Unistat 912w

Unistat 912w controls the process temperature in a 30l glass vacuum jacketed reactor from Asahi

Requirement

This case study demonstrates the control capabilities over the process temperature when a Unistat 912w is connected with an Asahi 30l vacuum jacketed reactor.

Method

The Unistat 912w was connected to a 30l Asahi vacuum glass jacketed reactor via 2 x 1,5m metal insulated tubes. The HTF used was Huber's M90.055/170.02 and the process mass simulated with 20l of Huber's DW-Therm.

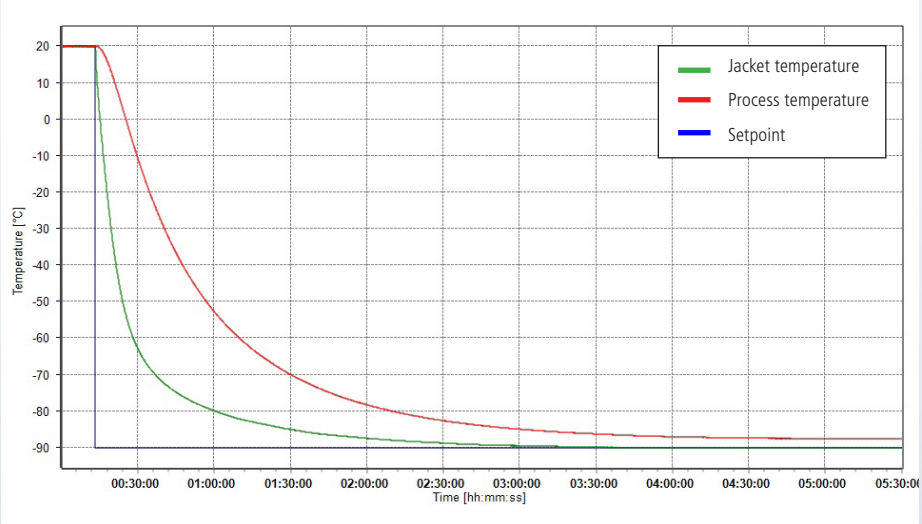
Setup details

Temperature range:	-90°C...+250°C
Cooling power:	7.0 kW @ +20°C
	7.0 kW @ 0°C
	7.0 kW @ -20°C
Heating power:	6 kW
Hoses:	2 x 1,5m M30 metal Insulated
HTF:	M90.055/170.02
Reactor:	30l Asahi vacuum glass jacketed
	Reactor content: 20l DW-Therm
Stirrer speed:	150 rpm
Control:	process
Amb. temperature:	+23°C

Results

1. Lowest achievable temperature (Tmin):

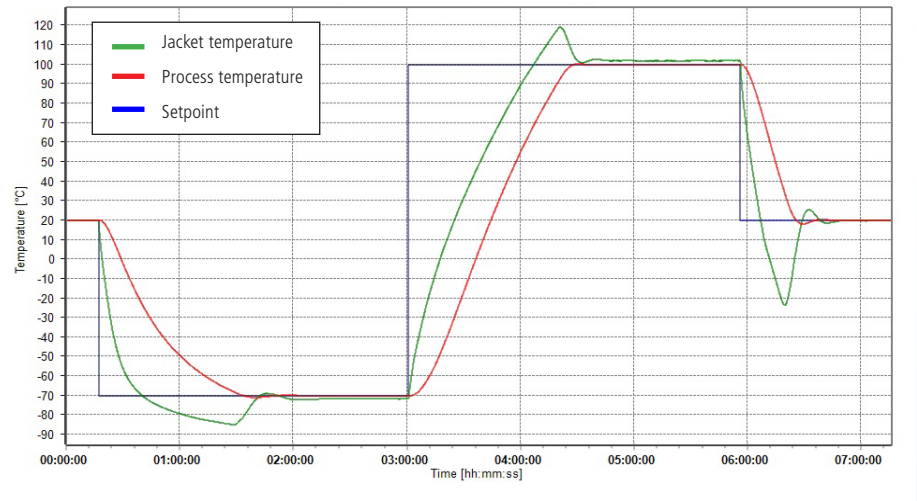
The graphic below shows that the minimum achievable process temperature was -87.7°C with a corresponding jacket temperature of -90°C.



2. Performance: Temperature Control

The graphic below shows the speed, accuracy and stability as the Unistat 912w as it reaches and maintains each new set-point over a temperature range of -70°C to +100°C.

Start T	End T	Approximate time	Av. Ramp Rate
+20°C	-70°C	76 minutes	1.2 K/min
-70°C	+100°C	88 minutes	1.9 K/min
+100°C	+20°C	29 minutes	2.8 K/min



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