

# Unistat® 830

**Controlling a 200 W (172 kcal / hr) exothermic reaction in a Radleys 10-litre jacketed reactor**

### Requirement

The graphic illustrates the dynamic of a Unistat 830 working with a Radleys 10-litre glass reactor. An exothermic reaction is simulated at 0 °C with a power of 200 W (172 kcal / hr).

### Method

The Unistat and reactor are connected using two 1.5-metre insulated metal hoses. The reactor is filled with 7.5 litre of "M90.055.03", a Huber supplied silicon based HTF. The exothermic reactions are simulated using a controlled electric immersion heater.

### Results

The heat input results in a temperature rise of approx. 3 K. The internal temperature jumps to approx. -26.3 °C to pull the process temperature back to its initial conditions. In 22 minutes the process temperature recovers to 0 °C.

The heater is then removed from the reactor (at 02:55:00) and the sudden heat loss is compensated in 17 minutes.

### Setup details

Unistat® 830 & Radleys reactor

- Temperature range: -85...200 °C
- Cooling power: 3.8 kW @ 100 °C  
3.6 kW @ 0 °C
- Heating power: 3 kW
- Hoses: 2x1.5 m; M30x1.5 (#6386)
- HTF: DW-Therm (#6479)
- Reactor: 10-litre jacketed glass reactor
- Reactor contents: 7.5 litre M90.055.03 (#6259)
- Reactor stirrer speed: 80 rpm
- Control: process

