

Unistat® 910w

Heating and cooling a 20-litre jacketed glass reactor from 20 °C to 180 °C to 20 °C

Requirement

This case study looks at the performance of a Unistat 910w heating and cooling a 20-litre jacketed reactor from 20 °C to 180 °C and back to 20 °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

Because of the maximum temperature of DW-Therm (the chosen HTF) the „internal“ (jacket) temperature is limited to 200 °C. This limit can be seen at the top of the heating curve as the „internal“ (jacket) temperature runs „flat“ at just below 200 °C.

Under "process" control the jacket is ramped rapidly to drag the process to its new set points as quickly as possible. It can be seen that in the cooling curve the jacket ramps to -48 °C from 188 °C (236 K) within 32 minutes at a ramp rate > 5.7 K/min.

Setup details

Unistat® 910w & Buchi Glas Uster reactor

Temperature range:	-90...250 °C
Cooling power:	5.2 kW @ 250...-20 °C
Heating power:	6.0 kW
Hoses:	2x1.5 m; M38x1.5 (#6656)
HTF:	DW-Therm (#6479)
Reactor:	20-litre jacketed glass reactor
Reactor content:	15 litre M90.055.03 (#6259)
Stirrer speed:	70 rpm
Control:	process

