

Unistat P915w

Unistat P915w controls a 50l De Dietrich reactor



Requirement

This case study demonstrates the performance of the Unistat P915w to control the process temperature. Case study also demonstrates the lowest achievable temperature in the process.

The tables and the graphics show the responsive, tight and stable control with the jacket temperature being continually adjusted to reach and maintain each new set-point.

Method

The Unistat P915w was connected to the DDPS QVF 50l glass jacketed reactor. The reactor was filled with 35l of Huber's "DW-Therm" to simulate a reaction mass, the agitation motor set to 250 rpm and then a PID tuning was carried out under the "TAC" feature in the Pilot ONE.

Temperature cycling was then carried out and recorded using Huber's service software. The graphics below show the responsiveness and stability of control as each new set-point is reached and maintained.

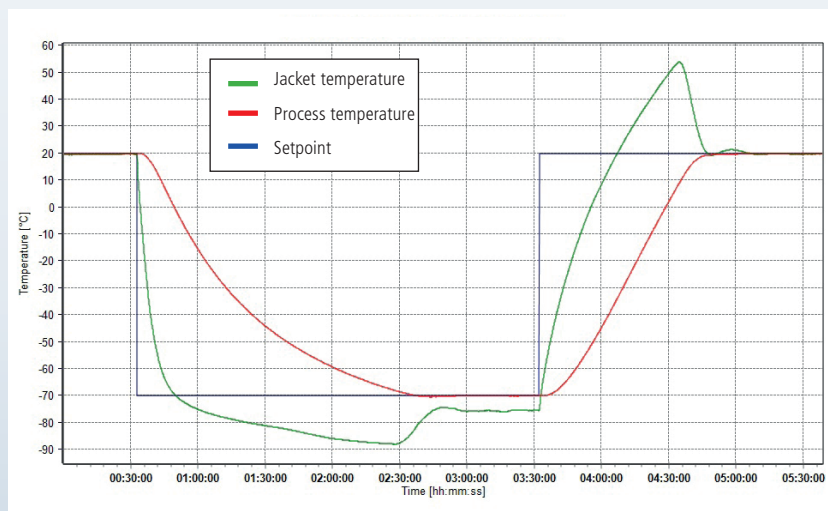
Setup details

Temperature range: -90°C...+250°C
 Heating power: 6.0 kW
 Hoses: 2 x M30 Metal insulated
 HTF: M90.055/170.03
 Reactor: De Dietrich 50 liter
 Reactor content: 35l M90.200.02
 Control: process
 Stirrer speed: 250 rpm
 Amb. temperature: +24°C

Results

1. Temperature control between -70°C and +20°C

Start (°C)	End (°C)	Time Taken	Av. Ramp Rate
20°C	-70°C	63 Minutes	1.4 K/Min
-70°C	20°C	75 Minutes	1.2 K/Min



2. Temperature control between -40°C and +80°C

Start (°C)	End (°C)	Time Taken	Av. Ramp Rate
20°C	-40°C	43 Minutes	1.4 K/Min
-40°C	80°C	114 Minutes	1 K/Min
80°C	20°C	38 Minutes	1.6 K/Min

