

# Cooler Maintenance Services

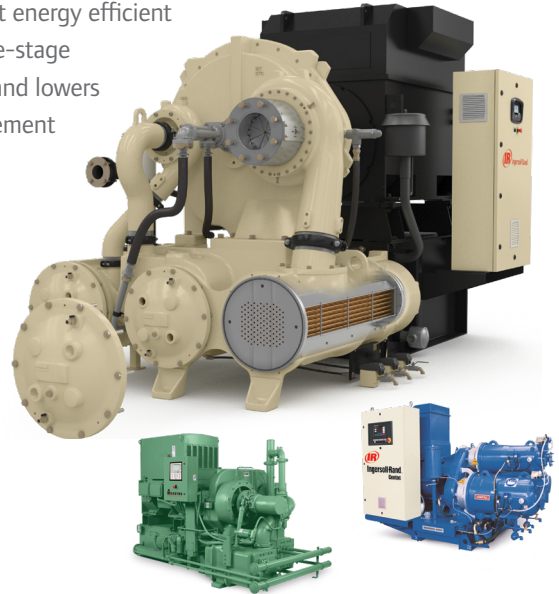
For Centrifugal Air Compressors

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## Keep it Cool and Save Energy

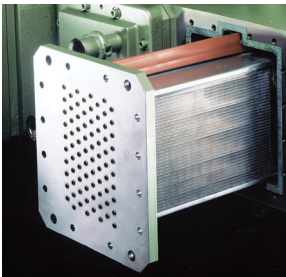
Did you know that multi-stage compression with intercooling is the most energy efficient way of reaching optimal compressor outlet pressure? Compared to single-stage compression, multi-stage compression significantly reduces energy use and lowers compressed air or gas discharge temperatures, which allows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

An air or gas heat exchanger plays a vital role in efficient compressor operation. Optimising 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 optimised 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

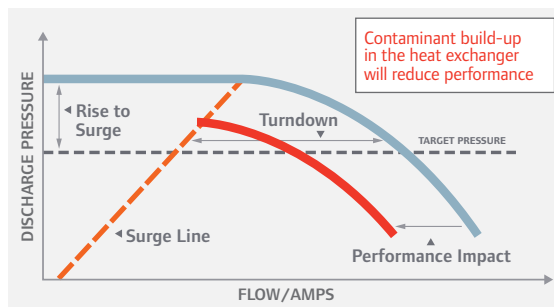
When contaminants infiltrate a cooling system, they can build up in the heat exchanger and lead to reduced performance and operating range, resulting in higher energy costs, as well as reduced turndown and rise to surge. This limits the compressor's ability to efficiently modulate the outlet capacity.

### 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

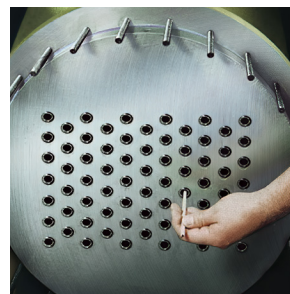
Corrosive cooling water can cause heat exchanger tube erosion and fractured cooling fins, eventually causing leaks. Dirt and dust in the inlet air or gas flow path can also cause damage.



## 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.



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