Westenergie AG - Eurotest

Test report

No.: **20_389-2** **Version: 1/1**

Customer	:	Hauff-Technik GmbH & Co. KG Robert-Bosch-Str. 9 89568 Hermaringen
Test object	:	Earthing wall bushing
Type	:	HEA PF M12
Manufacturer	:	Hauff-Technik GmbH & Co. KG
Date of receipt	:	01.02.2021
Date of test	:	10.02.2021
Applied test regulations	:	- By prescription of the manufacturer - According to DIN EN 50522 (VDE 0101-2):2011-11, Annex D
Test carried out	:	Short circuit tests on an earthing wall bushing with 2.1 kA/1 s
Test result	:	The earthing wall bushing, type HEA PF M12 of the manufacturer Hauff-Technik GmbH & Co. KG **passed** the short circuit tests with 2.1 kA/1 s by prescription of the manufacturer according to DIN EN 50522 (VDE 0101-2):2011-11, Annex D. The maximum allowed temperature of 300 °C was not reached. No damage was visible at the test object after the tests.
Specialist testers	:	Alexander Herbst; Ahmet Karakavak; Christoph Pieper

Dortmund, 12.03.2021

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Manager test laboratory

Dipl.-Ing. Holger Walter
Test engineer

Report No. 20_389-2 contains 8 pages and 3 annexes.

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Summary

The Westenergie AG, Eurotest carried out short circuit tests with 2.1 kA/1 s on an earthing wall bushing manufactured by Hauff-Technik GmbH & Co. KG by prescription of the manufacturer according to DIN EN 50522 (VDE 0101-2):2011-11, Annex D.

Result:

The earthing wall bushing, type HEA PF M12 of the manufacturer Hauff-Technik GmbH & Co. KG **passed** the short circuit tests with 2.1 kA/1 s by prescription of the manufacturer according to DIN EN 50522 (VDE 0101-2):2011-11, Annex D. The maximum allowed temperature of 300 °C was not reached. No damage was visible at the test object after the tests.

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Annex:

1 Applied test regulations

By prescription of the manufacturer according to

DIN EN 50522 (VDE0101-2):2011-11

Earthing of power installations exceeding 1 kV a.c.;
German version EN 50522:2010

Prescription of the manufacturer:
- Short circuit test with 2.1 kA/1 s
- Maximum allowed temperature: 300 °C
- No visible damage

2 Technical data of the test object

Test object:	Earthing wall bushing
Type:	HEA PF M12
Manufacturer:	Hauff-Technik GmbH & Co. KG
Concrete block:	WU – concrete C 25/30

3 Test and measuring equipment

Equip.-No.	cal.	Equipment	Type	Manufacturer
ET-811	*	Fibre Optic Isolated Digitizing Sub-system	GEN7t	HBM
ET-533		50 kA high-current test equipment	GDPN 5000/12 Sp	SIEMENS
ET-651	*	Digitizing Oscilloscope	DL750	Yokogawa
ET-556	*	Digital sampling microhmeter	DSM 200	T&R Test Equipment Limited
ET-1025	*	High current measurement system	HSM-S	RWE Eurotest GmbH

*) Measuring equipment is calibrated based on national and international reference standards. Calibration certificates can be inspected on request.

Table 1: Test and measuring equipment

The measurement uncertainty of the measuring instruments has been calculated and is archived by Eurotest. Documents can be inspected on request.

4 Tests carried out and results

The Westenergie AG, Eurotest carried out short circuit tests with 2.1 kA/1 s on an earthing wall bushing manufactured by Hauff-Technik GmbH & Co. KG by prescription of the manufacturer according to DIN EN 50522 (VDE 0101-2):2011-11, Annex D.

The test objects were connected with 240 mm² copper cables to the test transformer. Both cables were connected to the earthing bushing.

Figure 1: Test setup

The temperatures of the test objects were measured with 0,5 mm NiCr-Ni-Thermocouples (See figure 2). The measuring points were: T01 and T03 at the core material and T02 at the steel cable .

