Unistat® 705w

Heating and cooling a DDPS 2-litre jacketed reactor

Requirement

The purpose of this case study is to demonstrate the performance of a Unistat 705w in heating and cooling a 2-litre glass reactor.

Method

The Unistat and reactor are connected using two 1-metre insulated metal hoses. The reactor is filled with 1.5 litre of "M90.055.03", a Huber supplied silicon based HTF.

Result

The resulting curve shows it takes 33 minutes to heat from 20 °C to 100 °C giving a heating ramp-rate of 2.4 K/min.
In cooling, the curve shows the process takes 35 minutes to reach 20 °C giving a cooling ramp-rate of 2.3 K/min.

Setup details
Unistat® 705w & 2-litre DDPS reactor

Temperature range:	-75...250 °C
Cooling power:	0.6 kW @ 250…100 °C
	0.65 kW @ 0 °C
	0.6 kW @ -20...-40 °C
	0.3 kW @ -60 °C
Heating power:	1.5 kW/3 kW (in this test limited to 1.0 kW)
Pump speed:	3300 rpm
Hoses:	2x1 m; M24x1.5 (#9325)
HTF:	DW-Therm (#6479)
Reactor:	2-litre un-insulated jacketed glass reactor
Reactor content:	1.5 litre M90.055.03 (#6259)
Stirrer speed:	200 rpm
Control:	process

Process ramp rate > 2.3 K/min.

Process ramp rate > 2.4 K/min.

Legend:
- Jacket temperature
- Process temperature
- Setpoint