

# **Oil-free Compressed Air System Solution**

**Nirvana 37-75kW**

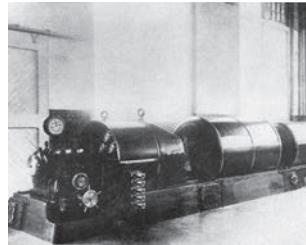
**Sierra 37-75kW**

**Class 0**  
**ISO 8573**  
**Oil-Free Air**

# We at Ingersoll Rand are Writing a History of Continuous Innovation, Just Providing Compressed Air

## 1 We insist on innovation

For over a century, Ingersoll Rand has constantly introduced new technologies through sustainable innovation to promote the development of oil-free compressed air technology. Back in 1912, Ingersoll Rand created the world's first oil-free centrifugal air compressor. After that, it has successively developed the world's first oil-free screw air compressor and the first variable speed drive (VSD) oil-free screw air compressor equipped with hybrid permanent magnet motor, and constantly put forward new industry standards to meet the increasing needs of customers.



## 3 We own unique technology

By launching its oil-free screw air compressor equipped with unique hybrid permanent magnet motor technology, using Xe controller, UltraCoat and designed for ambient temperature up to 46°C, Ingersoll Rand seamlessly integrates conventional compressed technology tested for more than 100 years with high-tech rotor coating technology, enabling reliability and excellent performance specific to oil-free screw air compressors.

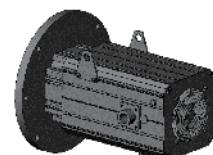


## 5 We are an industry expert

Ingersoll Rand has become a leader in oil-free compressed air system technology because we not only possess high quality products, but also deeply understand customers' needs for productivity and quality of oil-free compressed air systems and provide oil-free system solutions based on their specific needs. Wherever you are, and whatever production processes you are using or whatever products you are manufacturing, Ingersoll Rand can offer specialized oil-free system solutions and quality service for you.

## 2 We maintain a high industry standard

Ingersoll Rand is the industry's first air compressor manufacturer whose oil-free screw and centrifugal air compressors simultaneously passed through strict tests of TÜV Rheinland® (an institute leading the world in independent testing and evaluation services), and obtained Class 0 air certificate, which has since been upgraded to the latest standard of ISO 8573-1:2010 Class 0. Ingersoll Rand has been selected for Dow Jones Sustainability World Index and North America Index for nine consecutive years.



## 4 We have a convenient global service network

Wherever your installations are in the world, Ingersoll Rand can serve you 24 hour a day, 7 days a week. Our PackageCARE services guarantee prompt response to your service needs, help you to eliminate unplanned downtime, reduce your huge investment in monitoring systems and operator training. With just a phone call, we can always provide you with creative & efficient service solutions keeping your system in good shape.



# When High Air Purity is a High Priority

There's a lot riding on the quality of your air. The presence of particles, condensation, oil and oil vapor in a compressed air system can lead to downtime, product spoilage and recall, damage to your brand reputation, or worse, harmed consumers and product liability.

## How pure is your compressed air system?

ISO 8573-1:2010 Class 0 specifies the standard on air purity class for food & beverage, pharmaceutical, textile, electronics and other demanding production industries. It is the most stringent air purity class standard, which covers the strict requirements for suspended solid, vapor and oil content. The lower the number of air purity class is, the higher the compressed air purity represented is.



ISO 8573-1 Air Quality Classes	
Quality Class	Oil & Oil Vapor mg/m <sup>3</sup>
0	<0.01
1	0.01
2	0.1
3	1
4	5

Class 0 is the most stringent air class defined by ISO 8573, part1. Our oil-free compressors are certified Class 0 for no oil content by TUV to ensure your air quality exceeds specifications.

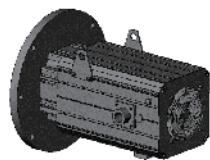
**Ingersoll Rand is the industry's first air compressor manufacturer whose oil-free screw and centrifugal air compressors simultaneously passed through strict tests of TÜV Rheinland® and obtained the latest ISO 8573-1:2010 Class 0 air certificate.**

Whichever industry you are in and whatever compressed air purity you demand, Ingersoll Rand can provide you with purer compressed air, helping you to minimize the risk.

