Setup details
Unistat® 405w & Glas-Keller reactor

Temperature range:	-45...250 °C
Cooling power:	1.3 kW @ 250…0 °C 0.7 kW @ -20 °C
Heating power:	1.5 kW / 3 kW
Pump speed:	3300 rpm
Hoses:	2x1 m; M24x1.5 (#9325)
HTF:	DW-Therm (#6479)
Reactor:	1-litre jacketed glass reactor
Reactor contents:	0.75 litre M90.055.03 (#6259)
Reactor stirrer speed:	200 rpm
Control:	process

Unistat® 405w

Heating and cooling a Glas-Keller 1-litre glass reactor

Requirement
This case study examines the fast response of a Unistat 405w controlling the process temperature inside a 1-litre un-insulated glass reactor from the company "Glas-Keller" under two different control dynamics, "Fast-with overshoot" or "No overshoot".

Method
The Unistat 405w is connected to the Glas-Keller 1-litre reactor with two 1-metre insulated metal hoses. The reactor is filled with 0.75 litre of "M90.055.03", a silicon based HTF.

Results
The first cycle (20 °C to 60 °C to 20 °C) allows a small overshoot while the second cycle (20 °C to 60 °C to 20 °C) is "without overshoot" and so takes a longer time to reach set-point. It can be seen that even allowing for an overshoot, the control is so tight the overshoot in the first curve is negligible.