

Unistat P610w

Unistat P610w controls the process temperature in a 50l vacuum insulated glass reactor from AGI Glassplant

Requirement

This case study demonstrates the ability of the Unistat P610w to control the process temperature in 50l vacuum insulated glass reactor from the company AGI Glassplant. As part of the case study, a temperature map was also generated via an array of sensors attached to the outer wall of the reactor. These sensors can clearly be seen in a picture.

Method

The Unistat P610w was connected to a 50l reactor via 2 x M32 metal insulated tubes. The HTF used was Huber's M90.055/170.02 and the process mass simulated with 40l of Huber's DW-Therm.

Setup details

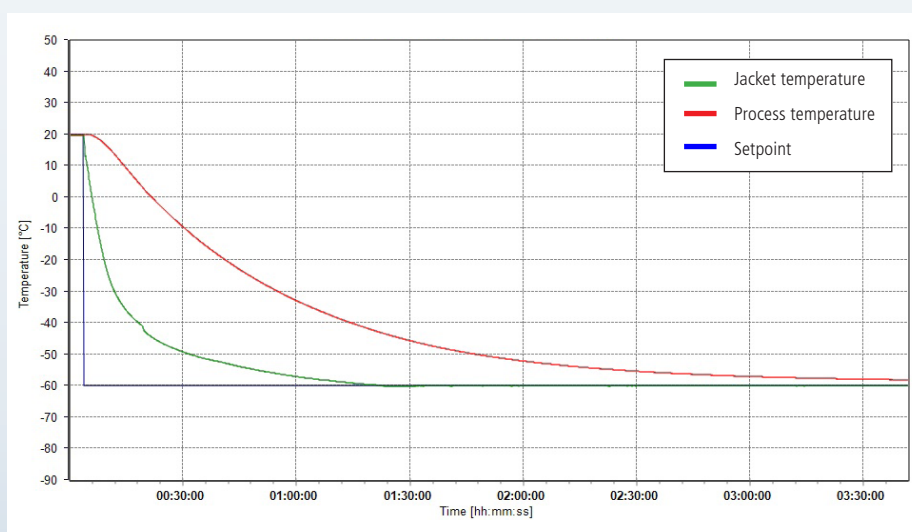
Temperature range:	-60°C...+200°C
Cooling power:	7.0 kW @ +20°C
	7.0 kW @ 0°C
	6.4 kW @ -20°C
Heating power:	6 kW
Hoses:	2 x M32 metal Insulated
HTF:	M90.055/170.02
Reactor:	50l AGI Glassplant
Reactor content:	40l DW-Therm
Stirrer speed:	150 rpm
Control:	process
Amb. temperature:	+23°C



Results

1. Lowest achievable temperature (Tmin)

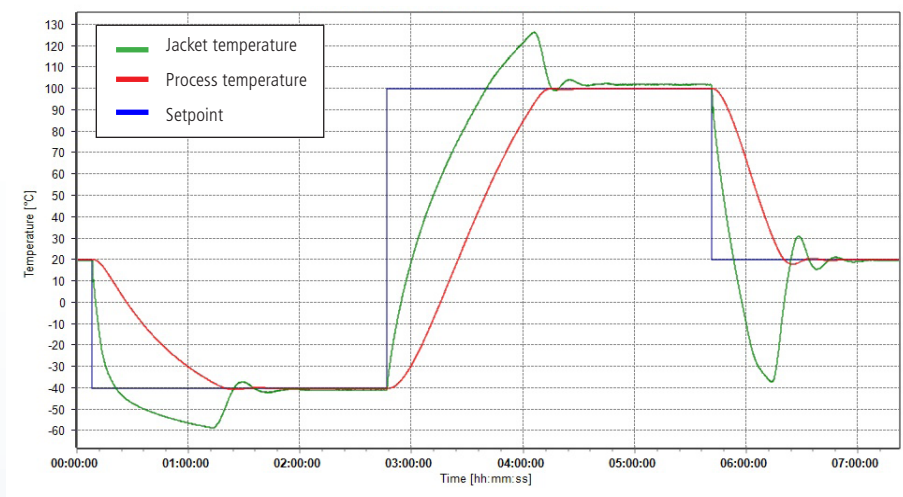
The graphic below demonstrates that the minimum achievable process temperature is -58,1°C with a corresponding jacket temperature of -60°C.



2. Performance: Temperature Control

The graphic below shows the speed and accuracy of temperature control as the process is cooled & heated from +20°C to -40°C then up to +100°C and back to +20°C.

Start T	End T	Approximate time	Av. Ramp Rate
+20°C	-40°C	71 minutes	0.8 K/Min
-40°C	+100°C	86 minutes	1.6 K/Min
+100°C	+20°C	38 minutes	2.1 K/Min



3. Stability

The graphics below demonstrate a continual stability of the process temperature of better than 0.02K at a set-point of +20°C and at a set point of -40°C.

