

# Unistat® 912w

**Unistat 912w cycling a 50 litre triple wall De Dietrich reactor**

**Requirement**

This case study demonstrates the ability of Unistat 912w to cycle the process temperature from +20°C to -90°C, the closeness of the temperature control and the minimum process temperature achievable in the process mass.

**Method**

The 50 litre reactor was connected to the Unistat 912w using flexible hoses. The thermofluid used in a reactor was M80.100.03. "Process" control was carried out via a Pt100 sensor located in the process mass. Stirrer speed was set to 250 rpm.

**Setup details**

- Temperature range: -90...250°C
- Cooling power: 7 kW @ 0°C  
7 kW @ -20°C  
6 kW @ -40°C  
3.5 kW @ -60°C  
0.9 kW @ -80°C
- Heating power: 6.0 kW
- Hoses: M30x2,5; M30x3,0
- HTF: M90.055.03 (#6259)
- Reactor: 50 litre triple wall glass reactor
- Reactor content: 40 litre M80.100.03 (#6276)
- Reactor stirrer speed: 250 rpm
- Control: Process



**Results**

**Performance:**

Heating up and cooling down from -10 °C to +100 °C. The Unistat 912w needs approximately 60 minutes to heat up from -10 to +50 °C and then 66 minutes to heat up from +50 °C to +100 °C. To cool down the reactor from +100 °C to 0 °C, the Unistat 912w needs approximately 60 minutes.

**Cooling a 50-litre triple wall glass reactor from 20 °C to Tmin:**

It can be seen from the graphic how quickly the jacket ramps creating a wide difference in temperature between the jacket and process in the initial cool down phase. Around 220 minutes after the start, -76 °C is reached as a minimum process temperature. The corresponding minimum jacket temperature is -82 °C.

