Unistat® tango NR

Temperature control of the 1l jacketed Radleys Reactor-Ready

Requirement
The case study shows the speed and accuracy as the Unistat tango cycles the process mass in a Radleys 1l glass jacketed reactor.

Method
The Unistat and reactor were connected using metal insulated hoses. The reactor was filled with M20.195/235.20. Stirrer speed was set to 230 rpm.
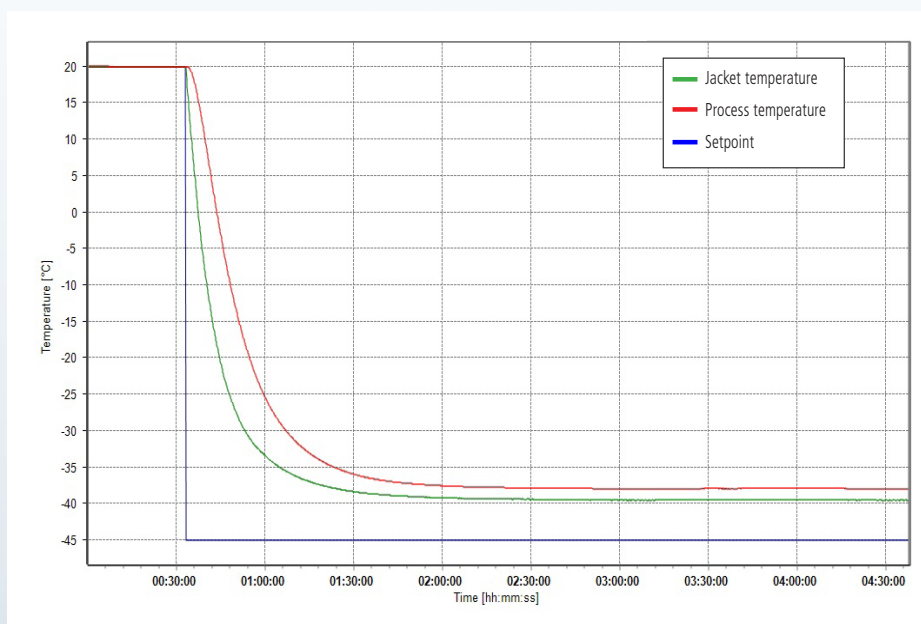
Setup details

Temperature range:	-45 … +250°C
Cooling power:	0,7 kW @ 0°C
	0,4 kW @ -20°C
	0,6 kW @ -40°C
Heating power:	3,0 kW
Hoses:	1 x 1,5m metal Insulated
	1 x 1,0m metal Insulated
HTF:	M60.115/200.05
Reactor:	1l glass jacketed
Reactor content:	0,75l M20.195/235.20
Reactor stirrer speed:	230 rpm
Control:	Process
Amb. temperature:	+22°C

Results: Glass Jacketed Reactor (1l)

1. Lowest achievable temperature in the reaction mass:
The graphic below shows that the minimum achievable process temperature in the process mass was -36.1°C


Technical details and dimensions are subject to change. No liability is accepted for errors or omissions.

2. Performance:

Temperature Control from +20°C to -20°C and back to +20°C

The graphic below shows the speed, accuracy and repeatability as the Unistat tango cycles the process mass in a Radleys 1l reactor between +20°C ... -20°C. The process mass was simulated with 0,75l of Huber's M20.195/235.20 silicon oil

