Julabo

Case study

Performance evaluation of JULABO models CF30, CF41, and FL300 with DrySyn COOL reaction systems

Objective

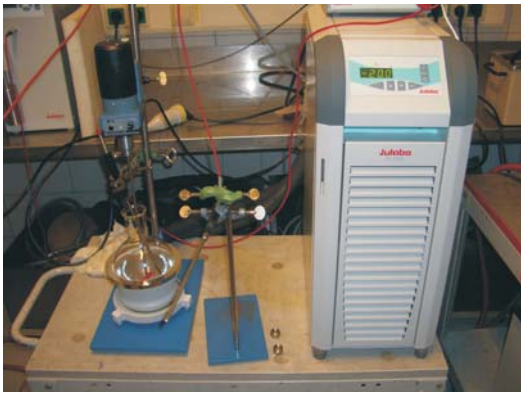
The objective of each test was to evaluate the performance of various JULABO units with ASYNT's DrySyn COOL reaction system.

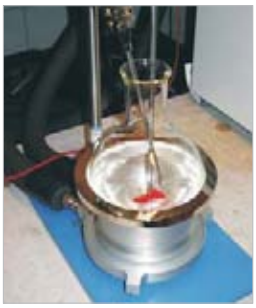
Test description

The experiment was conducted once each with an insulated and uninsulated DrySyn COOL reaction vessel. The DrySyn COOL module was equipped with a 1000 ml round-bottom flask filled one-third (330 ml) with ethanol.
The times required to achieve the temperature control unit's lowest rated temperature inside the unit itself and inside the round-bottom flask were recorded.

Test conditions

Units:	CF31 Cryo Compact Circulator CF41 Cryo Compact Circulator FL300 Recirculating Cooler
Mains voltage:	230 Volt / 50 Hz
Ambient temperature:	20 °C (room temperature)
Medium:	Ethanol
Special unit configuration:	Temperature control via JULABO EasyTemp Professional software





experimental setup insulated, not insulated

RESULTS

The results show that the tested JULABO models are capable of achieving temperatures below -33 °C inside the 1000 ml flask in DrySyn COOL.

Compilation of actual measurement results:

Model	Insulation	Lowest temp. in model/time	Lowest temp. in round-bottom/time
CF31 with DrySyn COOL	insulated	-30 °C / after 2h 20min	-25.2 °C / after 2h 45min
CF31 with DrySyn COOL	not insulated	-21 °C / after 2h 30min	-15.6 °C / after 3h 45min
CF41 with DrySyn COOL	insulated	-40 °C / after 2h 20min	-33.4 °C / after 3h 30min
CF41 with DrySyn COOL	not insulated	-40 °C / after 2h 40min	-27.9 °C / after 4h 00min
FL300 with DrySyn COOL	insulated	-20 °C / after 50min	-16.8 °C / after 1h 45min
FL300 with DrySyn COOL	not insulated	-20 °C / after 1h 10min	-11.3 °C / after 2h 10min

