



The Unistat creating a wide Jacket temperature ΔT between jacket and pro-Process temperature cess to pull the process to its 40 new set-point. 30 25 Process temperature reaches its new setpoint with minimal 01:10:00 01:20:00 01:30:00 01:40:00 01:50:00 02:00:00 02:10:00 02:20:00 02:00:00 02:40:00 02:50:00 03:00:00 03:10:00 03:20:00 03:30:00 03:40:00 03:

Unistat 510w

Unistat 510w cycling a 60 litre vacuuminsulated glass Asahi AG reactor

Requirement

This case study demonstrates the ability of the Unistat 510w to cycle the process temperature in a range from +20°C to -30°C. On the second page the case study shows cool down curves from +20°C to -50°C and from +120°C to -30°C. Additionally the measurements demonstrates the closeness of temperature control and the minimum process temperature achievable in the reactor.

Method

The 60 litre reactor was connected to the Unistat 510w using two M30x1,5 1,5-meter flexible hoses. The thermofluid used in the system was M90.055.03. "Process" control was carried out via a Pt100 sensor located in the process mass.

Setup details

Temperature range: -50...250°C Cooling power: 5.3 kW @ 0°C

2.8 kW @ -20 0.9 kW @ -40°C

Heating power: 6.0 kW

Hoses: M30x1,5; 2x1,5 m M90.055.03 (#6259) HTF: Reactor: 60 litre glass reactor vacuum-insulated

45 litre M90.055.03

Reactor content:

(#6259)

Reactor stirrer speed: 230 rpm Control: **Process**

Results

Performance:

The following cooling down and heating up curves demonstrates the performance of the Unistat 510w. It cools down and heats up in a range from +20°C to -30°C. The Unistat 510w needs approximately 65 minutes to cool down the reactor from +20°C to -30°C and approximately 36 minutes to heat it up from -30°C to +20°C.