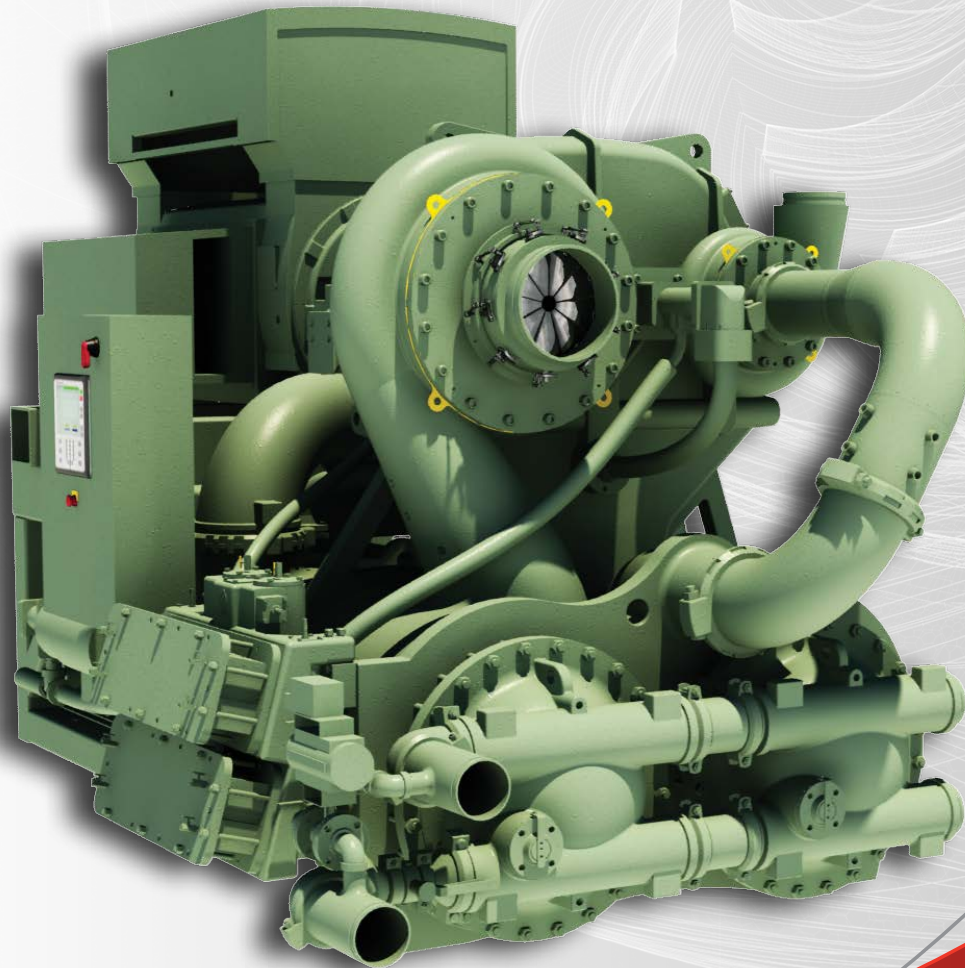




MSG[®] TURBO-AIR[®] NX 12000 Centrifugal Compressor

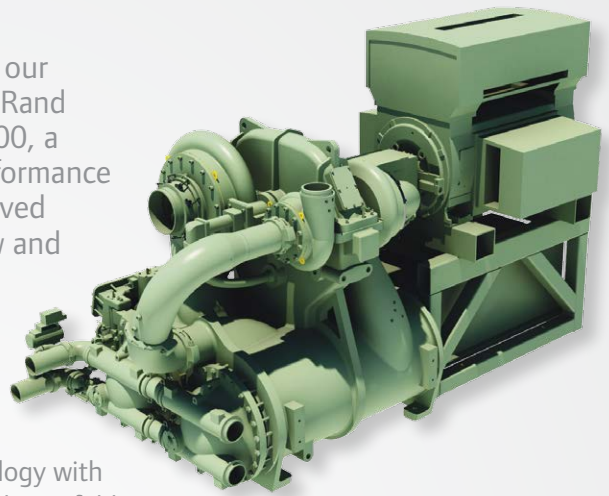
100% oil-free air*

**Per ISO 8573-1 certification*



Same Engineered Quality, All New Compressor

Ingersoll Rand has a long-standing tradition of providing innovative products and technology that positively affect our customers' bottom line. Following this tradition, Ingersoll Rand is proud to introduce the new MSG® TURBO-AIR® NX 12000, a centrifugal compressor designed to meet the highest performance and reliability standards. These high standards were achieved by incorporating robust design features that increase flow and optimize efficiency in a compact footprint.