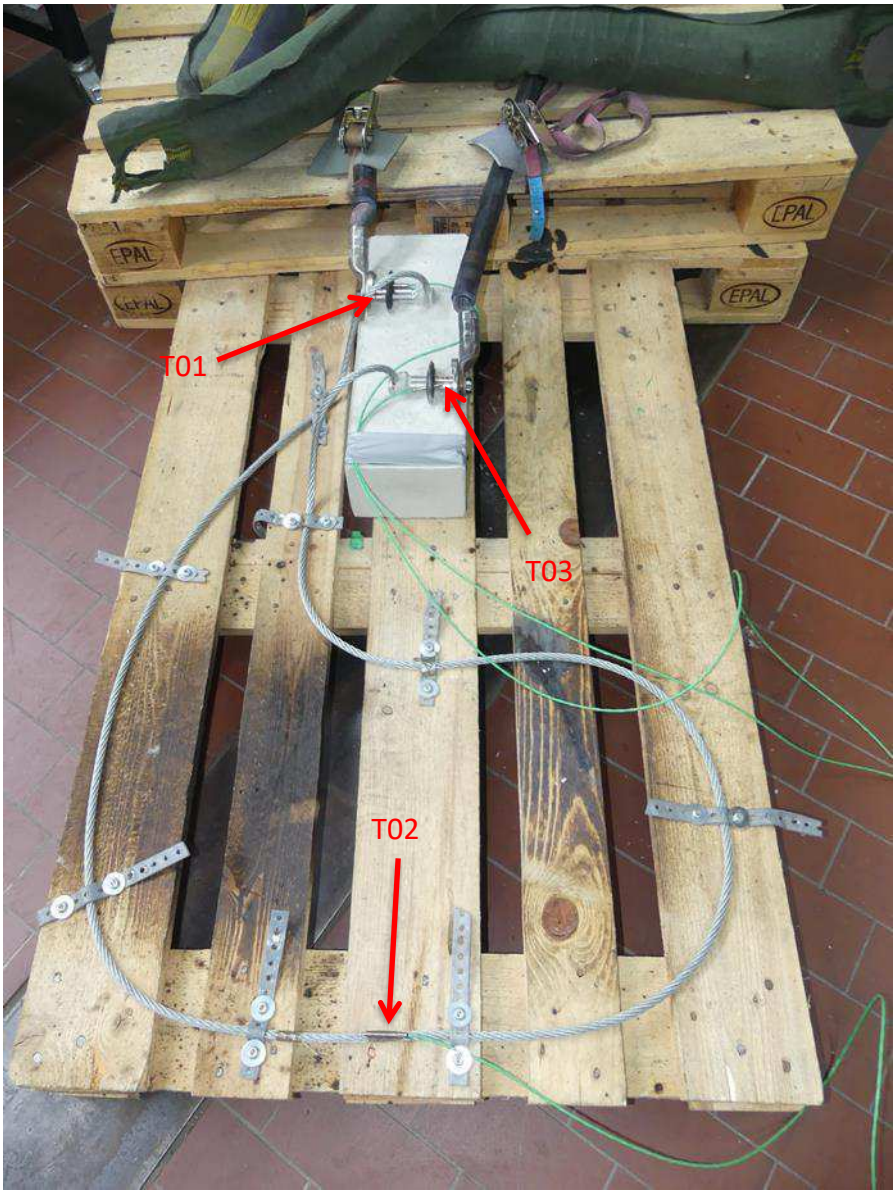


Figure 2: Positions of the thermocouples

The results of the short circuit tests are given in table 3.

