Setup details
Unistat® 425w & Buchi Glas Uster reactor

Temperature range:	-40...250 °C
Cooling power:	2.8 kW @ 250...100 °C 2.5 kW @ 0 °C 1.9 kW @ -20 °C 0.2 kW @ -40 °C
Heating power:	2.0 kW
Hoses:	2x1 m; M38x1.5 (#6656)
HTF:	DW-Therm (#6479)
Reactor:	20-litre jacketed glass reactor
Reactor content:	15 litre M90.055.03 (#6259)
Stirrer:	150 rpm
Control:	process

Unistat® 425w

Heating and cooling a 20-litre Buchi Glas Uster jacketed glass reactor

Requirement

This case study looks at the performance of a Unistat 425w heating and cooling a 20-litre Buchi Glas Uster reactor from 20 °C to 180 °C and back to 20 °C under "process" control.

Method

The Unistat 425w is connected to the 20-litre Buchi Glas Uster reactor using two insulated metal 1-metre hoses. The reactor is filled with 15 litre of "M90.055.03", a silicon based HTF.

Results

The jacket temperature ramps through 180 K (20 °C to 200 °C) within 30 minutes (ramp rate 6 K/min.) to pull the process to its new set-point. As the process approaches target temperature the jacket cools to guide the process precisely to its target temperature.
The cooling cycle shows a similar performance with the jacket cooling rapidly to -13 °C from 182 °C (195 K) within 50 minutes (ramp rate 3.9 K/min.) to pull the process back to 20 °C as quickly as possible.