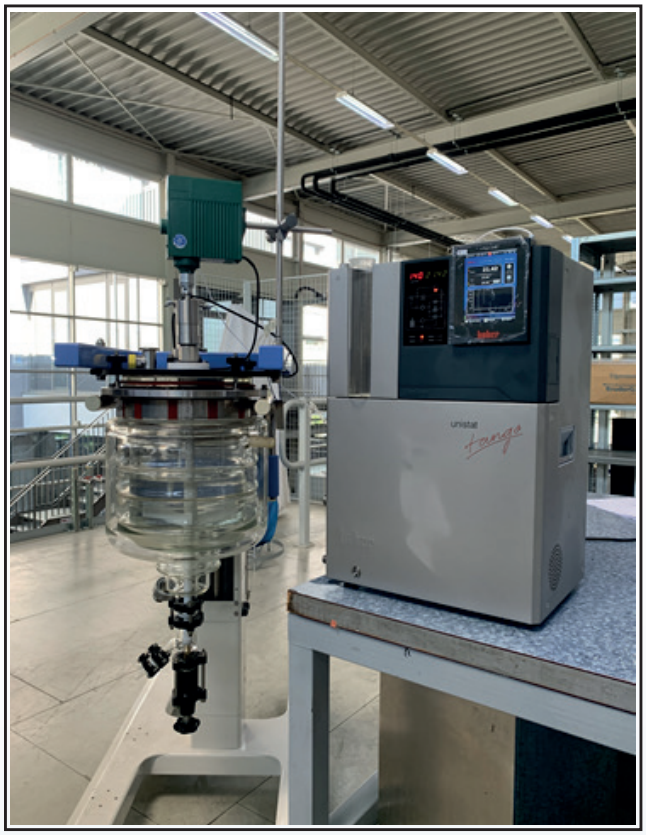
# Unistat Tango



**Unistat Tango controls the process temperature in vacuum insulated 10l glass jacketed reactor from Asahi**

### Requirement

This case study demonstrates the ability of the Unistat Tango to control the process temperature in vacuum insulated 10l glass jacketed reactor from Asahi.

### Method

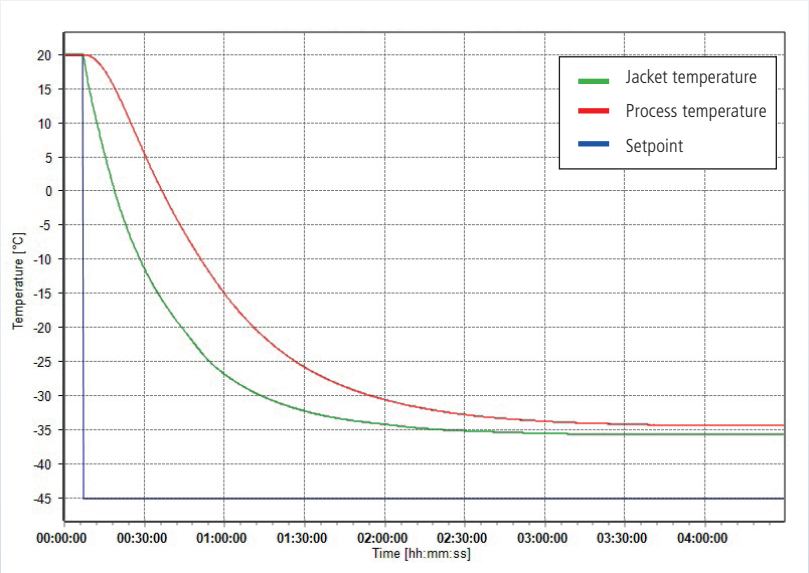
The Unistat Tango was connected to a 10l Asahi vacuum insulated glass reactor via 2 x 1.5m metal insulated tubes. The HTF used was Huber's M40.165/220.10 and the process mass simulated with 6l of Huber's M40.165/220.10 silicon oil.
Under "Process Control" from a Pt100 (Teflon covered) located in the process mass, different set-points were entered and the performance of the Unistat Tango was recorded using Huber's service software and recorded onto a USB thumb drive inserted in the USB interface on the Pilot ONE controller.

### Setup details

| | |
|---|---|
| Temperature range: | -45°C...+250°C |
| Heating power: | 3.0 kW |
| Cooling power: | 0.7 kW @ +100°C<br>0.7 kW @ 0°C<br>0.4 kW @ -20°C<br>0.06 kW @ -40°C |
| Hoses: | 2 x M30 x 1.5 m Metal Insulated |
| HTF: | M40.165/220.10 |
| Reactor: | Asahi 10l |
| Reactor content: | 6l M40.165/220.10 |
| Control: | process |
| Stirrer speed: | 100 rpm |
| Amb. temperature: | +25°C |

## Results

**1. Lowest achievable temperature (Tmin):**
The graphic below demonstrates a minimum achievable process temperature of -34.35°C with a corresponding jacket temperature of -35.62°C.



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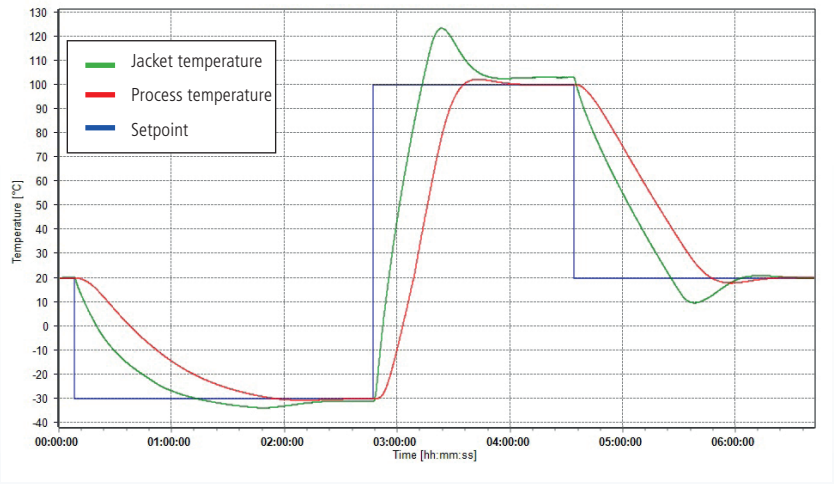
**2. Temperature Control**

This test demonstrates the speed and accuracy of the Unistat Tango to control the process temperature from +20°C to -30°C, then to +100°C and back to +20°C.

| Start (°C) | End (°C) | Approximate time (min) | Average Ramp Rate (K/Min) |
|---|---|---|---|
| 20 | -30 | 147 | 0.34 |
| -30 | +100 | 82 | 1.58 |
| +100 | +20 | 108 | 0.74 |





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