# Innovation Design of Ingersoll Rand Oil-free Screw Air Compressor

## Hybrid Permanent Magnet Motor

- ◆ Stator coil and permanent magnet rotor of the hybrid permanent magnet motor produce a strong electromagnetic force and drive the motor shaft to rotate at different speeds, directly driving the directly-connected male rotor of the airend without efficiency loss of any intermediate drive part.
- ◆ Eliminate the use of wear parts and bearings in the motor & gear / bearing / shaft seal to consume less wear parts
- ◆ With a volume equal to 1/3 of an ordinary motor, it can be maintained on site and replace one of its winding coils rather than replacing the whole winding for a conventional motor, which saves a lot of money.
- ◆ Soft start at a starting current less than the rated current & infinite starts / stops, saving 30% energy for unloading over conventional air compressors and maintaining a continuous operating efficiency up to 96%
- ◆ Permanent magnet synchronous motor IE4 motor with IP55 rating  
Excellent protection level IP55, significantly improved than the original Lleyesema motor protection level, motor energy efficiency IE4(and at any turn Energy efficiency can be maintained IE4); With unlimited start and stop function, automatic stop under low speed, no unloading process



## Nirvana Three-tube Parallel Cooler

- ◆ Distribute compressed air to three separate tubes to reduce pressure loss and balance heat load
- ◆ Eliminate heat circulation and pre-cooler to greatly reduce the exhaust temperature of second-stage compression chamber to approx. 30°F (17°C)
- ◆ Air-cooled oil-free screw air compressor with Nirvana guaranteesstable CTD by adjusting air flow of variable frequency centrifugal fan, which also saves energy and reduce noise
- ◆ Ensure that the cooling flow to accommodate ambient temperature & load changes, and eliminate the possibility for compressed air to bring liquid water into second-stage rotor



## Durable & Lasting Compression Module

- ◆ High efficient double-screw two-stage compression module with cast iron housing & synchronous gear drive
- ◆ The older oil-free screw compressor is equipped with a balance piston to offset the axial thrust, which can be easily seized by dust and other pollutants. To eliminate the hidden danger, Ingersoll Rand oil-free screw compressor replaces the balance piston with a pair of thrust bearings, which can withstand the axial force and improve the operation reliability of the airend
- ◆ The rotor with super coating guarantees stable and long lasting operating performance
- ◆ The stainless steel second-stage rotor can be operated at high temperature with greatly extended service life



Nirvana Oil-free

## Excellent Reliability of Cooling Unit

- ◆ The unit is designed for the high temperature & high humidity working environment in Asia
- ◆ The air-cooled unit can be normally operated continuously under high temperature up to 46°C, and the water-cooled unit can reach the highest inlet water temperature of 46°C
- ◆ CTD of the cooling device can reach 8-10°C
- ◆ All Sierra can be operated at harsh ambient temperatures to avoid high temperature shutdown

## UltraCoat Super Coating

- ◆ Both rotor and base surface needs to be treated with Ingersoll Rand super coating through mechanical and chemical processes to ensure that the coating is extremely thin and firmly adhere to the surface
- ◆ After the rotor surface is roughened through shot peening, molybdenum disulfide (MoS<sub>2</sub>) molecular resin embedded with high-temperature organic resin is mechanically wrapped onto the rough surface to make it durable, oxygen-resistant and non-fragile
- ◆ Compared to other coatings, UltraCoat super coating has a longer service life and reduces the airend energy consumption by 10%
- ◆ Stainless steel and aluminum alloy pipes are selected to connect the intercooler and stainless steel secondary rotor, which will not be corroded by the condensate produced in the intermediate cooling process, and extends the service life of the coating and rotor by preventing rust and shedding



