

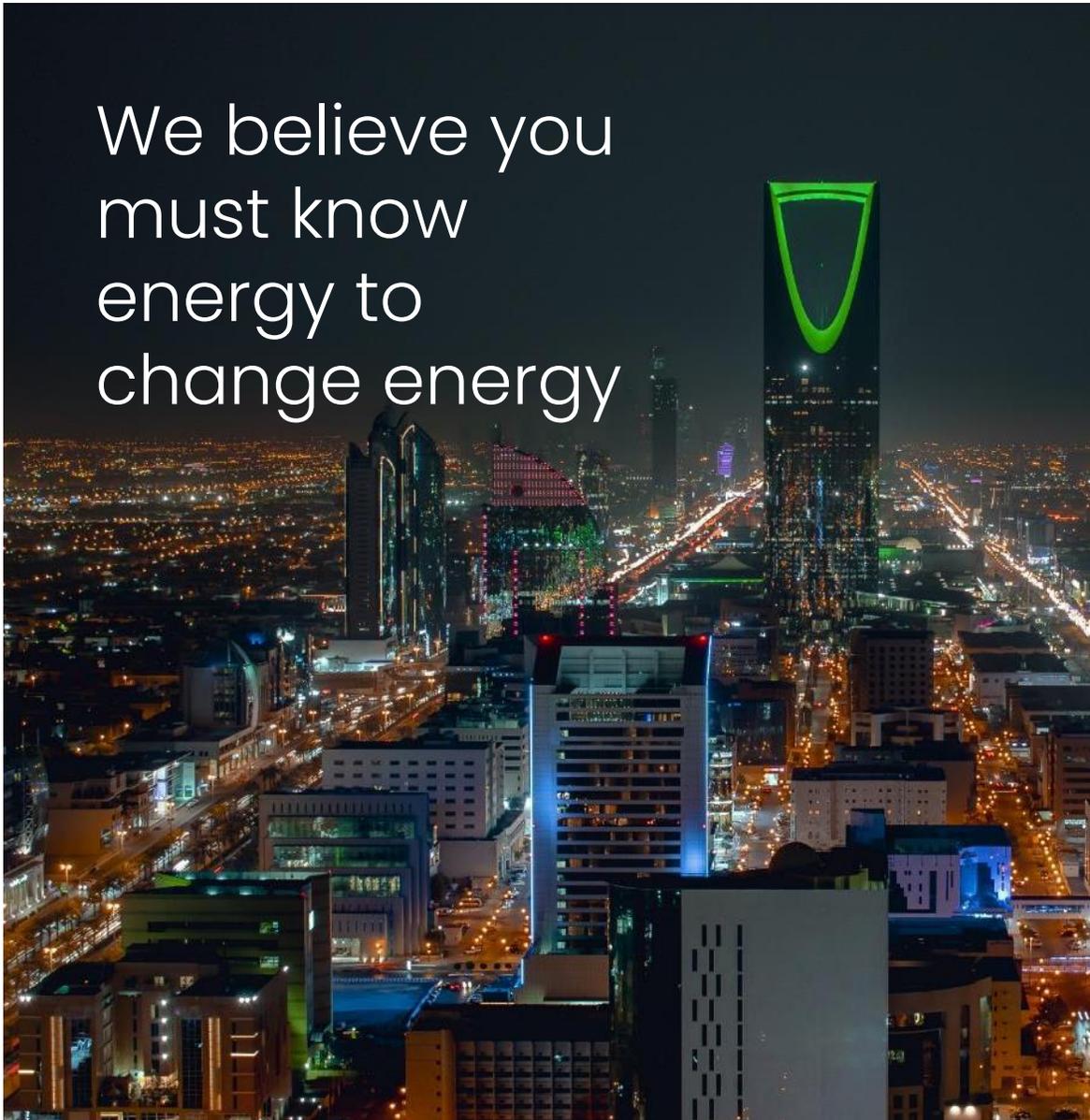
We are taking energy forward

The path to net-zero and a
sustainable energy future

How to navigate this document

Introduction	3
The challenge	6
Our energy transition framework	8
The path to net zero today	9
Efficient power and compression	10
Efficient oilfield	12
Emissions management solutions	13
Intelligent asset management and optimization	14
Accelerating new energy	16
Hydrogen	17
Carbon capture, use, and storage	19
Geothermal	20
Energy storage	21
Net-zero LNG	22
Materials and design	23
Partnerships	24

We believe you
must know
energy to
change energy



Letter from the CEO

The energy industry has been built on invention and reinvention. The 'energy transition' in fact, isn't a new concept. We've witnessed a number of transitions in our own lifetime, from coal to the rise of natural gas, to the shale revolution, and the advent of renewable energy. We have always been an industry in transition – managing volatility, advancing technology and innovation to power the world's progress and economic development.

Yet, it's clear that, today, we are at a new and critical inflection point. How do we meet the world's growing demand for energy, and the world's demands *from* energy – to be safer, cleaner, and more efficient?

We believe the answer lies in technology. As an energy technology company, this is the core of our mission – to deliver the highest efficiency solutions today and advance the path towards energy decarbonization. This company, this industry, knows energy. We have the power to change it for the better.



Lorenzo Simonelli,
Chairman and CEO

We were one of the first in the oil and gas industry to make a net-zero carbon commitment

And we hope we're not the last.

Baker Hughes is committed to reducing our emissions by 50% by 2030 and net-zero by 2050

31.6%

reduction in scope 1 and scope 2 emissions versus 2012 baseline

175

facilities powered by renewables representing 14.5% of total electricity usage

500+

global facility energy audits and weekend energy walk-throughs

Baker Hughes is an energy technology company

We are bringing our core technology capabilities to enable a path to net-zero for energy and industry.

Taking energy forward is the core of our growth strategy

OUR AMBITIONS

Reach net-zero carbon emissions by 2050

Lead in energy transition and digitalization and be a critical decarbonization partner

Deliver the highest efficiency, productivity outcomes for broader energy and industry

OUR STRATEGY FOR HOW WE GET THERE

Transform the core

Invest for growth

Position for new frontiers

We see three hard truths:

#1

Without major acceleration, the industry will not meet net-zero targets

While technologies in use today can deliver significant emission reductions, they are insufficient on their own to meet the Paris Agreement goals. We need a dual approach to implement efficiency measures today and invest in new energy solutions for the future.

#2

Reliance on hydrocarbons will not disappear, so efficiency matters

For at least the next 30 years, oil and gas will continue to play an important part of meeting global energy demand – even in the most aggressive of energy transition scenarios. Efficiency solutions are critical to reducing emissions, representing 37% of total emissions reductions needed to meet Paris Agreement goals.