Featured Improvements






- Patent-pending lube technology with integrated filters, coolers and manifold, allowing for a leak-free, compact and high-performance system
- Optimized stage and gas passages utilizing computational fluid dynamics (CFD)
- OEM-optimized cast-in-water manifold, with a patent-pending integral trim valve
- Interchangeable intercooler/aftercooler bundles and headers

ISO Certified Class Zero

Our MSG TURBO-AIR centrifugal compressor product line has been engineered to produce oil-free air for more than 60 years. This certification officially acknowledges the ability of our compressors to produce 100% oil-free air, providing our customers with enhanced quality assurance.



Compare the innovative centrifugal compressor technology of the MSG TURBO-AIR NX 12000 with other compressors, and the advantages are clear.

MSG TURBO-AIR COMPRESSORS	OTHER COMPRESSORS
 LOW MAINTENANCE <ul style="list-style-type: none"> • Compression elements do not wear or require periodic replacement • Oil filter elements are easily replaced • Bearings designed for extended life 	<ul style="list-style-type: none"> • Require regular maintenance and periodic replacement of air ends • Result in high operating expenses and significant machine downtime
 OIL-FREE AIR <ul style="list-style-type: none"> • 100% oil free per ISO 8573-1 certification • Prevent contamination of system 	<ul style="list-style-type: none"> • Oil filters must be installed at discharge • Potential for oil carryover that fouls the process • Oil-free claim is dependent on uninterrupted seal gas supply
 HIGH RELIABILITY <ul style="list-style-type: none"> • 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% • Conservative high-quality gear design 	<ul style="list-style-type: none"> • Contacting compression elements are subject to wear • Limited rotating element life • Designed-in wearing items to generate aftermarket revenues
 OPTIMUM CONTROL <ul style="list-style-type: none"> • Automatic operation for any operating condition • State-of-the-art MAESTRO™ suite of controls • PLC control available 	<ul style="list-style-type: none"> • Limited control capability • Costly, high-maintenance variable speed configurations
 NO VIBRATION <ul style="list-style-type: none"> • Essentially vibration-free • No special foundation is required 	<ul style="list-style-type: none"> • Special foundations needed to handle heavy weight • Precautions must be taken to prevent transmission of vibration to other equipment

MSG TURBO-AIR NX 12000 Centrifugal Compressor

Efficient Package

The MSG TURBO-AIR NX 12000 centrifugal compressor features easy, low-cost installation and operation.

Compressor Motor Sizes Available

1120 to 2237 kW (1500 to 3000 hp)

Compressor Discharge Pressure Range

3.5 to 14.5 barg (50 to 210 psig)

Compressor Flow Range

212 to 430 m³/min (7500 to 15,200 CFM)

