



LNG Centrifugal Compressors

**Delivering Premium Performance Through
Proven Robust Designs**



Robust Design



Premium Performance



Total Aftermarket Services
and Support

Choose a Global Leader for Your LNG Needs

We are a leading provider of flow equipment products, systems, and services to oil, gas, and process industries worldwide. That includes drilling contractors, oil and gas producers, pipeline operators, refiners, and other process owners. Leveraging our global manufacturing, engineering, and sales and service network, we help our customers control, direct, adjust, process, measure, and compress pressures and flows.



LNG – Energy Rising

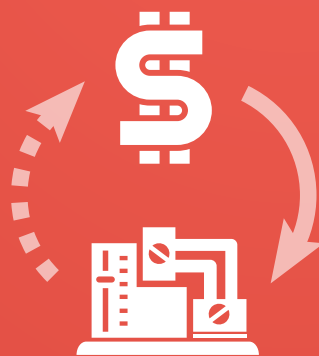
As the global economy continues to grow, so will the demand for LNG – a proven, reliable, and safe energy option. LNG facilities and equipment will increasingly be asked to do more. As a result, it will be paramount that specific equipment selections be based on overall performance, including the associated total cost of ownership.



Doing More

With year-over-year LNG demand projected to increase, operators have set their goals higher than ever for the following:

- Maximizing efficiency/minimizing power consumption per unit of LNG produced
- Increasing uptime, allowing more time for delivering product
- Limiting duration of planned downtime, allowing more running time
- Minimizing maintenance costs, lowering cost of ownership
- Reducing footprint and overall plant size



Return on Investment

Purchasing capital equipment for your plant is one of the biggest decisions you will make for your LNG project. We make your decision easier – through robust design, premium performance, and total aftermarket services and support, our product designs maximize your investment.



Robust Design

Our products are designed to allow our customers to run uninterrupted for extended periods of time under normal use and conditions.

We have a long-standing tradition, over 60 years, of providing proven integrally geared centrifugal compressor products, technology, and solutions that allow our machines to operate without unscheduled downtime under normal use and conditions. The resulting increased availability directly translates into production capacity and helps our customers maximize their bottom line returns.



Premium Performance

Our products are designed to meet your plant pressure and flow needs with lower input power requirements.

Efficiency, Efficiency, Efficiency... one word means a lot. Our integrally geared centrifugal compressor designs are uniquely suited to allow us to deliver a power-optimized solution for your LNG plant.