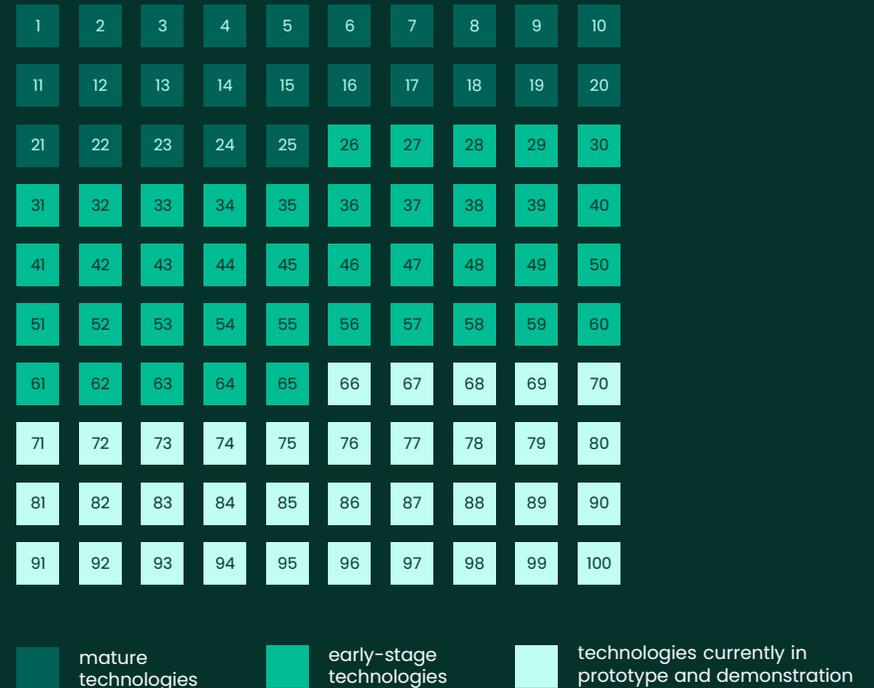
#3

There’s no path to net-zero without partnership and collaboration

Our business was built on partnership and service. Today, we know this matters more than ever. We believe it will take energy producers, technology and service providers, energy buyers, policymakers, and the community at large working closely together to achieve our collective ambitions.

Why future technology is critical to meeting net-zero ambitions

% OF CUMULATIVE CO₂ REDUCTIONS BY TECHNOLOGY READINESS TO MEET NET-ZERO BY 2070



How we help our customers on the path to net-zero

2.5%

efficiency gains in CO₂ emissions could be achieved with just 1% efficiency gains from gas turbines

Upgrades to high efficiency technology

Efficient technology solutions are at the core of reducing emissions from energy operations. It's also core to what we do. From our oilfield technology to our high-efficiency turbomachinery, we develop technology that runs cleaner and more efficiently.

46%

of global vented methane emissions are estimated to come from pneumatic control valves

Managing emissions at the source, at scale

Tackling emissions means addressing the small in a big way. No-bleed valves, methane monitoring, reducing flaring, and intelligent asset optimization at scale can deliver material reductions in methane and other greenhouse gas emissions.

35%

cumulative CO₂ emission reductions to meet net-zero targets will come from technologies currently in prototype and demonstration stage

Advancing a new energy era

New energy solutions are not new to us. We are advancing the long-term energy technology solutions needed for a decarbonized era – hydrogen energy, carbon capture and storage, geothermal, and other integrated solutions to make energy 'net zero'.

We take a dual approach to a sustainable energy future

Solve for the largest sources of scope 1 and 2 emissions in energy operations today

by deploying the most efficient and least emissive technologies.

THE PATH TO NET-ZERO TODAY

1. Efficient power and compression
2. Efficient oilfield
3. Emissions management solutions
4. Intelligent asset management and optimization

And invest in sustainable energy technology for tomorrow

by accelerating the adoption and deployment of new fuel sources and emissions solutions.

DECARBONIZING ENERGY FOR TOMORROW

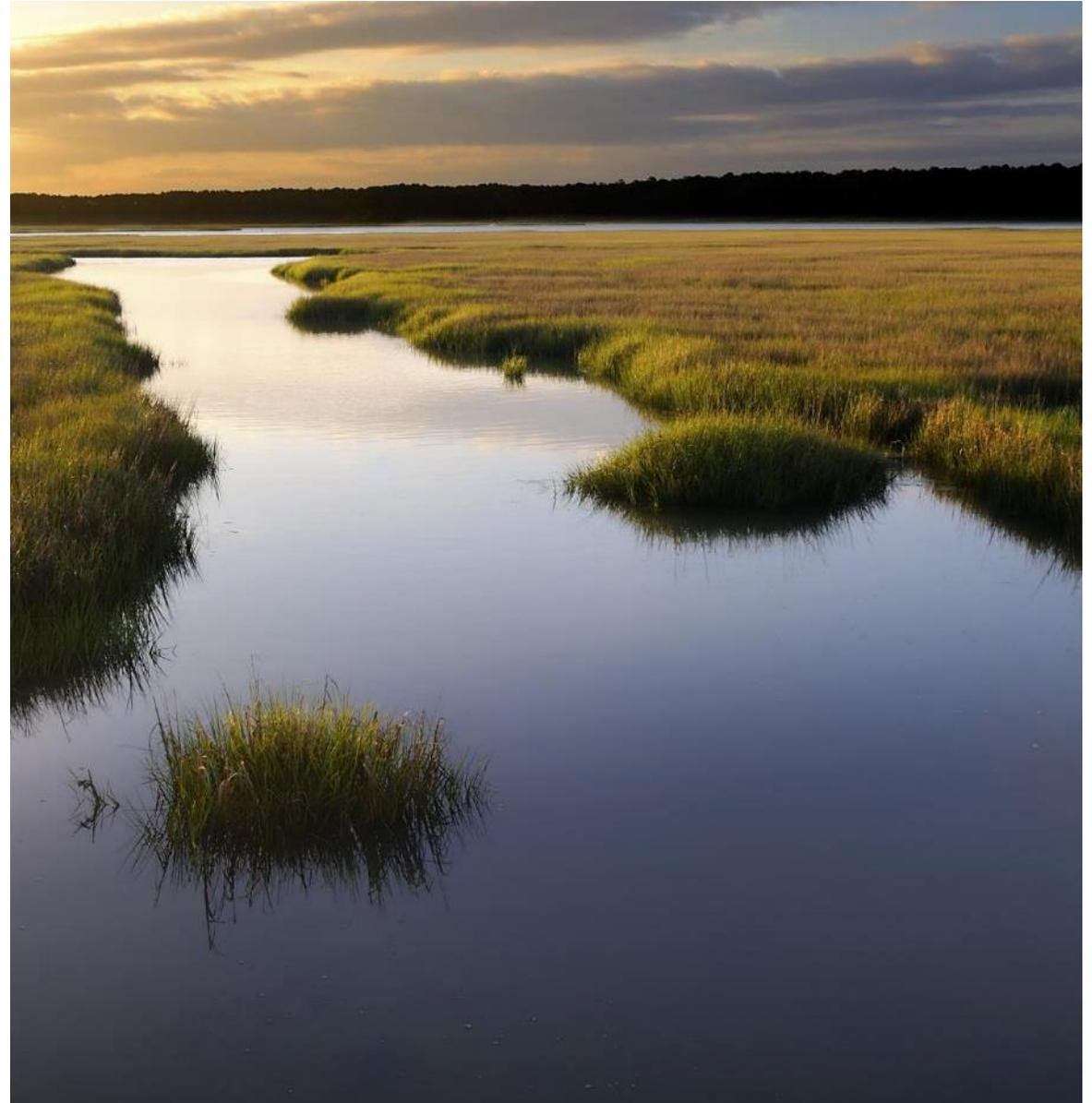
1. Hydrogen
2. Carbon capture, use, and storage
3. Geothermal
4. Energy storage
5. Net-zero LNG

If today's oil and gas operations were 10% more efficient, we would save ~0.5 Gt CO₂-equivalent per year

That represents a contribution of 5% per year of the emissions reduction target of the Paris Agreement climate goals.