## Advanced Intelligent Control System

- ◆ The operator's panel of the unit is an LCD display with a backlight and a touch button
- ◆ Simple and easy to operate with complete functions
- ◆ Fault causes and faulty components can be memorized with perfect self-diagnosis, alarm& monitoring functions
- ◆ Local, remote and interlock control mode can be configured according to the needs of users, and unmanned operation can be realized under interlock control mode



## Outstanding Sealing Technology

- ◆ Unique three-seal system
  - I.SS air seal – prevent air from entering oil passages (bearing seat / gears)
  - II. Labyrinth seal – prevent oil from entering the airend
  - III. Oil-draining seal – drain the oil into the atmosphere in case of a failure of the above seals
- ◆ 1~2 spacer rings open to atmosphere are set in each set of air-tight rings for the oil and gas to only come out of the hole open to atmosphere in case of a failure of the air-tight rings and not to enter the compression chamber, so as to discharge 100% oil-free compressed air



VSD

## High Efficient Inlet Valve

- ◆ Ingersoll Rand high efficient inlet valve uses advanced hydraulic regulator (instead of pneumatic regulator), which eliminates regular replacement of pneumatic elements and reduces unnecessary downtime and maintenance costs
- ◆ A combined inlet & vent valve is used for loading / unloading. At the time of loading, the butterfly valve is fully open, and meanwhile the vent valve is closed; at the time of unloading, the butterfly valve is closed, when the air is circulated through a small hole on the butterfly valve flap and interlocks the vent valve to open for venting



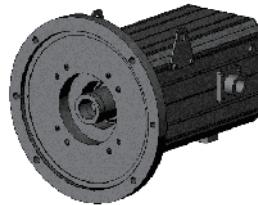
# Star Product: Uncover the Power of Oil-free VSD

## Nirvana oil-free air compressor with real VSD function

Ingersoll Rand is a manufacturer of oil-free air compressor with real VSD function. Nirvana oil-free air compressor can provide high quality oil-free compressed air supported with unmatched reliability in the market. Ingersoll Rand has once again successfully developed and released to market an oil-free air compressor with real VSD variable-frequency drive system by right of its unique design combining hybrid permanent magnet motor with innovative modular converter. Compared with other types of oil-free screw air compressors, Nirvana oil-free air compressor has much less rotating parts, and thus guarantees its extremely high reliability as driven by hybrid permanent magnet motor.

### Precise Winding

The winding of hybrid permanent magnet motor of Nirvana oil-free air compressor is directly wound on the convex structure simply and reliably to eliminate low efficiency & heat concentration (often leading to motor insulation layer destruction and other faults) of ordinary induction motor. While repairing a conventional air compressor may result in shutdown for days or weeks and certain rental cost, and rewinding coils or replacing bearings will cost a lot of manpower and material resources, Nirvana stators can be replaced quickly and costs less than replacing motor windings.



## Newly upgraded hybrid permanent magnet motor with no bearings or wear parts

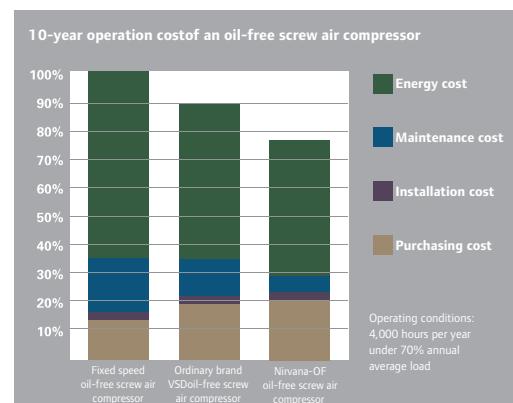
### Energy Saving & High Efficiency

Since your investment in and operation of Nirvana, it will save your cost of operating an air compressor.

Ingersoll Rand's unique VSD variable-frequency drive system enables the air compressor to ideally maintain high efficiency under a range of operating conditions. While starting the motor of a conventional air compressor may consume a lot of energy with the starting current usually being up to 8 times of the normal operating current at full load, the hybrid permanent magnet motor of Nirvana guarantees that the starting current is less than 100% of the load current, and thus eliminates the impact of air compressor start on the grid and saves energy.

