

CC®-505

CC®-505 cycling a 10 litre Radleys jacketed reactor

Requirement

This case study demonstrates the ability of the CC-505 refrigeration bath circulator to cycle the process temperature in a range from +20°C to -20°C, the closeness of the temperature control and the minimum process temperature achievable in the process mass.

Method

The 10 litre Radleys reactor was connected to the CC-505 using two M16x1 1-meter flexible hoses. The thermofluid used in the system was M40.165.10. "Process" control was carried out via a Pt100 sensor located in the process mass. Stirrer speed was set to 160 rpm.

Setup details

| | |
|--------------------|--|
| Temperature range: | -50°C...+200°C |
| Cooling power: | 1.2 kW @ +100°C 1.2 kW @ +20°C 1.0 kW @ 0°C 0.6 kW @ -20°C 0.15 kW @ -40°C |
| Heating power: | 1.5 kW |
| Hoses: | M16x1; 2* 1 m |
| HTF: | M40.165.10 |
| Reactor: | Radleys 10 litre jacketed reactor |
| Reactor content: | 8 litre P20.275.50 |
| Stirrer speed: | 160 rpm |
| Control: | process |



Results

Performance:

Cooling down and heating up in a range from +20°C to -20°C. The CC-505 needs approximately 95 minutes to cool down the reactor from +20°C to -20°C and 35 minutes to heat it up from -20°C to +20°C.

Lowest achievable temperature (T_{min}):

Once stable at +20°C under "Process" control, a set-point of -50°C is entered. The CC-505 cools the reactor down to the minimum achievable process temperature of -28°C.