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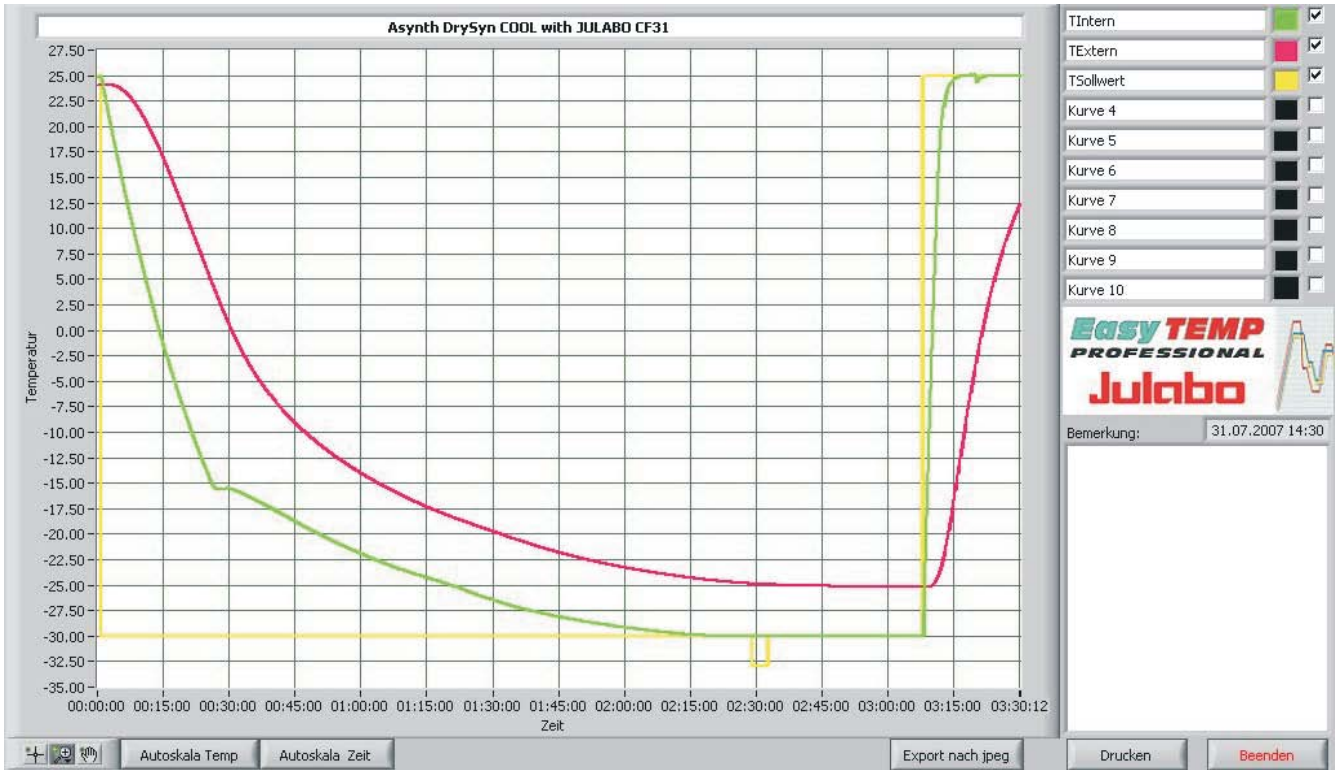
Test 1

CF31
Asynt DrySyn COOL, insulated

Lowest temp. internally:	-30 °C
achieved after:	2h 20min
Lowest temp. externally:	-25.2 °C
achieved after:	2h 45min



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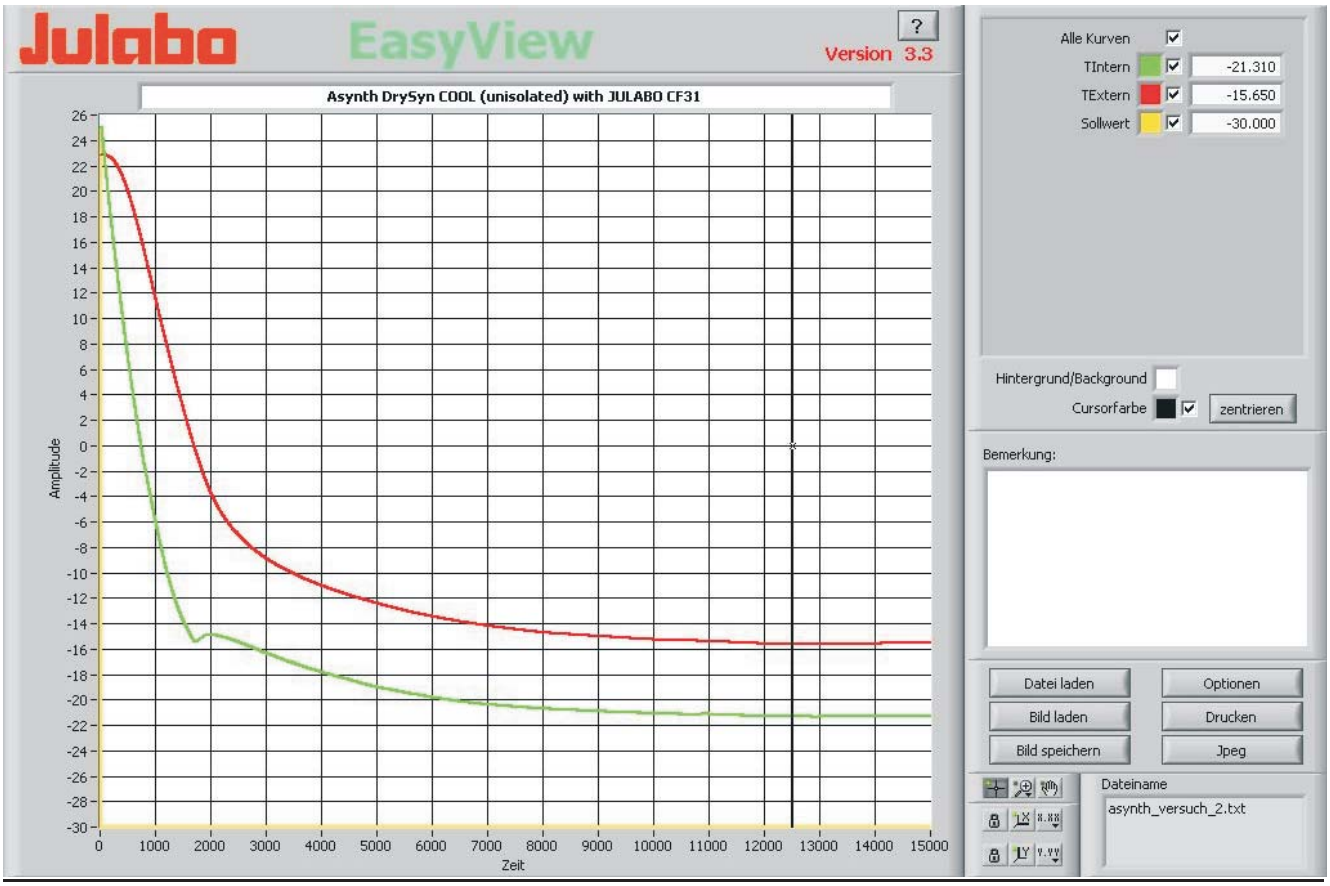
Test 2