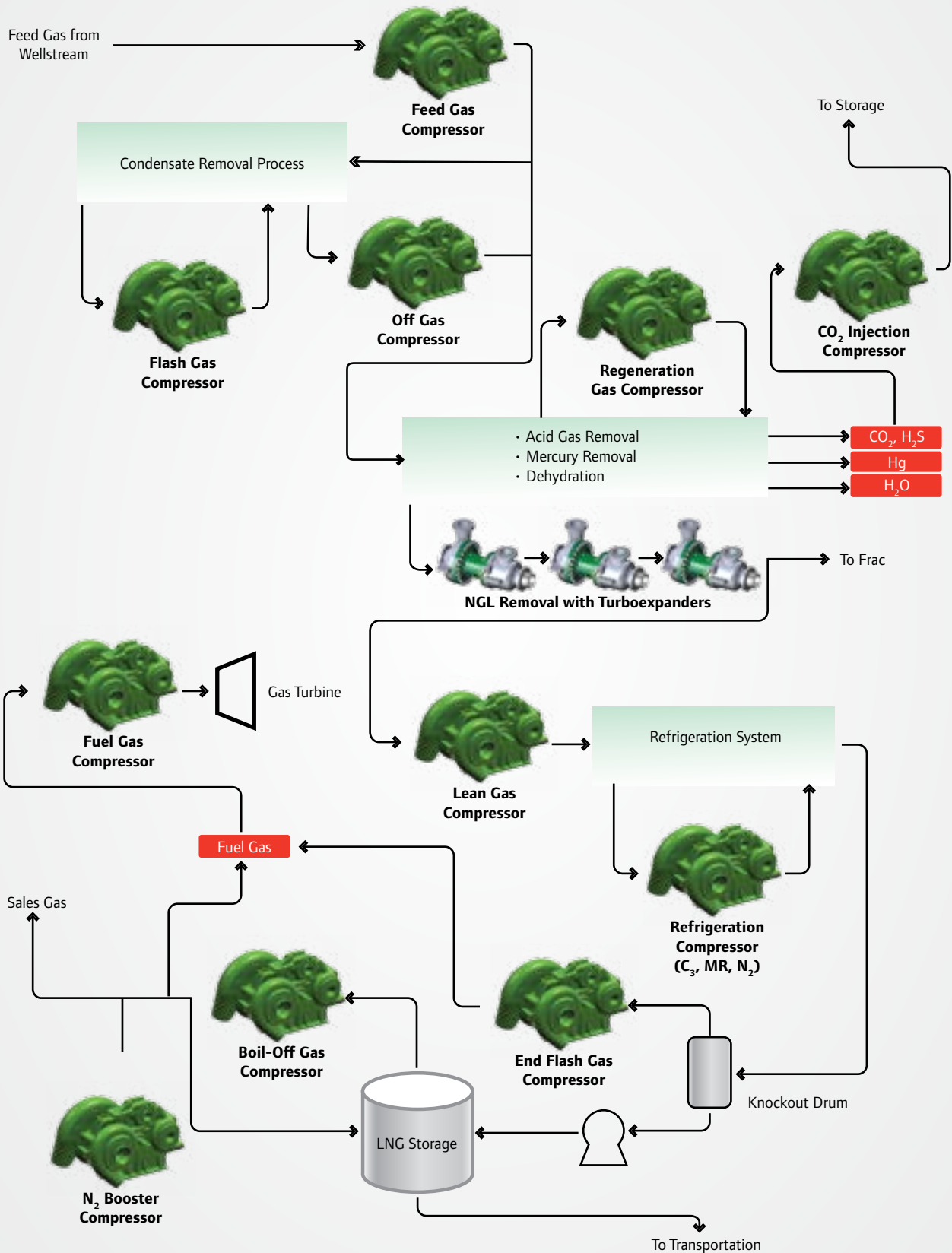
Total Aftermarket Services and Support

Our global experience, footprint, and expertise combine to provide 24/7 technical support and coverage.

Our commitment to you does not end with the delivery of the machine. Our aftermarket services team stands at the ready to support you throughout the installation, startup, and many years of successful operation of the compressor.



Typical LNG Liquefaction Processes



Expertise at Every Point

We are uniquely suited to support you with comprehensive LNG expertise, providing equipment, technology, and end-to-end solutions to optimize your operations.

1

2

2

LNG Liquefaction Process

- Lean Gas Compressors
- Refrigeration Compressors
(Mixed Refrigerant, N₂, etc.)
- End Flash Gas Compressors
- Air Compressors

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1

LNG Gas Treatment Process

- Feed Gas Compressors
- Flash Gas Compressors
- Off Gas Compressors
- Regeneration Compressors
- Air Compressors
- Acid Gas Compressors
- Turboexpanders

