Unistat 825

Unistat 825 controls the process temperature in 30l DW reactor from AGI Glassplant

Requirement

This case study demonstrates the ability of the Unistat 825 to control the process temperature in 30l DW reactor from AGI Glassplant. 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 DW reactor from AGI Glassplant 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 1,5m M30 metal Insulated
HTF:	M80.100/250.03
Reactor:	30l DW-reactor, AGI Glassplant
Reactor content:	20l DW-Therm
Stirrer speed:	200 rpm
Control:	process
Amb. temperature:	+23°C

Results

1. Lowest achievable temperature (Tmin):

The graphic below demonstrates a minimum achievable process temperature of -71.3°C with a corresponding jacket temperature of -73.6°C.
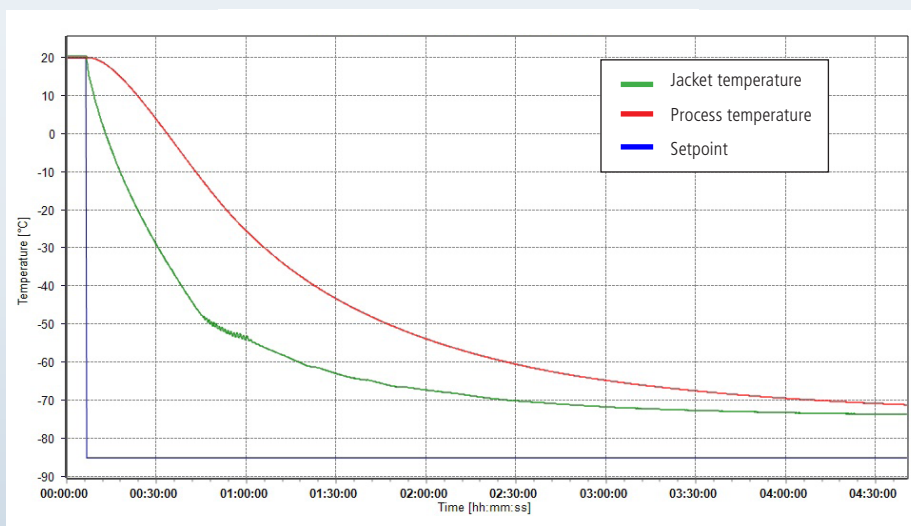
2. Performance: Temperature Control between -60°C and +100°C.
This test demonstrates the speed and accuracy that the Unistat 825 control the process temperature.

Start T	End T	Approximate time	Av. Ramp Rate
+20°C	-60°C	145 minutes	0.6 K/min
-60°C	+100°C	154 minutes	1.0 K/min