energy system, natural gas will continue playing a key role in ensuring energy security and facilitating just, orderly, and equitable energy transitions.

Source: www.gecf.org

WHY IS NATURAL GAS AN IDEAL FUEL SOURCE?



It heats and **Cooks Quicker** than electricity



It can be used to power microturbines, generating power at roughly **1/3 the cost of Electrical**



CO₂

Natural gas is the cleanest fossil fuel and a **highly efficient** form of energy.



Using natural gas instead of **Oil or Coal** produces fewer chemicals that contribute to greenhouse gases.



Innovations in petrochemical manufacturing

In an era of rising global demand, environmental accountability, and technological disruption, the petrochemical industry is experiencing a wave of innovation that promises to reshape its foundations.

Once seen purely as a fossil-fuel-dependent sector, petrochemical manufacturing is now at the forefront of industrial transformation, driven by advances in catalytic science, process efficiency, and circular economy solutions.

These innovations are not merely incremental—they are redefining how the world produces, uses, and reuses the chemical building blocks that underpin modern life.

Petrochemicals are everywhere—in packaging, construction materials, textiles, electronics, medical equipment, automotive parts, and beyond. As emerging economies industrialize and consumer markets expand, global demand for petrochemicals is expected to continue growing steadily over the next two decades.

Yet, with increasing scrutiny over plastic waste, greenhouse gas emissions, and resource consumption, the industry faces urgent pressure to innovate. The future of petrochemical manufacturing will depend on its ability to decouple growth from environmental degradation, and that journey begins with science and technology.

The catalyst revolution

At the core of petrochemical innovation lies the development of advanced catalysts—substances that speed up chemical reactions without being consumed in the process. Catalysts are essential to converting raw hydrocarbons into usable products like ethylene, propylene, benzene, and polymers. In recent years, researchers and industry leaders have made significant breakthroughs in catalyst design, improving both efficiency and selectivity.



One of the most promising areas is the creation of single-atom catalysts and zeolite-based catalysts, which offer unprecedented control at the molecular level. These new-generation catalysts can minimize byproduct formation,

reduce energy requirements, and operate under milder reaction conditions. For example, advances in metallocene catalysts have enabled the production of tailor-made polyethylene and polypropylene grades with specific properties—enhancing flexibility, strength, or recyclability depending on the application.

Moreover, the integration of computational chemistry and artificial intelligence has accelerated the discovery and optimization of catalysts. Machine learning algorithms are now used to predict catalytic performance and stability, allowing scientists to design novel materials with greater precision and speed. This digital approach reduces the need for time-consuming trial-and-error experimentation, making innovation more efficient and cost-effective.

Process optimization: doing more with less

Innovation in petrochemical manufacturing is not limited to the molecular level—it extends to entire industrial processes. A growing number of plants are implementing process intensification strategies, which aim to combine multiple functions into a single unit, reduce equipment size, and lower energy consumption. This is particularly evident in ethylene and methanol



Suhail Industrial Holding Group

Driving Qatar's Industrial Future

Suhail Industrial Holding Group stands as a beacon of Qatar's industrial strength and innovation, playing a pivotal role in the country's journey toward economic diversification and self-sufficiency. Aligned with Qatar National Vision 2030, Suhail has emerged as a national industrial champion, with a robust portfolio of specialized factories operating across diverse manufacturing sectors.



Diverse Industrial Capabilities

Suhail's operations span aluminum recycling and alloy production, providing vital materials to global industries. Its chemical division aviation-grade cleaners, lubricants,



oil and gas solutions, and food-grade sanitizers—engineered to meet strict international standards.

The plastic division produces durable containers and components with a strong focus on sustainability, incorporating in-house recycling. In engineering, Suhail crafts mechanical spare parts and high-performance components, already reaching markets like Saudi Arabia and the U.S.

Its metal forming unit delivers customized scaffolding, structures, and sheet metal products, while



the casting facility supplies ferrous and non-ferrous components essential for agriculture, heavy machinery, and infrastructure.



Ziyad Eissa
Managing Director and
Board Member

Innovation and Sustainability

Suhail's foray into battery production includes automotive and industrial types, backed by an advanced recycling plant that reclaims materials from used batteries—highlighting its environmental commitment.



The company also manufactures automotive brake pads, supported by a dedicated testing lab that ensures product quality and offers third-party testing services.

Global Reach and Growth

Expanding beyond Qatar, Suhail has entered the Moroccan market with its first overseas factory and is conducting feasibility studies in Indonesia. Exports to China, South Korea, India, and GCC continue to grow, enhancing Qatar's industrial export footprint.



Championing National Development

By offering Qatari-made products at competitive prices, Suhail helps reduce import dependency and boost local employment. Its mission blends innovation, sustainability, and competitiveness—strengthening the country's industrial backbone.

Through strategic leadership and a clear vision, Suhail Industrial Holding Group continues to elevate Qatar's manufacturing capabilities, positioning itself as a regional and global industrial powerhouse.



SUHAIL INDUSTRIAL HOLDING GROUP

Leading with Industrial Excellence

Suhail Industrial Holding Group is redefining excellence in Qatar's manufacturing landscape, delivering world-class solutions specializing in high-speed CNC machining, testing of high-precision and high-complexity components, advanced engineering, and chemical innovation including oil & gas treatment, chemicals and lubricants.

PRODUCTS OF SEI MACHINING CAPABILITIES

OIL AND GAS PRODUCTS



MANUFACTURING CAPABILITIES

SPECIAL PROCESS (HEAT TREATMENT)



SUHAIL INDUSTRIAL HOLDING GROUP

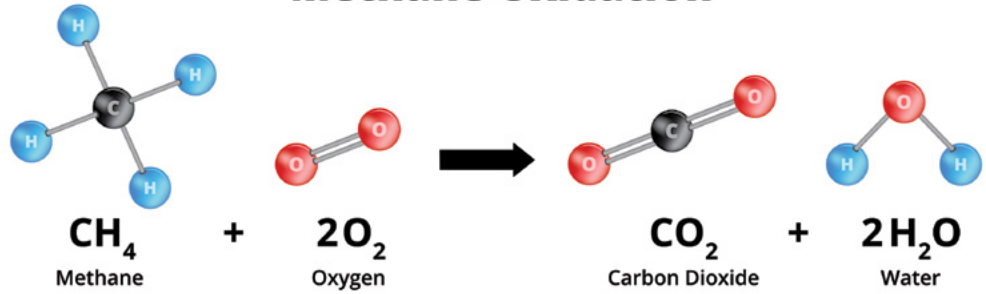
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Methane Oxidation



bypassing the energy-intensive steam cracking method. Though still in the development phase, OCM has the potential to significantly cut costs and emissions.

Additionally, carbon capture and utilization (CCU) technologies are being retrofitted into petrochemical facilities to transform CO_2 into valuable products. In some plants, captured carbon is being used to produce methanol, urea, and synthetic fuels, effectively turning a waste product into a feedstock. This aligns with broader decarbonization goals and positions petrochemical manufacturing as a participant in the circular carbon economy.

