

Petite Fleur



Petite Fleur cycling a 1-liter vacuum insulated reactor

Requirement

This Case Study demonstrates the control capabilities over the process temperature when a Petite Fleur is connected with an Asahi 1-liter vacuum insulated reactor over the temperature range of +20°C to -20°C, then to +100°C and back to +20°C.

Method

The 1-liter Asahi vacuum insulated 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
 HTF: DW-Therm
 Reactor: Asahi 1-liter vacuum insulated
 Reactor content: 0.7 l DW-Therm
 Stirrer speed: 150 rpm
 Control: process
 Amb. temperature: +25°C

Results

Performance:

The table and graphic data show the speed, accuracy and stability of the Petite Fleur as each new set point is reached and maintained.

Start T	End T	Approximate time	Av. Ramp Rate	Fastest Ramp Rate
+20°C	-20°C	50 minutes	0.8 K/min	(+10°C to 0°C) 1.7 K/min
-20°C	+100°C	24 minutes	5.0 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