Typical Package Weight*

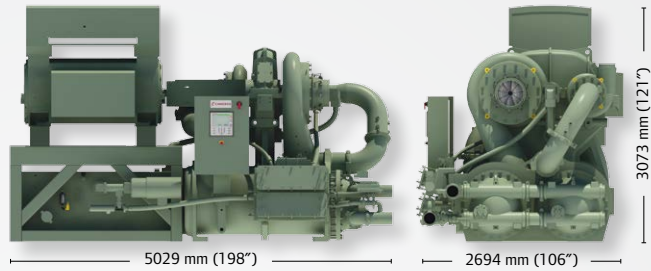
18,143 kg (40,000 lb) *driver dependent

Low Total Cost of Ownership

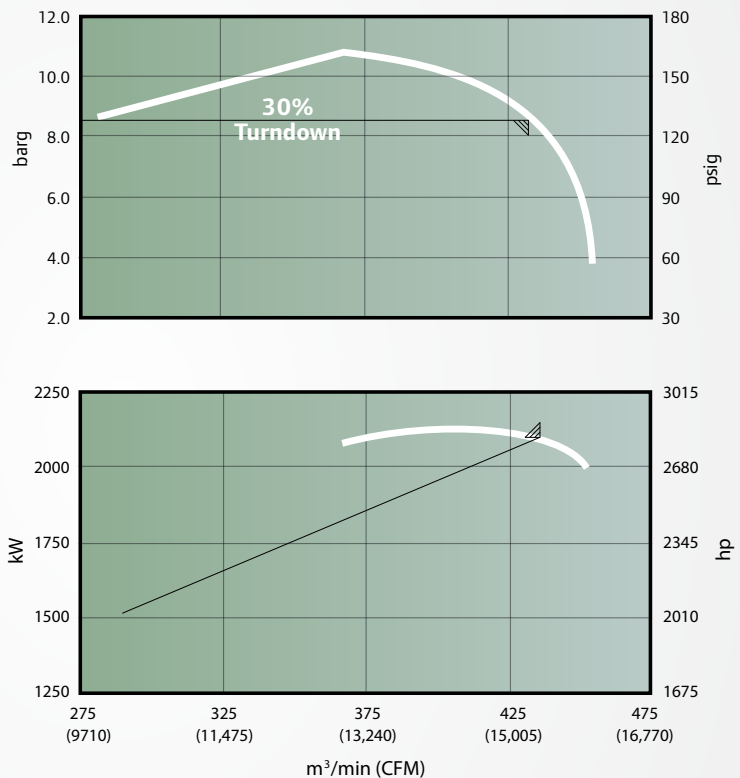
Over time, the energy required to power a compressed air system is the largest cost associated with a compressor; particularly in today's fluctuating energy markets. That is why, to accurately determine the return on your investment, it is important to consider the total life-cycle cost of operating the compressor, including the initial investment, energy consumption and maintenance costs.

As the chart below demonstrates, the MSG TURBO-AIR NX 12000 provides some of the lowest total life-cycle costs of any compressor.

The power savings delivered can significantly speed up the payback on your initial investment, and the savings continue to build the more you use the MSG TURBO-AIR NX 12000.

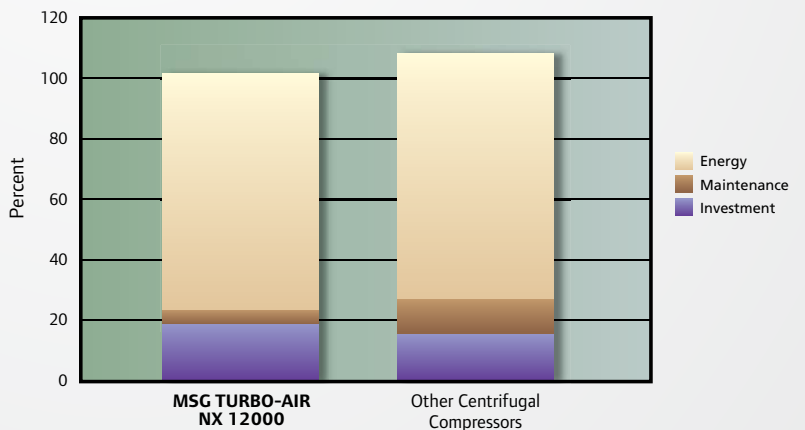


Typical Performance Curve for 2237 kW (3000 hp) / 8.6 barg (125 psig)



