

Kaloxi

Cleansing of Heating and Cooling Systems

- The CIP System

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INTRODUCTION

The idea of the CIP (Cleaning In Place) system is to mix the circulating media in a system or a heat exchanger with a cleaning compound and circulate it through the system with the help of a small portable pump. We offer a working cleaning compound and a range of portable circulation pumps.

Kaloxi® - A Unique Product

Kaloxi® is a cleaning compound especially developed to dissolve and remove the internal deposition of scale forming salts in water supplied systems.

Kaloxi® is caustic, with a pH-value of 1,4 and it consists of:

Phosphorous Acid

Citric Acid

Inhibitor

These acids are bio-degradable and non-toxic. Most soft drinks contain both citric and phosphoric acids. The inhibitor makes our product unique. It works as a buffer and protects all the sensitive components you find in heat exchangers and in complete heating or cooling systems.

Water quality and its consequences

The water used as a heat conductor in central heaters is often furnished by a local water board, i.e. surface water from a nearby reservoir. Places without waterworks usually have wells and in cooling systems water towers are commonly used. However, regardless of source, no water is a hundred percent clean; even drinking water contains pollutants such as iron, copper, calcium, sodium, potassium, and bacteria. This causes lime, magnetite, rust and bacteria precipitation to accumulate and form an insulating layer inside cooling or heating systems. This layer obstructs water flow and reduces heat transfer.

HEAT EXCHANGERS - PROBLEMS AND SOLUTION

Heat Exchangers

The heat exchanger is simply a device in which heat from a hot fluid is transferred to a colder one. The most commonly encountered heat exchangers are:

- Plate type
- Shell and Tube type
- Extended Surface of Finned type

Typical problems and solution:

In a heat exchanger the fluid flows are separated by a thin metallic wall. The wall surface area in contact with the fluid streams is referred to the exchanger heat transfer area. If sediments are allowed to accumulate on the heat transfer area the water streams are insulated against each other and the heat transferring effect is reduced.

Kaloxi® removes this sedimentation and thereby restores efficiency and cuts costs. There are several cleansing alternatives for cooling and heating systems:

- a) Cleaning the primary circuit
- b) Cleaning the secondary circuit
- c) Cleaning both circuits including the heat exchanger
- d) Cleaning the heat exchanger only. With a circulation pump you simply circulate **Kaloxi®** through the heat exchanger.

Until recently the cleaning of industrial equipment - including heat exchangers - entailed great expense. The machinery had to be dismantled and cleaned manually, or sometimes even replaced. By using **Kaloxi®** maintenance costs can be reduced drastically. Typical industrial installations which can benefit from **Kaloxi** are:

District Heaters	Water Heaters	Heat Batteries
Cooling Batteries	Boilers	Condensers
Heat Exchangers	Extruders	Processors

Kaloxi® can be used on practically anything that employs water as cooling or heating media.

USER MANUAL

By using the bio-degradable **Kaloxi®** cleaning compound unnecessary openings of plate heat exchangers can be avoided, saving you time and money.

Cleansing of heat exchangers:

1. Remove water from the system to allow adding of the **Kaloxi®** cleaning fluid. The most typical mixing proportion is 10%. Increase the proportion if the system is extremely dirty or the impurities unusually difficult.
2. Connect the circulation pump to the inlet and outlet of one side of the heat exchangers.
3. Check that the pump is directing the flow in the opposite direction of the normal system circulation.
4. Fill the pump with the right amount of **Kaloxi®**.
5. Start the pump and let it work for 3-5 hours.
6. Drain the cleansed part of heat exchanger
7. Flush the cleansed parts including the pump itself with water
8. Refill the heat exchanger and ventilate
9. The exchanger is ready for use.

Complete systems can be cleansed in similar fashion. To evaluate the effect of the cleansing, you can -for example- run the heat exchanger before cleansing and record the outlet temperature on the warm side (primary side). After cleansing of the cold side (secondary side); check the temperature again with the same mass flows and inlet temperatures as before cleansing.