Reducing emissions from core oil and gas operations is a first and critical step to meeting global and industry emissions targets. These solutions can be relatively lower in capital investment and provide more immediate results in terms of emissions reductions.

We are focused on developing and deploying these technologies in our own operations and for our customers to ensure we are cutting emissions while we invest in and advance a sustainable energy future.



Achieve lower emissions with the most efficient and reliable turbomachinery

FEATURED OFFERINGS

High efficiency power generation and compression for energy and industry

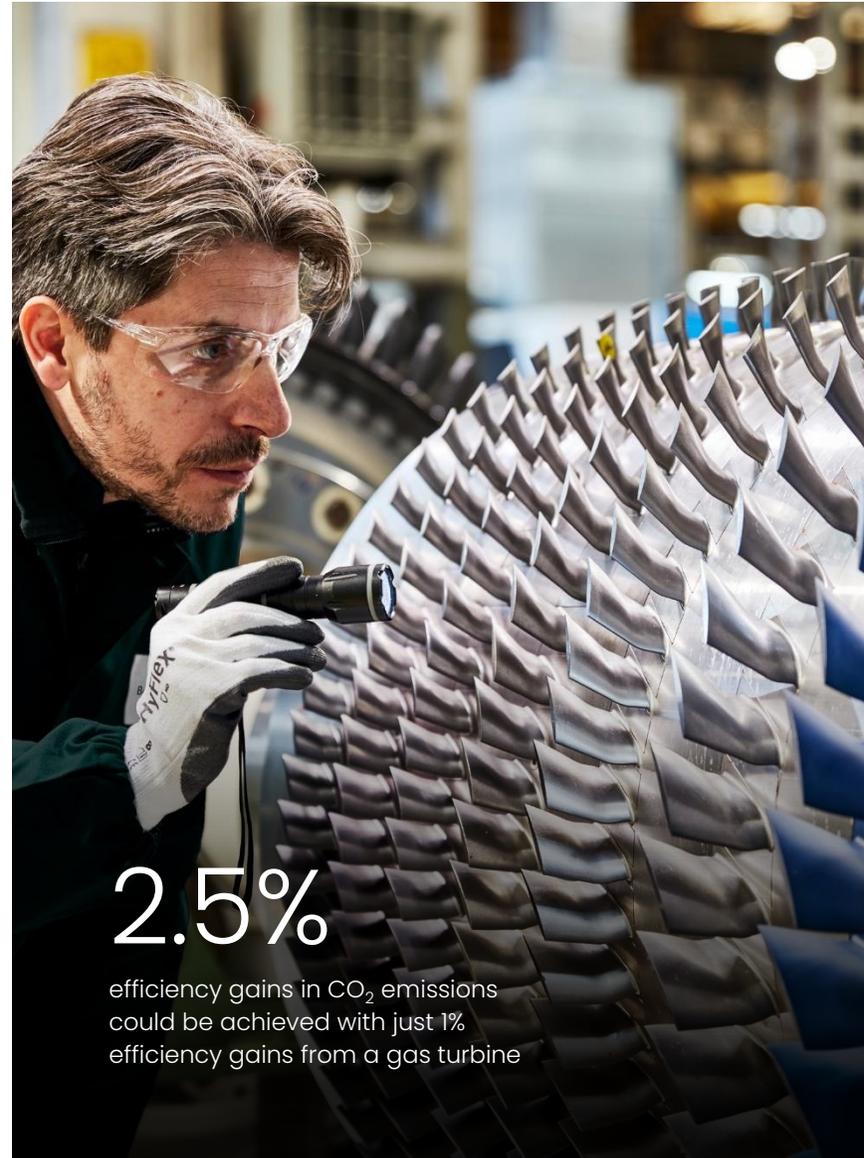
Our gas turbines and compressors are some of the world's most efficient – lower carbon intensity, high availability, and low NO_x emissions. Our LM9000 is the most efficient and powerful aeroderivative gas turbine in its class. Our NovalT™ family of high efficiency turbines for industrial cogeneration, pipeline, and offshore offers lower consumption and emissions as low as single digit ppm.

Upgrade equipment for emissions reductions

Replace turbomachinery fleets across plant operations to reduce emissions. Leverage planned outages to improve performance with vent recovery, compressor re-bundling, and other opportunities.

Modular, distributed and flexible solutions for higher efficiency

Design and develop new power generation concepts to suit the needs of your project. We provide combined cycle, alternative fuels and renewables integration solutions to reduce emissions for operations in oil & gas and industrial applications.



2.5%

efficiency gains in CO₂ emissions could be achieved with just 1% efficiency gains from a gas turbine

Source: Baker Hughes internal data and analysis

KEY TECHNOLOGY

Gas turbines

NovalT™ family turbines
Frame technology turbines
Aeroderivative turbines

Compressors

Reciprocating compressors
Centrifugal compressors
Turboexpander compressors

Software and analytics

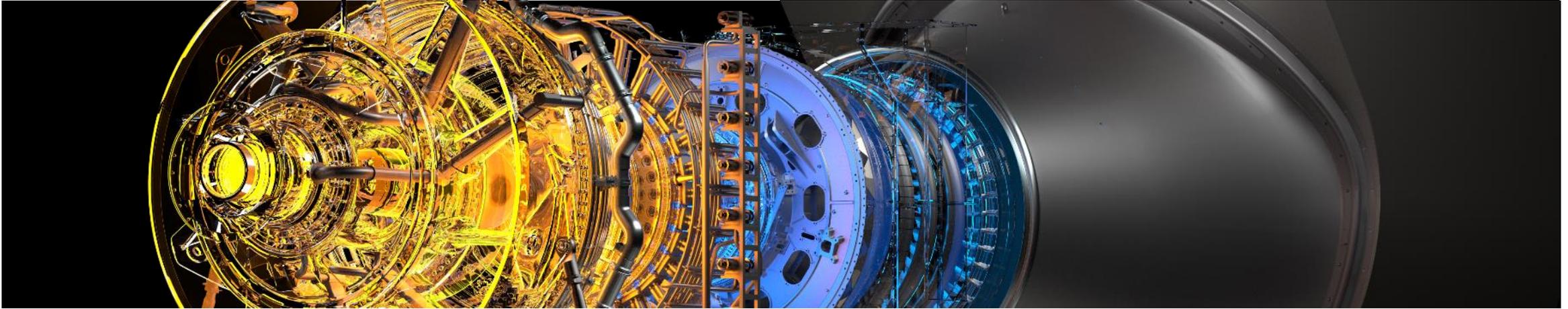
System 1 condition monitoring
Ranger Pro wireless sensors

