

A large industrial heat exchanger with a red metal casing and yellow piping. The unit is situated in a facility with other industrial equipment and pipes visible in the background. The yellow pipes are prominent, running horizontally and vertically. A pressure gauge is visible on one of the vertical pipes.

## Heat Exchangers: Restoration vs. Replacement

**Heat-Exchanger**



**USA**

Custom Heat Exchangers

Heat exchangers are critical devices for effectively transferring heat energy throughout commercial and industrial heating systems. These devices transfer, or exchange heat between two fluids—which can be gases or liquids—and are frequently used to minimize heat loss in high temperature and high pressure applications.

In addition to various heating solutions, heat exchangers can be used in cooling solutions such as air conditioners and refrigerators; the devices are used to remove unwanted heat from a given area, and either condense the heat into a fluid, or expel it into another area.

Regardless of the specific application, heat exchangers are generally built to last between 10 and 20 years. However, there are several factors that can lead to premature heat exchanger failure: improper maintenance, poor system or equipment design, incorrect installation, and many others.

Unfortunately, heat exchangers, like many heating and cooling system components, will eventually fail; this is primarily due to fatigue that results from the constant expanding and contracting of metals. Though this is normality within heating processes, heat exchangers are negatively affected, and will no longer perform to the best of their ability.



## Serviceable Issues

There are several heat exchanger issues that can be rectified without replacing the entire unit.

- **Fouling** (contamination) of heat exchanger units inhibits heat transfer, which will result in costly maintenance to repair the issue—but the issue will be quickly resolved. Common types of fouling include chemical, biological, deposition, and corrosion.
- **Flow maldistribution** is unsuitable air flow within your heat exchanger, which will reduce the device's thermal performance, thus leading to other potentially serious issues. This is usually a problem that stems from the design process of heat exchangers, but can occur due to poor installation.
- **Tube bundles**, which are core components of heat exchangers, are also subjected to harsh environments and high pressures and temperatures. If you are having circulatory issues within your system, tube bundle replacement can resolve the issue.



## Replacing the Heat Exchanger

There will be instances when the damage of your heat exchanger will be far beyond simple maintenance. A bigger problem befalling these devices is excessive cracking.

System overheating is the leading cause of many heat exchanger cracks. When heating systems don't receive an adequate amount of airflow, the heat exchanger will succumb to the stress of constant expansion and contraction of its metal material. Slowly but surely, this heat stress creates cracks near welds, bends, and other weak areas.

Over-sized heating systems are very prone to overheating, thus being prone to cracks as well. A huge system with small ductwork intensifies this problem even more, as there isn't enough air flow in the system. An over-sized system can heat an area quickly and then shut off, but the heat exchanger can rust from the inside since it remains wet.



If you have a cracked heat exchanger, there is no getting around it—you need to replace the unit. Without replacement, you could be in danger of the heat exchanger leaking carbon monoxide into your home or work facility.

## Crack Sizes

Cracks in your heat exchanger are easy to notice, and even the smallest crack can have huge implications on your heat transfer efficiency. Repairing a cracked heat exchanger is often much more expensive than replacing it entirely; some repairs can cost up to the higher thousand dollar range, while new devices are more economical.

## Warranties

Many heat exchanger warranties don't cover damage or failures due to faulty installation, improper servicing, force majeure, and general abuse of the device; moreover, you've likely had your heat exchanger for quite some time, and your warranty is likely to be expired. A new heat exchanger will save labor and utility costs, and it will come with a new warranty as well.

## Boiler Supplies Can Help

Since your exchanger will eventually need replacement, Boiler Supplies has diverse options available to your company. We provide replacement heat exchangers and related components manufactured by notable industrial companies:

- Armstrong
- Alco
- Old Dominion
- Bell & Gossett
- Patterson Kelley
- Cemline
- Taco
- Thrush
- Adamson
- Reco USA
- Standard Xchange
- AO Smith
- Graham
- American Standard

All of our Heat exchangers are available in Straight Tube, U-Tube and Double Wall High Temperature varieties to suit your specific applications. Most of our products can be shipped within 24 hours of your purchase order, so your replacement heat exchanger will quickly be in your hands.

To learn more about our extensive inventory of heating solutions, Contact Boiler Supplies today—our customer representatives are waiting to hear from you