### Unparalleled Energy Efficiency and Reliability of Nirvana

Nirvana requires no unloading, but simply lowers the screw speed to accommodate any changes in displacement. Nirvana adopts a shutdown mode simpler than the unloading mode of other air compressors. Also, Ingersoll Rand's unique super coating and hybrid permanent magnet motor makes Nirvana oil-free screw air compressor to be reliable, and save at least 30% energy over the conventional oil-free screw air compressors.



# Ingersoll Rand provides high-purity compressed air for various industries



## Pharmaceutical industry

From tablet production to application of preservatives, Ingersoll Rand Class 0 oil-free technology reduces product safety issues and eliminates product contamination risk.

Compressed air is frequently used to remove powder on tablets and sprayed on drug coating, where the oil-free air guarantees high product purity and eliminates the health risk caused by waste or oil contamination; at the time of filling and dispensing, compressed air is usually in direct contact with product or packaging, where Class 0 oil-free air prevents the oil from directly transferring to the product; Class 0 oil-free air is also essential for those processes requiring aseptic air.

Ingersoll Rand also provides compressed air system monitoring consistent with GMP requirements and PAT schemes. Our innovative IntelliSurvey tool allows us to monitor and analyze real-time performance of air systems to determine solutions that can promote system reliability and efficiency.



## Food & beverage industry

There is no oil during air compression of an oil-free compressor, which reduces the risk of contamination through high temperature compression for food & beverage producers, and minimizes the microorganisms in food.

Compressed air is used to push grains along the pipeline, and is usually in direct contact with the production wrapping, filling and capping process. It can also be used for cooling of baked goods, spray production and bottle & pipe cleaning. Class 0 oil-free air guarantees high product purity, eliminates the contamination risk of end-products, and avoids potential health hazards.

With the recent increase of food safety issues, food safety factors are increasingly affecting consumption behavior of consumers. Ingersoll Rand Class 0 oil-free air ensures that end products are free of contaminants produced by air compressors, helping food and beverage manufacturers to regain and maintain consumers' trust in food safety.



## Chemical industry

Class 0 oil-free air guarantees chemical purity in sensitive organic processes.

As compressed air provides oxygen to the bacteria during fermentation and oxidation, Class 0 oil-free air protects bacteria from being killed by residual oil in the air, and ensures oxidation process is not polluted by particles, which may be polluted by oil in the air and thus affect the composition of final products after sintering, but this risk is eliminated by using Class 0 oil-free air. Also, in the air separation industry, Compressed air is used for separation in PSA plants, and oil-free air guarantees no oil accumulation on the expensive filter membrane.

Safety is an important consideration in the chemical production industry to prevent any defects of safety management system, equipment failures, human operation errors and unpredictable chemical reactions, etc. Ingersoll Rand Class 0 oil-free air helps chemical producers to lower risks in the compressed air system.



## Automobile industry

Oil-free compressed air has important applications in automobile assembly, where it is used to ensure high-quality general assembly during surface dirt cleaning and painting process.

Compressed air is used to clean and dry metal surfaces before painting, where oil stains on the surfaces may prevent adhesion of paint and result in premature corrosion, while oil-free air effectively eliminates such hazards. As compressed air sprays paint onto clean metal surfaces through spray gun and robotic arm, oil-free air can maintain adhesion of the paint, and avoid foaming for a long time after painting. Compressed air is also used in robots pushing car assembly, which are sensitive to quality of compressed air, and Class 0 oil-free air can prevent oil and sediments from hindering normal operation of the robots.

Class 0 oil-free compressed air provided by Ingersoll Rand air compressor can play its role in all fields of automobile industry.