Services

Upgrades and spare parts
Field services and repairs
Remote monitoring and diagnostic services
Digital operations

SEGMENTS

LNG
On/Offshore
Refinery and petrochemicals
Pipeline
Light industrial and process industries
Heavy industry & mining
Renewables



The LM9000 is the world's most efficient simple cycle gas turbine

FEATURES

- Powerful and efficient gas turbine derived from the GE90-115B, which has been on Boeing 777s since 2004
- Compact, modular package for fast installation and lower costs than field-erected units; ideal for stringent space requirements
- Designed for easy inspection and condition-based maintenance — delivering high reliability and maintainability

BENEFITS

- 44% efficiency in simple cycle, 80% in cogeneration
- Higher availability thanks to long maintenance intervals, and modular package allowing 24-hour engine swap
- Pressurized LNG compressor startup capability without a helper motor
- Power output 15% higher compared to industry peers. This efficiency is key to driving lower carbon intensity and combined with lower NOx emissions (15 ppm in dry condition, 40% lower than competing technology)

CASE STUDY

NOVATEK's Arctic LNG 2 Project

Amidst COVID-19 restrictions, LM9000 gas turbine technology successfully completed First Engine to Test (FETT). The FETT confirmed LM9000's best-in-class availability, efficiency, and lower NOx emissions, ideal for LNG operators to reduce their total cost of ownership and overall carbon footprint. The project includes gas turbine, compression and turboexpander technology for power generation and three liquefaction trains on gravity-based structures (GBS).

Improve oilfield efficiency and lower emissions

FEATURED OFFERINGS

Drill leaner wells

Our reservoir experts design lean drilling programs to achieve a customer's recovery goals with fewer wells. Operations personnel apply drilling technology to ensure predictable, flawless execution — saving days, cutting waste and eliminating unnecessary emissions.

Achieve peak productivity

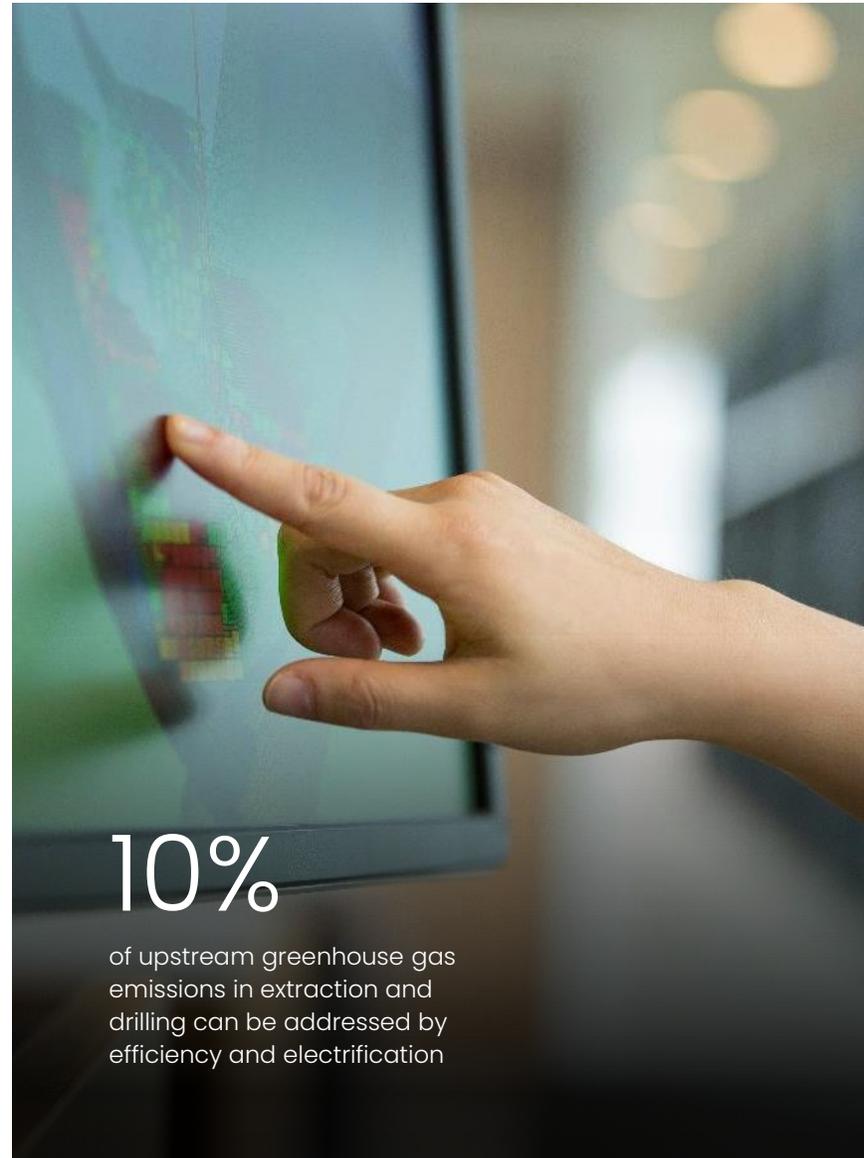
Our reliable completions and production technology keep wells flowing at peak efficiency, with minimal downtime and fewer interventions. These products and services eliminate the need to construct new wells when production declines.

Execute from anywhere

Our robust remote infrastructure ensures 99.99% uptime and keeps our global subject matter experts connected to wellsite technology 24/7/365 — reducing the number of people on the rig. Automating key processes eliminates unnecessary delays, rework, and travel related to human error.

Benefit from alternative power sources

Mobile and modular, our e-frac packages replace diesel power with electrical pumps and can even use associated gas to power operations and reduce flaring. Our permanent magnet motors reduce the amount of power required to run downhole pumps.



10%

of upstream greenhouse gas emissions in extraction and drilling can be addressed by efficiency and electrification

KEY TECHNOLOGY

Drilling

i-Trak™ drilling automation services

Kymera™ hybrid drill bit

Lucida™ advanced rotary steerable service

DELTA-TEQ™ drilling fluids system

Remote drilling fluids monitoring system

Completions

GeoFORM™ conformable sand management system

SureCONNECT™ downhole intelligent wet-mate system

E-frac packages

Production

Magnefficient™ permanent magnet motor

ProductionLink™ artificial lift monitoring and surveillance system

Reduce methane venting, fugitives and flaring where they happen most

FEATURED OFFERINGS

'Zero-bleed' valves to control fugitives and leakage

Valves and controls are one of the largest sources of methane emissions in oil and gas production and downstream processing. Our 'zero bleed' positioners take higher pressure gas direct from the pipeline and use it as a remote source for pneumatic control. In a plant environment, our control valves reduce fugitive leakage through emission containment and bellow seals to provide zero leakage to the atmosphere.

