Unistat® 910w

Cooling a 20-litre jacketed glass reactor from 20 °C to -60 °C then to T_{min}

Requirement
This case study looks at the performance of a Unistat 910w cooling a Buchi Glas Uster 20-litre glass reactor first to -60 °C and then to T_{min} under "process" control.

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
The initial „internal" (jacket) ramp rate is over 6.5 K/min. and cools the jacket to -60 °C in less than 10 minutes with a corresponding process ramp rate of 2.3 K/min.
Once the target of -60 °C is reached and temperatures stable the set-point is changed. After 1 hour it can be seen that T_{min} for the jacket is -82 °C with a corresponding process temperature of -75 °C.

Setup details
Unistat® 910w & Buchi Glas Uster reactor

Temperature range:	-90...250 °C
Cooling power:	4.7 kW @ -40 °C 3.1 kW @ -60 °C 0.9 kW @ -80 °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