Test	I_{RMS} [kA]	t [s]	I^2t [MA²s]	Maximum measured temperatures [°C]		
1	2.194	1.001	4.816	T01: 15.2	T02: 205.7	T03: 15.7
2	2.180	1.002	4.763	T01: 21.6	T02: 203.9	T03: 22.1

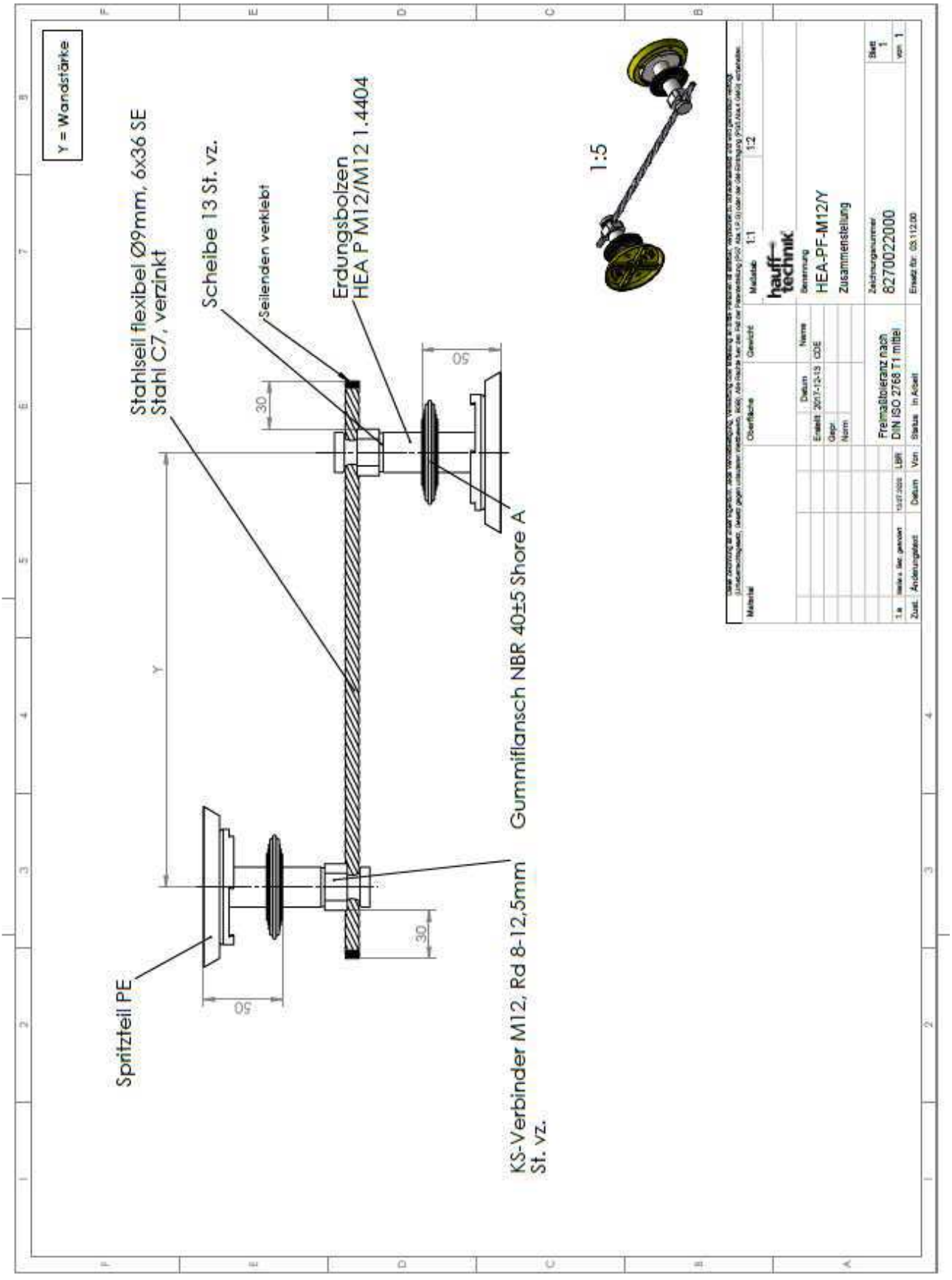
Table 3: Results of the tests

The maximum allowed temperature of 300 °C was not reached during the short circuit tests.

