



### Setup details

Unistat® 830 & Buchi Glas Uster reactor

Temperature range: -85...200 °C  
 Cooling power: 3.6 kW @ 0 °C  
 2.2 kW @ -60 °C  
 3.6 @ 0 °C  
 3.5 @ -20...-40 °C  
 2.2 @ -60 °C  
 0.7 @ -80 °C  
 Heating power: 3 kW  
 Hoses: 2x1.5 m; M38x1.5 (#6656)  
 HTF: DW-Therm (#6479)  
 Reactor: 20-litre jacketed glass reactor  
 Reactor contents: 15 litre M90.055.03 (#6259)  
 Reactor stirrer speed: 70 rpm  
 Control: process

## Unistat® 830

**Controlling a simulated 150 W (129 kcal/hr) exothermic reaction in a Buchi Glas Uster 20-litre jacketed glass reactor at -40 °C**

### Requirement

This case study looks at the performance of a Unistat 830 as it controls a 150 W (129 kcal / hr) in a Buchi Glas Uster 20-litre jacketed glass reactor. The reaction is carried out at -40 °C.

### Method

The Unistat and reactor are connected using two 1.5-metre insulated metal hoses. The reactor is filled with 15 litre of "M90.055.03", a Huber supplied silicon based HTF. The exothermic reactions are simulated using a controlled electric immersion heater.

### Results

The "exotherm" is started by turning on the heater and causes a rise in process temperature peaking at approximately -38.2 °C. The jacket temperature rapidly cools through 17 K to -59 °C and quickly returns the process to and controls it at the set-point of -40 °C. Once the heater is turned "Off", the process cools but again, the swift response of the jacket minimises the under-shoot and the process is returned to its set-point.