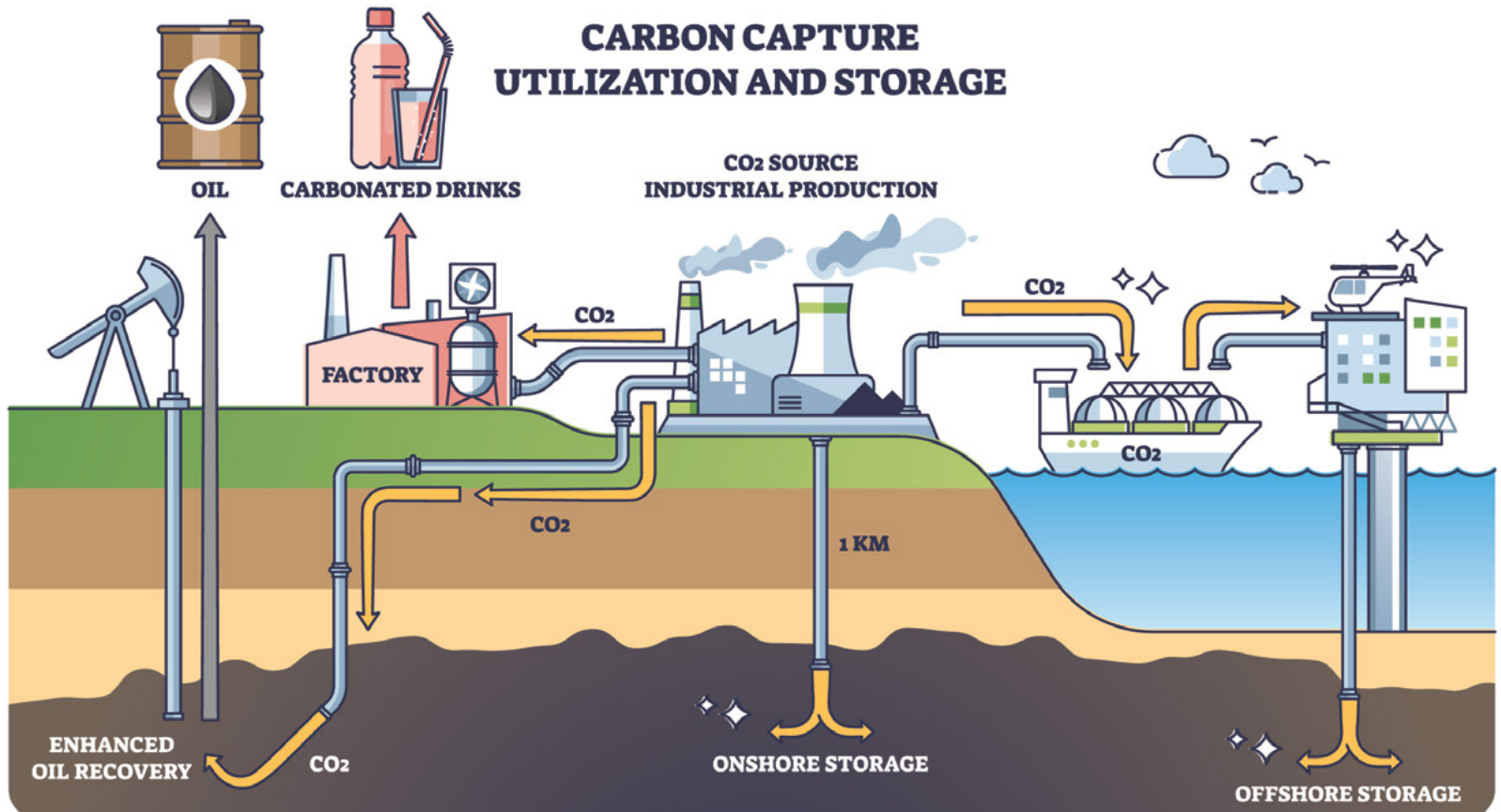
The rise of digital twin technology—a real-time virtual replica of physical assets—has also changed how petrochemical plants are designed and operated. By simulating chemical reactions, equipment performance, and energy flows, operators can optimize plant operations, anticipate maintenance needs, and respond quickly to fluctuations in demand or supply. The result is greater efficiency, safety, and environmental compliance.

Toward a circular petrochemical economy

Perhaps the most profound shift underway in petrochemical manufacturing is the move toward circularity. Traditional petrochemical processes have followed a linear model: extract, produce, consume, and dispose. But with mounting concern over plastic pollution and resource scarcity, companies are now investing in circular solutions that aim to close the loop.

One such solution is chemical recycling, which breaks down used plastics into their original monomers or other hydrocarbons that can be fed back into the production process. Unlike mechanical recycling—which often results in downgraded material—chemical recycling can produce virgin-quality polymers, suitable for food packaging, medical devices, and other high-performance applications.

Chemical recycling encompasses various technologies, including pyrolysis, gasification, and solvolysis. These methods are being scaled up in Europe, North America, and Asia, with companies





ECO MINDFULNESS
GO GREEN

Plastic free

like BASF, SABIC, Dow, and Eastman Chemical leading the charge. Some petrochemical hubs are even establishing integrated recycling ecosystems, where municipal plastic waste is collected, sorted, and chemically reprocessed on-site.

Another avenue of circular innovation is the development of bio-based and biodegradable polymers. Derived from renewable sources such as corn starch, sugarcane, or algae, these polymers can substitute conventional plastics in certain applications while offering a reduced environmental footprint. Although they currently represent a small fraction of global plastic production, continued R&D and policy support could accelerate their market penetration.

Collaboration is also key to driving circularity. Petrochemical manufacturers are partnering with consumer goods companies, municipalities, and technology providers to build value chains that support collection, recycling, and reuse. These alliances reflect a growing recognition that sustainability is not a solitary pursuit but a shared responsibility.

The road ahead

Despite these advances, challenges remain. High capital costs, regulatory uncertainty, and technical limitations continue to pose barriers to widespread adoption of some innovations. Chemical recycling, for instance, is energy-intensive and still under development in many regions. Bio-based polymers face scalability and cost issues. Moreover, achieving full circularity will require systemic changes across supply chains, consumer behavior, and waste management infrastructure.

Nevertheless, the momentum is undeniable. Governments around the world are introducing stricter emissions targets, plastic bans, and extended producer responsibility (EPR) schemes, pushing the industry toward sustainable innovation. Investors are increasingly favoring companies with clear ESG strategies, while customers demand transparency and green credentials.

Looking to the future, the most successful petrochemical manufacturers will be those who can integrate advanced chemistry with environmental stewardship. The convergence of science, data, and sustainability will define the next chapter of the industry. From catalytic breakthroughs and process intensification to digitalization and circularity, petrochemical manufacturing is entering a new era—one that values not just productivity, but purpose.

In this landscape, innovation is not optional—it is essential. As the global community strives to balance the benefits of petrochemicals with the imperative of planetary health, the industry has a unique opportunity to lead by example. By reimagining how it produces and reuses its products, petrochemical manufacturing can fuel not only economic progress but also environmental resilience.

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, and ISO 17025:2017.

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.



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.

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



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 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.

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.



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.



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

Importer of Abrasive Garnet

WATER CUTTING MACHINE CONSUMABLES



EMPOWERING INDUSTRIES LEADING GAS SOLUTIONS

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

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



NIOP

مصانع الغازات الصناعية الوطنية
National Industrial Gas Plants

NATIONAL INDUSTRIAL GAS PLANTS V



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Sales & Operations Street #4
Sales Doha Tel: +974 444221
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GAS SUPPLIERS



WITH



AL MANA
HOLDING



CRYOGENIC PRODUCTS

CYLINDER TESTING PLANT

WELDING PRODUCTS

PURE GASES & HIGH PURITY GASES

SPECIALITY GAS & LIQUID MIXTURES

PPE (Personnel Protective Equipment) items

ABRASIVE GARNET

REFRIGERANT GASES

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Fueling the future

The evolving landscape of the global energy sector

The global energy sector is undergoing one of the most profound transformations in its history. For over a century, oil, gas, and petrochemicals have powered economies, shaped geopolitical alliances, and defined the contours of industrial civilization. Today, this triumvirate of energy is at a critical juncture.

As the world accelerates toward a low-carbon future, the fossil fuel industry faces a stark dual challenge: to continue meeting the world's insatiable demand for energy while aligning with ambitious climate goals. What emerges is not a story of decline, but one of reinvention, as the industry adapts to a future shaped by innovation, sustainability, and shifting global dynamics.

At the heart of this transformation lies a rapidly changing global energy landscape. The need for secure, affordable, and cleaner energy—often referred to as the “energy trilemma”—is pushing oil and gas companies to innovate faster than ever before.