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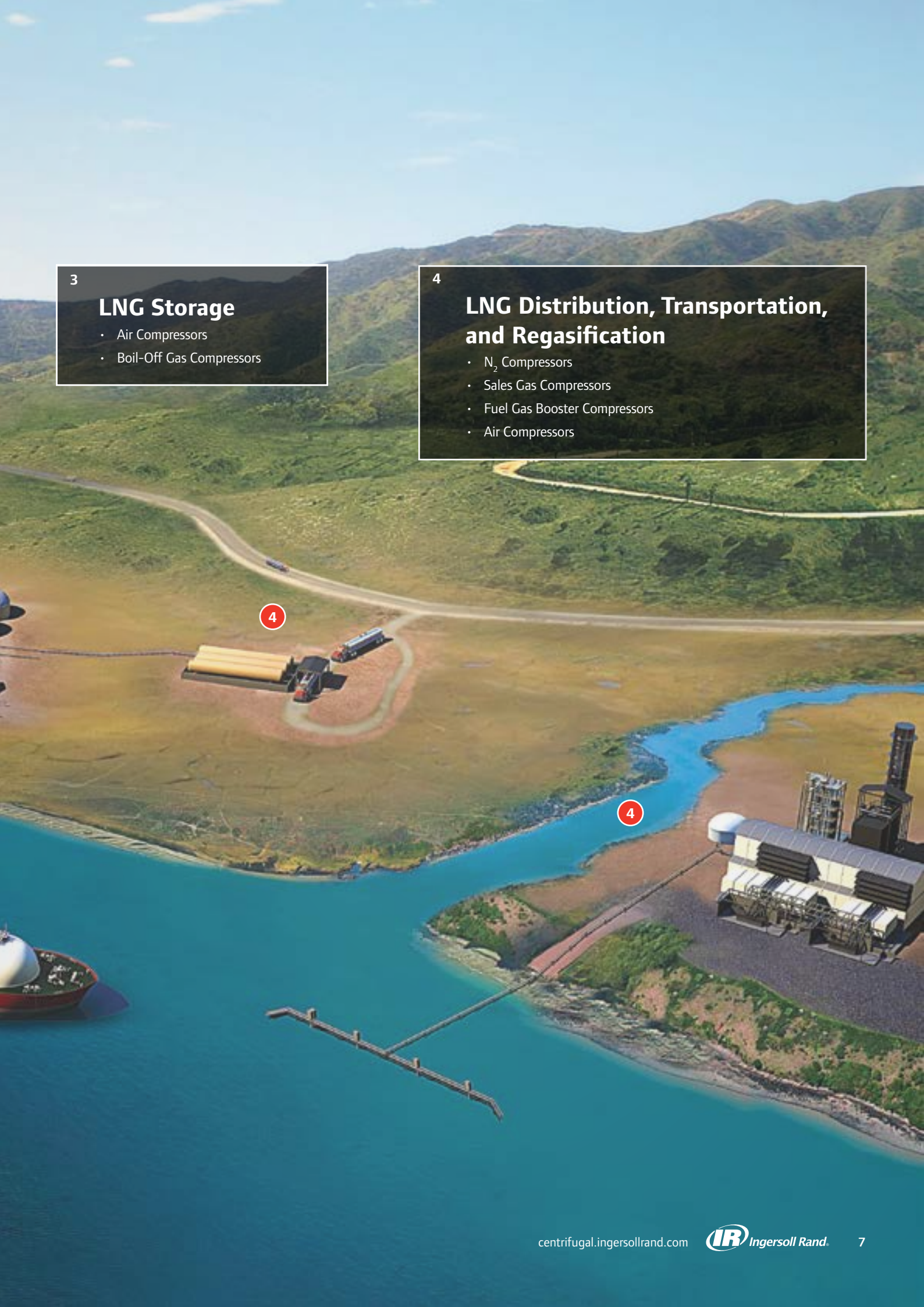
LNG Storage

- Air Compressors
- Boil-Off Gas Compressors

4

LNG Distribution, Transportation, and Regasification

- N₂ Compressors
- Sales Gas Compressors
- Fuel Gas Booster Compressors
- Air Compressors





The MSG-10 pictured serves as a Feed Gas Compressor for a gas treatment plant in the USA.

Our Compressors:

- Can operate with the high inlet pressures and low flows required for many of the typical LNG plant processes.
- Are available with NACE and Stainless Steel materials for use with sour gases.
- Have a long history of uninterrupted operation in critical applications.

LNG Gas Treatment Process

Feed Gas Compressor

Used at the inlet of the LNG gas treatment plant to raise the gas pressure to a sufficient level for processing, the Feed Gas Compressor must be able to handle changes in supply pressure and gas quality.

Flash Gas Compressor

Utilized during the initial phase of gas treatment, the Flash Gas Compressor must pressurize the vapor that is produced. Typically, equipment materials and design must be suitable for inlet temperatures lower than -160°C (-256°F).

