

# Unistat 620w

**Unistat 620w controls an uninsulated Buchi 100l GLSS jacketed reactor**

**Requirement**

This case study demonstrates the ability of the Unistat 620w to control the process temperature of the reaction mass when a simulated reaction is taking place in a 100l GLSS jacketed reactor. The agitator speed was set to 250rpm.

**Method**

At set points of 70°C and -20°C, the heater was turned "On" at values of 1kW, 750w, 500w and 250w. Once the temperature had stabilised with the additional heat load of the simulated reaction, the heater was turned "Off". Again, once the temperature had stabilised, the heater was turned "On" again at the new wattage level and the procedure repeated. The results were recorded using a USB thumb drive via the Pilot ONE controller and can be seen below.

**Setup details**

- Temperature range: -60...+200°C
- Heating power: 12 kW
- Hoses: 2 x M30 Metal Insulated
- HTF: M60.115/200.05
- Reactor: GLSS jacketed reactor 100l
- Reactor content: 80l M40.165/220.10
- Control: process
- Stirrer speed: 250 rpm
- Amb. temperature: +23°C

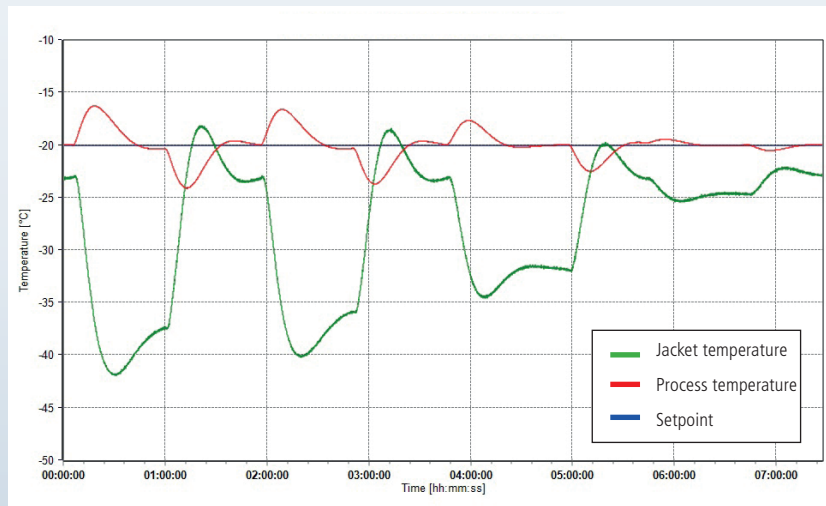


**Results**

**1. Simulated reaction at -20°C**

The graphic below shows the speed and accuracy of temperature control as the process is cooled & heated from 20°C to 150°C and back to 20°C.

kW	kcal/hr	Process rise	Recovery	Process fall	Recovery	Max Delta T
1.0	860	3.8K	37 min	4K	32 min	25.5K
0.75	645	3.4 K	37 min	3.7K	33 min	22K
0.5	430	2.3K	34 min	2.5K	32 min	25.9K
0.25	215	0.6K	28 min	0.5K	34 min	6.8K



## 2. Simulated reaction at +70°C

The graphic below shows the speed and accuracy of temperature control as the process is cooled & heated from 20°C to 150°C and back to 20°C.

kW	kcal/hr	Process rise	Recovery	Process fall	Recovery	Max Delta T
1.0	860	1.8K	30 min	1.8K	30 min	8.4K
0.75	645	1.8K	29 min	1.8K	30 min	8.9K
0.5	430	1.2K	29 min	1.6K	29 min	6.5K
0.25	215	1K	30 min	***	***	3.6K