Life-Cycle Cost Comparison

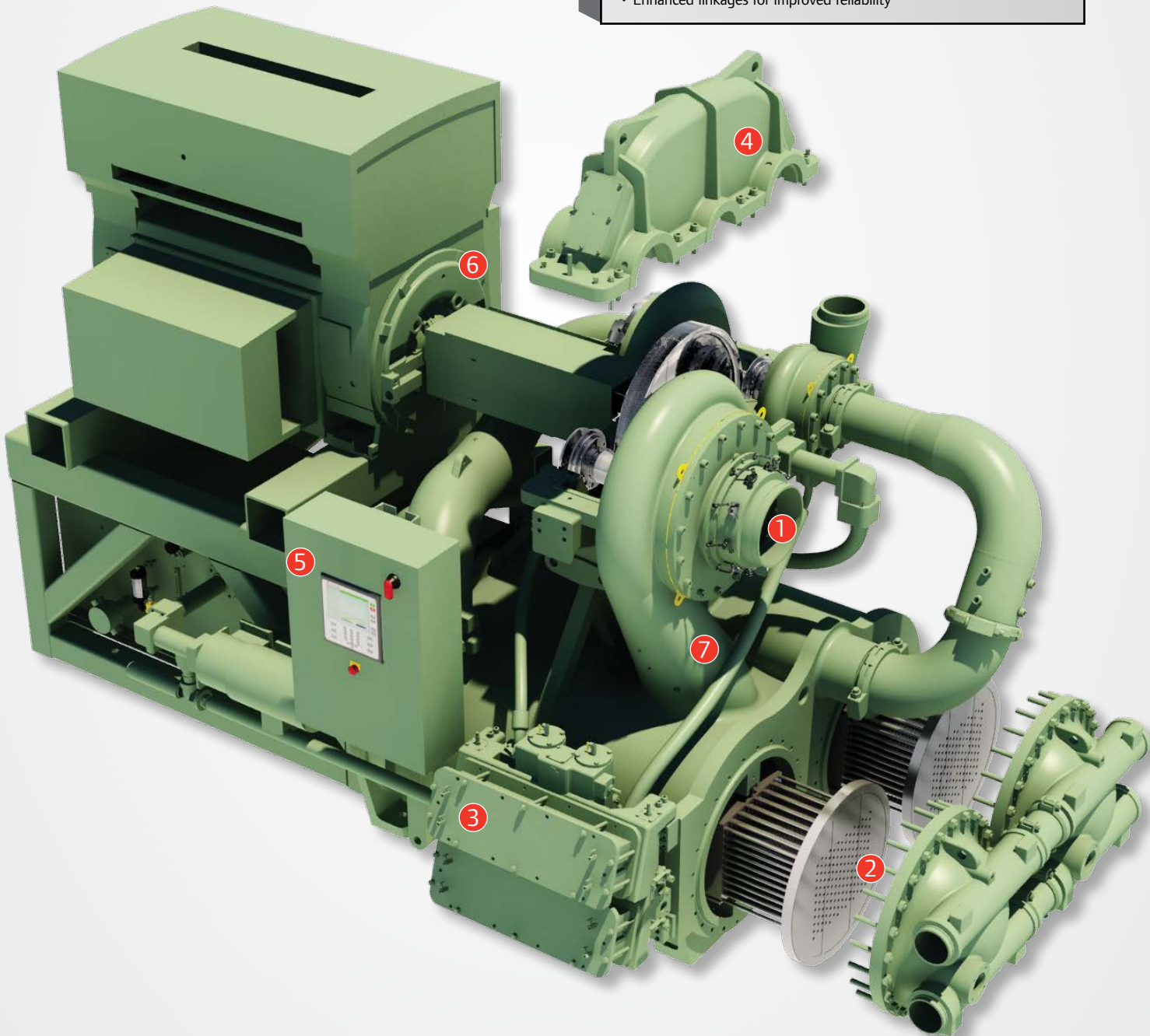
(more than 10 years of operation at 80% loaded)



MSG TURBO-AIR NX 12000 Centrifugal Compressor

Features and Benefits

The MSG TURBO-AIR NX 12000 centrifugal compressor is newly improved, with a variety of upgraded features.



