Unistat® 930w

Cooling a Diehm 100-litre glass reactor to T_{min}

Requirement
This case study shows the performance of a Unistat 930w connected to a 100-litre Diehm glass reactor cooling from 20 °C to T_{min} under "internal" (jacket) control.

Method
The Unistat and reactor are connected using two 1.5-metre insulated metal hoses. The reactor is filled with 75 litre of "M90.055.03", a Huber supplied silicon based HTF.

Results
The test is run for 2 hours. The initial „internal" (jacket) ramp rate of over 8.5 K/min. rapidly cools the jacket from 20 °C to -70 °C in approximately 12 minutes with a corresponding process ramp rate averaging 2.2 K/min.
After 2 hours the minimum internal temperature reached is -85 °C with a corresponding process temperature of -71 °C though it is continuing to cool towards the "internal" (jacket) temperature.

Setup details
Unistat® 930w & Diehm reactor

Temperature range:	-90...200 °C
Cooling power:	20 kW @ 0...-40 °C 15 kW @ -60 °C 5 kW @ -80 °C
Heating power:	24 kW
Hoses:	2x1 m; M38x1.5 (#6656)
HTF:	DW-Therm (#6479)
Reactor:	100-litre un-insulated glass reactor VPC Bypass installed
Reactor content:	75 litre M90.055.03 (#6259)
Stirrer speed:	400 rpm
Control:	internal