

# PROTECT YOUR INVESTMENT & SAVE MONEY WITH LOWER MAINTENANCE COSTS

OUR SKILLED ENGINEERS ARE DEDICATED TO ENSURING SEAMLESS OPERATION OF YOUR MSG® CENTRIFUGAL COMPRESSOR PACKAGE. ENJOY TOTAL PEACE OF MIND FOR YOUR PROJECT THROUGH INGERSOLL RAND'S AFTERMARKET SOLUTIONS.



Engineered Systems and Services (ESS) www.ingersollrand.com/en/custom-air-and-gas-solutions

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### WE HELP YOU TO IMPLEMENT SUCCESSFUL PROJECTS WITH PEACE OF MIND. BROWSE THE BROCHURE & DISCOVER THE FULL RANGE OF INGERSOLL RAND AFTERMARKET SERVICES!

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**MSG<sup>®</sup> Centrifugal Compressors** 

YOUR ENGINEERED-TO-ORDER CENTRIFUGAL COMPRESSOR PARTNER

Ingersoll Rand has extensive experience in providing engineered-to-order air & gas centrifugal compressor packages for global engineering companies, EPC contractors and end-users Worldwide for over 70 years.

Thanks to this consolidated experience, Ingersoll Rand is capable of understanding client specific needs and requirements, allowing us to be with you through every step of your project. We can quickly design the most effective customized solution, giving you total peace of mind.

With our main manufacturing facilities in Buffalo (US), Vignate (Italy) and Wujiang (China), sales and service locations worldwide, Ingersoll Rand is a global company with a commitment to meeting your needs with exceptional centrifugal compressor technology while exceeding your expectations with unequaled service & support.









A FULLY DEDICATED EXPERT ENGINEERS TEAM DEVOTED TO **REPAIR AND OVERHAUL SERVICES** 

In Europe, we have a centrifugal remanufacturing and technology center located in Vignate, Italy. Here, we have established a comprehensive set of policies and procedures that provide a disciplined approach to the servicing of both compressors and components. This ensures a thorough quality inspection and establishes a clear scope of work.







# **European Centrifugal Remanufacturing & Technology Center**

#### OUR REMANUFACTURING & TECHNOLOGY CENTER CAN HELP YOU

- Knowledge and Expertise Over 70 years of experience manufacturing and servicing centrifugal compressors
- Proprietary Technology Access to original design specifications with strict adherence to proper equipment tolerances
- Complete Service History Meticulous maintenance of service record history to ensure accuracy

In-house Rework

Servicing is performed at an OEM facility with proper equipment and experienced technicians

Inspection Summary

Each service proposal is provided with a comprehensive breakdown of the required scope

• Genuine Spare Parts Replacement Service centers contain extensive inventories of OEM replacement parts

Experienced Workforce

Dedicated teams of engineers and technicians devoted to repair and overhaul services

 Complete Gearbox overhaul Full mechanical and aerodynamic testing

capabilities to prove compressor performance

Globally Located

We have strategically placed Remanufacturing & Technology Centers in Vignate (Italy), Buffalo (US), and Wujiang (China).



**Engineered Systems and Services (ESS)** 

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### **Aftermarket Services Benefits**

#### **CUSTOM MAINTENANCE PLANS WITH MULTIPLE BENEFITS**

You have many distinct advantages when you partner with Ingersoll Rand for your centrifugal compressor needs. The cutting-edge solutions we deliver for air, industrial and process gas requirements are made possible by the **unique blend of product quality, engineering talent and dedicated teamwork brought to every unique customer needs.** 

#### **WHAT YOU CAN GET Highest Maximum** Lower **Lower Cost Maximized Performance** Efficiency **Maintenance** of Ownership **Uptime Longer Life Predictive Genuine Parts at Trained** Global **Technicians Diagnostics Preferred Pricing Expectancy** Presence