CF31
Asynt DrySyn COOL, not insulated

Lowest temp. internally:	-30.0 °C
achieved after:	Temperature not achieved, Lowest achieved temperature -21.0 °C after 2h 30min
Lowest temp. externally:	-15.6 °C
achieved after:	3h 45min



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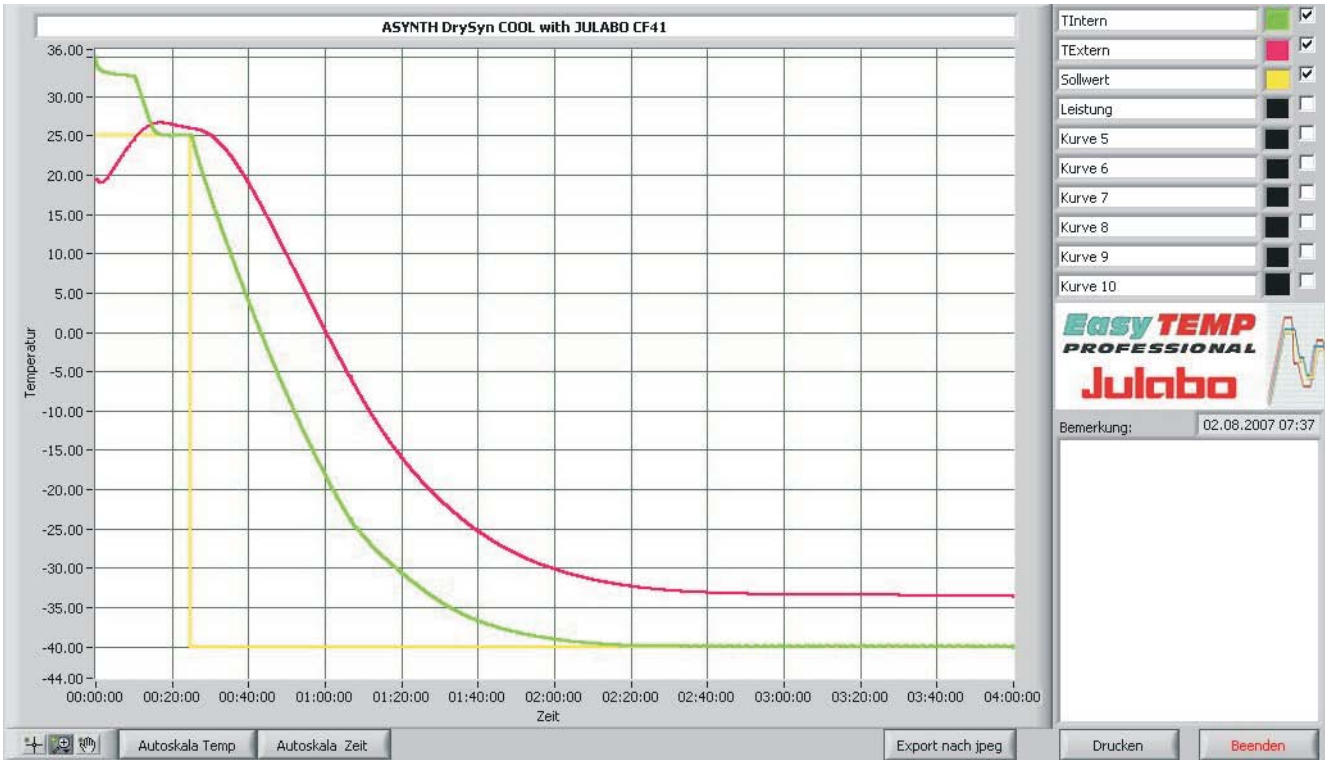
Test 3

