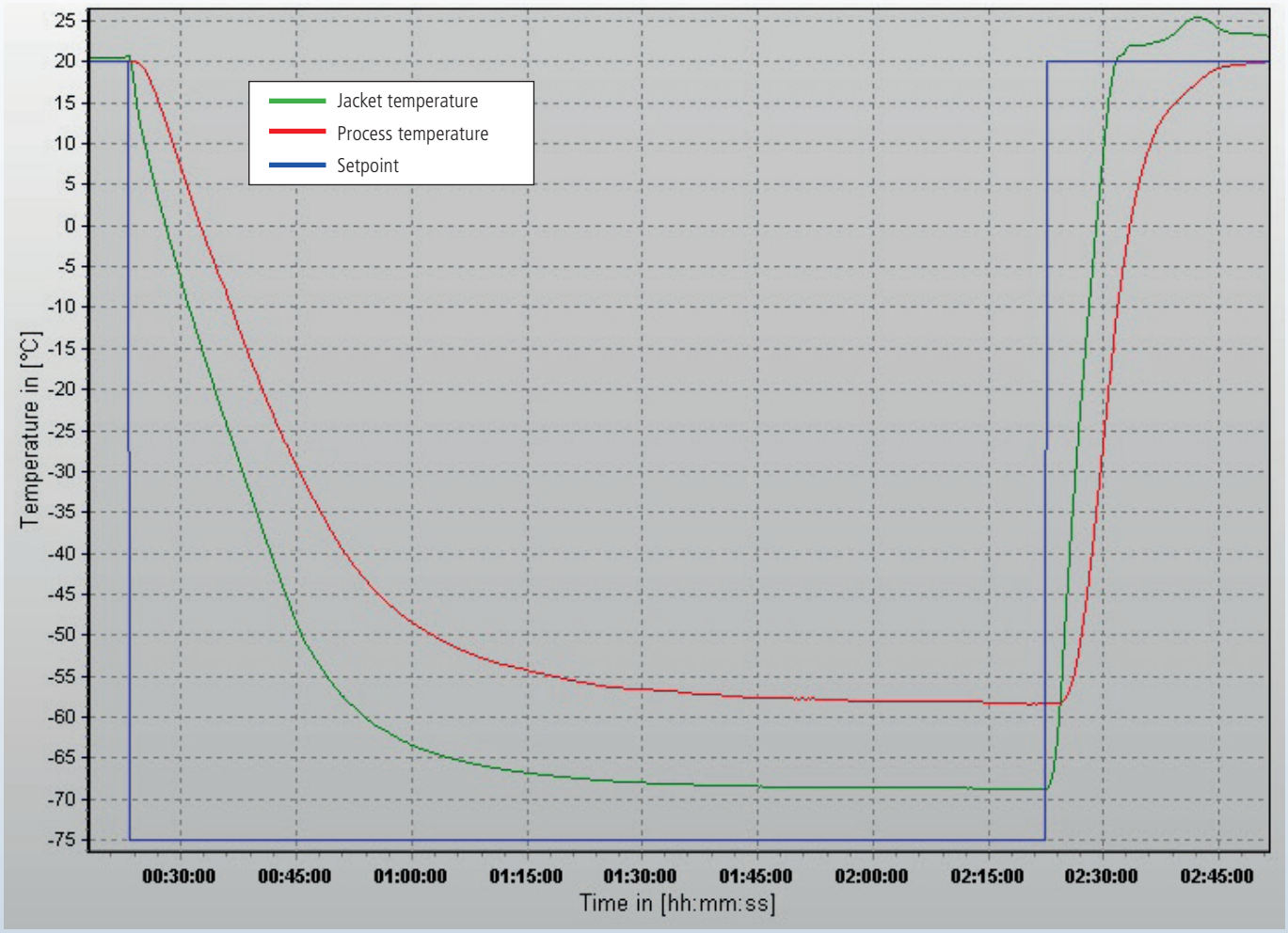
Unistat® 705w

Controlling a Heidolph "Synthesis 1"

Requirement
This test demonstrates the responsiveness and level of control that can be achieved when a Unistat 705 is used in conjunction with a Heidolph "Synthesis 1" parallel synthesis apparatus.

Method
The setpoints of all four temperature zones of the Synthesis 1 were set at -30 °C and then reduced to -50 °C. The response was recorded using the Huber "SpyControl".

Results
The first set-point of -30 °C was reached in approximately 32 min. The second set-point of -50 °C was reached after an additional 23 min. At both set-points the process temperature offset was due to the positioning of the process-located Pt 100.



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In comparison to a previously published case study with the Heidolph Synthesis 1 it is possible to achieve lower temperature with less cooling power and in a much faster time demonstrating more efficient thermal transfer.

Setup details
Unistat® 705w with optional bypass installed

Temperature range:	-75...250 °C
Cooling power:	0.6 kW @ 250…100 °C
	0.65 kW @ 0 °C
	0.6 kW @ -20...-40 °C
	0.3 kW @ -60 °C
Heating power:	1.5 kW (3 kW @ 400 V)
Pump speed:	3500 rpm
Hoses:	2 x1 m M24 x 1,5 #9325
HTF:	Ethanol
Reactor:	Heidolph Synthesis 1
Control:	process (inside test tube)
Control of the Heidolph Synthesis 1:	off

Setup details: Heidolph Synthesis 1
Each of the 24 test tubes of the Synthesis 1 were filled with 5 ml Sil Oil Huber M90.055.03 #6259

Control of the Heidolph Synthesis 1:	Zone temperatures controlled via internal sensors.
Setpoint 1:	-30 °C
Setpoint 2:	-50 °C