



# MSG<sup>®</sup> TURBO-AIR<sup>®</sup> Centrifugal Compressed Air Systems

90-4,200 kW (125-5,650 hp)



# Your Trusted Partner in Compressed Air

Staying ahead of your competition with advanced compressed air systems and services that boost productivity, lower operating expenses and extend equipment life is critical to your success.

No matter the industry or application, you can count on Ingersoll Rand® as a trusted partner for centrifugal compressed air technologies and services. By focusing on you and your business, we provide collaborative solutions that make you successful, offering a total system approach to maximize efficiency and performance.

## Take a Systems Approach

Delivering reliable compressed air to your facility goes well beyond the compressor itself. To maximize your return on investment, it is imperative to manage the entire lifecycle of your compressed air system. Your total cost of ownership can be maximized at any point—from design to operation to decommissioning.

Your business will benefit from Ingersoll Rand's partnership through our extensive experience and global expertise to ensure reliability, lower maintenance costs, ease of serviceability and system optimization.



**Let's Get Started Together**

*Ingersoll Rand Contracting Services Video*





# Purely Efficient Centrifugal Technology

Integrally geared centrifugal compressors represent the latest technology, offering significant advantages over outdated, less-efficient and more costly compressor designs. These advantages are inherent in the centrifugal design and translate into lower operating costs and a quick return on your initial investment.



## The Importance of ISO Certified Class 0 Oil-Free Air

Using oil-free air prevents oil contamination of your system, eliminates costly waste disposal and reduces maintenance. 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 per ISO 8573-1, providing you with enhanced quality assurance.



**Why You Need Class Zero Air**  
*Contamination Risk in the Food & Beverage Industry*

## Centrifugal Compressors Designed for Your Application

We offer a broad portfolio of reliable centrifugal products that will adapt to your application. With more than 40,000 centrifugal installations worldwide, on nearly every continent, Ingersoll Rand's products are proven in a number of different industries.



**Food & Beverage**  
*Minimize the risk for product contamination and spoilage*



**Textile**  
*High-tech air jet looms require super clean 100% oil-free air*



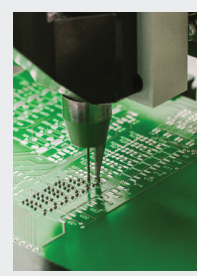
**Oil & Gas**  
*Robust centrifugal systems that meet API standards*



**Aerospace**  
*Proven design to meet demanding manufacturing environments*



**Chemical**  
*Achieve the highest purity to minimize risk of product liability*



**Electronics**  
*Eliminate wet or oily compressed air that causes downtime*



**Download Our Whitepaper**  
*Maintaining Quality Compressed Air in the Pharma Industry*



# AIR COMPRESSORS

With experienced design teams, ISO certified management systems and comprehensive product testing for aerodynamic and mechanical performance, our MSG TURBO-AIR centrifugal compressors provide the performance and quality that you need.



**MSG TURBO-AIR 3000**

## The Right Compressor for Your Operation

MSG TURBO-AIR centrifugal compressors are completely packaged on a common base to reduce footprint and are available in a number of configurations.

## MSG TURBO-AIR

### Reliable Components

Conservative, high-quality gear design, long-life pinion bearings, a robust thrust management system, and stainless steel compression elements build in reliability.



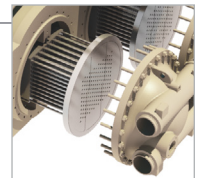
### Intuitive MAESTRO™ Control Systems

MAESTRO™ includes a large 10" color graphic display, web server and built-in USB port for system configuration and datalogging. MAESTRO can monitor and control multiple units, and be integrated with on-site host systems.



### Easy Maintenance

MSG TURBO-AIR compressors are designed to simplify maintenance, including a horizontally split gearbox, easily removable cooler bundles and long-life elements that do not require replacement.



MSG TURBO-AIR centrifugal compressors are designed with extremely reliable components, including a vibration-free rotor assembly.



**Learn More**

*Interactive MSG TURBO-AIR NX 8000 Product Tour*

## Designs for a Variety of Operating Conditions

MSG TURBO-AIR compressors have been developed to provide high pressure discharge air and air-cooled solutions when cooling water is not economically available.



