

Unistat® 830

Heating and cooling a 20-litre metal jacketed reactor under different control dynamics

Requirement

A standard feature of the “Unistat-Pilot” is to choose “fast, small overshoot” or “without overshoot” when reaching a set-point. The graphic shows the differences in performance between these settings. In this test the Unistat 830 is programmed to alternate between 20 °C and 60 °C.

Method

The Unistat and reactor are connected using two 1.5-metre insulated metal hoses. The reactor is filled with 15 litre of “M90.055.03”, a Huber supplied silicon based HTF.

Results

The first process curve (fast, small overshoot) reaches 60 °C in just 22 minutes with the second process curve (without overshoot) takes 35 minutes to reach the same set-point temperature.

It can be seen that the overshoot is very minimal in the “fast, small overshoot” mode.

Setup details

Unistat® 830 & Buchi Glas Uster reactor

- Temperature range: -85...200 °C
- Cooling power: 3.6 kW @ 100 °C
3.5 kW @ 0 °C
- Heating power: 3 kW
- Hoses: 2x1.5 m; M30x1.5 (#6386)
- HTF: DW-Therm (#6479)
- Reactor: 20-litre jacketed un-insulated metal pressure reactor
- Reactor contents: 15 litre M90.055.03 (#6259)
- Reactor stirrer speed: 400 rpm
- Control: process