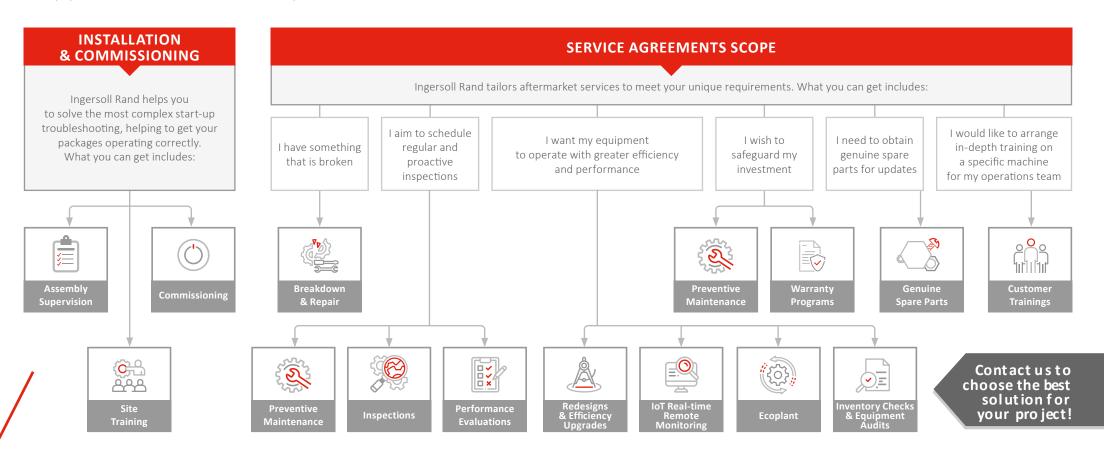
**REQUEST A QUOTE** 

# **MSG<sup>®</sup> Compressor Maintenance Plans**



#### **RUN SMARTER WITH A BETTER PLAN!**

The Ingersoll Rand PlannedCARE diagnostic and maintenance service program gives you a more cost-effective plan for scheduling and executing all required compressed air equipment services over the course of a year.



**Engineered Systems and Services (ESS)** 





### **Field Service**

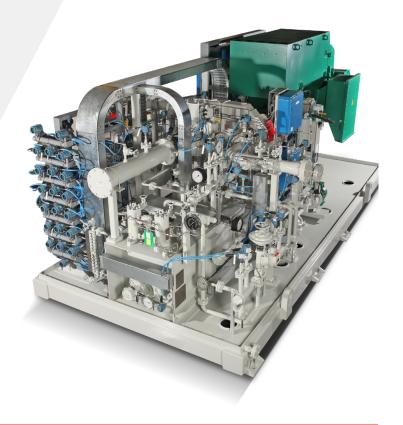
Our field service technicians are trained experts specializing in the technical coordination of on-site compressor installations, repairs, overhauls, upgrades and start-up commissioning.

Ingersoll Rand has clearly defined processes and procedures for all required site service work. Each field service technician is required to document control panel settings and corrective actions associated with the site work in accordance with these procedures.

#### Our team will provide:

- Installation
- Startups
- Vibration Analysis
- Turnaround Inspections
- Field Balancing
- Drive Motor Alignment

- Control System Services
- Performance Evaluation
- Preventative Maintenance
- Diagnostic Checks
- Additional Services as Required



#### OUR REMANUFACTURING & TECHNOLOGY CENTER CAN HELP YOU



Quick turnaround time for repair



**Restore factory** performance & reliability



Incorporate safety & performance upgrades



Performance levels



**Enhanced** efficiency



Cost savings avoiding new purchasings



More Safety













**Enhancing & Efficiency Upgrades** 

Whether your compression requirements have changed, or you are looking for increased efficiency, Ingersoll Rand offers a variety of performance-enhancing solutions that can improve operating efficiency.

#### Our team will provide:

• Aerodynamic Enhancements: Ingersoll Rand offers a variety of aerodynamic modifications to adjust your existing performance to meet current compressed air demands with optimal operating efficiency.

#### Additional Upgrades

- Duplex Oil Filters
- Duplex Oil Coolers
- Control Valves
- Cooler Bundles with Alternative Materials
- Condensate Traps
- Inlet Guide Vanes: Our innovative inlet guide vanes (IGV) replace conventional inlet butterfly valves (IBV) with substantial potential for energy savings (up to 9%).



#### GET THE BENEFITS OF REDESIGN & EFFICIENCY UPGRADES, INCLUDING





**Enhanced efficiency** 





**Cost savings** 



More safety













**Preventive Maintenance Plans** 

Backed by certified service professionals, Ingersoll Rand can help you implement a regular service routine that includes a full inspection using diagnostic tools to help identify ways to improve efficiency and reliability, while reducing downtime.

What Services Need to Be Performed?

- Equipment and General System Inspection
- System Diagnostics
- Equipment Assessment
- Maintenance Service Programs
- Consumables Replacement



#### **GET THE BENEFITS OF REGULAR MAINTENANCE**



Increases air compressor Lifespan and efficiency



Helps to avoid unscheduled downtime

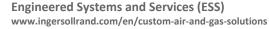


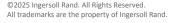
**Prevents emergency repairs** 



Maximizes the return on investment (ROI) of the installation









# **Genuine Spare Parts & Lubricants**

#### **PROTECT YOUR INVESTMENT**

The genuine Ingersoll Rand replacement components are essential to meet the rigorous manufacturing standards that ensure the continuous operation and safety of your machinery, while also preserving the validity of your warranty.



