

Decalcification

Cleaning requirements:

Scale formation which adversely affects the required operation can be expected due to insufficient flow speeds, high temperatures, unfavourable turbulence, high degrees of hardness or strong contamination. Therefore, Single Temperiertechnik recommends cleaning at regular intervals. Various factors and issues must be noted for the optimum cleaning of tempering machines and other affected system parts.

Instructions for optimum cleaning:

The cleaning agent flow rate should be similar to the normal flow rate. If the flow rate is smaller, the cleaning time is extended accordingly. Only use approved cleaning systems for the cleaning, e.g. decalcification pump SRG EKP 20 S U (or the larger EKP 45 or EKP 90; cleaning systems can be requested from Single Temperiertechnik).

Decalcification and removal of inorganic coatings:

Fill the cleaning system with water, circulate the water and check the connections for leaks before the actual cleaning. Do not add the concentrated acids until there are no leaks. For example, 5 – 20% inhibited phosphoric acid (e.g. Beizer 640) should be used for the cleaning. The cleaning liquid must be pumped through the parts of the system to be cleaned. The formation of gas can be expected if calcium or similar deposits are present. It should be ensured that gases produced are purged and that no gas cushion is generated. In the case of gas formation, the formation of foam can also be expected; a suitable antifoam agent (e.g. ST-DOS S-913) should therefore be ready for use.

The cleaning is monitored using pH measurement. The pH value should be approx. 2.0 when phosphoric acid is used. If the pH value increases, the cleaning solution should be intensified with acid. However, a concentration of 40% should not be exceeded.

When the cleaning is complete (no rise of the pH value during the cleaning), the cleaning solution must be neutralised outside the tempering machine using an appropriate alkaline solution (e.g. sodium hydroxide, e.g. Beizer N-720) (pH value between 6.5 and 10.0) and can then be disposed of accordingly. Afterwards, the cleaned system must be carefully rinsed with clean water. For neutralising the inhibited residual acid in the tempering machine, this must be treated with a weak sodium hydroxide solution (e.g. Beizer N-730) before the last rinsing.

If other cleaning chemicals are used, strictly observe the instructions and recommendations of the manufacturer or supplier.

Summary of the cleaning process:

- Product selection
- Completely disconnect heat exchanger / tempering machine from the mains power supply
- Connection of the cleaning pump (pump, hoses, preparation tank)
- Execution of the leak tightness test (only with water)
- Preparation of the cleaning solution
- The basic principle is: First the water then the acid, otherwise it won't be placid!**
- Circulation of the cleaning solution
- pH control. Monitoring of the cleaning progress and the tempering machine
- Completion of the cleaning / neutralisation outside the system
- Post-treatment / rinsing the cleaned system.

Suitable cleaning products and cleaning equipments can be ordered from, for example, Schweitzer-Chemie GmbH in 71691 Freiberg, <http://www.schweitzer-chemie.de> .