Setup details
Unistat® 830 & HWS 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; M30x1.5 (#6386)
HTF:	DW-Therm (#6479)
Reactor:	5-litre jacketed glass reactor
Reactor contents:	3.75 litre M90.055.03 (#6259)
Reactor stirrer speed:	200 rpm
Control:	process

Unistat® 830

Controlling a simulated exothermic reaction of 200 W (172 kcal / hr) in a HWS 5-litre jacketed glass reactor

Requirement
This case study shows the ability of the Unistat 830 to control exothermic reactions in a HWS 5-litre glass reactor.

Method
The Unistat and reactor are connected using two 1.5-metre insulated metal hoses. The reactor is filled with 3.75 litre of "M90.055.03", a Huber supplied silicon based HTF. The exothermic reactions are simulated using a controlled electric immersion heater.

Results
An exothermic reaction of 200 W (172 kcal / hr) is simulated at 0 °C. The process curve shows how fast the Unistat 830 compensates a sudden rise in process temperature.
When the process temperature increases due to the heat from the simulated exothermic reaction the "internal" (jacket) temperature reacts immediately. The "exothermic" energy results in an increase in process temperature of 4.2 K before the reaction is brought under control and the process temperature is cooled back to the set-point of 0 °C in 13 minutes.