Start T	End T	Time taken	Av. Ramp Rate
+20°C	-20°C	34 minutes	1,7 K/Min
-20°C	+20°C	34 minutes	1,7 K/min
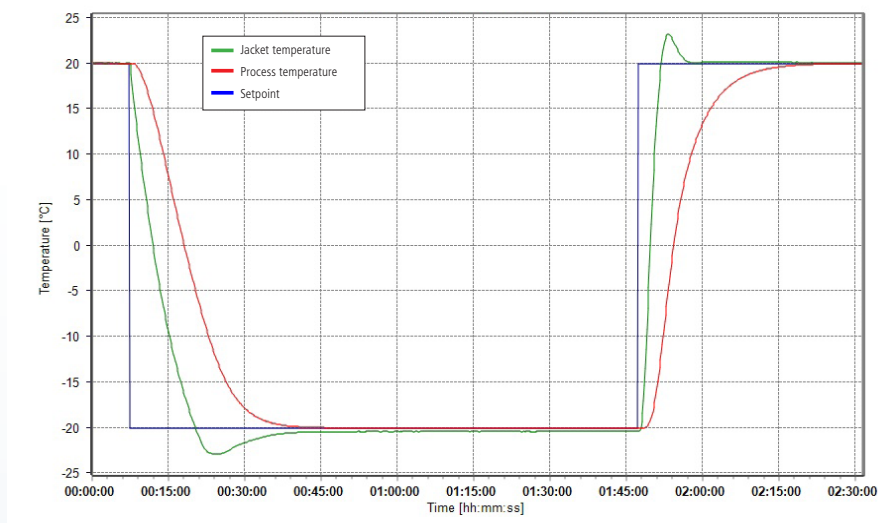
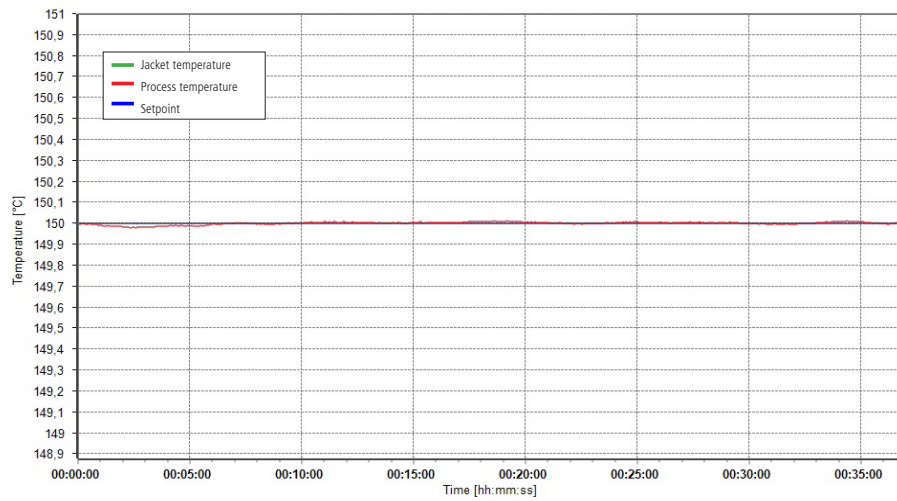**Temperature Control: from +20°C to +150°C and back to +20°C**

The graphic below shows the speed, accuracy and repeatability as the Unistat tango cycles the process mass in a Radleys 1l reactor between +20°C ... +150°C. The process mass was simulated with 0,75l of Huber's M20.195/235.20 silicon oil

Start T	End T	Time taken	Av. Ramp Rate
+20°C	+150°C	53 minutes	2,4 K/Min
+150°C	+20°C	61 minutes	2,1 K/min
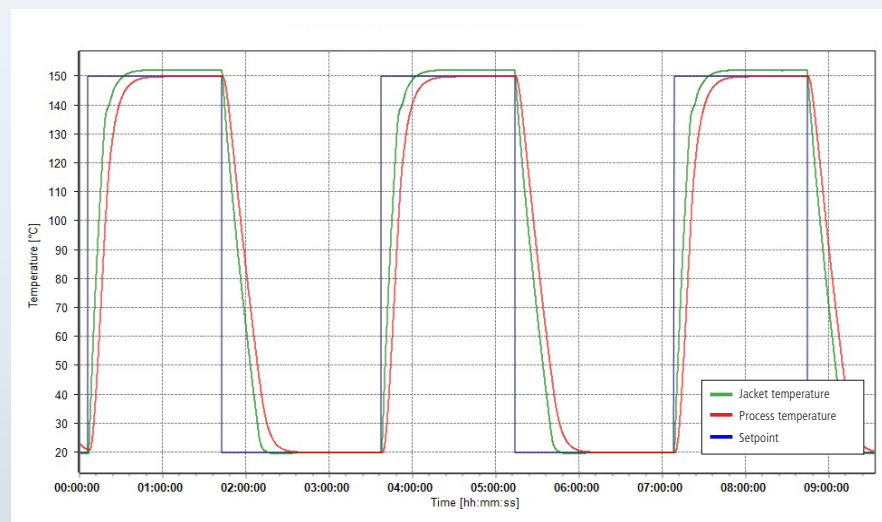
3. Stability

The graphic below shows that the control stability at +150°C in the process mass is better than +/- 0.02K

The graphic below shows that the control stability at -20°C in the process mass to be better than +/- 0.01K

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