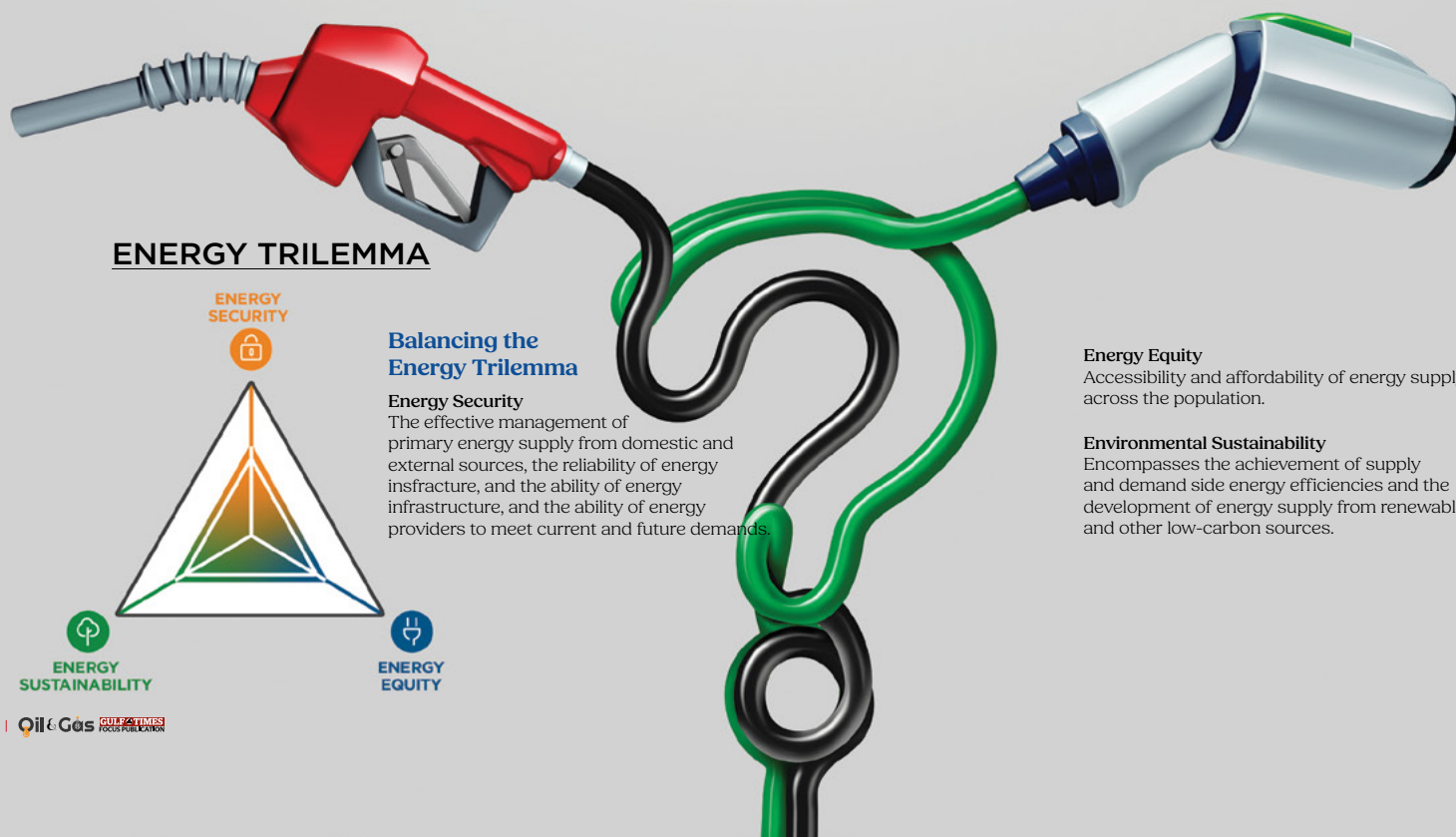
While hydrocarbons continue to supply more than half of the world's energy needs, signs of transition are everywhere. According to projections by the International Energy Agency (IEA), global oil demand is expected to peak as early as the beginning of the 2030s. This anticipated plateau is driven largely by the rise of electric vehicles, improvements in energy efficiency, and growing momentum toward decarbonization in the industrial and transport sectors.

However, despite these changes, oil and gas are not going away. Rather than facing extinction, the industry is entering a new chapter—one defined by strategic adaptation. Many national and international oil companies are actively reconfiguring their operations, investing heavily in cleaner technologies and alternative energy sources while improving the environmental footprint of traditional operations. This is particularly evident in the upstream sector, where

exploration and production (E&P) are being revolutionized through digital transformation.

The integration of real-time reservoir modeling, artificial intelligence, and automated drilling systems is not only enhancing efficiency and safety but also enabling producers to lower costs and reduce emissions. Offshore rigs and remote fields are now managed with precision tools that optimize output while mitigating environmental risks.

Natural gas has emerged as a crucial bridge in the global transition to cleaner energy. Its lower carbon intensity compared to coal and oil makes it an attractive option for countries looking to balance development with climate responsibility. Liquefied Natural Gas (LNG), in particular, is playing a central role in this shift. Demand for LNG is expected to rise sharply in the next two decades, with Asia and Europe leading the charge. Qatar, already one of the world's leading LNG exporters, is expanding





its North Field project, signaling a long-term commitment to supplying cleaner-burning fuel to the world. Other major producers such as the United States and Australia are also scaling up their LNG infrastructure, recognizing the strategic importance of gas in global energy security.

Beyond its role as a transitional fuel, natural gas is increasingly linked to the development of hydrogen—a fuel touted as a cornerstone of the future energy mix. Hydrogen can be produced through various pathways, including steam methane reforming of natural gas coupled with carbon capture and storage, commonly referred to as “blue hydrogen.” The ability to repurpose existing gas infrastructure for hydrogen production and transport offers a viable route toward decarbonizing hard-to-abate sectors such as steel, cement, and heavy transport.

In the petrochemical segment, growth remains robust. Even as the world moves away from fossil fuels for energy generation, the demand for petrochemical products continues to rise. From plastics and fertilizers to synthetic fibers and detergents, petrochemicals are embedded in nearly every facet of modern life. The rising global population, urbanization, and economic development—particularly in emerging markets—are driving increased consumption of these products. Asia, led by China and India, is at the forefront of this demand surge.

Yet, the petrochemical industry is also facing mounting environmental scrutiny. The global backlash against plastic pollution has prompted

governments, consumers, and companies to rethink the way plastic products are manufactured, used, and disposed of. This has spurred a wave of innovation within the industry. Companies are now investing in advanced chemical recycling technologies, bio-based polymers, and closed-loop systems designed to promote circularity. In parallel, efforts are being made to decarbonize petrochemical production through the adoption of renewable energy, improved process efficiency, and carbon capture technologies.

Environmental, Social, and Governance (ESG) factors have become a defining force in shaping the future of the oil, gas, and petrochemical sectors. What began as a compliance exercise has now become a strategic imperative. Investors, regulators, and consumers are demanding greater transparency, accountability, and climate action from energy companies. In response, major oil firms have set ambitious net-zero emissions targets and are reallocating capital toward renewable energy projects, low-carbon fuels, and sustainability-driven innovation. Carbon capture, utilization, and storage (CCUS) projects are being developed at scale, particularly in regions with heavy industrial footprints. These technologies are seen as essential to achieving climate goals while maintaining energy reliability.

Simultaneously, the industry is confronting heightened geopolitical volatility. The Russia-Ukraine conflict, shifting trade alliances, and disruptions in global shipping lanes have

highlighted the fragility of existing energy supply chains. Countries are reassessing their energy security strategies, accelerating diversification of energy sources, and building strategic reserves. The definition of energy geopolitics itself is evolving, moving beyond oil fields and pipelines to include control over rare earth minerals, dominance in clean technology manufacturing, and influence over carbon regulation frameworks.