Intelligent flare management to cut emissions

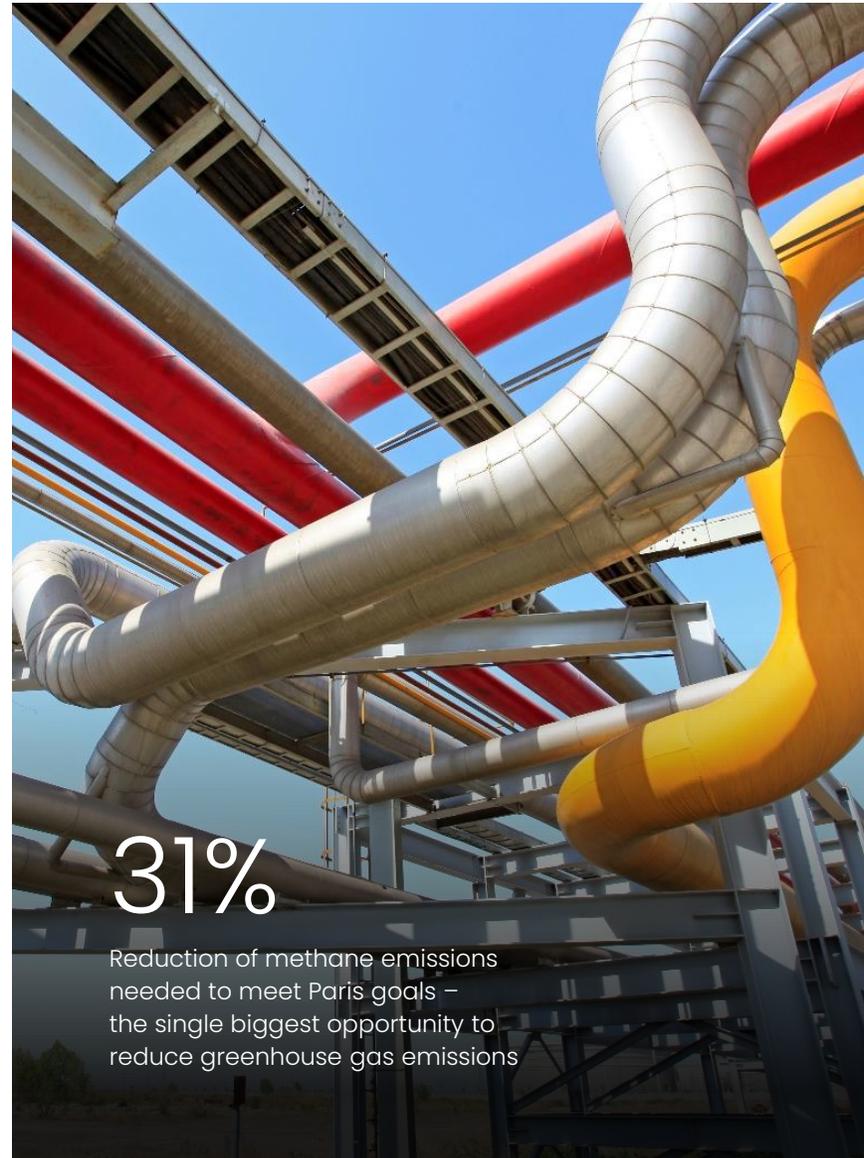
Improved flaring can cut up to 12,100 metric tons of CO₂ equivalent emissions per flare annually. Our flare solutions can cut methane emissions, ensure high-efficiency flare combustion, and reduce steam usage in flare systems.

Lower emissions in LNG operations

Our low-emissions 'EZ Start' solution-enables depressurizing LNG refrigeration compression systems without purging propane and methane emissions.

Waste-heat and flare gas recovery

We can recover, at the highest possible efficiency, high-enthalpy waste heat from gas turbines and other heat sources to produce valuable power in virtually any type of industrial plant. Using modular gas processing, our solutions can also capture flare gas for use as a highly efficient power source.



31%

Reduction of methane emissions needed to meet Paris goals – the single biggest opportunity to reduce greenhouse gas emissions

KEY TECHNOLOGY

Valves

Masoneilan Low-E packing series
Valve Aware early leak detection
Consolidated 'True Zero Leakage' modulating pilot valve

Flare management

flare.iQ advanced flare control and digital verification
Flare gas recovery systems

Turbomachinery

Oregen™ Organic Rankine Cycle (ORC) package
EZ-Start for LNG to prevent emissions purging

SEGMENTS

LNG
On/Offshore
Refinery and petrochemicals
Pipeline
Light industrial and process industries
Heavy industry (cement, mining)

Transform operations with analytics and automation for more with less impact

FEATURED OFFERINGS

Methane monitoring and analytics

Detect, reduce, and prevent methane leaks with our continuous land-based or aerial drone based digital methane monitoring systems across fleet-wide areas and single sites.

Remote drilling and automation

70% of our drilling operations are now remote and reducing facilities, transportation, and operational activity.

Optimize rotating equipment to reduce emissions

Our Carbon Optimizer digital solution reduces CO₂ emissions by optimizing multiple power gen or compressor trains – on the edge and cloud. Our System 1 predictive emissions monitoring system predicts the level of stack emissions generated by combustion equipment.

BHC3™ Energy Management and AI suite

BHC3 Energy Management uses machine learning to help energy companies gain visibility into their cross-facility energy use and predict energy saving opportunities.

Wind turbine operations and predictive maintenance

Our condition monitoring technology provides reliability, uptime and security to more than 30,000 wind and hydro turbines worldwide.



3,000+

Number of wells
Baker Hughes delivers
remote services for each day

KEY TECHNOLOGY

Software and analytics

System 1 condition monitoring
Carbon Optimizer
BHC3 Energy Management
BHC3 AI Suite
Avitas smart inspection and monitoring solutions

Digitally-enabled services

Drilling automation solutions
Condition monitoring and predictive maintenance
Remote inspections and non-destructive testing
Unmanned operations

SEGMENTS

LNG
On/Offshore
Oilfield operations
Refinery and petrochemicals
Pipeline
Light industrial and process industries
Renewables



Cost effective methane monitoring powered by AI, from Avitas, a Baker Hughes venture

FEATURES

- The LUMEN Sky Drone solution from Avitas meshes optical gas imaging (OGI), associated imagery, and proprietary computer vision algorithms, to efficiently and accurately provide detection and quantification of methane emissions, as well as precise localization with automated component recognition.
- Ability to use additional sensor types as applications require (TDLAS for example)

BENEFITS

- Cost effective solution to detect, localize and quantify leaks to enable emissions reduction
- Flexible offering, with large area surveys, as well as detailed regulatory compliant surveys available
- Cloud based platform for ingesting, analyzing and reporting on emissions findings
- Automated visual analytics enable efficient solutions with insights beyond methane detection
- Safer compared to existing manual techniques, reducing windshield time and physical inspections on site

CASE STUDY

Since 2018, the Shell-Avitas team has tested drones equipped with methane detection cameras and sensors in the Permian Basin. The teams have conducted over 500 test flights, using drones and drone-mounted sensors, combined with artificial intelligence (AI) enabled software platforms.