**MSG TURBO-AIR COOLED 2000**



**MSG TURBO-AIR 6040**



**MSG TURBO-AIR 2040**



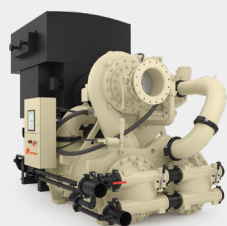
**MSG TURBO-AIR 2000**



**MSG TURBO-AIR 6000**



**MSG TURBO-AIR NX 8000**



**MSG TURBO-AIR NX 12000**

## MSG TURBO-AIR Features and Benefits

### Reliability

- **Advanced pinion bearing design** extends life and operation at any load
- **OEM-optimized, cast-in-water manifold** with optional patent-pending integral trim valves (NX models only)
- **Non-wearing labyrinth air and oil seals** provide continuous performance over the compressor's life without the need for periodic replacement
- **Hydrostatic and tilting pad journal bearings** (model specific) enhance mechanical reliability across the application range

### Efficiency

- **Optimized stage and gas passages** designed using computational fluid dynamics to ensure stable, high efficiency compressor operation
- **Intercooler bundles** optimized for superior heat transfer maximize compressor performance
- **Variable inlet guide vanes** offer up to 9% power savings when operating in turndown

### Productivity

- **Advanced design impellers** provide efficient performance across a wide air flow and pressure range
- **Water-in-tube intercooler and aftercooler** bundles slide out for easy cleaning
- **Horizontally split gearbox** provides easy access to core components for inspection and maintenance



**Launch the App**






MSG TURBO-AIR NX 8000 Augmented Reality Tour

### MSG TURBO-AIR Performance

Model	Nominal Power kW (hp)	Discharge Pressure bar g (psig)	Inlet Flow m <sup>3</sup> /min (cfm)
MSG TA-2000	90-260 (125-350)	3.5-10.3 (50-150)	15-50 (500-1,700)
MSG TAC-2000	90-260 (125-350)	3.5-10.5 (50-150)	15-50 (500-1,700)
MSG TA-2040	375-600 (500-800)	Up to 42 (610)	40-50 (1,500-1,800)
MSG TA-3000	300-600 (400-800)	3.5-10.3 (50-150)	55-110 (2,000-4,000)
MSG TA-6000	600-1,300 (800-1,750)	3.5-10.3 (50-150)	110-225 (4,000-8,000)
MSG TA-6040	Up to 1,700 (2,250)	Up to 42 (610)	130-170 (4,500-6,500)
MSG TA-NX 8000	750-1,700 (1,000-2,250)	2.5-14.5 (35-210)	135-300 (4,850-10,800)
MSG TA-NX12000	1,100-4,200 (1,500-5,650)	3.5-40 (50-585)	210-525 (7,500-18,500)

# MSG TURBO-AIR ADVANTAGES

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

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

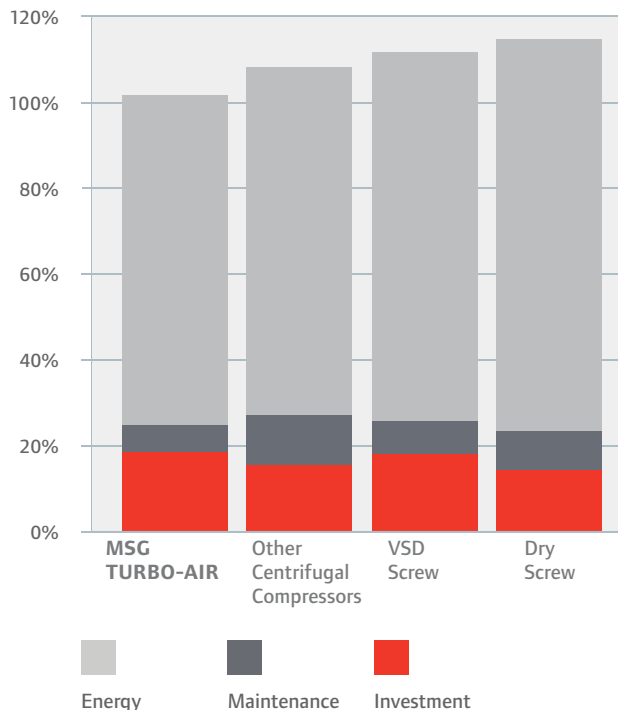
## Low Total Cost of Ownership

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.

MSG TURBO-AIR compressors provide 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 your compressor.



**Life-Cycle Cost Comparison**  
(over 10 years of operation at 80% loaded)



Moisture and contamination in compressed air can cause significant problems in equipment operation, such as rust, scale and clogged orifices that result in product damage or costly shutdowns. Making our air treatment equipment an integral component of your compressed air system will improve productivity, system efficiency and product or process quality.



**HOC Dryers:  
Maximum  
Performance,  
Minimal Energy Use**

HOC dryers recover the heat that is a natural by-product of the compression process to provide moisture-free air, while consuming virtually no energy.