Looking ahead to 2035, the global energy landscape is likely to reflect a mosaic of interdependent trends. While oil will continue to play a role in sectors such as aviation, shipping, and petrochemicals, its dominance in the energy mix will gradually decline. Natural gas, especially in its liquefied form, will solidify its position as a transition fuel and a companion to renewable energy sources. The petrochemical sector, although challenged by environmental concerns, will remain vital, driven by innovation in materials and manufacturing. Digital technologies will be deeply embedded across the entire energy value chain, from exploration and refining to distribution and trading. Sustainability, once a peripheral concern, will serve as the industry’s social license to operate.

Ultimately, the story of oil, gas, and petrochemicals in the next decade will not be one of obsolescence, but of strategic evolution. The companies that will thrive are those that can harness technology, adapt to regulatory shifts, and align their operations with the environmental priorities of a changing world. As the industry redefines its role in the global energy system, it is clear that the future will not be fueled solely by hydrocarbons—but neither will it be possible without them.

The coming era demands balance: between energy security and climate responsibility, between economic growth and ecological preservation, and between innovation and legacy. In meeting this challenge, the oil, gas, and petrochemical industries have a critical—and perhaps defining—role to play.



SEAWORKS

A Trusted Leader in the Marine Industry



SEAWORKS is recognized as one of the most respected and trusted companies in the Marine Industry. With history spanning over 30 years, Seaworks and its team of highly trained marine specialists continue to excel in the field. With a comprehensive array of marine construction capabilities, we have delivered major marine construction projects along the Gulf Region's coastline and inland waterways.

Established in 1991, Seaworks has influenced the development of the maritime industry in the Gulf Region. The company is headquartered in the State of Qatar, with branches in Kuwait, the Kingdom of Saudi Arabia and the Sultanate of Oman.

SEAWORKS specializes in Offshore Marine Services, including the chartering of a diverse range of vessels and maritime equipment. Our operations are comprehensive

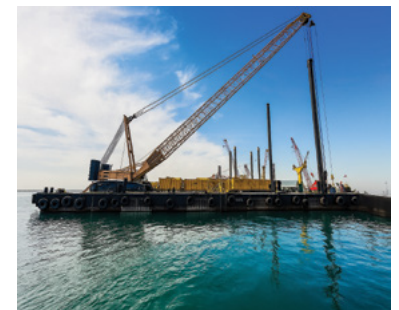
and backed by a team of seasoned professionals dedicated to providing high-quality marine services. A significant facet of our operations



is the provision of vessels & maritime equipment and services to the offshore oil & gas, power, and construction industries, ensuring these sectors receive the quality support they deserve for their critical operations.

Our marine fleet comprises various vessels such as barges, dredgers, tug boats, and crew boats. We are proud to introduce the new addition to our fleet list - "**Seaworks 56**" (Crane Barge). Seaworks 56 is a spud barge mounted with a brand new XCMG XLC450 crawler crane,

with a maximum lifting capacity of 450T and maximum height of 127 meters, ideal for large-scale projects/operations. The XCMG XLC450 guarantees offshore heavy-lifting performance. This empowered crane barge is equipped with 22-meter spuds and 4-point mooring system, making it suitable for a wide range of operations. All the barge machinery is approved by Ras Laffan Port with the most stringent safety conditions including OVID certification.



Sustaining the vision of continuously providing service excellence, Seaworks diversified its portfolio in the field of Ship Management, Heavy Equipment Rentals, Earthworks, Manpower Supply, and Trading.



Marine Construction

Our heavy civil marine construction services include revetment, seawall, breakwater, rock bund construction and maintenance, land reclamation, dredging, diving services, and many other specialized marine works. Our multidisciplinary approach and practical experience help clients to manage the risks involved in dredging, reclamation, and marine projects, and ultimately leads to successful completion, on time and within budget.



Dredging

Our primary core strength lies in dredging work. Seaworks fleet consists of specialized marine equipment for the collection and transportation of marine aggregate to undertake dredging activities. Operating with a fleet of cutter suction dredgers and backed up by a wide range of ancillary equipment including workboats, booster pumps, work barges and pipelines, Seaworks possess the capabilities to handle complex dredging projects worldwide.



Manpower Supply

Seaworks takes pride in its extensive and diverse experience in supplying professionals, skilled, and unskilled manpower for the Construction, Engineering, Oil & Gas, Manufacturing, Information Technology, Retail, Hospitality, and Healthcare Industries. We go to great lengths to ensure that we satisfy the needs and expectations of our Clients. We do so by taking the time to thoroughly understand the specific manpower requirements and then using first-rate recruitment techniques to identify the most suitable job candidates.



Earthworks

Seaworks owned and maintained a wide range of specialized equipment, supported by decades of expertise to fulfill standard and unique rental equipment requirements. Seaworks has its own fully-equipped Plant, Maintenance, and Vehicle Workshop with an extensively trained and well-experienced maintenance team to ensure the cost-effective operation, reliability, and safety of all our equipment.

Ship Management

Seaworks is an independent marine service provider offering a broad scope of high-quality ship management and consultancy services for all types of vessels and offshore units. We are committed to adding value to your business with efficient ship management services and highly trained marine specialists.



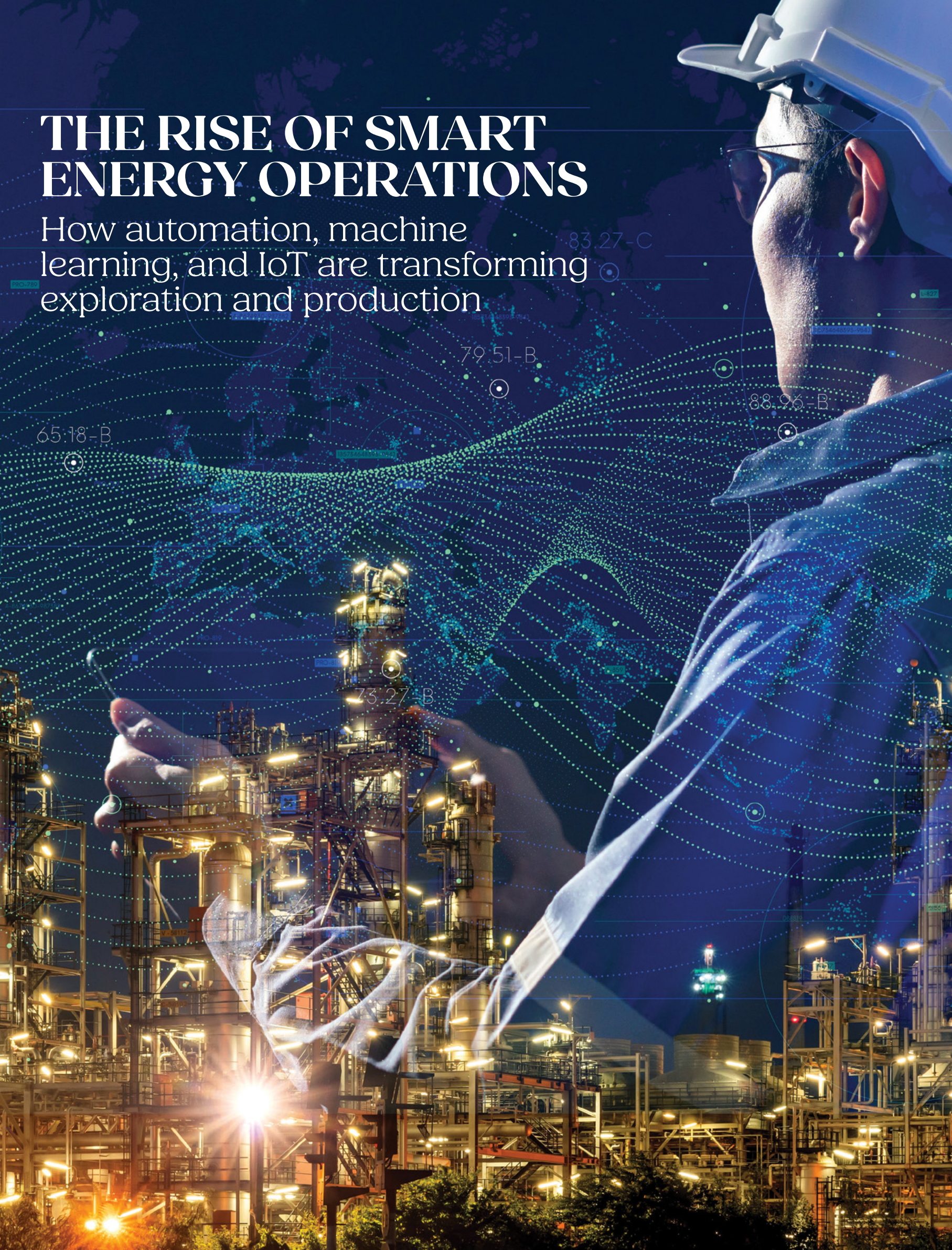
Heavy Equipment Rental

We continually invest in the latest heavy equipment and machinery and pride ourselves on versatile earthworks solutions while minimizing environmental impact.



