

Petite Fleur

Petite Fleur controlling a 1 liter jacketed reactor

Requirement

This Case Study demonstrates the minimum achievable process temperature and the control capabilities over the process temperature when Petite Fleur is connected with Chemglass 1 liter glass jacketed reactor.

Method

The 1 liter Chemglass jacketed reactor was connected to Petite Fleur 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 150 rpm.

Setup details

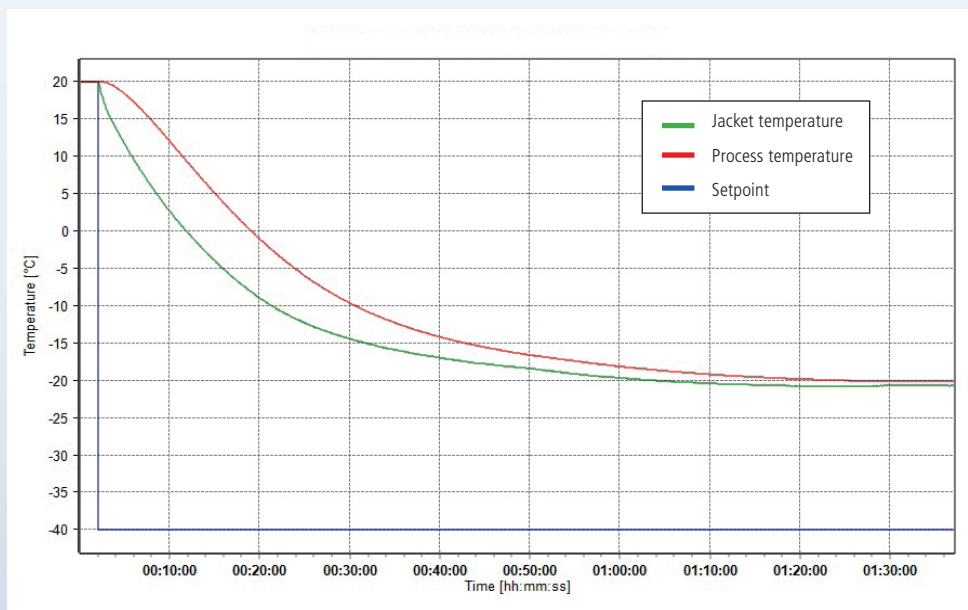
- Temperature range: -40°C...+200°C
- Cooling power: 0.48 kW @ +20°C
0.45 kW @ 0°C
0.27 kW @ -20°C
- Heating power: 1.5 kW
- Hoses: 2*1 m metal insulated M16
- HTF: DW-Therm
- Reactor: Chemglass 1liter jacketed reactor
- Reactor content: DW-Therm
- Stirrer speed: 150 rpm
- Control: process
- Amb. temperature: +25°C



Results

1. Lowest achievable temperature (Tmin):

The graphic shows that the minimum achievable temperature was -20.3°C.



2. Performance:

The table and graphic show the speed, accuracy and stability as the Petite Fleur reaches and maintains each new set-point.

Start T	End T	Approximate time	Av. Ramp Rate	Fastest Ramp Rate
+20°C	-20°C	45 minutes	0.9 K/min	(+10°C to 0°C) 1.7 K/min
-20°C	+100°C	23 minutes	5.2 K/min	(+30°C to +60°C) 7.5 K/min
+100°C	+20°C	34 minutes	2.4 K/min	(+60°C to +30°C) 2.5 K/min