Off Gas Compressor

Applied to recover the off gas separated from the condensate stream, Off Gas Compressors must handle high-density gases and achieve high pressure ratios.

Regeneration Compressor

Used during the gas treatment process, the Regeneration Compressor must operate with relatively high inlet pressures and low flows to effectively restore the molecular sieve beds.

Air Compressor

Applied in various utility and process support roles, the typical LNG Air Compressor must be able to reliably supply compressed air at specific pressures and flows to meet the plant's demand.

Acid Gas Compressor

Employed after the gas treatment process, the Acid Gas Compressor must compress the CO_2 -rich gas stream to a high enough pressure to allow for injection into downstream processes.

Turboexpanders

Used downstream of the gas treatment process, Turboexpanders are employed to cool the gas stream for separating out heavier hydrocarbon compounds.



The MSG-7 pictured serves as a Refrigeration Compressor compressing propane as part of a liquefaction process located in South Korea.

LNG Liquefaction Process

Lean Gas Compressor

Installed downstream of the NGL removal process, the Lean Gas Compressor is used to repressurize the gas stream prior to entering the main cryogenic heat exchangers.

Refrigeration Gas Compressor

Used to feed the main cryogenic exchanger, the Refrigeration Gas (Mixed Refrigerant, N₂, etc.) Compressor must be both highly efficient and reliable.

End Flash Gas Compressor

Employed downstream of the refrigeration process, the End Flash Gas Compressor is used to compress the flash gas taken off the top of the knockout drum.



The MSG-5 pictured serves as a Boil-Off Gas Compressor at a storage and transfer terminal in Algeria.

LNG Storage

Boil-Off Gas Compressor

Designed to maintain the LNG storage tank at a stable temperature and pressure, the Boil-Off Gas Compressor must be able to maintain operational efficiency at low relative temperatures and across wide performance ranges.

Air Compressor

Applied in various utility and process support roles, the typical LNG Air Compressor must be able to reliably supply compressed air at specific pressures and flows to meet the plant's demand.





LNG Distribution, Transportation, and Regasification

Nitrogen Compressor

Employed in the regasification process, the Nitrogen Compressor must deliver high-pressure nitrogen for injection into the natural gas stream.

Sales Gas Compressor

Utilized to transport the natural gas from the processing plant to the pipeline, the Sales Gas Compressor must operate at high pressure and flow rates.

Fuel Gas Booster Compressor

Installed upstream of a gas-fired turbine, the Fuel Gas Booster Compressor must be able to increase the pressure of the low-temperature flash and/or boil-off gases to allow for stable and efficient combustion of the gas in the turbine.

Air Compressor

Applied in various utility and process support roles, the typical Air Compressor used in an LNG facility must be able to reliably supply compressed air at specific pressures and flows to meet the plant's demand.

The MSG-3 pictured serves as a Fuel Gas Booster Compressor boosting fuel gas to optimum turbine inlet pressures for a power plant in Russia.

Our flexibility in design allows us to custom design compressors to meet your specific requirements.

More than 90% of our compressors built over the last 40 years are still running strong.

Centrifugal compressors are proven to have a long mean time between failures (MTBF), and independent research has shown an industry-leading availability of 99.7%.





A field service technician evaluates instrument readings on a 5-stage MSG-3 compressor.

Aftermarket Services

High-Quality OEM Parts

- Designed and produced in the US for more than 60 years.
- Backed by our standard OEM guarantee, with extensive inventories in strategic locations worldwide.
- Cross-checked against unit assembly and maintenance records to ensure accuracy.

Service Centers

In addition to OEM solutions and engineering expertise, our service centers support comprehensive turnaround maintenance and inspection capabilities in strategic locations worldwide:

- Houston, TX, US
- Buffalo, NY, US
- Milan, Italy

Field Service

We prove our commitment to your total satisfaction by providing comprehensive aftermarket services, the industry's most comprehensive resource for top-notch aftermarket products, engineering solutions, and field service:

- Preventative maintenance and extended warranty programs.
- Diagnostic and troubleshooting capabilities.
- Vibration analysis, trending, and overall compressor health evaluations.





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