THE RISE OF SMART ENERGY OPERATIONS

How automation, machine learning, and IoT are transforming exploration and production





As the global energy sector faces increasing pressure to improve efficiency, reduce costs, enhance safety, and lower carbon emissions, a technological revolution is quietly transforming the heart of oil and gas operations.

The integration of automation, machine learning (ML), and the Internet of Things (IoT) into exploration and production (E&P) activities is ushering in a new era—commonly referred to as smart energy operations.

These digital technologies are redefining how hydrocarbons are discovered, extracted, transported, and monitored. No longer confined to dusty oil fields and offshore rigs, the energy industry is becoming data-driven, predictive, and intelligent. The result is not just operational efficiency—it's a fundamental reshaping of how value is created across the energy chain.

The digital oilfield

The concept of the digital oilfield—first floated in the early 2000s—is finally becoming a reality thanks to dramatic advances in computing power, cloud connectivity, and data analytics. Modern oilfields are now outfitted with thousands of sensors, automated equipment, and networked control systems that generate vast streams of real-time data. These inputs provide unprecedented visibility into subsurface conditions, well performance, equipment health, and environmental parameters.

At the core of smart energy operations is automation. Drilling rigs, for example, now feature automated drilling systems (ADS) that can adjust weight-on-bit, rotation speed, and mud flow in real time without human intervention. These systems not only improve drilling accuracy and reduce non-productive time (NPT), but also enhance safety by limiting human exposure to hazardous tasks.



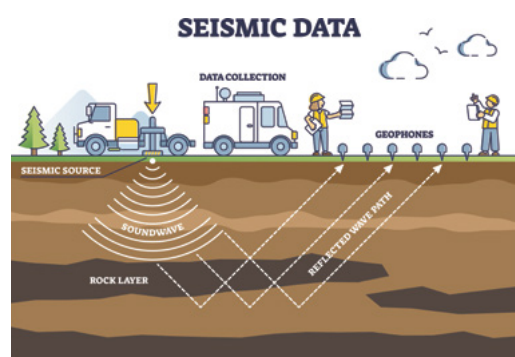
Remote operations centers (ROCs) equipped with high-resolution dashboards and AI-assisted monitoring software allow engineers to oversee multiple fields from a single centralized location—often hundreds of kilometers away. This approach, proven effective during the COVID-19 pandemic, has become a permanent fixture in global operations.

Machine learning

If automation enables action, machine learning empowers foresight. By analyzing historical and real-time data, ML algorithms can detect subtle patterns, make predictions, and prescribe corrective actions—often faster and more accurately than human analysts.

In upstream operations, ML is being applied in:

- **Reservoir modeling:** Algorithms can learn from geological, petrophysical, and production data to create dynamic 3D models that simulate reservoir behavior under various scenarios.
- **Production forecasting:** By training on years of production data, ML models can anticipate future output, identify declining wells, and recommend enhanced oil recovery (EOR) techniques.



- **Seismic interpretation:** ML accelerates the processing and analysis of seismic data, helping geologists identify promising hydrocarbon reservoirs more quickly and accurately.



- **Predictive maintenance:** Equipment failures are costly and dangerous. ML can monitor vibrations, temperature, and pressure data to predict and prevent breakdowns in pumps, compressors, and pipelines.

These capabilities not only reduce downtime and operational costs but also help companies make better capital allocation decisions, especially in uncertain commodity markets.

Internet of Things

The Internet of Things (IoT) provides the physical infrastructure that connects all elements of the smart energy ecosystem. IoT-enabled devices—including sensors, actuators, drones, and smart meters—collect data from the field and transmit it to centralized platforms for analysis and decision-making.

In E&P, IoT applications include:

- **Wellhead monitoring:** Sensors continuously track pressure, flow rates, and temperature to detect anomalies or leaks.

- **Environmental compliance:** Real-time air and water quality sensors ensure adherence to regulations and reduce environmental risks.

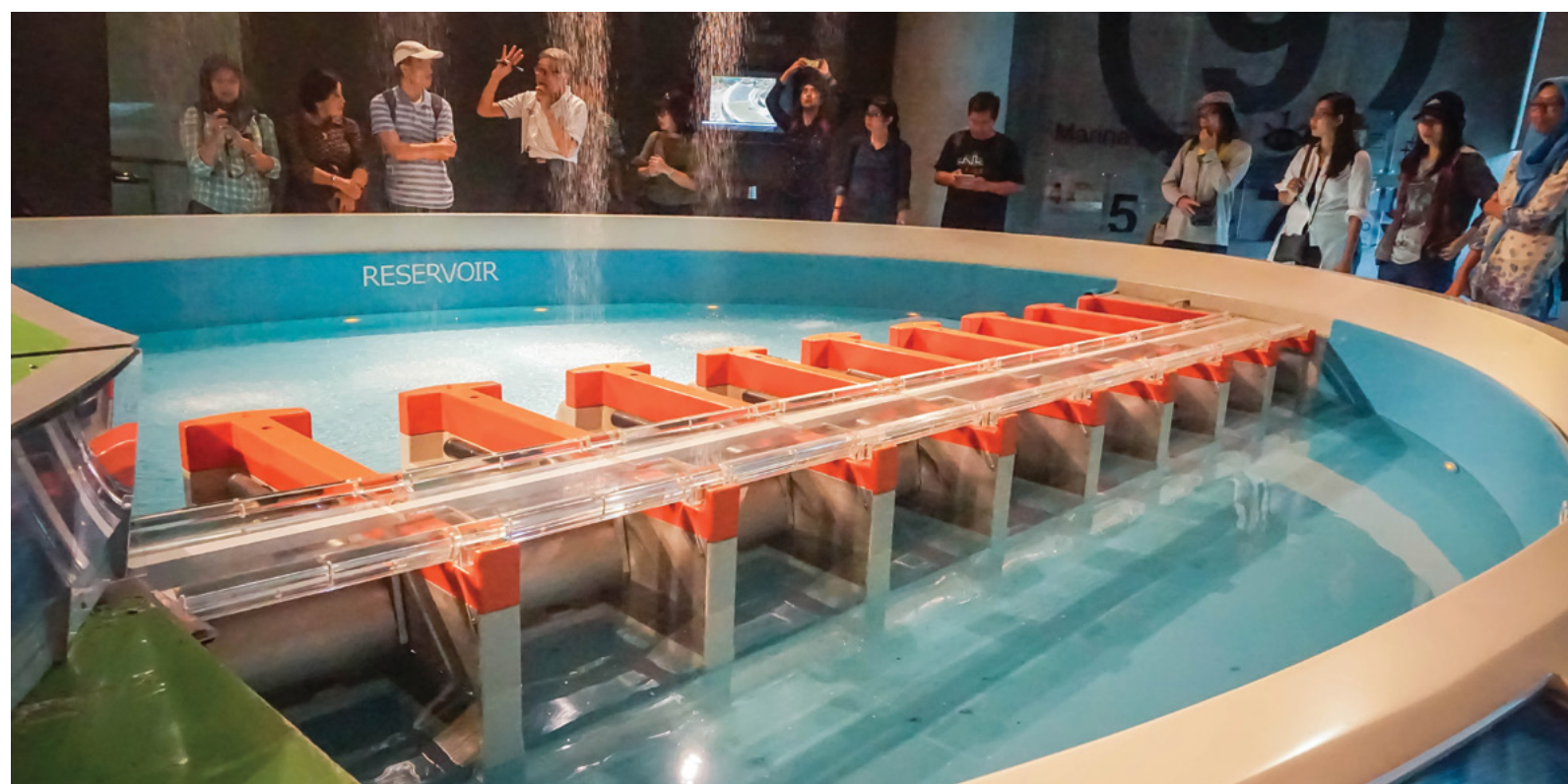
- **Asset tracking:** RFID and GPS technologies monitor the location and utilization of mobile assets, from drilling rigs to service vehicles.

