

Unistat 825

Unistat 825 controls the process temperature in non-insulated 30l glass jacketed reactor from Asahi

Requirement

This case study demonstrates the ability of the Unistat 825 to control the process temperature in non-insulated 30l glass jacketed reactor from Asahi. The tables and the graphics below show the speed, accuracy and stability as the process temperature is changed to each new set-point.

Method

The Unistat 825 was connected to a 30l Asahi non-insulated glass jacketed reactor via 2 x 2m metal insulated tubes. The HTF used was Huber's M80.100/250.03 and the process mass simulated with 20l of Huber's DW-Therm.

Under "Process Control" from a Pt100 (Teflon covered) located in the process mass, different set-points were entered and the performance of the Unistat 825 was recorded using Huber's service software and recorded onto a USB thumb drive inserted in the USB interface on the Pilot ONE controller.

Setup details

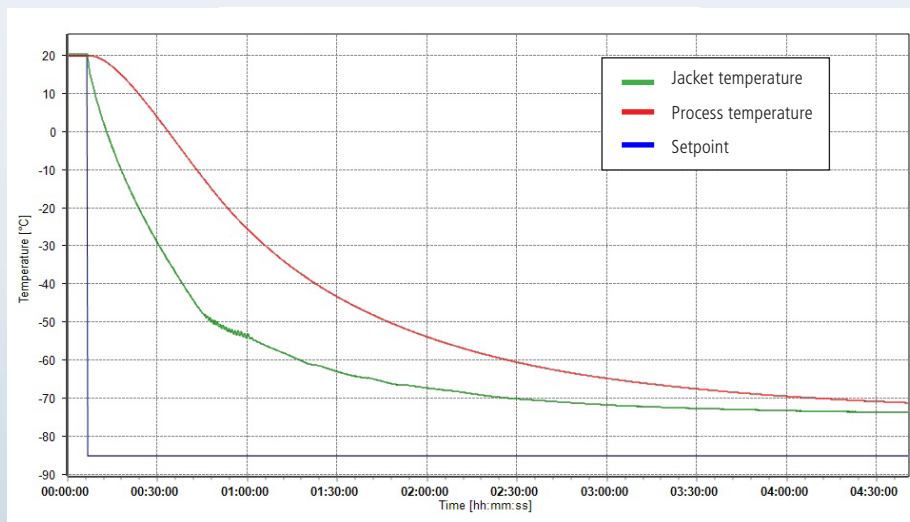
- Temperature range: -85°C...+250°C
- Cooling power: 2.3 kW @ +20°C
2.2 kW @ 0°C
2.0 kW @ -20°C
- Heating power: 3 kW
- Hoses: 2 x M30x1,5 Metal Insulated
- HTF: M80.100/250.03
- Reactor: 30l Asahi glass jacketed
- Reactor content: 20l DW-Therm
- Stirrer speed: 200 rpm
- Control: process
- Amb. temperature: +25°C



Results

1. Lowest achievable temperature (Tmin):

The graphic below demonstrates a minimum achievable process temperature of -71.26°C with a corresponding jacket temperature of -73.70°C.



2. Performance: Temperature Control between -60°C and +100°C.

This test demonstrates the speed and accuracy that the Unistat 825 control the process temperature.

Start T	End T	Approximate time	Av. Ramp Rate
+20°C	-60°C	106 minutes	0.75 K/min
-60°C	+100°C	155 minutes	1.03 K/min
+100°C	+20°C	92 minutes	0.87 K/min

