



Unistat 705

Unistat 705 cycling a 5-litres glass vacuum insulated reactor

Requirement

This case study demonstrates the lowest achievable temperature, the speed and control of a Unistat 705 as it cools and heats an Asahi 5-liter vacuum insulated reactor from +20°C to -50°C then up to +100°C.

Method

The 5-litres Asahi glass vacuum insulated reactor was connected to Unistat 705 using 1-meter metal insulated hoses. The thermofluid used in the system was "DW-Therm". "Process" control was carried out via a Pt100 sensor located in the "process" mass. Stirrer speed was set to 155 rpm.

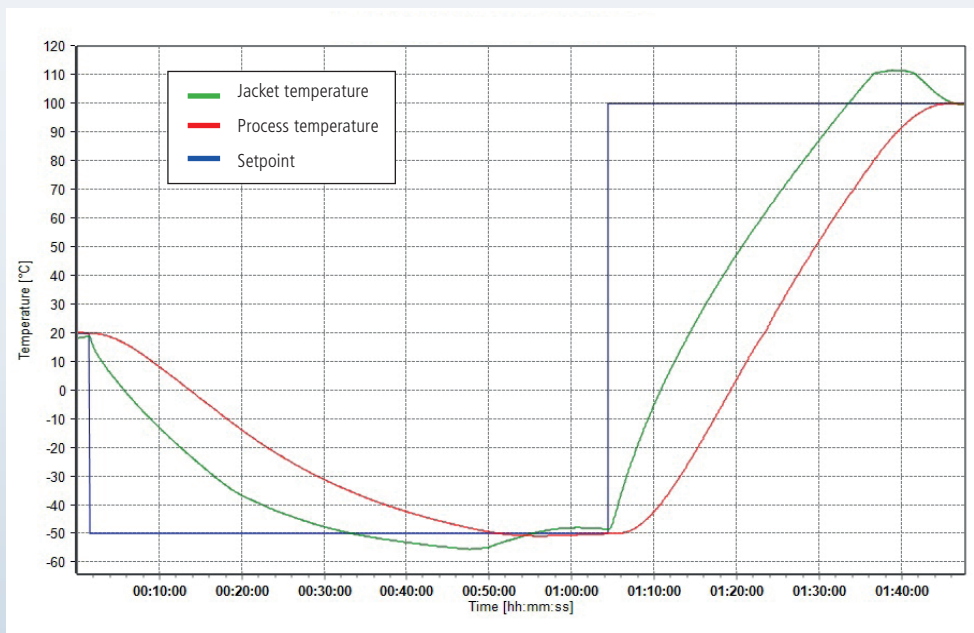
Setup details

Temperature range:	-75°C...+250°C
Cooling power:	0.6 kW @ +20°C
	0.65 kW @ 0°C
	0.6 kW @ -20°C
Heating power:	1.5 kW
Hoses:	1-meter metal insulated
HTF:	DW-Therm
Reactor:	Asahi 5-litres glass vacuum insulated
Reactor content:	4 l M60.115/200.05
Stirrer speed:	155 rpm
Control:	process
Amb. temperature:	+25°C

Results

1. Performance:

The graphic shows the speed and accuracy of the Unistat 705 as each new set point is entered. It takes approximately 50 minutes to cool down the reactor from +20°C to -50°C. In the heat up phase Unistat 705 takes 41 minutes to heat the reactor from -50°C to +100°C.



2. Lowest achievable temperature (Tmin):

Once stable at +20°C under the "Process" control, a set point of -75°C is entered. The graphic shows that the minimum achievable process temperature was -61°C.

