

Unistat® 510w

Heating a Chemglass 50-litre jacketed glass reactor from -50 °C to 20 °C

Requirement

This case study looks at the speed of response when the process temperature set-point is changed from -50 °C to 20 °C in a Chemglass 50-litre jacketed glass reactor.

Method

The Unistat and reactor were connected using two 1.5 m insulated metal hoses. The reactor was filled with 37 litre of "M90.055.03", a Huber supplied silicon based HTF.

Results

It can be seen that the jacket temperature ramps rapidly from -50 °C to 20 °C in around 27 minutes (average ramp rate of 4.8 K/min.) and as the process approaches its set-point ramping back to guide the process exactly to its new set-point within 32 minutes (average ramp rate of 2 K/min.) with a negligible overshoot.

Setup details

Unistat® 510w & Chemglass 50-litre reactor

- Temperature range: -50...250 °C
- Cooling power: 5.3 kW @ 250...0 °C
2.8 kW @ -20 °C
0.9 kW @ -40 °C
- Heating power: 6.0 kW
- Hoses: 2x1.5 m; M38x1.5 (#6659)
- HTF: DW-Therm (#6479)
- Reactor: 50-litre Chemjacketed glass reactor (un-insulated)
- Reactor content: 37 litre M90.055.03
- Stirrer speed: 80 rpm
- Control: process

