

Unistat® 705w

Effects of differing control dynamics when heating and cooling a Buchi Glas Uster 3-litre metal jacketed reactor

Requirement

Every Unistat can be set to ramp "Fast with small overshoot" or "No overshoot". This case study looks at the response of a Unistat 705w under different "control dynamics"

Method

The Unistat and reactor are connected using two 1-metre insulated metal hoses. The reactor is filled with 2.25 litre of "M90.055.03", a Huber supplied silicon based HTF.

Results

The first curve is under "Fast with small overshoot", even so it can be seen that after ramping rapidly through 40 K (20 °C to 60 °C) in approximately 15 minutes, the process temperature hits exactly the set-point with NO over shoot. The second curve is carried out under the "No overshoot dynamic setting".

Setup details

Unistat® 705w & Buchi Glas Uster reactor

Temperature range: -75...250 °C
 Cooling Power: 0.6 kW @ 250...100 °C
 0.65 kW @ 0 °C
 0.6 kW @ -20...-40 °C
 0.3 kW @ -60 °C

Heating power: 1.5 kW/3 kW
 Pump speed 3500 rpm
 Hoses: 2x1 m; M24x1.5 (#9325)
 HTF: DW-Therm (#6479)
 Reactor: 3-litre un-insulated metal pressure reactor

Reactor contents: 2.25 litre M90.055.03 (#6259)

Reactor stirrer speed 200 rpm
 Control: process