This effort is contributing to meeting Shell's goals of maintaining methane emissions intensity below 0.2% by 2025.

New energy – It's not new to us

We have been working to advance sustainable energy for decades – from our early CCUS pilot projects in the 2000s and in 2008, when we built the first turbine in the world to run on 100% hydrogen for the Fusina Hydrogen Power Project in Italy.

Now, we are taking our experience to focus on developing and deploying solutions to enable a net-zero future for the energy sector and beyond.



Advancing the hydrogen revolution

Proven and available today – up to 100% hydrogen turbine

Our gas turbine technology is commercially available today for applications with various levels of blended fuel gas from 10% and up to 100%. Our technology can be integrated and adapted to work with existing gas infrastructure, making it easier to deploy.

Expanding our compression leadership to hydrogen technology

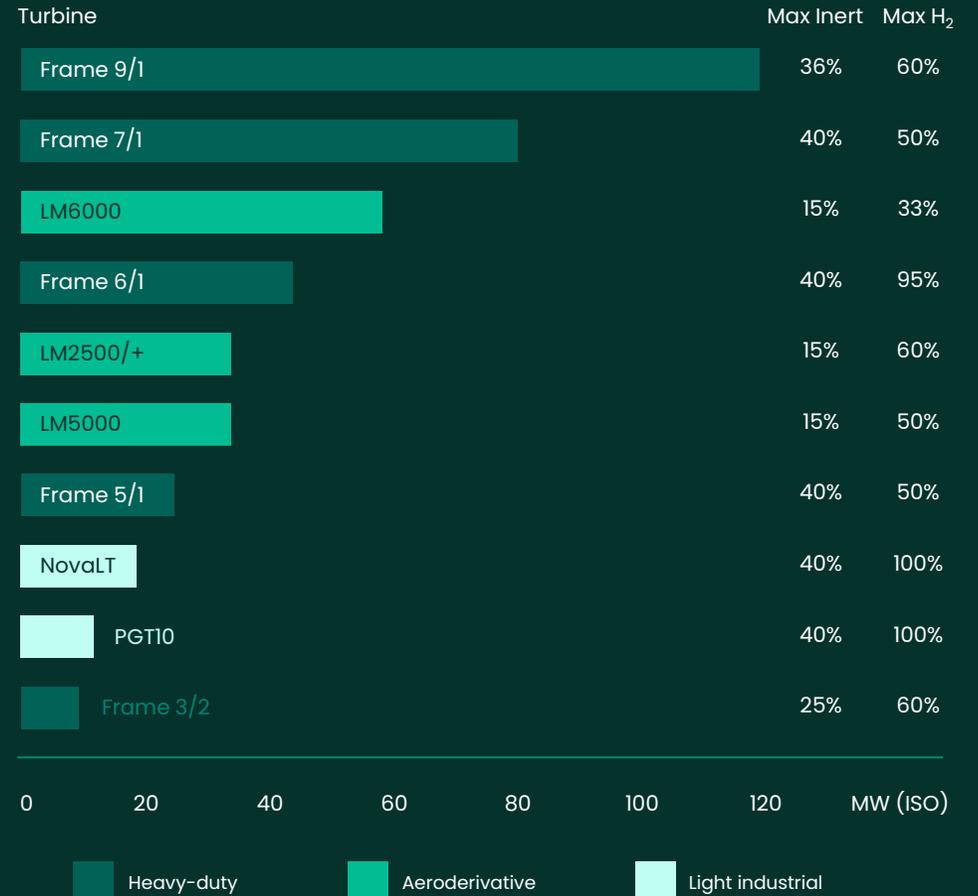
We are established leaders in compression technology and our High Pressure Ratio Compressors (HPRC) provide significant improvements in overall green H₂ plant footprint, reliability, availability and weight.

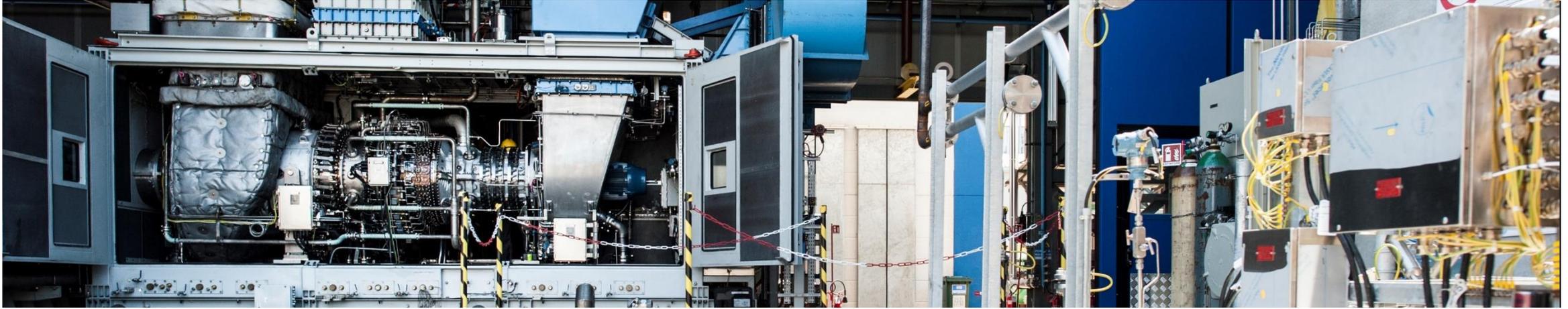
Advanced materials for hydrogen handling and transportation

We are advancing our hydrogen handling capabilities in composite reinforced thermoplastic pipe to be more resistant to corrosion than traditional steel.



WIDE RANGE OF EXPERIENCE IN BURNING HYDROGEN





Snam and Baker Hughes test the world's first hydrogen blend turbine for gas networks

RESULTS

Hydrogen at scale in Europe's most extensive gas transmission and storage network

Baker Hughes and Snam, Europe's largest gas network operator, successfully completed the testing for the operation of the world's first "hybrid" hydrogen turbine designed for a natural gas transportation infrastructure. The test paves the way to implement the adoption of hydrogen (up to 10%) blended with natural gas in the current infrastructure, thanks to Baker Hughes NovalT™12 gas turbine technology.

Enabling the adoption of hydrogen with the industry's first family of high-performance gas turbines

The NovalT has the robustness of a heavy duty but the performance in terms of start up time and low emissions of an aeroderivative. With this family of turbines we have demonstrated the capacity to burn 100% hydrogen in wet conditions/wet combustion and we have a multi-year program to complete the NovalT family with dry low NOx capabilities.

