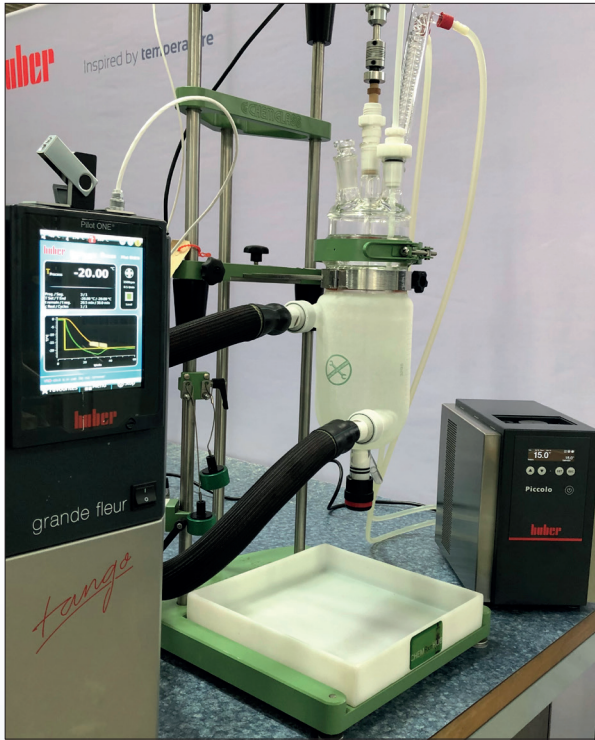


Grande Fleur

Grande Fleur cycling 1-liter Chemglass jacketed reactor



Requirement

This Case Study demonstrates the minimum achievable process temperature and the process temperature control abilities of the Grande Fleur jacketed reactor when it is connected with a Chemglass 1-liter jacketed reactor.

Method

The 1-liter Chemglass jacketed reactor was connected to Grande Fleur using 1-meter M16 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.

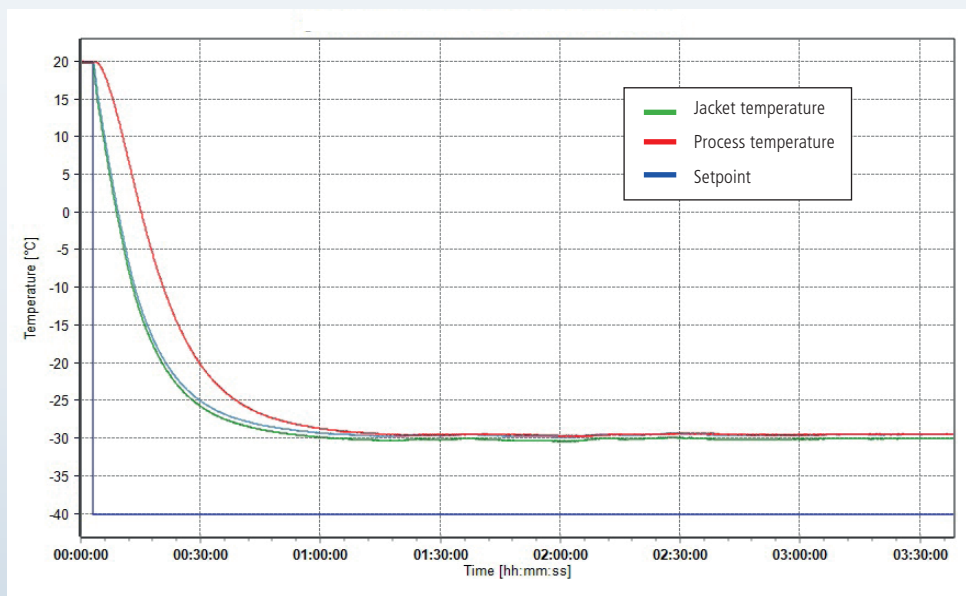
Setup details

- Temperature range: -40°C...+200°C
- Cooling power: 0.6 kW @ +20°C
0.6 kW @ 0°C
0.35 kW @ -20°C
- Heating power: 1.5 kW
- Hoses: 2*1 m metal insulated
- HTF: DW-Therm
- Reactor: 1-liter Chemglass jacketed reactor
- Reactor content: 0,75 l DW-Therm
- Stirrer speed: 150 rpm
- Control: process

Results

1. Lowest achievable temperature (Tmin):

The graphic shows that the process reaches a temperature of -29°C.



2. Performance:

The graphic shows that process temperature reaches -20°C approximately 29 minutes after the setpoint of -20°C is entered. It takes the unit about 37 minutes to stabilize the process temperature at $\pm 0.03^{\circ}\text{C}$.

After the new setpoint of 130°C is entered, it takes the Grande Fleur approximately 40 minutes to heat the process mass up to this point and about 44 minutes to stabilize process temperature at $\pm 0.03^{\circ}\text{C}$.

Finally, it takes the Grande Fleur approximately 32 minutes to cool the process mass back down to $+20^{\circ}\text{C}$ and about 44 minutes to stabilize the temperature at $\pm 0.03^{\circ}\text{C}$.

Start T	End T	Approximate time	Av. Ramp Rate
$+20^{\circ}\text{C}$	-20°C	29 minutes	1.38 K/min
-20°C	$+130^{\circ}\text{C}$	40 minutes	3.75 K/min
$+130^{\circ}\text{C}$	$+20^{\circ}\text{C}$	32 minutes	3.44 K/min

