

Unistat® 510w

Temperature control of the 80-litre DDPS GLSS reactor

Requirement

This case study demonstrates the ability of the Unistat 510w to control the temperature of the reaction mass in an 80-litre DDPS GLSS reactor.

Method

The Unistat and reactor were connected using two metal insulated hoses M30. The reactor was filled with 60 liters of DW-Therm. "Process" control was carried out via a Pt100 sensor located in the process mass. Stirrer speed was set to 80 rpm.

Setup details

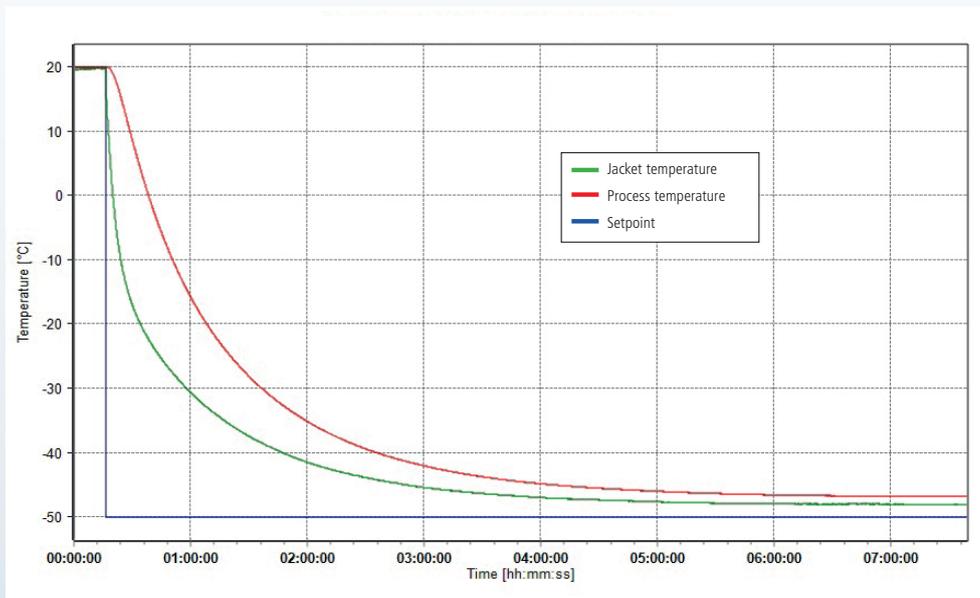
Temperature range:	-50 ... +250°C
Cooling power:	5,3 kW @ 0°C
	2,8 kW @ -20°C
	0,9 kW @ -40°C
Heating power:	6,0 kW
Hoses:	2 x M30 metal Insulated
HTF:	DW-Therm
Reactor:	80l Glass Lined Stainless Steel
Reactor content:	60 liters DW-Therm
Reactor stirrer speed:	80 rpm
Control:	Process
Amb. temperature:	+24°C



Results

1. Lowest achievable temperature (Tmin):

The graphic shows the minimum achievable process temperature was -47°C.



2. Performance:

The graphic shows the speed, accuracy and stability of the Unistat 510w as each new set-point is reached.

Start T	End T	Approximate time	Av. Ramp Rate	Fastest Ramp Rate
+20°C	-20°C	52 minutes	0.8 K/min	(10°C to -10°C) 0.9 K/Min
-20°C	+150°C	136 minutes	1.3 K/min	(30°C to 60°C) 1.7 K/Min
+150°C	+20°C	84 minutes	1.06 K/min	(60°C to 30°C) 1.7 K/Min