- **Pipeline integrity:** Smart pigs (pipeline inspection gauges) equipped with IoT technology detect corrosion, cracks, and mechanical damage inside pipelines before they lead to failures.

Moreover, edge computing—processing data at or near the source—enables real-time analytics in remote areas with limited bandwidth, reducing latency and improving responsiveness in critical operations.

Several industry leaders are already reaping the benefits of smart energy technologies:

- **BP's APEX system:** A cloud-based digital twin used across offshore platforms in the Gulf of Mexico to simulate, optimize, and troubleshoot production systems in real time. BP reported



production gains of up to 30,000 barrels of oil equivalent per day using APEX.

- **Saudi Aramco's Intelligent Fields:** Equipped with permanent downhole sensors, fiber optics, and automated control valves, Aramco's fields in the Kingdom can adjust injection rates, monitor water cut, and optimize well performance autonomously.
- **Shell's Smart Wells:** In deepwater assets, Shell uses IoT sensors and machine learning models to optimize flow assurance and reduce hydrate formation risks, resulting in higher uptime and lower intervention costs.

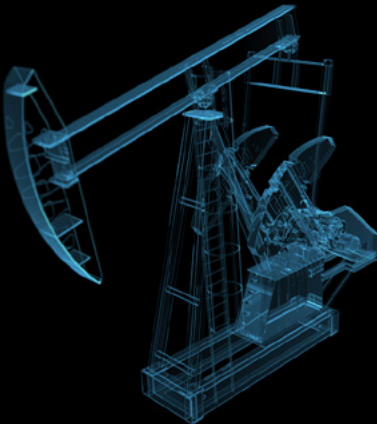
With increased connectivity comes heightened vulnerability. The more digital an operation becomes, the more exposed it is to cyberattacks. Recent ransomware incidents targeting pipeline operators and refineries have highlighted the urgent need for robust cybersecurity frameworks in the energy sector.



Smart energy operations must incorporate multi-layered defenses, including encryption, access controls, intrusion detection systems, and AI-driven threat monitoring. The convergence of IT (information technology) and OT (operational technology) requires not just technical solutions, but also a cultural shift toward cybersecurity awareness across all levels of the organization.

TOP 10 Oil & Gas Industry Trends & Innovations in 2025

OIL & GAS



Internet of Things	Cloud Computing
Artificial Intelligence	Augmented & Virtual Reality
Big Data & Analytics	Manufacturing Execution Systems
Robotics & Automation	Predictive Maintenance
3D Modelling & Visualization	Blockchain

Human-machine collaboration

While automation and AI are transforming job roles, they are not replacing humans. Instead, they are augmenting human capabilities—enabling engineers, geologists, and technicians to focus on higher-value tasks such as strategy, innovation, and complex decision-making.

Energy companies are investing in reskilling and upskilling programs to equip their workforce with digital fluency. Data science, coding, remote collaboration, and system integration are becoming core competencies for the next generation of energy professionals.

Toward a smarter, cleaner, more resilient energy future

Smart energy operations are not just about doing things faster and cheaper—they are about doing them better. By embedding intelligence into every layer of exploration and production, the energy industry is positioning itself for a more sustainable and resilient future.

As the world transitions to lower-carbon energy systems, digital technologies will play a critical role in optimizing existing hydrocarbon assets while supporting new energy pathways, such as carbon capture, hydrogen, and geothermal exploration.

The rise of smart energy operations marks a turning point. From the drill bit to the cloud, the fusion of automation, machine learning, and IoT is transforming one of the world's oldest industries into one of its most forward-looking. And in this transformation lies not only economic opportunity—but a renewed commitment to energy security, environmental stewardship, and technological excellence.



In 2006, RASTEC launched its **Chemical Division** to provide specialized chemical cleaning and process maintenance services. With a solid track record in Qatar and an expanding footprint across the GCC, we proudly serve major industrial clients by delivering **safe, efficient and environmentally responsible** cleaning solutions.

Rastec is proud to partner with **Conceptual Technologies Inc. (CTI), Canada** – a global leader in specialty chemical formulations and heat exchanger treatment programs. This collaboration enables us to offer proprietary chemicals, advanced CIP technologies, and field-proven expertise to address the most demanding plant cleaning challenges.

Backed by a skilled workforce and equipped with **ATEX-certified mobile CIP units**, RASTEC is fully prepared to support both planned maintenance and emergency shutdowns – **safely, swiftly, and effectively**.

RASTEC CHEMICAL MAINTENANCE SERVICES

"We don't just clean equipment – we restore performance, extend asset life, and engineer safety into every drop of chemistry."

Our Core Capabilities

We offer specialized chemical cleaning solutions that optimize plant efficiency, ensure regulatory compliance, and extend equipment life:

- ◆ CIP of Heat Exchangers (Shell & Tube, Plate, Printed Circuit, Air-Cooled)
- ◆ Amine System Cleaning (Compabloc & PHE) Air-Cooled)
- ◆ Pipeline & Loop Cleaning (Flooded circulation CIP)
- ◆ Automated Vessel & Tank Cleaning (Gama Jet, no man-entry)
- ◆ Boiler & Furnace Cleaning (Degreasing, Acid Cleaning, Neutralization, Passivation)
- ◆ Pre-Commissioning Cleaning (Single/Multi-phase CIP)
- ◆ Offline Filtration & Separation (Thermal oil, lube oil, solvents)

Flagship Solutions

1

CIP for Amine Heat Exchangers

- ◆ Eliminates fouling in Rich and Lean Amine sides without generating H₂S
- ◆ Ensures safe cleaning and restored performance in RAS/LAS circuits

2

CIP for Printed Circuit Heat Exchangers (PCHEs)

- ◆ Removes gas-side fouling in microchannels without dismantling
- ◆ Improves differential pressure and thermal efficiency



All systems are operated using fully ATEX certified, explosion-proof mobile CIP skids designed for hazardous environments (Class 1, Zone 2).

RASTEC's Innovative Cleaning Approach



C3
Precision-Engineered CIP Solutions
Tailored cleaning solutions for optimal plant performance.

Pre-Engineered ATEX certified CIP Skid Systems
Designed for rapid deployment during shutdowns and critical operations in hazardous environments

Eco-Friendly Chemistry
High-performance, eco-friendly chemistry for equipment protection.

QHSE Standards
Compliance with highest quality, health, safety, and environmental standards.



Carbon capture, hydrogen, and the energy transition

The global energy sector stands at a pivotal crossroads. As countries race to meet ambitious climate goals and reduce greenhouse gas emissions, the push for low-carbon energy solutions has never been more urgent. Amid this transition, two technologies have emerged as central pillars of the new energy landscape: carbon capture and hydrogen. Though distinct in purpose, both serve as critical enablers of a cleaner, more sustainable energy future—bridging the gap between today's fossil-fuel-reliant systems and tomorrow's net-zero world.

