

Unistat Tango

Unistat Tango controls the process temperature vacuum insulated 5l TWRB reactor from AGI Glassplant

Requirement

This case study demonstrates the ability of the Unistat Tango to control the process temperature in vacuum insulated 5l TWRB reactor from AGI Glassplant.

Method

The Unistat Tango was connected to a 5l AGI vacuum insulated glass reactor via 2 x 1.5-meter metal insulated tubes. The HTF used was Huber's M40.165/220.10 and the process mass simulated with 3l of Huber's M40.165/220.10 silicon oil.

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

The agitator speed was set to 200 rpm.

Setup details

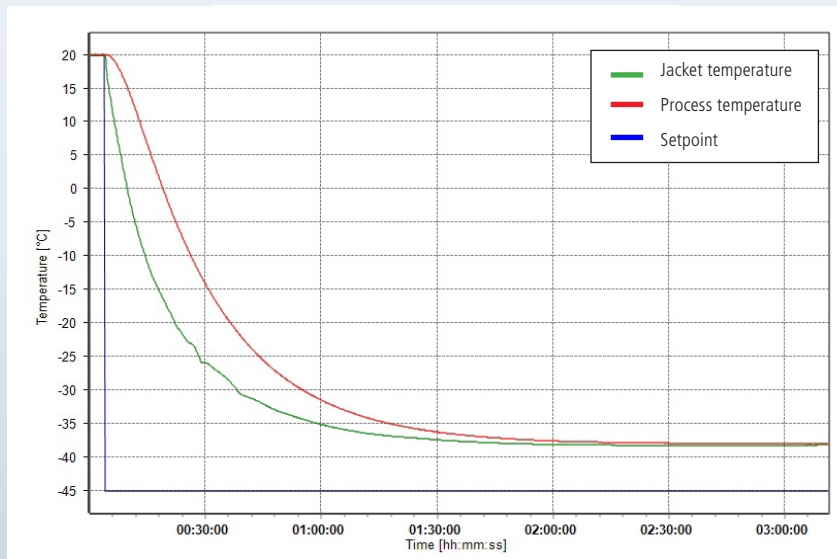
- Temperature range: -45°C...+250°C
- Cooling power: 0.7 kW @ +20°C
0.7 kW @ 0°C
0.4 kW @ -20°C
- Heating power: 3 kW
- Hoses: 2 x 1.5m M24x1.5 Metal Insulated
- HTF: M40.165/220.10
- Reactor: 5l TWRB reactor AGI Glassplant
- Reactor content: 3l M40.165/220.10
- Stirrer speed: 200 rpm
- Control: process
- Amb. temperature: +25°C



Results

1. Lowest achievable temperature (Tmin):

The graphic below demonstrates a minimum achievable process temperature of -37.93°C with a corresponding jacket temperature of -38.24°C.



2. Performance: Temperature Control

The test demonstrates the speed and accuracy that the Unistat Tango control the process temperature from -20°C to +100°C and back to -20°C.

Start T	End T	Approximate time	Av. Ramp Rate
-20°C	+100°C	41 minutes	2.93 K/min
+100°C	-20°C	94 minutes	1.28 K/min