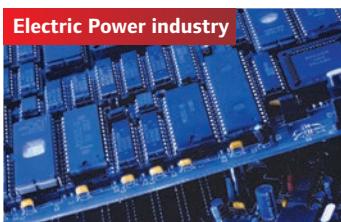


## Oil & gas industry

Ingersoll Rand is committed to providing quality products & services to meet technical and operational challenges in the oil & gas industry, and our Class 0 oil-free technology enables you to be highly efficient and productive on land and at sea, from exploration and exploitation to refining and processing of crude oil and natural gas products.

Class 0 oil-free air can be used in gasoline sweetening, acidic water oxidation, catalyst regeneration and desulfurization to maintain purity of end products; during equipment calibration & testing process, compressed air is usually used to calibrate the test bench for instruments and safety valves and liquid & gas analyzers, where Class 0 oil-free air guarantees the accuracy of such equipment.

As safety is critical for oil and gas companies, they must take special precautions to guarantee safety of the working environment. Ingersoll Rand Class 0 oil-free compressed air technology helps them to eliminate these risks and enhance safety and productivity.



## Electric Power industry

We can provide better Class 0 oil-free products & services to support your high-profit and efficiency operation in electric power system.

Our products are widely used in various applications. Whether you need to handle turbine overhaul, boiler or grinder repair, air intake ventilation or booster fan, equipment maintenance or other matters, Ingersoll Rand can help you to get it done easily. With the increasing awareness of environmental protection, significant business opportunities emerge in renewable energy generation, where Ingersoll Rand products & services make construction, installation and maintenance of the equipment easier, and thus greatly improve production efficiency. Our products play a significant role in various areas, from small backup power supplies for residential, commercial or industrial low-power generators, to large independent generators powering the entire plant.

# Oil-free Screw Air Compressor Performance

## Sierra® Performance

50 Hz(37-75kW)							
Motor power kW	SL7.0barg FAD flow@ 7.0bar(g) m <sup>3</sup> /min	SM8.5barg FAD flow@ 8.5bar(g) m <sup>3</sup> /min	SH10barg FAD flow@ 10.0bar(g) m <sup>3</sup> /min	Length mm	Width mm	Height mm	Weight kg
37	6.00	5.10/5.20*	--	2248	1372	1917	2387/2410*
45	7.70	6.50	--	2248	1372	1917	2497/2520*
55	9.60	8.80	--/7.80*	2248	1372	1917	2577/2600*
75	12.70	11.60/11.70*	--/10.80*	2248	1372	1917	2682/2705*

## Nirvana Performance

50 Hz(37-75kW)							
Model	Max. volume flow m <sup>3</sup> /min	Operation pressure range barg	Motor power kW	Length mm	Width mm	Height mm	Weight kg
IRN37K-OF	6.5	4.5-8.5	37	2080	1115	2024	1579/1624*
IRN45K-OF	7.2	4.5-8.5	45	2080	1115	2024	1579/1624*
IRN55K-OF	10.6	4.5-10	55	2078	1321	1948	2041
IRN75K-OF	13.1	4.5-10	75	2078	1321	1948	2041

\* The former is the parameter of the air-cooled unit, and the latter is the parameter of the water-cooled unit

## Instrument-related standards:

Test standards: ISO1217, GB/T 3853-1998

# Oil-free Screw Air Compressor Supply Scope

## Scope of Supply

Standard Features		Sierra®	Nirvana OF
Item	Description	Sierra®	Nirvana OF
Airend	Premium performance two-stage compression screw airend	●	●
	AGMA12 gear	●	●
	Stainless steel second-stage rotor	●	●
	UltraCoat super coating	●	●
	Thrust ball bearing	●	●
Sealing system	Labyrinth gland seal	●	●
	Multi-layer floating ring type gas seal	●	●
Cooling system	Max. ambient temperature of 46°C	●	●
	Three-tube parallel cooler	●	●
	Cold / hot zone separation	●	●
	Independent variable frequency fan	●	●
Motor	Star-delta starter	●	
	High-efficiency IP55 IE4 closed motor- Class F insulation with B rise	●	
	Hybrid permanent magnet IP55 IE4 37-160kW		●
Power protection	PORO power outage restart	○	○
	Power optimizer		●
Control system	Integrated built-in converter		●
	Intelligent control system	●	●
	Energy-saving controller easy to operate	●	●
	Chinese and English switch	●	●