5 Overall result

The earthing wall bushing, type HEA PF M12 of the manufacturer Hauff-Technik GmbH & Co. KG **passed** the short circuit tests with 2.1 kA/1 s by prescription of the manufacturer according to DIN EN 50522 (VDE 0101-2):2011-11, Annex D. The maximum allowed temperature of 300 °C was not reached. No damage was visible at the test object after the tests.

- End of report -


Y = Wandstärke
Stahlseil flexibel Ø9mm, 6x36 SE
Stahl C7, verzinkt
Scheibe 13 St. vz.
Seilenden verklebt
Erdungsbolzen
HEA P M12/M12 1.4404
Gummiflansch NBR 40±5 Shore A
Spritzteil PE
KS-Verbinder M12, Rd 8-12,5mm
St. vz.
Y
30
50
1:5
hauff-technik
HEA-PF-M12/Y
Zusammenstellung
82700220000
Freimaßtoleranz nach
DIN ISO 2768 T1 mittel

Current-/time-diagrams

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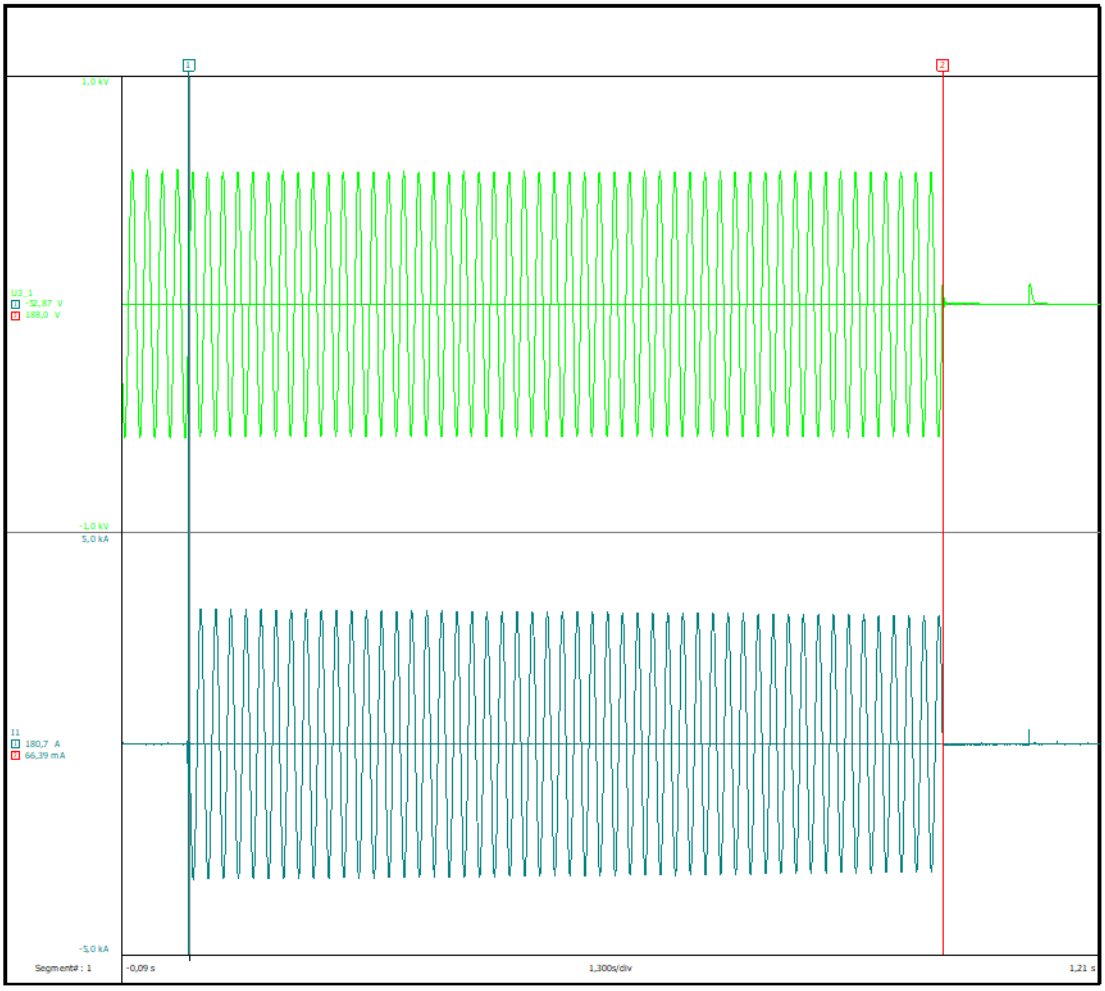

