



Setup details

Unistat® 705w & Radley reactor

Temperature range: -75...250 °C
 Cooling power: 0.6 kW @ 250 °C...100 °C
 0.65 kW @ 0 °C
 0.6 kW @ -20...-40 °C
 0.3 kW @ -60 °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 un-insulated jacketed glass reactor
 Reactor content: 0.75 litre M90.055.03 (#6259)
 Stirrer speed: 200 rpm
 Control: process

Unistat® 705w

50 W (43 kcal / hr) exothermic reaction in a Radleys 1-litre glass reactor

Requirement

The diagram illustrates the performance of a Unistat 705w working with a Radleys 1-litre un-insulated jacketed glass reactor. An exothermic reaction of 50 W (43 kcal / hr) is simulated at a temperature of 0 °C.

Method

The Unistat and reactor are connected using two 1-metre insulated metal hoses. The reactor is filled with 0.75 litre of "M90.055.03", a Huber supplied silicon based HTF.

Results

The process temperature rises 5.5 °C above the set-point from the heat of the simulated exothermic reaction. The Unistat 705w reacts to this change of temperature by cooling the jacket rapidly to approximately -14.5 °C pulling the process temperature back to 0 °C. When the exothermic reaction stops the process temperature undershoots to -6 °C before the jacket temperature is rapidly ramped upwards to return the process to its set-point.