7B

cubic meters of hydrogen
could be introduced into the
Snam network each year

5M

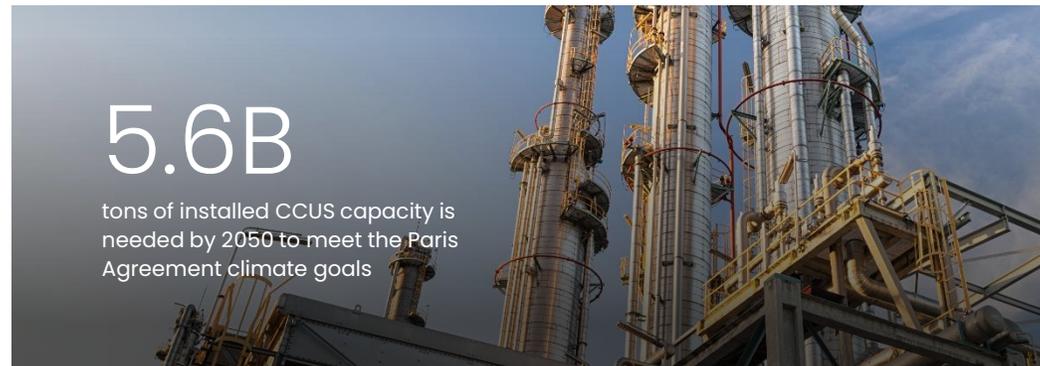
potential tons of CO₂ emissions
that could be reduced each
year by the hydrogen network

Developing flexible and integrated technology solutions across the CCUS value chain

For decades, our technology has been helping run pilot-scale and the world's biggest CCUS projects.

SERVICES INCLUDE

- Pre-FEED and FEED consultation and project design
- Capture and purification
- Fit-for-purpose CO₂ compression technology
- Integrated well design and construction for storage
- Integrity, monitoring and site stewardship



NEW VENTURES AND INNOVATION

Compact Carbon Capture, a Baker Hughes venture

Breakthrough technology will make carbon capture more flexible and lower cost – enabling larger scale deployment and adoption. In 2020, Baker Hughes acquired Compact Carbon Capture and will incubate the technology to accelerate its deployment.

FEATURES

- Utilizes centrifugal force instead of gravity to distribute solvents, effectively distributing them in a compact and modularized format
- 75% smaller footprint and lower CAPEX spend compared to conventional carbon capture process technology
- Broad range of segment applications including offshore and industrial

We have been active in geothermal hotspots for more than 40 years

Our advanced technology tackles challenging rock formations, high temperatures, and harsh well conditions to tap geothermal energy's potential.

Our focus on geothermal technology ranges from emulating the wellbore conditions of geothermal wells, to testing high-temperature materials and components, full bottomhole assemblies, and submersible pumps.

PRODUCTS AND SERVICES INCLUDE

- Upper completions, lower completions, liner hangers, and packers
- Waste-heat recovery and energy recovery systems
- Integrated well services
- Ultra high-temperature drill bits and casing exit technology
- Rugged, durable steerable motors
- High-temperature cementing solutions



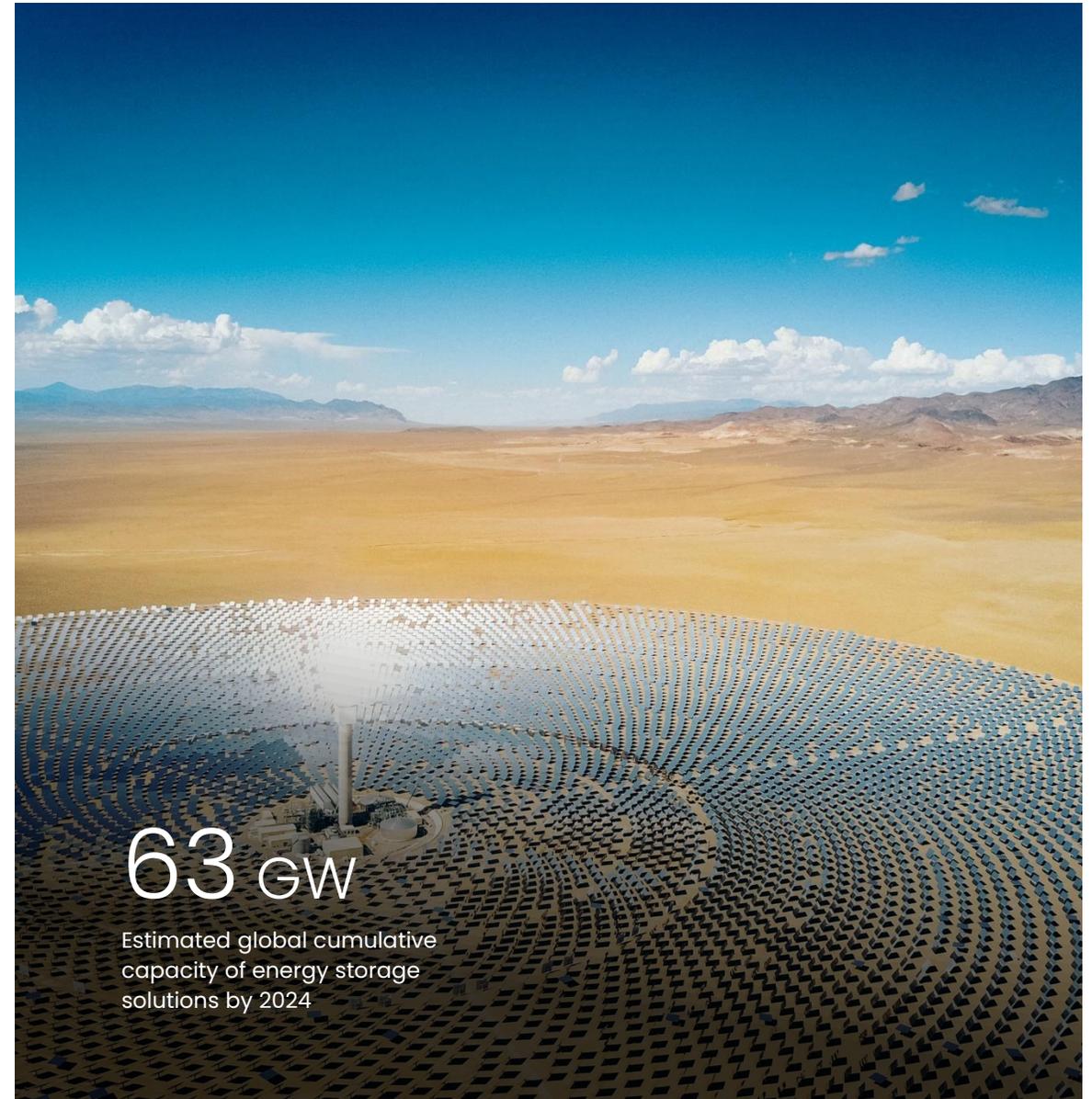
Building a future for large-scale energy storage solutions

Large-scale energy storage is integral to any energy system with high renewables penetration to provide grid stability.

We are leveraging our core technology capabilities to advance innovative thermomechanical energy storage technology, including LAES (liquified air), CAES (compressed air) solutions.

