



Unistat[®] 410w

Unistat 410w cycling a 40-litre steel enamel De Dietrich reactor

Requirement

This case study demonstrates the ability of Unistat 410w to cycle the process temperature in a range from $+20^{\circ}$ C to $+80^{\circ}$ C and the minimum process temperature achievable in the process mass.

Method

The 40 litre reactor was connected to the Unistat 410w using two insulated metal hoses. The thermo-fluid used in a reactor was M40.165/200.10.

Setup details

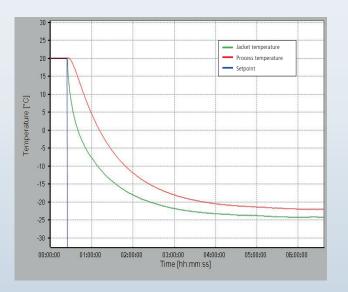
Temperature range:	-45250°C
Cooling power:	1,5 kW @ 0°C
	0,8 kW @ -20°C
	0,2 kW @ -40°C
Heating power:	1,5/3,0 kW
Hoses:	M24x1,5; 2x1,5 m
HTF:	M60.115/220.05 (#6166)
Reactor:	40-litre steel enamel
	De Dietrich reactor
Reactor content:	30 litres M40.165/200.10
	(#6164)
Reactor stirrer speed:	300 rpm
Control:	Process

Results

Given the physical size of the Huber Unistat 410w, its performance on a 40-litre reactor is remarkable. The tightness of control, the minimum process temperature and the stability can clearly be seen.

Cooling a 40-litre steel enamel reactor from +20 °C to Tmin:

It can be seen from the graphic how quickly the jacket ramps creating a difference in temperature between the jacket and process in the initial cool down phase. -22 °C is reached as a minimum process temperature. The corresponding minimum jacket temperature is -24 °C.



Perfomance:

Cooling and heating over the range +20 °C to +80 °C. The Unistat 410w needs approximately 65 minutes to cool the reactor from +80 °C to +20 °C and 70 minutes to heat up from +20 to +80 °C.

