Unistat® 425

Controlling a simulated 100 W (86 kcal / hr) exothermic reaction

Requirement
This case study looks at the performance of a Unistat 425 as it controls a simulated 100 W (86 kcal / hr) exothermic reaction in a 2-litre DDPS reactor.

Method
The Unistat 425 is connected to the 2-litre DDPS glass reactor using two insulated metal 1-metre hoses. The reactor is filled with 1.5 litre of "M90.055.03", a silicon based HTF. An electric heater is immersed in the "process" and controlled to give a pre-determined power value.

Results
As soon as the "reaction" starts and raises the temperature of the process the Unistat cools the jacket to generate a wide ΔT rapidly to remove the heat and bring the process temperature back to its set-point. The reaction is caught and controlled within 7 minutes. The heater is then turned off and the Unistat responds again by ramping the jacket to return and hold the process at its set-point

Setup details
Unistat® 425 & DDPS 2-litre reactor

Temperature range:	-40...250 °C
Cooling power:	2.5 kW @ 0 °C 1.8 kW @ -20 °C
Heating power:	2.0 kW
Hoses:	2x1 m; M24x1.5 (#9325)
HTF:	DW-Therm (#6479)
Reactor:	2-litre jacketed glass reactor
Reactor content:	1.5 litre M90.055.03 (#6259)
Stirrer speed:	150 rpm
Control:	process