

Unistat® petite fleur®

Petite Fleur® cycling a 2-litre Radleys jacketed reactor between +100°C and -20°C

Requirement

This case study demonstrates the closeness of the temperature control and the minimum process temperature achievable in the process mass.

Method

The 2-litre Radleys reactor was connected to Petite Fleur using two M16x1 1-meter flexible hoses. The thermo fluid used in the system was "M90.055.03". "Process" control was carried out via a Pt100 sensor located in the "process" mass. Stirrer speed was set to 200 rpm.

Setup details

- Temperature range: -40°C...+200°C
- Cooling power:
 - 0.48 kW @ +20°C
 - 0.48 kW @ +200°C
 - 0.45 kW @ 0°C
 - 0.27 kW @ -20°C
 - 0.16 kW @ -30°C
- Heating power: 1.5 kW
- Hoses: M16x1; 2* 1 m
- Thermo fluid: M90.055.03
- Reactor: Radleys 2-litre jacketed reactor
- Reactor content: 1 litre M40.165.10
- Stirrer speed: 200 rpm
- Control: process



Results

Performance:

This graphic shows the Petite Fleur cooling the process in a 2-litre glass jacketed reactor from 100°C to -20°C in a time of approximately 80 minutes, hitting and controlling at -20°C with no overshoot. Heating back to 100°C from -20°C takes only 26 minutes with the same tight control at the target temperature.

Lowest achievable temperature ("T_{min}"):

To demonstrate the working range of the Petite Fleur when connected to a 2-litre reactor, this graphic shows that the Process temperature asymptotes at -27°C.