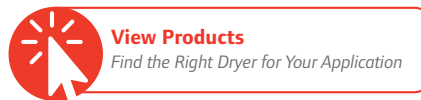
## Desiccant Dryers

Choose desiccant dryers when very low dew points are necessary for high quality air and to prevent potential freeze-up. Depending on whether you require lower initial capital costs, or lower energy use, choose from heat-of-compression (HOC), heatless, externally heated or heat blower desiccant models.



### Desiccant Dryer Features

- **Delivers reliable -40°C (-40°F) pressure dew point** in most operating conditions
- **High-strength desiccant** and durable valves
- **Low pressure drop design** saves energy
- **Advanced microprocessor control** is easy to use and maximizes uptime



## Refrigerated Dryers

Our cost-effective refrigerated dryers provide clean, dry air for most industrial applications. Choose efficient cycling dryers to maximize energy savings or non-cycling dryers for a lower initial cost.

### Refrigerated Dryer Features

- **Dew points as low as 3°C (38°F)**, meeting Class 4 requirements
- **Corrosion-free heat exchanger design** for reliable operation
- **Intuitive microprocessor control** for easy operation
- **Compact design** for easy serviceability



**Cost-Effective  
Operation**

Choose refrigerated dryers for lower capital, operating and maintenance costs for many industrial applications.



# MAINTENANCE PLANS

MAINTENANCE PLANS

Ensure reliability for the life of your compressed air equipment with our CARE service programs. With CARE, we have one goal—to earn the right to be your trusted partner.



## The CARE Service Program Advantage

Compressed air is critical to your operation. A proper maintenance strategy is crucial to avoiding unplanned, unbudgeted downtime and production interruptions. By choosing an Ingersoll Rand CARE service program, you are investing in your future with a trusted partner.

Depending on your centrifugal compressor system maintenance requirements, choose from one of these two programs:

### PackageCARE™ Total Protection, Eliminate the Risk



- Greatest value for asset management
- Transfer operational risk for up to 10 years
- Includes all scheduled maintenance
- Predictive and analytical tools prevent production interruptions

### PlannedCARE™ Comprehensive Parts and Service Coverage



- Predictable, on-time planned maintenance
- Preventative diagnostics to catch potential problems
- Up to 5-year coverage on major airend components in new centrifugal compressors



**Find the Best CARE Plan for You**  
Answer 7 Questions to Find Out!

## IT ALL ADDS UP TO PEACE OF MIND



### Lower Cost of Ownership

CARE service programs provide the most cost-effective solutions based on your customized maintenance strategy.



### Quality Results

Ingersoll Rand factory-trained service technicians are backed by more than 145 years of industry experience.



### Increased Uptime

Our CARE programs help decrease unplanned downtime and costly production interruptions.



### Efficient Energy Use

Peak system efficiency is achieved through properly performed maintenance and inspection.



### Peace of Mind

Our world-class services will help you achieve the results you need, while you focus on what's important to your business.





Your productivity can be reduced due to ongoing inefficiencies throughout your facility. Use our remanufacturing and system optimization services as economic alternatives to purchasing new equipment to meet long term sustainability goals.



## Remanufacturing Services

Replacing compressed air equipment can significantly impact your bottom line. Fortunately, Ingersoll Rand's remanufactured products can reduce that impact with an economic and environmentally sustainable alternative to new equipment.

Our qualified technicians have extensive knowledge and experience in parts restoration and remanufacturing of centrifugal air compressors, including:

- Compressor overhaul
- Compressor airend remanufacturing
- Clean and dynamic balance of all rotating assemblies
- Cooler refurbishing
- Remanufactured and engineered packages
- Performance re-rates

You will receive a 'like-new' piece of equipment while reducing equipment costs, downtime and energy usage...as well as taking advantage of the latest technology advances.



### Replace or Remanufacture?

*Learn How to Restore Your Compressor*

## System Optimization

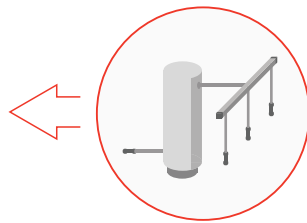
The problems associated with operating a modern compressed air system are fairly complex. That's where Ingersoll Rand assessment solutions can help. We'll develop cost-efficient, long-term solutions that meet your ROI goals, increase productivity, improve air quality and enhance system reliability.



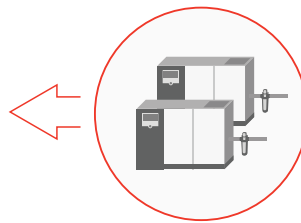
Our rigorous assessment process focuses on long-term sustainability for your entire facility.



