# Unistat® 530w

**Unistat® 530w cycling a 50-litre Chemglass un-insulated glass jacketed reactor between 20 °C and -40 °C**

## Requirement

The Unistat 530w is the largest Unistat in the "500" series. This case study looks at its performance when cycling a Chemglass 50-litre reactor between 20 °C and -40 °C.

## Method

The reactor was filled with 37 litre of M90.055.03 as a thermal load. The stirrer was set to 100 rpm and the control set to "Process". The results were recorded using the Huber "SpyLight" software. The HTF (heat transfer fluid) used was DW-Therm (-90…200 °C).

## Results

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 cool down phase resulting in the process reaching -40 °C from 20 °C (60 K) in under 2-hours.

The heat-up rate demonstrates the remarkable level of control with the jacket ramping to 110 °C to pull the process back towards 20 °C. As the process temperature approaches the target temperature the jacket rapidly cools to approximately 23 °C to bring the process to 20 °C in approximately 30 minutes.

## Setup details

Unistat® 530w and Chemglass 50-litre reactor

| | |
|---|---|
| Temperature range: | -55...250 °C |
| Cooling power: | 7 kW @ 250 °C<br>19 kW @ 200 °C<br>21 kW @ 100 °C<br>16 kW @ 0 °C<br>9 kW @ -20°C<br>3 kW @ -40 °C |
| Heating power: | 12 kW |
| Hoses: | M30x1.5, 1x1 m;<br>(# 6426) 1x2 m;<br>(# 6427) |
| HTF: | DW-Therm (#6479) |
| Reactor: | 50-litre jacketed glass reactor |
| Reactor contents: | 34.5 litre M90.055.03 (#6259) |
| Reactor stirrer speed: | 100 rpm |
| Control: | process |