



## Unistat 430

**Unistat 430 cycling a 20-liter glass jacketed reactor**

### Requirement

This case study determines the lowest achievable process temperature and the ability of the Unistat 430 to control the process temperature when it is connected with an 20-liter Büchi Glas Üster jacketed reactor.

### Method

The 20-liter Büchi Glas Üster jacketed reactor was connected to Unistat 430 using metal insulated hoses M24. The thermofluid used in the system was "DW-Therm". "Process" control was carried out via a Pt100 sensor located in the process mass. Stirrer speed was set to 100 rpm.

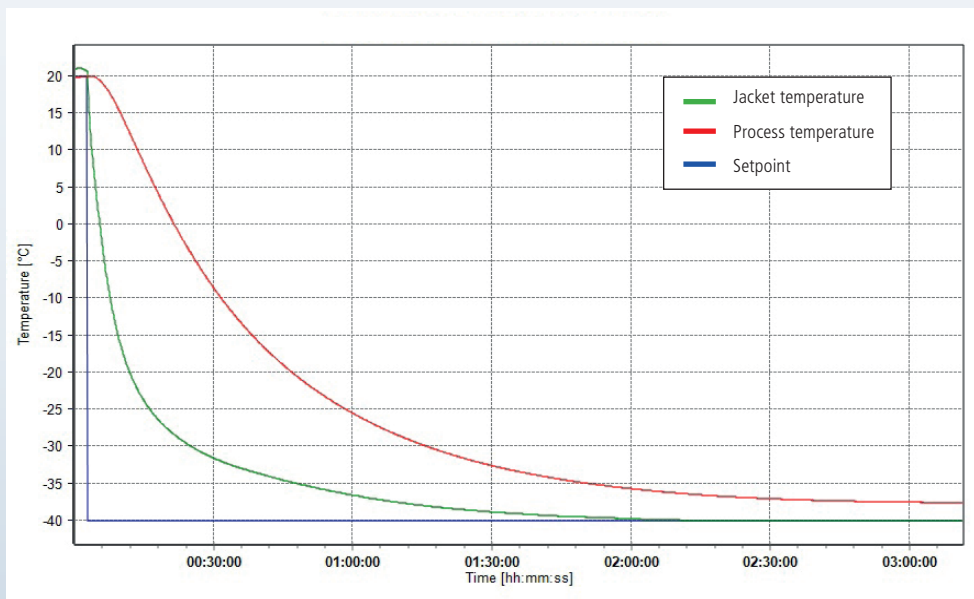
### Setup details

Temperature range:	-40°C...+250°C
Cooling power:	3.5 kW @ +20°C
	3.5 kW @ 0°C
	2.2 kW @ -20°C
Heating power:	4 kW
Hoses:	metal insulated M24
HTF:	DW-Therm
Reactor:	20 l Büchi jacketed reactor
Reactor content:	15 l DW-Therm
Stirrer speed:	100 rpm
Control:	process
Amb. temperature:	+24°C

## Results

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

As the graphic shows that the minimum achievable process temperature was -37.6°C.



## 2. Performance:

The table and the graphic shows the speed and stability of control as each new set-point is reached.

Start T	End T	Approximate time	Av. Ramp Rate
+20°C	-20°C	43 minutes	0.9 K/min
-20°C	+100°C	80 minutes	1.5 K/min
+100°C	+20°C	37 minutes	2.2 K/min

