

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°C to +80°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: -45...250°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 T_{min}:

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.

Performance:

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.

