

Unistat® 705w

Unistat® 705w cooling a 2-litre reactor to T_{min}

Requirement

This case study demonstrates the minimum achievable process temperature when a Unistat 705 is connected to a Radleys "Reactor Ready" system configured with 2-litre vacuum insulated reactor.

Method

The reactor was filled with 1.5 litre of "P20.275.50" as a thermal load, the stirrer set to 250 rpm and the control to "Process". The results were recorded on the Huber "SpyControl" software.

Results

As can be seen from the graphic, the jacket rapidly cools to $-61\text{ }^{\circ}\text{C}$ with a corresponding minimum process temperature of $-59\text{ }^{\circ}\text{C}$.

The ramp time back to $20\text{ }^{\circ}\text{C}$ sees the jacket temperature increase to $47\text{ }^{\circ}\text{C}$ before ramping back to bring the process temperature exactly to its $20\text{ }^{\circ}\text{C}$ set point.

Setup details

Unistat® 705w & Radleys 2-litre "Reactor-Ready" glass reactor

- Temperature range: $-70\text{...}250\text{ }^{\circ}\text{C}$
- Cooling power: $0.6\text{ kW @ }-20\text{ }^{\circ}\text{C}$
 $0.6\text{ kW @ }-40\text{ }^{\circ}\text{C}$
 $0.3\text{ kW @ }-60\text{ }^{\circ}\text{C}$
- Heating power: $1.5\text{ kW / }3\text{ kW}$
- Pump speed: 3500 rpm
- Hoses: $2\times 1\text{ m; M24}\times 1.5\text{ (#9325)}$
- HTF: $\text{SilOil P20.275.50 (#6157)}$
- Reactor: $2\text{-litre vacuum jacketed glass reactor}$
- Reactor contents: $1.5\text{ litre P20.275.50 (#6259)}$
- Reactor stirrer speed: 250 rpm
- Control: process