Optional Features		Sierra® Category	
Item	Description	Sierra® (37-75KW)	Sierra® (90-150KW)
Motor	10KV IP23/IP55motor		
	6KV IP23/IP55motor		
	Motor heater	○	○
	Motor phase monitor	○	○
	Total two RTD(PT100) for front & rear bearings	○	○
Electric control system	NEMA4 electric protection class	○	○
	Remote control module(dry contact signal: remote start & stop, running status, comprehensive fault alarm, remote / local switch)	○	○
	Unit discharge pressure 4-20mA signal	○	○
	Unit discharge temperature 4-20mA signal	○	○
	Moisture-proof heater for electric control box	○	○
Other options	Outdoor options	○	○
	High dust filter	○	○
	Back-flush component for airend	○	○
	Ultra FG food grade coolant	○	○
	Electric control box heater	○	○
	Without after-cooler	○	○
	Remote control module	○	○

Optional Features		Nirvana Category	
Item	Description	Nirvana OF (37-75KW)	Nirvana OF (90-160KW)
Other options	Back-flush component for airend	○	○
	PORO power outage restart	○	○
	Ultra FG food grade coolant	○	○
	Electric control box heater	○	○
	Without after-cooler	○	○
	Remote control module	○	○

● Standard feature ○ Optional feature "Blank" Not available

## AIR TREATMENT

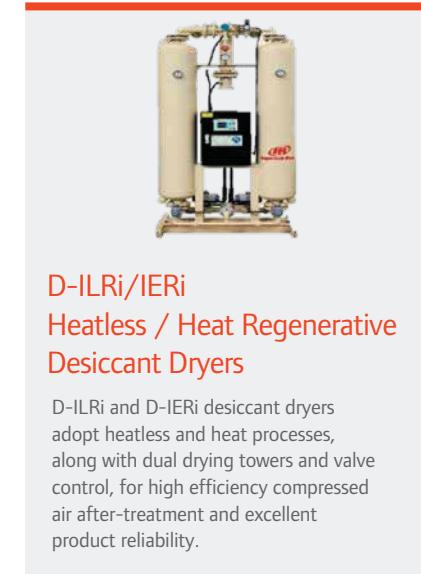
Moisture and contaminants in compressed air can cause serious equipment operation problems, such as rust, scaling, and pipe clogging, which can lead to product damage or even shutdown. Using our air treatment equipment as an integral component of your compressed air system will help improve productivity, system efficiency and product or process quality.

### Desiccant Dryer

When the dew point requirement is very low, it is necessary to choose desiccant dryers to provide high-quality air and prevent possible freezing. Depending on your different needs to reduce initial investment cost or reduce energy cost, you can choose from compression heating, no heating, external heating or blower heating desiccant dryer.

#### Features of desiccant dryer

- Provides reliable -40°C pressure dew point in most operating conditions
- High-strength desiccant and durable valves
- Low-pressure drop design saves energy
- Advanced controller, easy to use and maximize uptime



### Refrigerated Dryer

Our cost-effective refrigerated dryers provide clean, dry air for most industrial applications.

#### Features of refrigerated dryer

- Dew point as low as 7°C, in compliance with ISO Grade-4 requirements
- Non-corrosive heat exchanger design to achieve reliable operation
- Intuitive microprocessor control to simplify operation
- Compact design for easy maintenance



### Filter

F-Series compressed air filters effectively reduce contaminants in the air system to protect critical processes and valuable instrumentation and equipment.



# OIL-FREE PARTS AND ACCESSORIES

## 8000-Hour Polyether Products

- Exceptional cleaning properties effectively prevent issues with sludge and carbon deposits.
- Superior high-temperature stability for adaptability to more operating conditions and longer service life.
- Good heat transfer properties for better cooling effects.
- Outstanding rust prevention properties for better protection of compressor components.