CF41
Asynt DrySyn COOL, insulated

Lowest temp. internally:	-40 °C
achieved after:	2h 20min
Lowest temp. externally:	-33.4 °C
achieved after:	3h 30min



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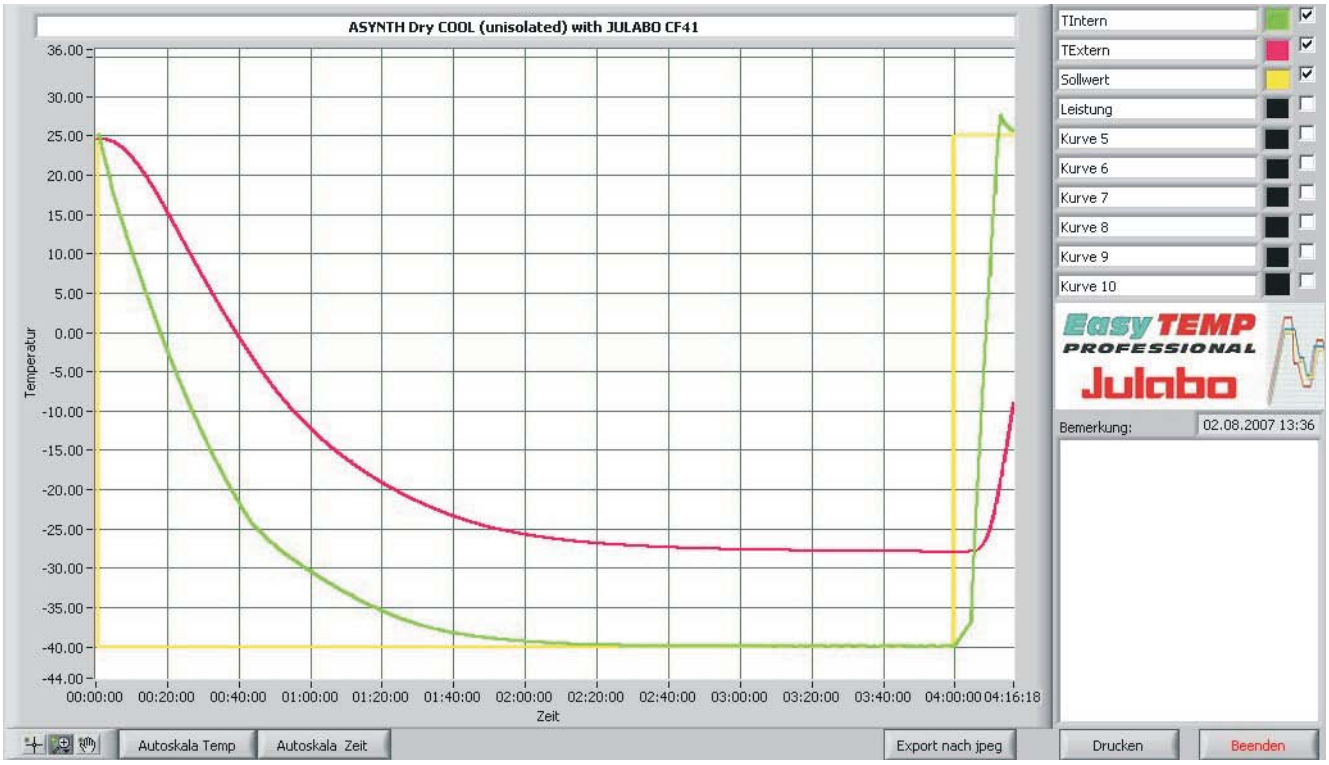
Test 4

