

TEST RECORD

NO. 2315.2090550.0386

THS Industria e Comercio Ltda. Rua Ernesto Biester, 59 CEP 04777-120 - Sao Paulo BRAZIL	CLIENT
THS Industria e Comercio Ltda.	MANUFACTURER
Fuse links	TEST OBJECT
Ferraz Shawmut Protec-Train 800A/1000VCC CC1000D86C255.800A / Ref. BRT 200901	TYPE
Test samples	SERIAL NO.
Rated voltage Rated current	1000 V DC 800 A RATED CHARACTERISTICS GIVEN BY THE CLIENT
Following to PROJETO FUSIVEL 800A/1000VDC Conf. Metro Codigo EC-9.86.01.41/700-003 Rev. 1: 27.10.05 Sub-clause 5.7	NORMATIVE DOCUMENT
Verification of the breaking capacity at 1150 V DC and 100 kA	TEST PERFORMED
29 June 2009	DATE OF TEST
See Sub-clause 3	TEST RESULT

This test document consists of 11 sheets.



RONALD BORCHERT
Test engineer in charge
Berlin, 03 July 2009

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Independent test laboratory, accredited by Deutsche Akkreditierungsstelle Technik (DATech) e.V. in the fields of h.v. apparatus and switchgear, power cable and power cable accessories, lv. apparatus and switchgear, installation equipment and switching and control equipment with DAR Record No. DAT-P-019/92.
Institut „Prüffeld für elektrische Hochleistungstechnik“ GmbH (IPH Berlin) is a subsidiary of CESI S.p.A, Milan.

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SHEET 3

1. Participants in the test

Mr. Borchert, Ronald IPH test engineer in charge

2. Test performed

Verification of the breaking capacity at 1150 V DC and 100 kA

3. Test results

Oscillogram No.		209 2502	209 2503	209 2504	209 2505
No. of test object:		-	21	25	18
Rated current of fuse-link	A	-	800	800	800
Test voltage	V	1150	1150	1150	1150
Prospective peak current	kA	-	-	-	-
Prospective test current I_p	kA	102	102	102	102
Time constant	ms	18.5	18.5	18.5	18.5
Rate of current rise	kA/ms	5.51	5.51	5.51	5.51
Melting current i_s	A	-	33.5	33.3	32.1
Cut-off current	A	-	34.2	34.1	32.7
Melting time	ms	-	7.07	7.03	6.68
Arcing time	ms	-	5.28	5.40	5.16
Break time	ms	-	12.4	12.4	11.8
Joule integral	$10^3 \text{ A}^2\text{s}$	-	2911	2857	2498
Arcing integral	$10^3 \text{ A}^2\text{s}$	-	1810	1889	1580
Breaking integral	$10^3 \text{ A}^2\text{s}$	-	4709	4735	4068
Arc energy	kVAs	-	152	154	141
Switching voltage	V	-	2522	2471	2517
Recovery voltage	V	-	1157	1160	1161
Resistance after test ¹⁾	MΩ		2.9	3.0	3.0
Notes		Setting	-	-	-
Evaluation		-	OK	OK	OK

Notes:

- 1) Resistance was measured 10 minutes after the test.
 OK - The test object was able to break properly.