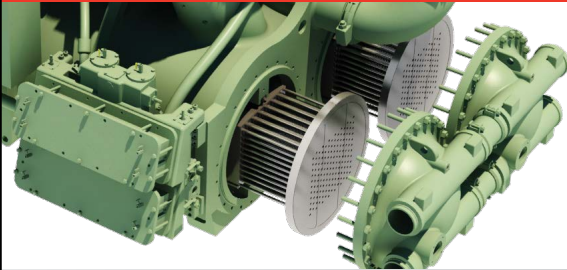
INLET GUIDE VANES



BASE

- Allows for up to 9% increase in turndown efficiency
- Enhanced linkages for improved reliability

INTERCOOLERS/WATER MANIFOLD



2

BASE

- Roddable-in-place, straight-tube design
- Optimized heat-transfer surface for top performance
- Factory-designed and proven integrated water manifold
- Single-point customer water connection for ease of install

UPGRADE

- Coolant trim valve to reduce wasted energy

MAESTRO UNIVERSAL SP CONTROLS



5

BASE

- Automatic and precise pressure/flow regulation
- User selectable energy-saving control modes
- Single Point (SP) – simplifies site electrical installation and maintenance work

UPGRADE

- Interstage pressure and temperature monitoring
- X, Y, axial and keyphasor monitoring

LUBRICATION SYSTEM



3

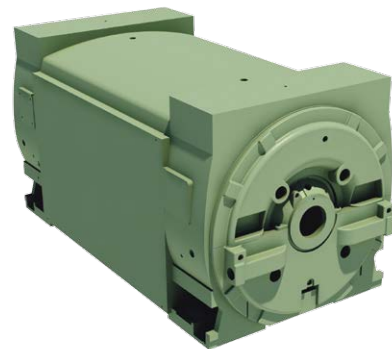
BASE

- Duplex filter for improved uptime
- SAE connection allows for leak-free operation
- Temperature control valve