Demand



Transmission



Supply

1. Identify Goals
2. Measure & Collect Data
3. Analyze & Identify Root Cause
4. Recommend & Implement Solutions
5. Validate and Sustain Results

## Centrifugal Capability Testing

Specifically designed to optimize centrifugal systems, capability testing collects relevant data at current conditions and compares it to the original design. You'll understand the health of your compressor, and be able to intelligently budget for immediate and future maintenance needs.



### Know the Health of Your Compressor?

*Learn more about Capability Testing*

# CENTRIFUGAL COMPRESSOR PARTS & ACCESSORIES

A compressed air system is a significant investment. You expect consistently reliable, clean dry air at the lowest possible operating cost. Choose our genuine parts and accessories to ensure that your compressor is running efficiently and productively.

## Control Systems

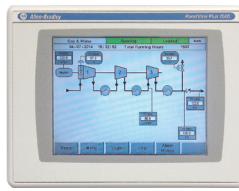
Advanced MAESTRO controls are the current standard for MSG TURBO-AIR compressors and are available as an upgrade for existing centrifugal compressor installations. We offer two distinct MAESTRO models, each designed for your specific compressor control needs.

### MAESTRO™ UNIVERSAL



An advanced control system with web-enabled monitoring, MAESTRO UNIVERSAL provides a built-in web server for compressor monitoring using your local Intranet.

### MAESTRO™ PLC

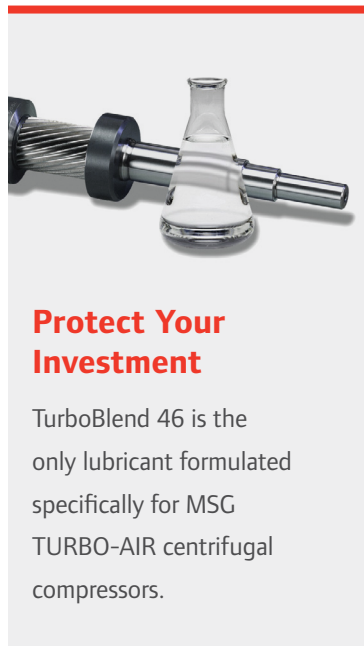


Utilizing an open architecture Allen-Bradley® PLC, MAESTRO PLC uses off-the-shelf components that better match other controls and best practices in your plant.



**Be in Control**

*See How Maestro Improves Productivity*



### Protect Your Investment

TurboBlend 46 is the only lubricant formulated specifically for MSG TURBO-AIR centrifugal compressors.

## TurboBlend™ 46 Lubricants

Our patented high-pressure, hydrostatic pinion bearing design requires a specific lubricant to ensure peak performance and reliability. Lubricant blends designed for other compressors may break down at the bearing, leading to extensive damages and maintenance costs. Be certain to use only TurboBlend 46 for optimum performance.

### Why is TurboBlend 46 Lubricant Better?

Hydrocracking strips mineral oil of unstable molecules that can break down under demanding compressor environments. Most manufacturers use wax molecular restructuring to help create stock oils — the process to create TurboBlend 46 takes an additional step to eliminate components that cause varnish.

- Group II classification under API base oil standards
- Demonstrates exceptional oxidation resistance and thermal stability, leading to cleaner equipment and longer life
- Will not deteriorate seals and O-rings
- Provides outstanding foam release, wear protection and extended life cycle properties



**See the Difference**

*Learn how TurboBlend 46 Ensures Peak Performance*





## No-Loss Drains

Our electronic and pneumatic no-loss drains are the most reliable, durable and energy-efficient way to remove condensate from air compressors and a variety of other air system components.



## Installation Solutions

From receiver tanks to couplings, our installation solutions offer everything you need to deliver clean, dry air from the compressor to your point of use.



## Filters

Our ECO-SPIN™ and ECO-FILTER™ intake filtration systems remove particulates from the incoming air stream to preserve downstream filtration element life as well as reducing energy costs.



## OEM Replacement Parts

We have the exact genuine OEM parts you need—from a replacement bullgear to a missing bolt—with extensive inventories maintained in strategic locations around the world.



**Don't Settle for Knock-Offs**  
Buy Genuine OEM Replacement Parts

## Centrifugal Compressed Air Systems from Start to Finish

Maximize your total cost of ownership with Ingersoll Rand's extensive knowledge of compressor technologies, services, parts and accessories—**we are your trusted partner in compressed air systems.**





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 \$14 billion global business committed to a world of sustainable progress and enduring results. For more information, visit [www.ingersollrand.com](http://www.ingersollrand.com).



[IngersollRandProducts.com](http://IngersollRandProducts.com)



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