

# Unistat® 410w

**Unistat® 410w cycling a 50-litre Chemglass un-insulated glass jacketed reactor between 100 °C and -15 °C**

### Requirement

The Unistat 410w is a bench top model with small dimensions but has 2.5 kW of cooling at 100 °C and 1.5 kW at 0 °C. Heating power of 3 kW makes this compact unit a good choice for comparatively large reactors above 0 °C as this case study shows.

### Method

The reactor was filled with 34.5 litre of Huber's silicon based Heat Transfer Fluid (HTF) "M90.055.03", the stirrer speed was set to 100 rpm and control to "Process" control. The unit was cycled between 20 °C to 100 °C then to -15 °C before being returned to 20 °C.

### Results

It can be seen in the graphic that the Unistat 410w heats the process from 20 °C to 100 °C in approximately 1 hour. Cooling from 100 °C to -15 °C takes approximately 2.5 hours.

Given the physical size of the Huber Unistat 410w, its performance on a 50-litre un-insulated reactor is remarkable. The tightness of control as the process temperature reaches set point and the stability can clearly be seen.

### Setup details

Unistat® 410w & Chemglass un-insulated glass jacketed reactor

Temperature range: -45...250 °C  
Cooling power: 1.5 kW @ 0 °C  
0.8 kW @ -20 °C  
0.2 kW @ -40 °C

Heating power: 1.5/3.0 kW  
Hoses: 1x2 m; M30x1.5 (#6427)  
1x1 m; M30x1.5 (#6426)

HTF: M90.055.03 (#6259)  
Reactor: 50-litre un-insulated jacketed glass reactor

Reactor contents: 34.5 litre  
M90.055.03 (#6259)

Reactor stirrer speed: 100 rpm  
Control: process