CF41
Asynt DrySyn COOL, not insulated

Lowest temp. internally:	-40 °C
achieved after:	2h 40min
Lowest temp. externally:	-27.9 °C
achieved after:	4h 00min



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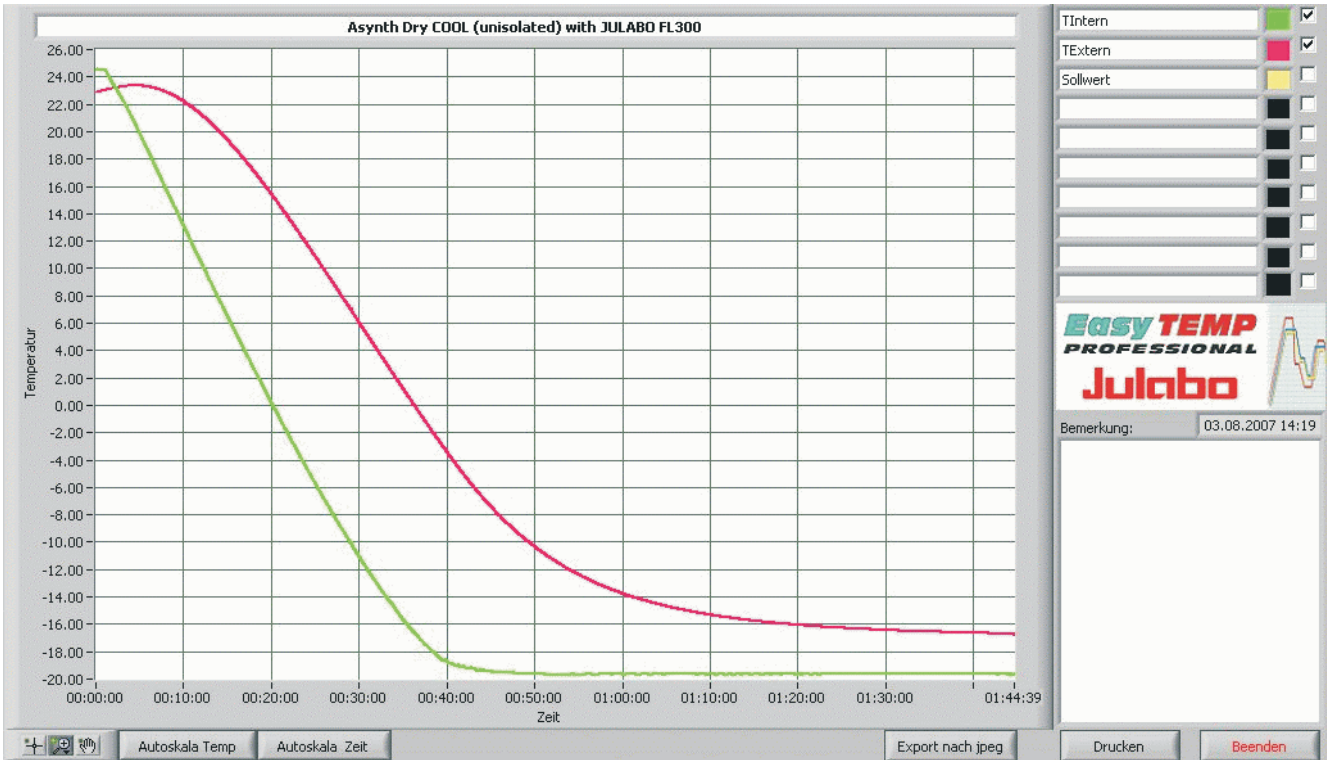
Test 5

FL300
Asynt DrySyn COOL, insulated

Lowest temp. internally:	-20 °C
achieved after:	50min
Lowest temp. externally:	-16.8 °C
achieved after:	1h 45min