UPGRADE

- Twin oil cooler design

PACKAGED HIGH-EFFICIENCY DRIVER



6

BASE

- Reduced energy costs
- Selected to meet site-specific requirements

HORIZONTALLY SPLIT GEARBOX



4

BASE

- Built-in inspection portals
- Easy access for periodic maintenance

CORROSION PROTECTION

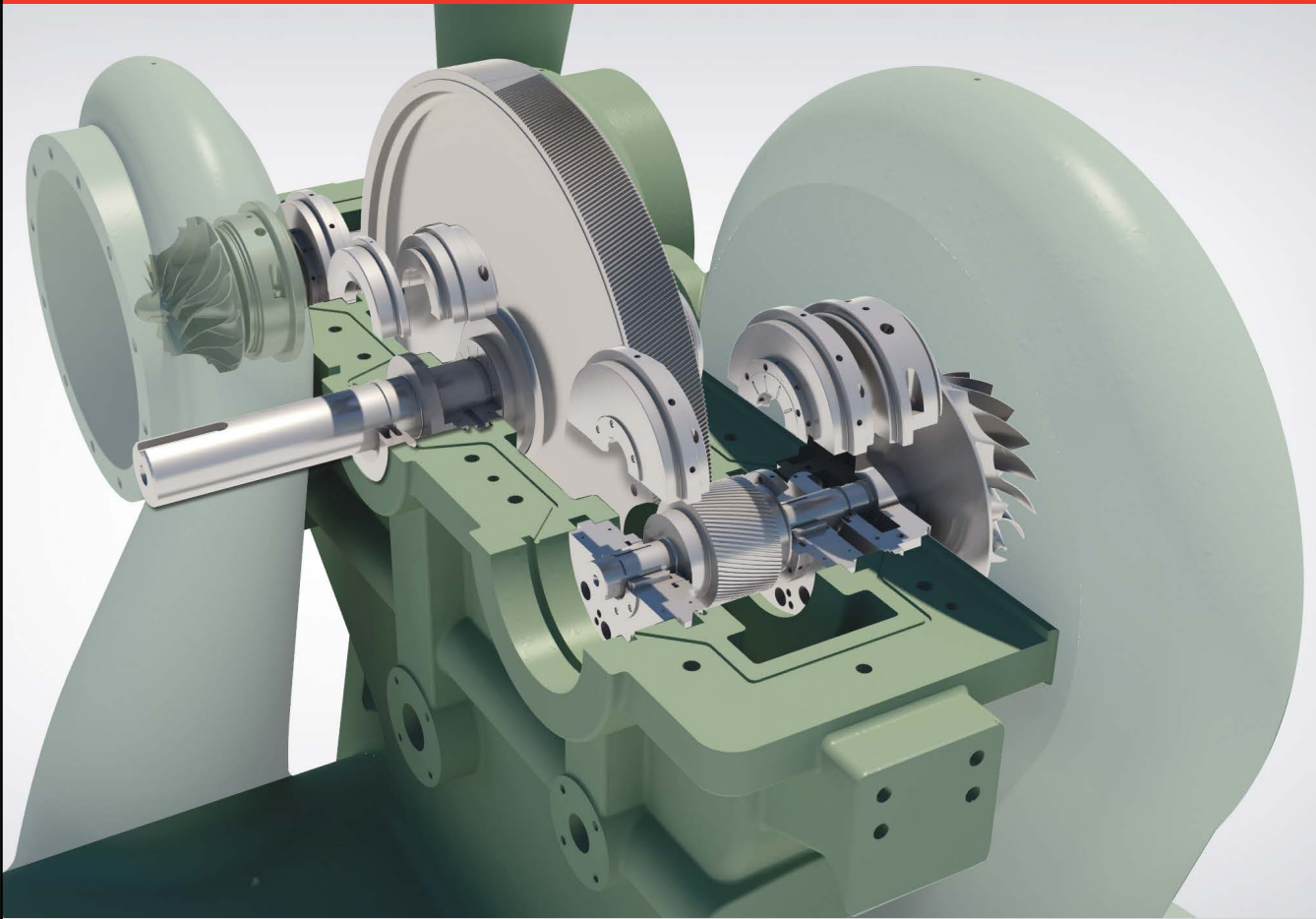


7

BASE

- High-gloss, industrial-grade, epoxy-based exterior paint
- Cooler cavities protected with special epoxy coating

ROBUST AIR END AND ROTATING COMPONENT DESIGN



BASE

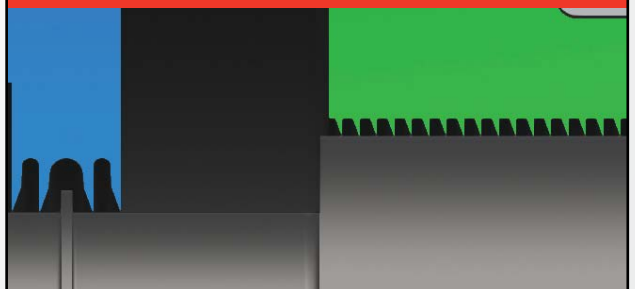
- High-efficiency AGMA 13 gearing
- Five-axis milled impellers
- Split seal and bearing design for ease of inspection
- Non-contacting air and oil seals
- Stainless steel rotating compression elements

TILTING PAD JOURNAL BEARING WITH INTEGRAL THRUST BEARING



Enhances mechanical reliability for a wide range of loads

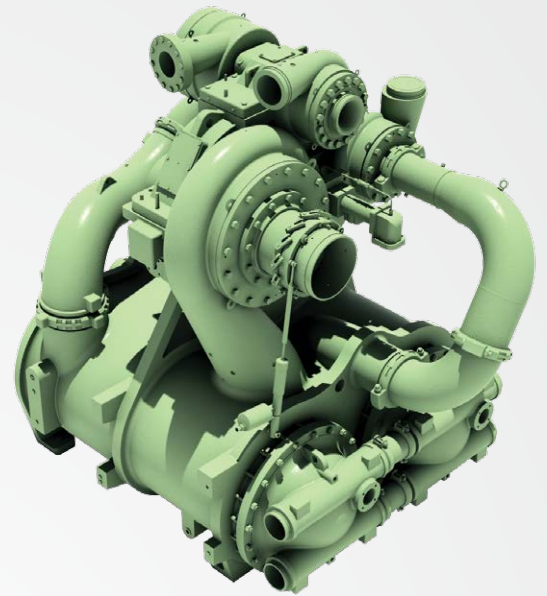
HARDWARE-FREE, INTERLOCKING AIR AND OIL SEALS



Non-contacting, non-wearing labyrinth air and oil seals, with atmospheric air gap, require no buffer air for oil-free air, and eliminate the need for periodic replacement of carbon-ring seals and instrument air for permissive starting

High-pressure/Multiple Process Capability

The MSG TURBO-AIR NX 12000 is available with an optional third pinion, located in the gearbox cover, to enable higher discharge pressures or multi-process applications. The third pinion supports additional 4th and 5th compression stages to achieve discharge pressures up to 40 barg (585 psig), or as provisions for additional process streams. This extension of the operating capability provides greater coverage and flexibility within a single machine to meet many of the toughest booster and/or multi-process requirements.



