

Unistat® 405w

Cooling a 1-litre reactor to T_{min}

Requirement

This case study determines the minimum process temperature that can be achieved in a 1-litre Glas-Keller jacketed reactor with a Unistat 405w under "process" control.

Method

The Unistat 405w is connected to the Glas-Keller 1-litre reactor with two 1-metre insulated metal hoses. The reactor is filled with 0.75 litre of "M90.055.03", a silicon based HTF.

Results

At first the Unistat 405w rapidly cools the jacket temperature before the ramp rate slows and finally asymptoting at $-41\text{ }^{\circ}\text{C}$ cooling the process to its minimum temperature of $-39\text{ }^{\circ}\text{C}$.

Setup details

Unistat® 405w & Glas-Keller reactor

Temperature range: $-45\text{...}250\text{ }^{\circ}\text{C}$
 Cooling power: $1.3\text{ kW @ }250\text{...}0\text{ }^{\circ}\text{C}$
 $0.7\text{ kW @ }-20\text{ }^{\circ}\text{C}$

Heating power: $1.5\text{ kW / }3\text{ kW}$
 Pump speed: 3300 rpm

Hoses: $2 \times 1\text{ m; M24} \times 1.5$
 (#9325)

HTF: DW-Therm (#6479)

Reactor: 1-litre vacuum jacketed glass reactor

Reactor contents: $0.75\text{ litre M90.055.03}$
 (#6259)

Reactor stirrer speed: 200 rpm

Control: process