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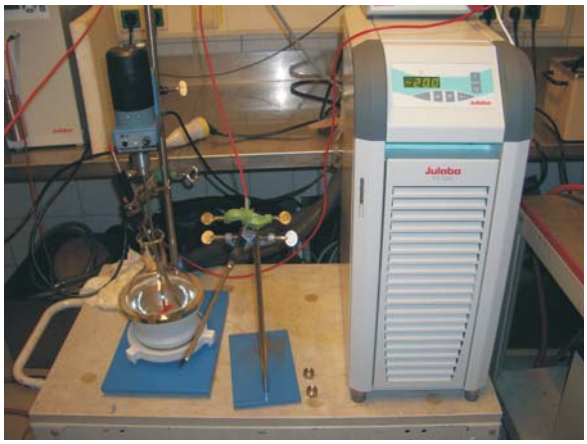
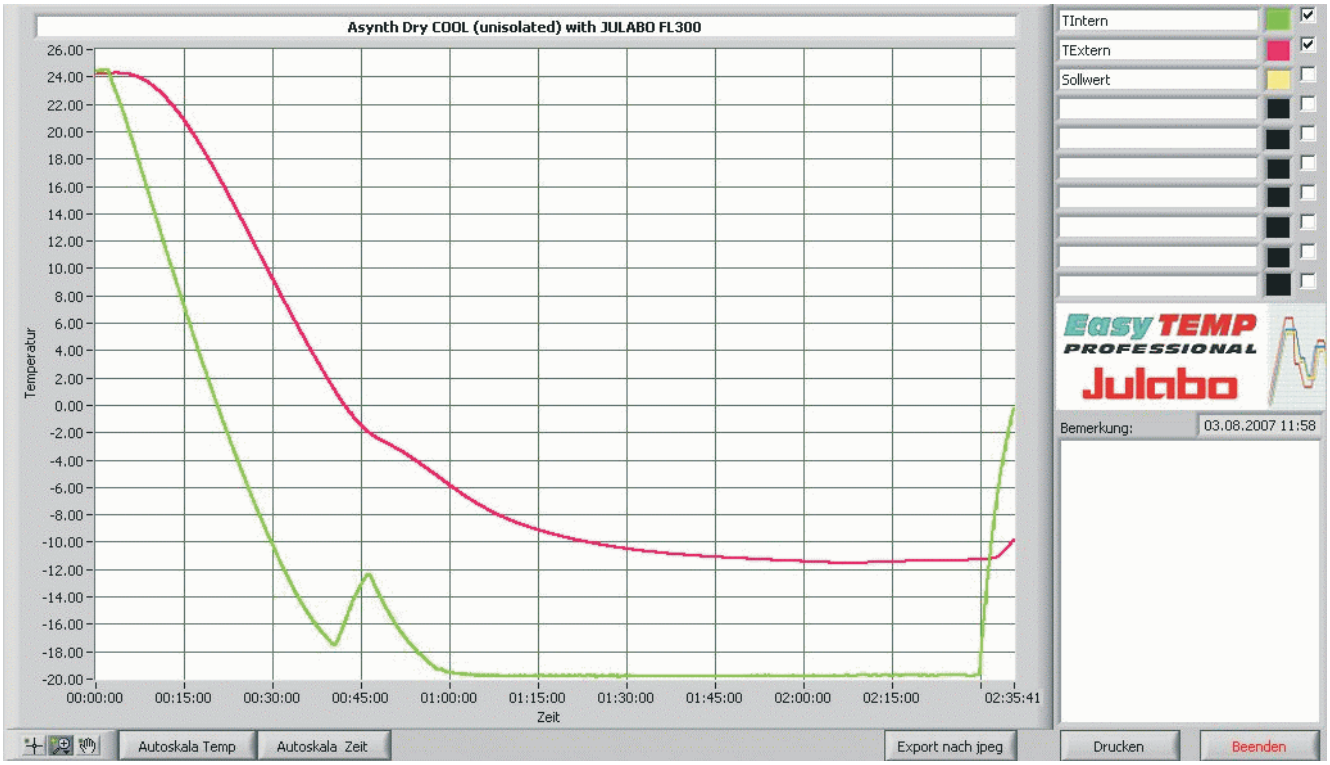
Test 6

FL300
Asynt DrySyn COOL, not insulated

Lowest temp. internally:	-20 °C
achieved after:	1h 10min
Lowest temp. externally:	-11.3 °C
achieved after:	2h 10min





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