Unistat® 910w

Heating a Diehm 100-litre jacketed glass reactor from -80 °C to 20 °C

Requirement

This case study shows the effectiveness of a Unistat 910w in heating a Diehm 100-litre jacketed glass reactor from -80 °C to 20 °C.

Method

The Unistat and reactor are connected using two 1.5-metre insulated metal hoses. The reactor is filled with 75 litre of "M90.055.03", a Huber supplied silicon based HTF.

Results

It can be seen that the jacket temperature ramps rapidly through 165 K (-80 to 85 °C) within 1 hour then ramping quickly down as the process approaches its target to guide the process temperature to its new set-point.
Though oversized for a Unistat 910w (designed for efficient operation on reactors to a maximum of 50 litre), the speed and accuracy of the control is evident in the graphic below.

Setup details
Unistat® 910w & Diehm 100-litre reactor

Temperature range:	-90…250 °C
Cooling power:	5.2 kW from 250 °C to -20 °C 4.7 kW @ -40 °C 3.1 kW @ -60 °C 0.9 kW @ -80 °C
Heating power:	6.0 kW
Hoses:	M38x1.5; 1x 2m #6657; 1x1m # 6655, VPC Bypass installed
HTF:	M90.055.03 (#6259)
Reactor:	100-litre Diehm un-insulated jacketed glass reactor
Reactor content:	75 litre M90.055.03
Stirrer speed:	410 rpm
Control:	process