

# Cooler Maintenance Services

For Centrifugal Air Compressors

IngersollRandProducts.com

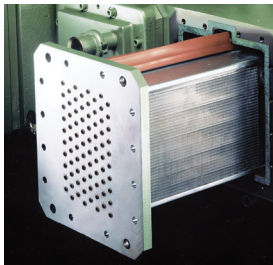
## Keep it Cool and Save Energy

Did you know that multi-stage compression with intercooling is the most energy efficient way of reaching optimal compressor outlet pressure? Compared to single-stage compression, multi-stage compression significantly reduces energy use and lowers compressed air or gas discharge temperatures, which allows you to implement less complex and costly system solutions.

An air or gas heat exchanger plays a vital role in efficient compressor operation. Optimizing its performance is essential to ensure excellent reliability and energy efficiency. Implementing a sound preventive maintenance strategy is key to keeping your intercooler system running smoothly.

## Ensuring Optimum Performance

There are two critical factors to guarantee you get the most out of your compressor's cooler system:



- 1. Proper Design:** To benefit from an optimized compressed air or gas system, heat exchangers must be properly designed in order to provide the lowest possible air temperatures with minimal pressure drop. A conservative fouling factor should also be considered to prolong top performance.
- 2. Proper Maintenance:** Once your compressed air system is in operation, regularly scheduled preventive maintenance is critical. Monitoring cooling water quality and system temperature and pressure, as well as cleaning and inspecting your equipment as part of an ongoing program, will help avoid intercooler performance degradation.



## The Risk of Poor Maintenance

When cleaned and maintained properly, cooler systems run flawlessly. But if the necessary steps are not taken to keep up with scheduled maintenance, things can go wrong, including fouling, leaks and mechanical damage to the unit—all costly problems that will affect your bottom line.

## Causes of Cooler Damage

### Fouling

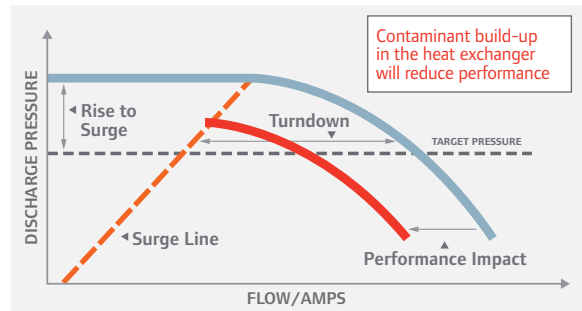
When contaminants infiltrate a cooling system, they can build up in the heat exchanger and lead to reduced performance and operating range, resulting in higher energy costs, as well as reduced turndown and rise to surge. This limits the compressor's ability to efficiently modulate the outlet capacity.

### Leaks

Leakage can easily happen due to worn gaskets, seals or O-rings. Leaks introduce danger of cooling liquid carryover into the compressed air or gas stream, bringing about severe damage risk to aero components, seals and inlet piping. This same fluid content can end up downstream, ultimately effecting air treatment equipment or your production process, resulting in damage or destruction of the finished product.

### Mechanical Damage

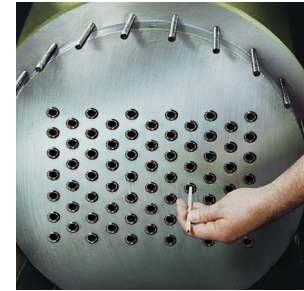
Corrosive cooling water can cause heat exchanger tube erosion and fractured cooling fins, eventually causing leaks. Dirt and dust in the inlet air or gas flow path can also cause damage.



## Preventive Maintenance is Key

Ingersoll Rand recommends the following preventive maintenance steps:

- Monitor interstage temperatures and pressures daily to identify potential problems
- Clean heat exchangers every 16,000 hours or as required by operating conditions
- Inspect all gaskets, seals and O-rings, and replace as required
- Replace heat exchanger bundles as needed
- Perform routine air and water quality testing, revise treatment plans as needed



## Services to Support You

We offer a variety of services for your intercooler system, including:

- Inspection, assessment and comparison with performance design values
- Onsite equipment and system troubleshooting
- Preventive maintenance—monitoring, cleaning and genuine OEM parts
- Genuine OEM bundle replacements or upgrades

## Want to Learn More?

Visit our website or call your local Ingersoll Rand representative today to learn more about intercooler maintenance.



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

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).



Ingersoll Rand, IR, and the IR logo are trademarks of Ingersoll Rand, its subsidiaries and/or affiliates. All other trademarks are the property of their respective owners. Ingersoll Rand compressors are not designed, intended or approved for breathing air applications. Ingersoll Rand does not approve specialised equipment for breathing air applications and assumes no responsibility or liability for compressors used for breathing air service. Nothing contained on these pages is intended to extend any warranty or representation, expressed or implied, regarding the product described herein. Any such warranties or other terms and conditions of sale of products shall be in accordance with Ingersoll Rand's standard terms and conditions of sale for such products, which are available upon request. Product improvement is a continuing goal at Ingersoll Rand. Any designs, diagrams, pictures, photographs and specifications contained within this document are for representative purposes only and may include optional scope and/or functionality and are subject to change without notice or obligation.