#### **GET ALL OF THE BENEFITS OF GENUINE SPARE PARTS**







Reduce lead time and cost



Lower total cost of ownership



Safety and risk management



**Quality products** 



**Trained experts** 

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**Engineering standards** with revision control

#### TURBOBLEND™ 46 PREMIUM CENTRIFUGAL COMPRESSOR LUBRICANT

The genuine Ingersoll Rand replacement components are essential to meet the rigorous manufacturing standards that ensure the continuous operation and safety of your machinery, while also preserving the validity of your warranty.











## **Genuine Spare Parts & Lubricants**

#### **ENHANCE YOUR INVESTMENT**



#### TYPICAL SPARE PARTS NEEDS FOR A CENTRIFUGAL COMPRESSOR

RECOMMENDED SPARES (AS PER IOM)			
<ul> <li>Bearings (bull gear and pinions)</li> <li>Air and oil seals</li> <li>O-ring and shims per stage (gear box kit)</li> <li>Heat exchangers gasket kit</li> <li>Oil cooler gasket kit</li> </ul>	<ul> <li>Victaulic gasket couplings</li> <li>Oil pumps couplings</li> <li>Oil pumps repair kits</li> <li>Coupling hardware kit</li> <li>Repair kit of control valves</li> </ul> CAPITAL/INSURANCE SPARES	<ul> <li>One instrument per type (temperature/pressure/vibration)</li> <li>Oil pump or oil pump motor</li> <li>Check valve (process)</li> <li>Coupling hubs and spacer</li> </ul>	
Bullgear     Rotors	● Complete gearbox as alternative	<ul><li>Heat exchanger bundles</li></ul>	
CONSUMABLES/LUBRICANT OIL			
<ul> <li>All air/oil filters         (including demister filter)</li> </ul>	• Grease	•TURBOBLEND™ 46	

Ingersoll Rand reminds the importance to properly store your spare parts: indoor climate-controlled environment and regular inspections







# **Maestro Centrifugal Compressor Control System**

#### OPTIMIZE COMPRESSOR PERFORMANCE AND LOWER YOUR COSTS

MAESTRO control system is designed to enhance visualization and optimization of performance, minimizing waste and cutting energy costs to deliver significant savings.

The system information allowing you to continually optimize your compressed air and gas performance.



#### **FEATURES**

- Remote monitoring and control with built-in web server
- Event history and diagnostics
- Complete integration of plc (programmable logic controller)
- Compatible with all makes and models of centrifugal compressors
- Quick set-up, easy configuration
- Over 30 languages

- Cooling water control
- Meets international standard codes

#### OUR REMANUFACTURING & TECHNOLOGY CENTER CAN HELP YOU



Quick turnaround time for repair



Restore factory performance & reliability



Incorporate safety & performance upgrades



Performance levels



**Enhanced** efficiency



Cost savings avoiding new purchasings



More Safety













**IIoT Real-time Remote Monitoring** 

#### HELIX™ CONNECTED PLATFORM: REAL-TIME MONITORING

Helix™ Connected Platform monitors supply compressed air users with comprehensive machine data in real time, which is required for precise production planning, maximum operational uptime and to protect your investment.

Utilizing the technological advancements IIoT (Industrial Internet of Things) and 14.0 (Fourth Industrial Revolution) provide, Helix allows you to receive data and alerts from a cloud-based platform to your PC, tablet or smartphone. This makes operational efficiency simple by keeping you connected and reducing your costs.



#### **FEATURES**

- Advanced remote analysis
- Real-time knowledge about air systems
- Evaluates historical data
- Predictive maintenance

#### **GET THE BENEFITS OF HELIX™ CONNECTED PLATFORM**







Cost savings



Maximises energy efficiency



Highest air quality



More safety



Works to an open standard - easily support compressed air products from other













# **Ecoplant**

#### KEEP YOUR PLANTS RUNNING LONGER WHILE SPENDING LESS

EcoPlant™, in collaboration with Ingersoll Rand, is a machine learning compressed air monitoring and control network that optimizes utility operation to achieve peak efficiency of compressed air generation.



EcoPlant™ is a cloud-based SaaS platform that integrates with your compressed air system to increase energy efficiency and reduce factory downtime.

LEARN MORE ABOUT ECOPLANT



#### **FEATURES**

- Brand agnostic solution connects to all compressed air technologies
- Machine learning control for energy efficiency and predictive maintenance
- 24/7 Continuous monitoring and unlimited data logging
- Manage your air system from anywhere in the world

#### GET THE BENEFITS OF ECOPLANT™ CLOUD-BASED MONITORING AND CONTROL





costs



**Prevent unplanned** downtime

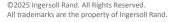


**Optimized production** changes—dynamic control













### **Global Presence**

Over 70 years of experience managing and implementing engineered-to-order centrifugal air and gas packages for engineering companies, EPC contractors and end-users.



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