## Ingersoll Rand Parts and Service

Air compressor units that operate under high temperature and pressure loads for extended periods gradually lose their working capacity due to various stresses, wear, and chemical corrosion. Using Ingersoll Rand parts and periodic professional maintenance helps eliminate operational risks, maintain their excellent working performance, and keep them running at peak efficiency. Ingersoll Rand compressor parts possess superior quality and performance that many other brands cannot match.

## Maintenance and Service Kits

Periodic Maintenance Kits: Oil filters, air filters, and other consumable parts and wear parts

2000 h / 4000 h

8000 h / 16000 h

Service Maintenance Kits: Regular maintenance service components for parts such as valves and coolers

### Save Money

The price of the maintenance kits is lower than the sum of individual part prices

### Save Worry

One-time budget price  
One-stop service  
Know the maintenance budget in advance

### Save Effort

One part number, quick operation, improve work and production efficiency, and reduce waiting time before service



The maintenance and service kits include all the parts needed for one service maintenance

## Energy Saving Reman Business

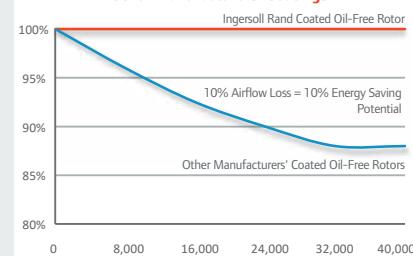
### Airend Reman

#### Advantages of Oil-Free Screw Airend Reman

Professional reman centers, genuine original parts  
High-efficiency and reliable coatings, new machine factory standards.



#### Change in Airflow: Ingersoll Rand Coating vs. Other Manufacturers' Coatings



### Motor Reman

#### Motor Overhaul

#### Energy Saving Motor Exchange

- Professional repair facilities
- Authoritative testing
- Comprehensive service
- High reliability
- Original factory manufacturing
- "Zero wait" delivery time
- Reduced operating costs
- Convenient on-site exchange



# MAINTENANCE SERVICES



**CARE** SERVICES PROGRAM

## Comprehensive Protection

All Your Investments Are Worthwhile

- ✓ Ensure your needs are prioritized
- ✓ Improve equipment operational efficiency and extend lifecycle
- ✓ Enjoy hassle-free spare parts purchasing and after-sales service
- ✓ Tailored service agreements



## Each of Our Maintenance Programs offers Significant Benefits, Including:

- Genuine OEM parts eliminate exposure to unnecessary equipment wear and tear, reducing downtime
- Rapid response, because as an Ingersoll Rand service program customer, you are our top priority
- Optimized services for your specific operation that are structured to lower electricity consumption
- Early detection and predictability that eliminates surprises and unwanted costs
- Automated shipment or scheduling reminders prevent overlooking or under-maintaining equipment
- Equipment that lasts longer and runs better by replacing the right parts at the right time
- Premium monitoring via the Helix™ Connected Platform to maximize productivity

### IT ALL ADDS UP TO PEACE OF MIND



#### Lower Cost of Ownership

Our service programs provide the most cost-effective solutions based on a customized maintenance strategy.



#### Quality Results

Ingersoll Rand factory-trained service technicians are backed by more than 160 years of industry experience.



#### Increased Uptime

Service 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.

## SERVICES AND OPTIMISATION

Emergencies, maintenance and persistent inefficiencies in your plant can lead to air losses, thus reducing productivity. Our integrated products and services can reduce short-term production losses and achieve long-term sustainable development goals.

## Reduce your operation costs

To optimize your total cost of ownership, you need to look beyond air compressors. Here are some other ways that Ingersoll Rand can help you reduce your energy and equipment costs:



## iR5500 controller

Variable-speed energy conservation system adopts variable speed control technology, and the exhaust volume of compressor can be perfectly combined with the gas consumption volume of user, thus avoiding the rated power loss of air compressor caused by frequent loading and unloading.



## Heat recovery system

Throughout your plant, the heat generated during air compression can be recycled and used for a variety of different purposes.