4. Photographs

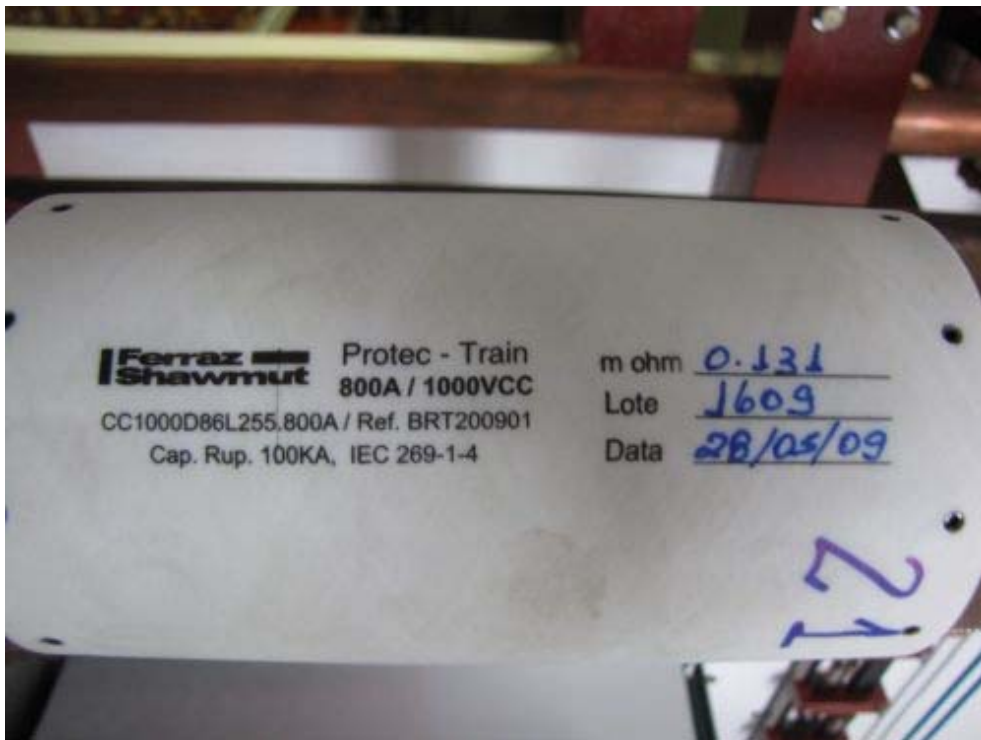


Photo 1: Name plate



Photo 2: Test arrangement



Photo 3: Test object No. 21 after test

