Setup details
Unistat® 705w & Buchi Glas Uster 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
Pump speed:	3300 rpm
Hoses:	2x1 m; M24x1.5 (#9325)
HTF:	DW-Therm (#6479)
Reactor:	1-litre un-insulated jacketed glass pressure reactor
Reactor content:	0.75 litre M90.055.03 (#6259)
Stirrer speed:	500 rpm
Control:	process

Unistat® 705w

Cooling a Buchi Glas Uster 1-litre reactor to T_{min}

Requirement
This case study looks at the performance of a Unistat 705w cooling a Buchi Glas Uster 1-litre un-insulated jacketed glass pressure reactor to T_{min} under "process" control.

Method
The Unistat and reactor are connected using two 1-metre insulated metal hoses. The reactor is filled with 0.75 litre of "M90.055.03", a Huber supplied silicon based HTF.

Results
The jacket cooling curve is almost linear to -50 °C where it begins to asymptote before reaching its lowest temperature of -66 °C with a corresponding process temperature of -65 °C.

Legend:
- Jacket temperature
- Process temperature
- Setpoint

Rapid and linear ramp > 3 K/min.
Rapid and linear ramp > 2 K/min.
Jacket asymptotes at -66 °C

Temperatur in [°C]

Zeit in [hh:mm:ss]