

## **Regulation of temperature hints for heating solids**

(Also applies to other types of heating although in the case of contact heating of solid materials, i.e. conduction, where there is the common use of higher working temperatures together with the requirement for the relatively exact regulation of working temperatures. Due to these reasons, the correct method of regulation has a more important impact on the service life of the heating elements than in the case of heating liquids or gases).

Connection and disconnection within the range 40s- 60s causes repeated full disconnection and shrinking of the resistance wire. This results in high stressing and oxidation of the heating wire inside the heating rod. Capillary and bimetallic thermostats have too high connection / disconnection difference.

For the purpose of increasing the service life of the heating rods, it is recommended to use electronic regulation (ON/OFF regulator or PID regulator) together with a mechanical relay where the switching times must be under 10s. The ideal solution is regulation with the controlled electric voltage in time intervals up to 1s i.e. thermal regulation + SSR (solid-state relay) or SCR relay.

The thermal sensor is located a maximum of 10 mm from the heating rods.

