

## Unistat 825

**Unistat 825 controls the process temperature in 20l glass jacketed reactor from QVF**

### Requirement

This Case Study demonstrates the control capabilities over the process temperature when a Unistat 825 is connected with an QVF 20l glass jacketed reactor over the temperature range of -60°C to +100°C.

### Method

The Unistat 825 was connected to 20l glass jacketed reactor from QVF via 2 x 2m metal insulated tubes. The HTF used was Huber's M90.055/170.02 and the process mass simulated with 15l DW-Therm.

### Setup details

Temperature range: -85°C...+250°C  
 Heating power: 3.0 kW  
 Cooling power: 2.3 kW @ +100°C  
 2.4 kW @ 0°C  
 2.4 kW @ -20°C  
 2.4 kW @ -40°C  
 Hoses: 2 x M30 x 2m Metal Insulated  
 HTF: M90.055/170.02  
 Reactor: QVF 20l  
 Reactor content: 15l DW-Therm  
 Control: process  
 Stirrer speed: 150 rpm  
 Amb. temperature: +23°C

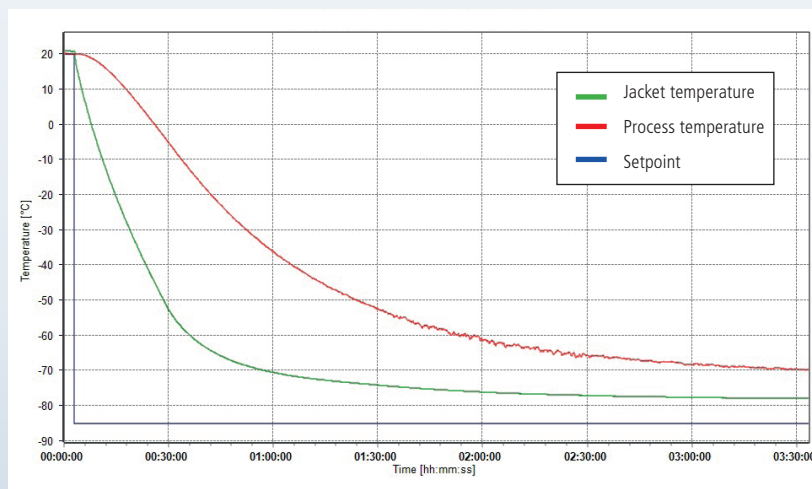


## Results

### 1. Lowest achievable temperature (Tmin):

This case study demonstrates the minimum achievable process temperature when a Unistat 825 is connected with an QVF 20l glass jacketed reactor. The minimum achievable process temperature was -70.29°C.

Start (°C)	End (°C)
+20	-70.29

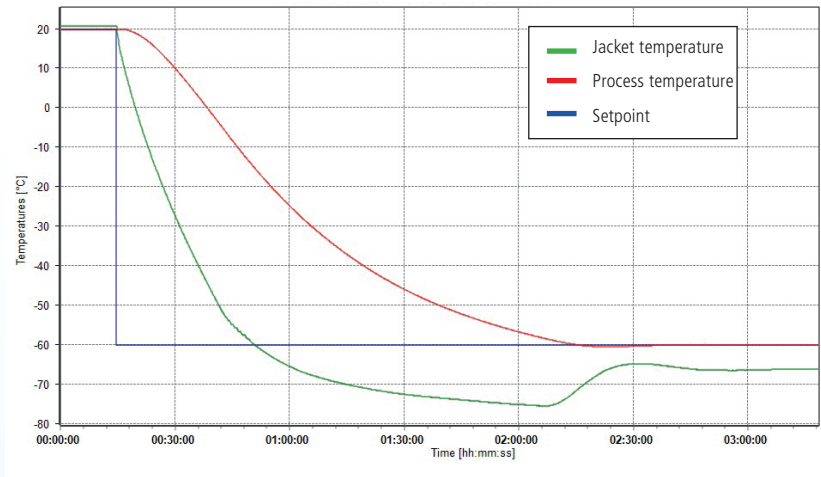


## 2. Temperature Control

This Case Study demonstrates the control capabilities over the process temperature when a Unistat 825 is connected with an QVF 20l glass jacketed reactor over the temperature range of -60°C to +100°C.

The tables and the graphics show the speed, accuracy and stability as the process is changed to each new set-point.

Start (°C)	End (°C)	Approximate time (min)	Average Ramp Rate (K/Min)
+20	-60	118	0.67



Start (°C)	End (°C)	Approximate time (min)	Average Ramp Rate (K/Min)
+20	+100	75	1.06