PRODUCTS AND SERVICES INCLUDE

- Centrifugal compressors
- Steam turbines
- Expanders
- Electric motor integrated solutions
- Plant and module technology
- Energy underground storage
- Reliability and inspection solutions

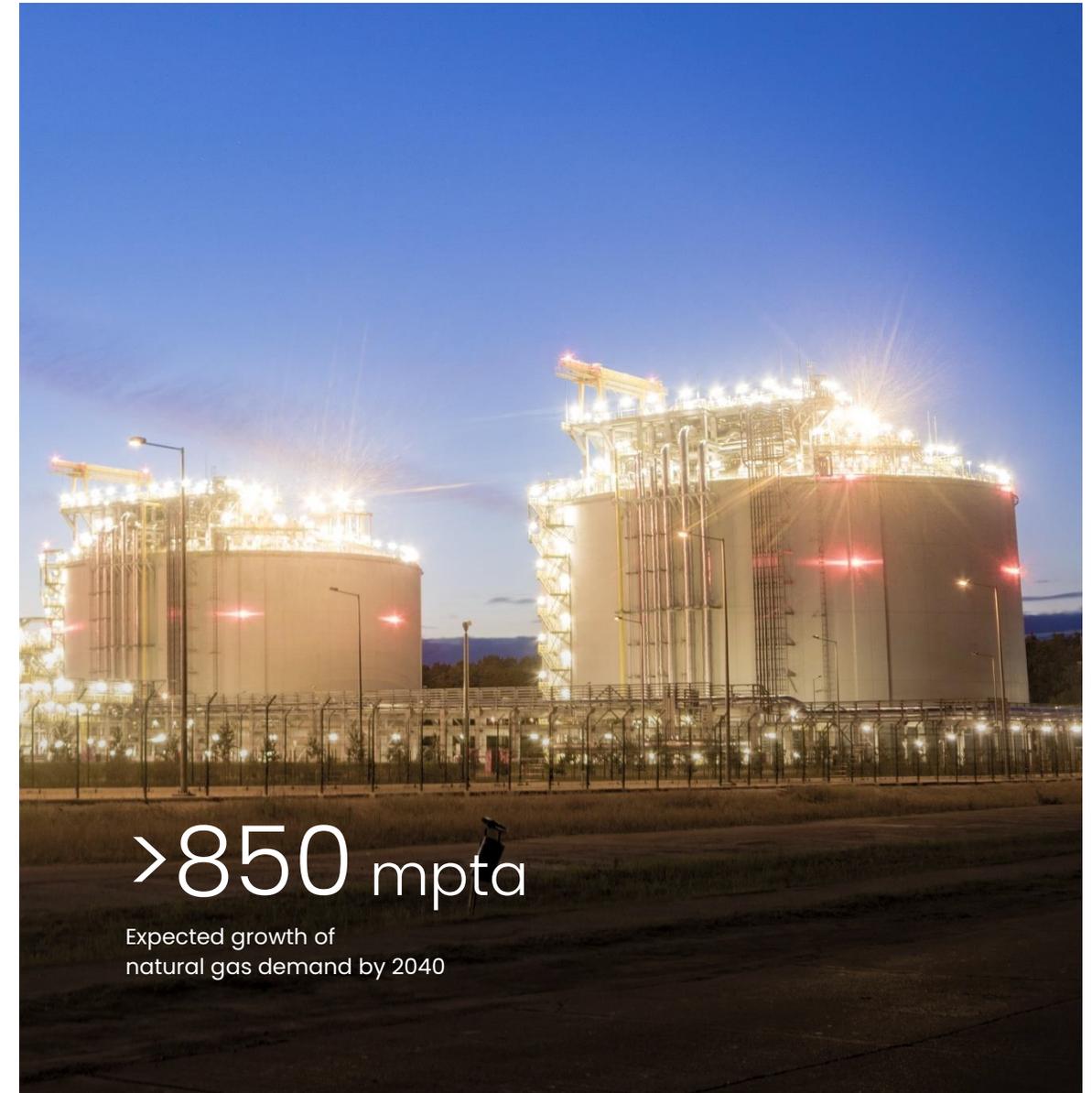


Net-zero liquified natural gas for the next era of energy

We have a longstanding history of 'industry firsts' in the LNG sector. By bringing together next generation technologies we are helping operators lower emissions from LNG production today and we are developing future integrated net-zero LNG solutions to help secure cleaner, more efficient LNG for the next energy era.

SERVICES INCLUDE

- High efficiency turbomachinery
- Renewables integrated combined cycle power plants
- Integrated carbon capture and storage solutions
- Remote operations and emissions management services
- LNG asset performance management





We are
transforming
what we make
and how we work

Composites and thermoplastics

We designed our Composite Reinforced Thermoplastic Pipe (RTP), with uses in multiple applications in oil and gas and other industries, to provide some of the highest strength to weight ratios and longest lengths per reel. These solutions offer lower carbon intensity from the materials, manufacturing process, and supply chain compared to traditional steel pipes.

Redesigning subsea systems for less waste, less footprint

We designed our Aptara™ lightweight compact subsea tree to transform the footprint of conventional trees. Our breakthrough design is 50% lighter than previous models, making manufacturing, installation, and use less carbon intensive over the life of the tree.

Additive manufacturing for efficient supply chain

We have produced more than 25,000 additive parts and qualified more than 450 individual parts from our centers in the United States, Europe and Middle East. By designing parts with less materials waste and weight, and manufacturing 'on demand' to reduce shipping times.

Refurbish and redeploy for a circular economy

We have been manufacturing drill bit technology for over 100 years. Our drill bits are designed to work hard, and our service and manufacturing centers refurbish drill bits for redeployment or melt them down to be reused as stock for new drill bits – reducing waste and materials.



There is no path
to net-zero
without
partnership

CONSULTING AND ADVISORY SERVICES

Industry leading consultation for feasibility and economics

- GaffneyCline consulting offers expertise in new energy projects from CCUS to regulatory policies. Services include quantification of carbon intensity, verification of emissions reductions, evaluation of policy and regulation, and assessment of solutions to avoid, reduce, offset or sequester emissions.
- io consulting works in the early front-end development of low carbon projects, with project expertise including CCUS, hydrogen, emissions reduction, energy storage, carbon neutral facilities, and negative emissions and offsetting.

POLICY AND STAKEHOLDER ENGAGEMENT

Performance-based policy drives innovation

Because energy will never be one size fits all, we support policies that do not pick technology winners and losers, instead supporting performance standards supported by flexible incentives. We believe this market-driven approach best supports a dynamic energy mix across different geographic settings.

Partnering to be a voice for change

Our stakeholder engagement is more than just policy. It also includes local community engagement and partnering with leading organizations across a variety of sectors to learn from each other, such as the Hydrogen Council, Fuel Cell & Hydrogen Energy Association, the European Clean Hydrogen Alliance, Global CCS Institute, Stanford Natural Gas Initiative, and more.

Baker Hughes 