Your Trusted Partner in Compressed Air

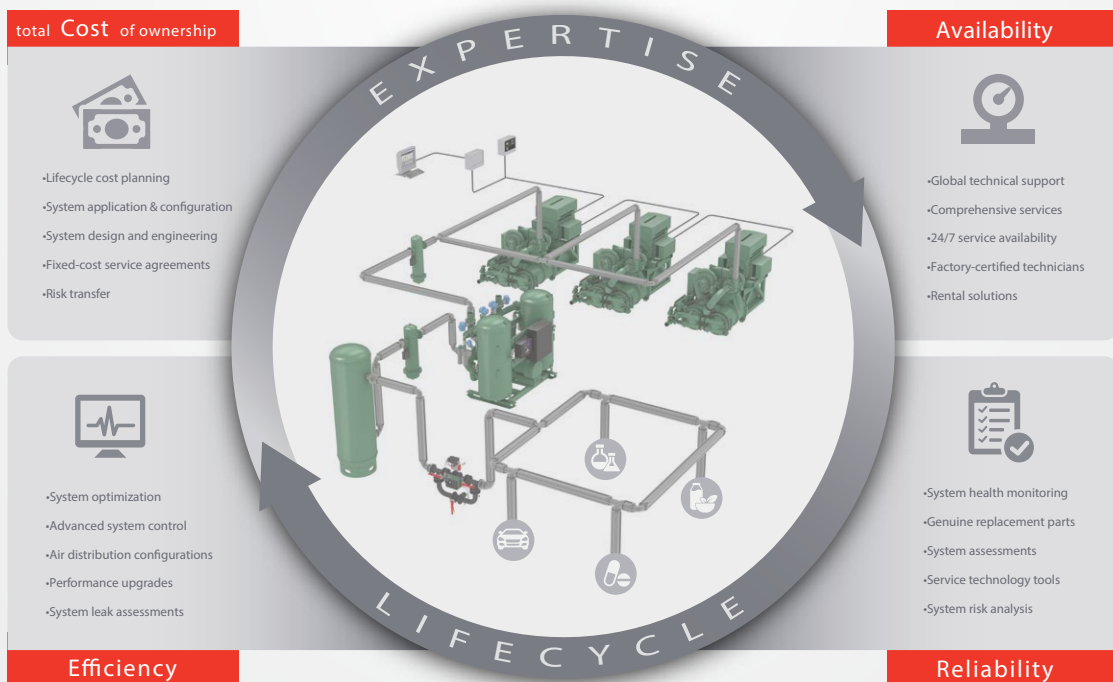
Optimize your total **Cost** of ownership, while maximizing **Availability**, **Reliability** and **Efficiency** throughout the life of your compressed air system with our Lifecycle CARE services.



PackageCARE™

PackageCARE™ ...eliminate the inconvenience

No matter where your facility is located, Ingersoll Rand is committed to serving you 24 hours a day, seven days a week, and is available to support you with innovative, cost-effective service solutions that will keep you running at peak performance. Let Ingersoll Rand handle the pressures and responsibilities of owning a compressed air system with our signature service contract.



Design • Install • Commission • Operate • Maintain • Extend



Ingersoll Rand (NYSE:IR) advances the quality of life by creating comfortable, sustainable and efficient environments. Our people and our family of brands—including Club Car®, Ingersoll Rand®, Thermo King® and Trane®—work together to enhance the quality and comfort of air in homes and buildings; transport and protect food and perishables; and increase industrial productivity and efficiency. We are a \$13 billion global business committed to a world of sustainable progress and enduring results.



centrifugal.ingersollrand.com

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