Together, carbon capture and hydrogen are helping reshape the contours of the energy economy. From decarbonizing heavy industry and power generation to enabling new fuel pathways for transport and storage, these technologies are no longer theoretical concepts. They are being deployed, tested, and scaled across continents, with growing support from

governments, investors, and industry leaders.

Carbon Capture

Carbon Capture, Utilization, and Storage (CCUS) refers to a suite of technologies designed to capture carbon dioxide (CO₂) emissions from industrial processes or power plants, and either store it deep underground or reuse it in commercial applications. In essence, CCUS allows energy producers and heavy industries to continue operations while significantly reducing their environmental footprint.

For decades, carbon capture was seen as expensive and impractical. But recent advancements in capture materials, compression methods, and monitoring systems have brought costs down and boosted efficiency. According to the International Energy Agency (IEA), more than 500 million tonnes of CO₂ will need to be

captured annually by 2030 if the world is to stay on track for net-zero by 2050.

The applications of CCUS are broad and transformative. In the power sector, post-combustion capture units are being retrofitted to coal and gas plants to scrub CO₂ from flue gases. In the industrial sphere—especially in cement, steel, and fertiliser production—carbon capture is often the only viable path to deep decarbonization, given the process-related emissions that cannot be eliminated by renewables alone.

Some captured CO₂ is sequestered in geological formations, such as depleted oil and gas reservoirs or deep saline aquifers, where it can remain safely stored for thousands of years. Other streams are repurposed for enhanced oil recovery (EOR) or converted into synthetic fuels, plastics, or construction materials—ushering in a new era of carbon-to-value innovation.

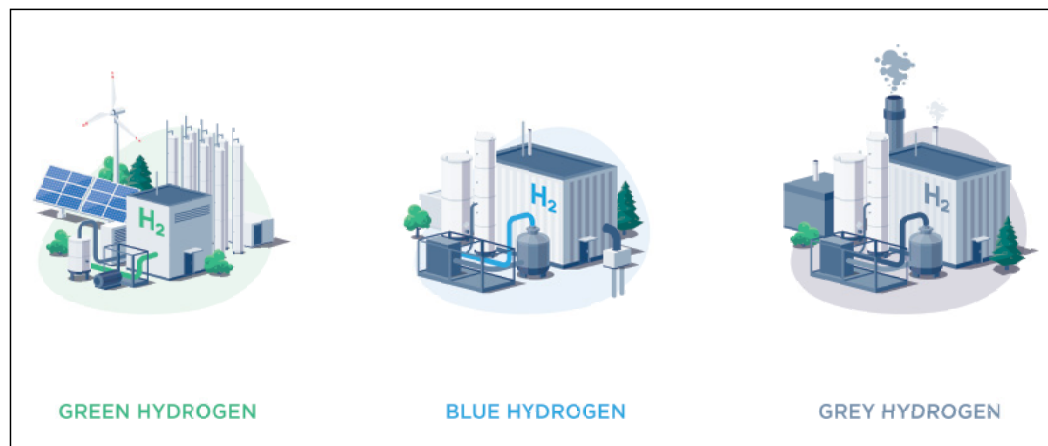


Several flagship projects are leading the way. The Northern Lights project in Norway, a partnership between Equinor, Shell, and TotalEnergies, is developing the first cross-border carbon transport and storage network in Europe. In the Middle East, QatarEnergy is advancing its CCUS capabilities as part of its broader sustainability roadmap, aiming to capture over 11 million tonnes of CO₂ annually by 2035.

Hydrogen: The clean molecule with massive potential

While CCUS secures the present, hydrogen fuels the future. Hydrogen is the most abundant element in the universe, and when used as an energy source, it emits only water vapour—making it a compelling alternative to fossil fuels across multiple sectors.

Hydrogen is categorised by the method of its production. Grey hydrogen is produced from natural gas via steam methane reforming (SMR) without carbon capture, resulting in CO₂ emissions. Blue hydrogen follows the same process but integrates CCUS to mitigate those emissions. Green hydrogen, considered the cleanest, is generated by splitting water into hydrogen and oxygen through electrolysis, powered by renewable electricity.



While green hydrogen represents the ultimate climate-friendly fuel, it remains costly due to the high price of renewable electricity and the limited scale of electrolyzer infrastructure. As a result, blue hydrogen is currently viewed as a practical intermediate solution—leveraging existing gas assets while incorporating CCUS to reduce emissions.

Hydrogen's versatility is its strongest asset. It can be burned in turbines for power generation, used in fuel cells to power vehicles, or deployed in heavy industry to replace coal and natural gas in high-temperature processes. The transportation sector, in particular, is seeing rapid hydrogen adoption—especially in applications where batteries are impractical, such as long-haul trucks, trains, and ships.

Countries around the world are racing to establish hydrogen economies. The European Union has set ambitious targets to deploy 40 gigawatts of green hydrogen capacity by 2030. Japan and South Korea are investing heavily in hydrogen-powered mobility. In the Gulf region, Saudi Arabia's NEOM project is building the world's largest green hydrogen plant, while the UAE and Qatar are also exploring hydrogen export strategies, using their abundant solar resources and existing gas infrastructure.

are otherwise hard to abate, creating space for renewables and green hydrogen to scale.

Together, these technologies offer a hybrid approach to transition—one that balances environmental goals with energy reliability and economic practicality. They help ensure that energy-rich nations, especially those reliant on hydrocarbons, can participate meaningfully in global climate action without sacrificing economic stability.

Importantly, carbon capture and hydrogen also support infrastructure repurposing, turning existing pipelines, gas terminals, and storage facilities into low-carbon assets rather than stranded liabilities. This enables a just and orderly transition, preserving jobs and investments while gradually shifting toward cleaner systems.

Challenges and the path forward

Despite their potential, both carbon capture and hydrogen face significant challenges. The cost of building and operating CCUS facilities remains high, particularly in the absence of carbon pricing mechanisms that reward emission reductions. Hydrogen faces hurdles related to production costs, transportation difficulties, and safety concerns.

Moreover, both require massive scale-up. Current hydrogen production is dominated by grey hydrogen, and global CCUS capacity is still far below what is needed for climate targets. Achieving meaningful progress will require coordinated action across policy, finance, and industry. Governments must create enabling environments through incentives, regulations, and public-private partnerships. Financial institutions must channel investment into low-carbon infrastructure. And energy companies must continue to innovate, collaborate, and commit to long-term decarbonization.

Catalysts of a low-carbon era

Carbon capture and hydrogen are no longer fringe technologies—they are cornerstones of the emerging energy paradigm. Their ability to decarbonize hard-to-abate sectors, enhance energy security, and create new economic opportunities places them at the centre of global climate strategies.

In a world seeking to balance sustainability with growth, these technologies provide not only a bridge—but a blueprint—for a cleaner, smarter, and more resilient energy future. As we move through this decisive decade, their role will only grow in importance—fueling a transition not just in how we power our world, but in how we reimagine it altogether.



Synergy and the energy transition

Though carbon capture and hydrogen operate independently, their synergies are vital for enabling a realistic and economically viable energy transition. Blue hydrogen, for instance, cannot exist without effective carbon capture. Meanwhile, CCUS provides a pathway to decarbonize industries and power sources that

Al Habari Engineering & Energy Services

A Pillar of Excellence in Qatar's Industrial Landscape

Al Habari Engineering and Energy Services has established itself as a reputable and reliable partner in Qatar, delivering comprehensive solutions as a Greenfield and Brownfield EPIC contractor, shutdown specialist, and strategic sponsor and agent for original equipment manufacturers (OEMs) entering the Qatari market.

With deep expertise in local regulatory frameworks and business dynamics, the company enables OEMs to establish a strong presence across key sectors such as oil and gas, construction, and infrastructure. Through its extensive network and industry influence, Al Habari facilitates seamless market entry, enhanced client access, and the development of long-term, successful business relationships.