Table		
U3_1_eff	408,2	V
I1_eff	2,194 k	A
I1²t	4,816 M	A²s
I1_max	3,212 k	A
Time	1,001	s

Settings of the high current plant		
	L1	L3
U [V]	412	412
R_{slide} [mΩ]	0	0
R_{fixed} [mΩ]	102	50
X_L	i	i
Phi	0°	0°

Ambient temperature:	20 °C
Humidity:	12 %

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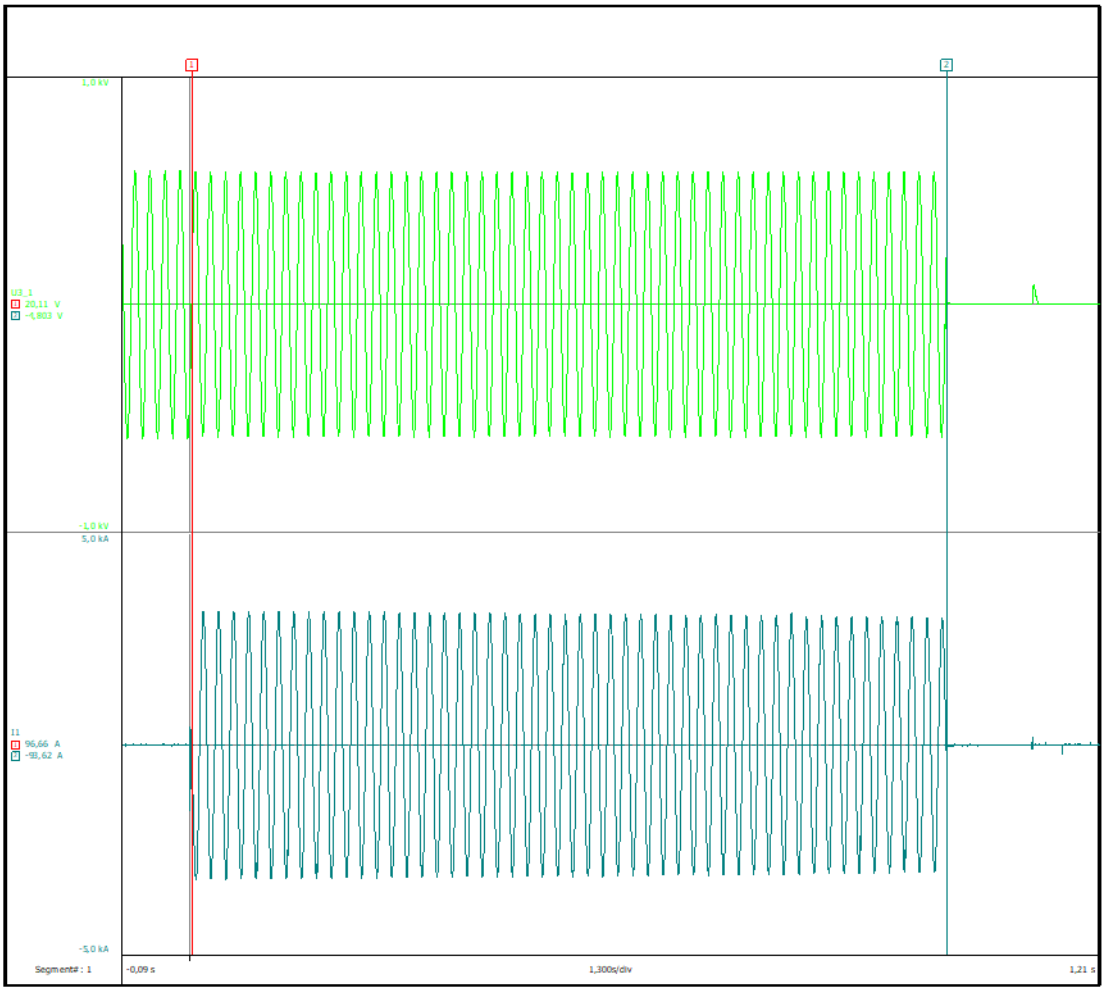