## Airend re-manufacturing

We can provide professional, fast and reliable remanufacturing service for your long-operating air compressor or internal air end and other parts, prolong the service life of your compressor, improve the operation efficiency, and reduce the unexpected shutdown caused by the failure of air compressor.

## Performance assessment **service**



## Electronic assessment



## Air leakage assessment

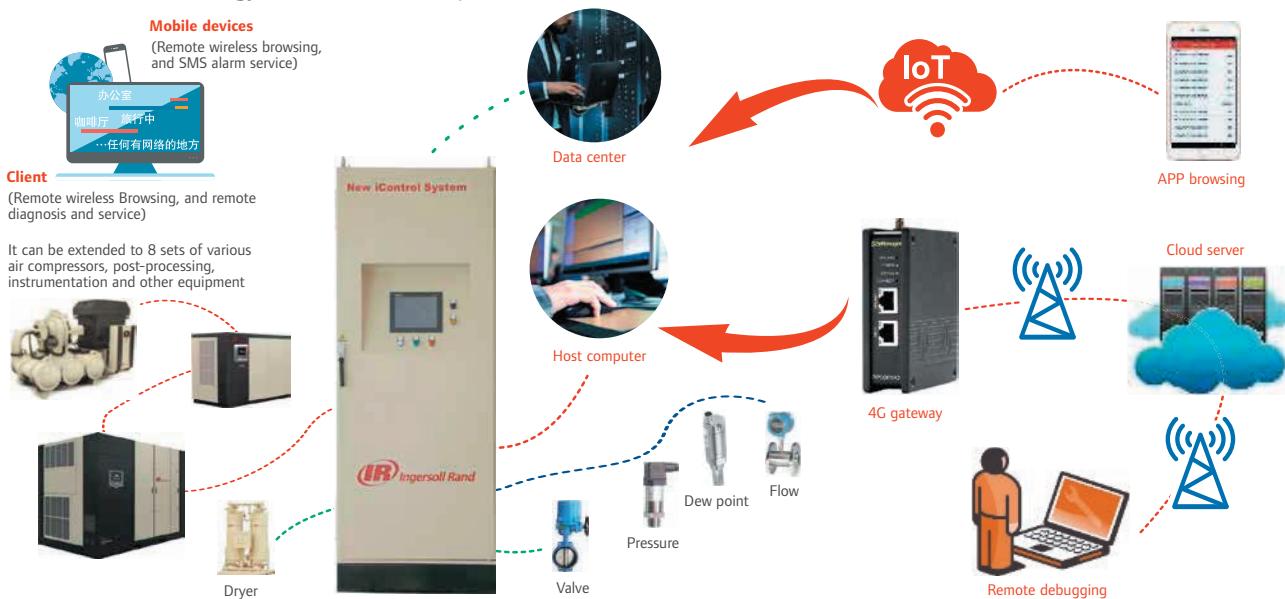


## System assessment

By identifying, analyzing and rectifying the problems in your complete compressed air system - our global service team can use big data analytics to uncover root causes, and recommend cost-effective solutions to increase your profits and reduce your total operating costs.

## System automation

System assessments usually identify the wastes resulting from a lack of appropriate controls. Our complete system automation solution can reduce energy costs and stabilizes pressure.





Ingersoll Rand Inc. (NYSE:IR), driven by an entrepreneurial spirit and ownership mindset, is dedicated to Making Life Better for our employees, customers, shareholders, and planet. Customers lean on us for exceptional performance and durability in mission-critical flow creation and industrial solutions. Supported by over 80+ respected brands, our products and services excel in very complex and harsh conditions. Our employees develop customers for life through their daily commitment to expertise, productivity, and efficiency. For more information, visit [www.IRCO.com](http://www.IRCO.com).



#### Contact Us

Add: F11 L'Avenue,  
99 Xianxia Road, Shanghai  
Tel: 021-22216000  
Website: [www.ingersollrand.com](http://www.ingersollrand.com)

#### 24-hour Toll Free National Hotline:

800 820 2128  
400 820 2128