As a proud division of the Al Habari Group, the company operates with a specialized team and holds In-Country Value (ICV) certification. It is also ISO 9001:2015, ISO 14001:2015, and ISO 45001:2018 certified, underscoring its commitment to quality, environmental management, and occupational health and safety.



Al Habari offers a broad spectrum of engineering services, including Engineering, Procurement, Installation, and Commissioning (EPIC Projects); construction; and maintenance support for civil, mechanical, electrical, instrumentation, HVAC, and MEP works. Our capabilities extend to deconstruction, demolition, and reinstatement. Backed by a skilled workforce and advanced machinery, the company is well-positioned to deliver on major infrastructure and energy projects across Qatar.

The company's vision is to lead the region in innovative engineering solutions and sustainable energy services, enriching communities and driving national progress. Its mission revolves around delivering exceptional outcomes through cutting-edge technology and a dedicated team. Integrity, sustainability, and innovation are the core values that guide every project undertaken by Al Habari.

Health, Safety, and Environment (HSE) remain a top priority. Al Habari ensures all operations maintain a safe and healthy environment for employees, contractors, and the communities in which it operates. With regular risk assessments and continuous investment in ergonomic and efficient equipment, the company upholds the



highest safety standards on both onshore and offshore sites.

Al Habari is equally committed to Corporate Social Responsibility (CSR). The company actively engages in environmentally responsible practices, uses local resources to uplift infrastructure, and collaborates with stakeholders to enhance living standards. Its initiatives are aimed at minimizing environmental impact and maximizing community well-being.

In the EPIC domain, Al Habari is widely recognized for its capabilities in executing projects across oil, gas, hydrocarbon, and EPIC Projects petrochemical sectors. With a multidisciplinary team and access to the latest technology, the company ensures seamless project delivery from inception to commissioning, with a strong focus on timeliness, cost-efficiency, and sustainability.

In civil and infrastructure works, Al Habari provides comprehensive services such as earthwork, excavation, site preparation, backfilling, grading, soil stabilization, and drainage control. Their capabilities extend to foundation and substructure works, offering everything from pile and raft foundations to retaining walls and dewatering systems. In superstructure construction, they deliver durable and efficient buildings for residential, commercial, and industrial use, including high-rise complexes, factory buildings, and retrofitting of existing structures.

The company also specializes in advanced roofing solutions, offering durable and weather-resistant systems tailored to the unique requirements of industrial, commercial, and residential projects. From waterproofing and insulation to eco-friendly roofing systems, Al Habari ensures functionality and sustainability.

In the oil and gas sector, the company is a leading provider of civil construction services for specialized projects. From EPIC construction services, rig foundations and pipeline trenching

to structural works for factories and warehouses, Al Habari brings a high level of safety, efficiency, and durability to every undertaking. Their expertise also extends to industrial fencing, with installations ranging from chain link and palisade fences to razor coils and barbed wire.

Al Habari's mechanical and piping division is adept at constructing and rehabilitating storage tanks in accordance with API standards. Their services include fixed and floating roof tank construction, cathodic protection system installation, tank desludging, seal replacements, and product transfers—all executed with a focus on safety and operational integrity.

The company is also well-regarded for its plant turnaround and maintenance projects, particularly in the hydrocarbon, petrochemical, and fertilizer industries. Their debottlenecking and optimization strategies significantly enhance plant performance and minimize downtime, aligning with industry standards for safety and reliability.

In the field of cleaning services, Al Habari employs high-pressure water jetting, ultrasonic techniques, and tube cleaning to maintain the efficiency and longevity of industrial equipment. These advanced solutions ensure thorough cleaning while adhering to stringent safety protocols.

Rounding out their services, Al Habari offers specialized pipe and structural fabrication and installation. Utilizing precision tools and expert teams, the company delivers robust and custom-engineered components to meet client specifications, ensuring seamless integration and high performance across industrial operations.





CIVIL AND INFRASTRUCTURE

- ▶ Earth and Back filling works
- ▶ Foundation and Substructure works
- ▶ Specialized oilfield and Industrial civil construction work
- ▶ EPIC Projects



MECHANICAL & PIPING

- ▶ Tankages (Rehabilitation & Construction Tank Cleaning by 3D Nozzel)
- ▶ Plant Turn-Around & Maintenance Services
- ▶ Project Process Piping Works Small bore to Large bore
- ▶ Hydrojetting Services, Pipe Line Pigging Services, Bolt Torquing and Tensioning, Cross Country Piping Hydrotesting

UPSTREAM SERVICES

- ▶ Well Surveillance & Diagnostics
- ▶ Remedial & Stimulation Services
- ▶ Well Integrity and Pressure Testing
- ▶ Pipe Recovery & Fishing Services
- ▶ Coiled Tubing Interventions
- ▶ Logging and Perforation Services

EQUIPMENTS

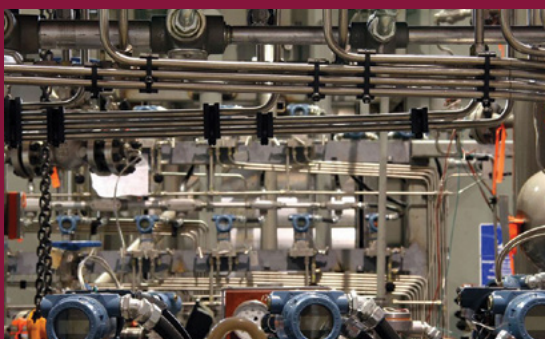
- ▶ Wireline Equipment
- ▶ Coiled Tubing (CT) Equipment
- ▶ Pumping & Stimulation Equipment
- ▶ Well Control & Pressure Control Systems
- ▶ Fishing & Milling Equipment
- ▶ Logging and Evaluation Tools
- ▶ Hydraulic Workover Units (Snubbing Units)



ELECTRICAL

EPIC Electrical Distribution & Elv System

EPIC Electrical Distribution & ELV System Al Habari Engineering and Energy Services excels in executing EPIC (Engineering Procurement, Installation, and Commissioning) projects in power generation, electrical substations, and infrastructure development.



INSTRUMENTATION

Al Habari Engineering and Energy Services is highly adept in providing comprehensive instrumentation services for the oil and gas sectors. Their expertise encompasses the design, installation, calibration, and maintenance of instrumentation systems, ensuring precise monitoring and control of industrial processes.



HVAC AND MEP

Al Habari Engineering and Energy Services possesses robust capabilities in EPIC (Engineering, Procurement, Installation and Commissioning), maintenance, and reconstruction for HVAC and MEP systems. Their team of skilled professionals delivers tailored solutions, focusing on energy efficiency and sustainability.



SEAWORKS specializes in Offshore Marine Services, including the chartering of a diverse range of vessels and maritime equipment. Our operations are comprehensive and backed by a team of seasoned professionals dedicated to providing high-quality marine services. A significant facet of our operations is the provision of vessels & maritime equipment and services, including heavy lifting to the offshore oil and construction industries, ensuring these sectors receive the quality support they deserve for their critical operations. Seaworks possesses pools of equipment and available techniques to handle heavy loads, including lifting, lowering, tilting, and sliding. It offers very mature systems tested to international standards. With this expertise, we can develop bespoke services using innovative solutions to provide comprehensive alternative marine construction schemes.

Our marine fleet comprises various vessels such as barges, dredgers, tug boats, and crew boats. We are proud to introduce the new addition to our fleet list – **“Seaworks 56”** (Crane Barge). Seaworks 56 is a spud barge mounted with a brand new XCMG XLC450 crawler crane, with a maximum lifting capacity of 450T and maximum height of 127 meters, ideal for large-scale projects/ operations. The XCMG XLC450 guarantees offshore heavy-lifting performance. This empowered crane barge is equipped with 22-meter spuds and 4-point mooring system, making it suitable for a wide range of operations. All the barge machinery is approved by Ras Laffan Port with the most stringent safety conditions, including OVID certification.





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 I 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.



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.

"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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