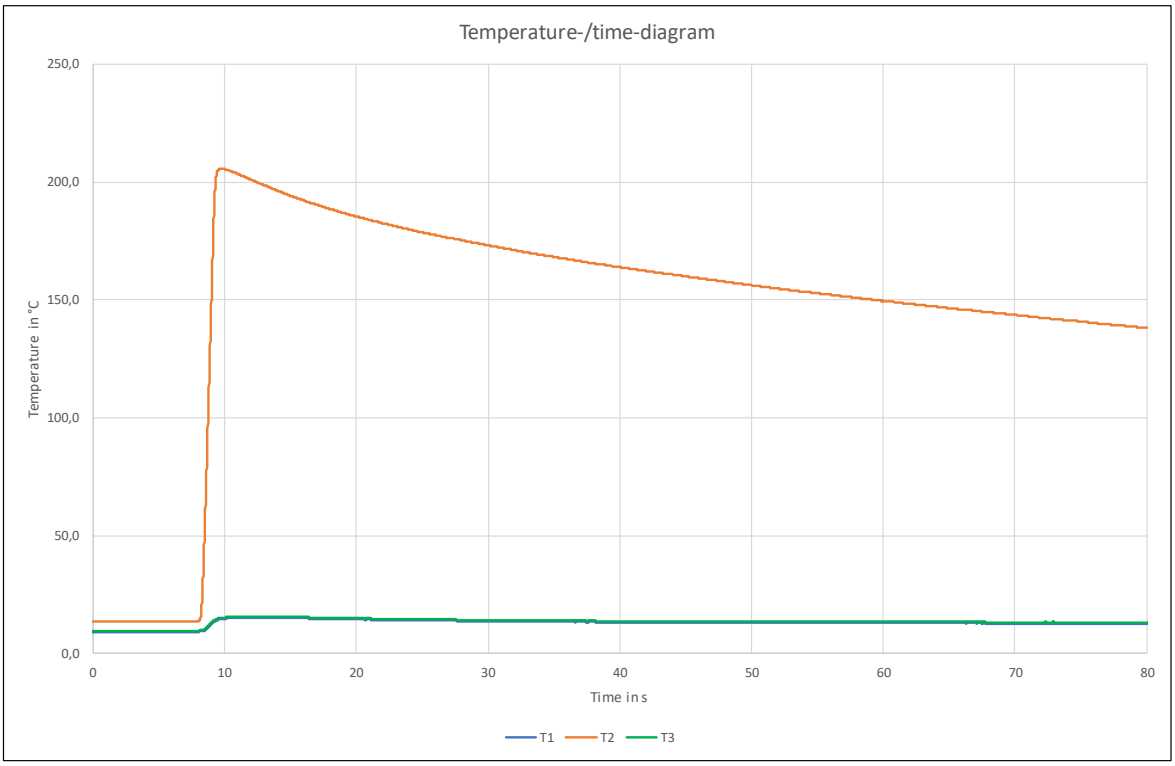
Table		
U3_1_eff	406,1	V
I1_eff	2,180 k	A
I1²t	4,763 M	A²s
I1_max	-3,208 k	A
Time	1,002	s

Settings of the high current plant		
	L1	L3
U [V]	412	412
R_{slide} [mΩ]	0	0
R_{fixed} [mΩ]	102	50
X_L	i	i
Phi	0°	0°

Ambient temperature:	20 °C
Humidity:	12 %

Temperature-/time-diagrams

Test 1



Test 2