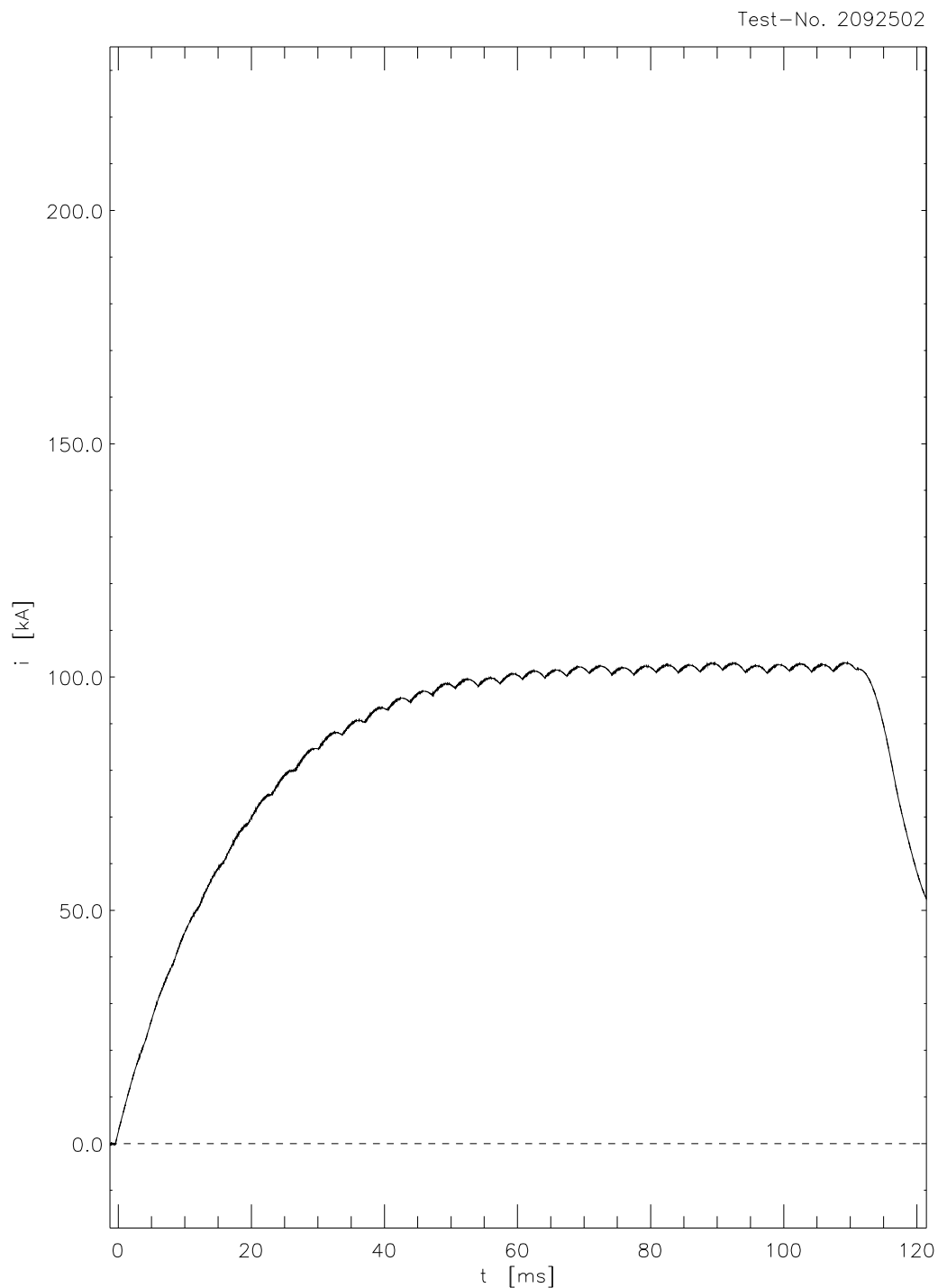


Photo 4: Test object No. 25 after test

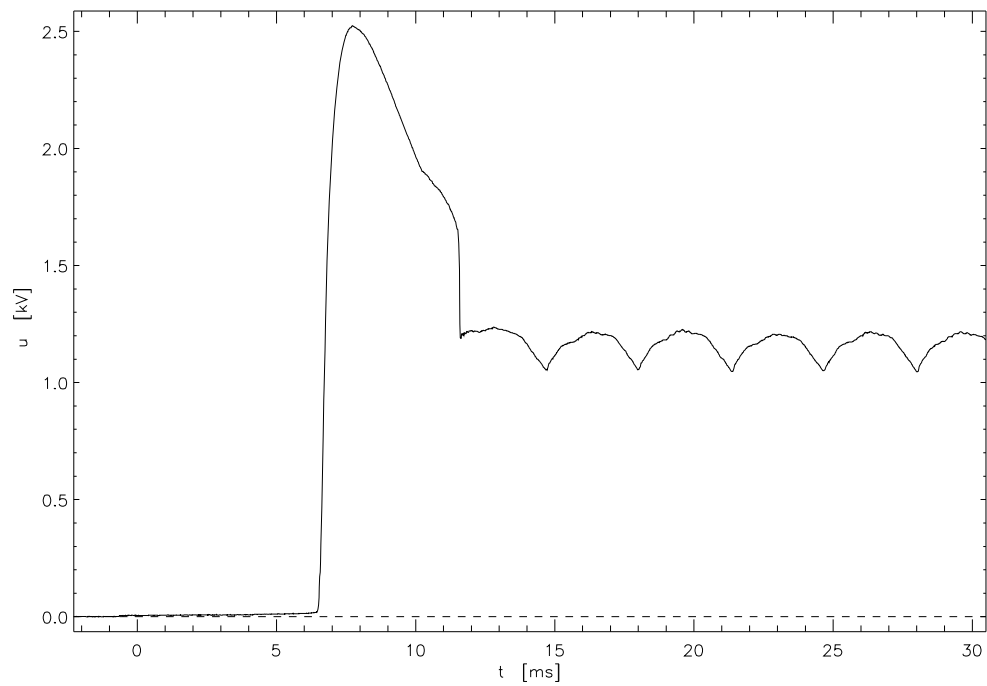
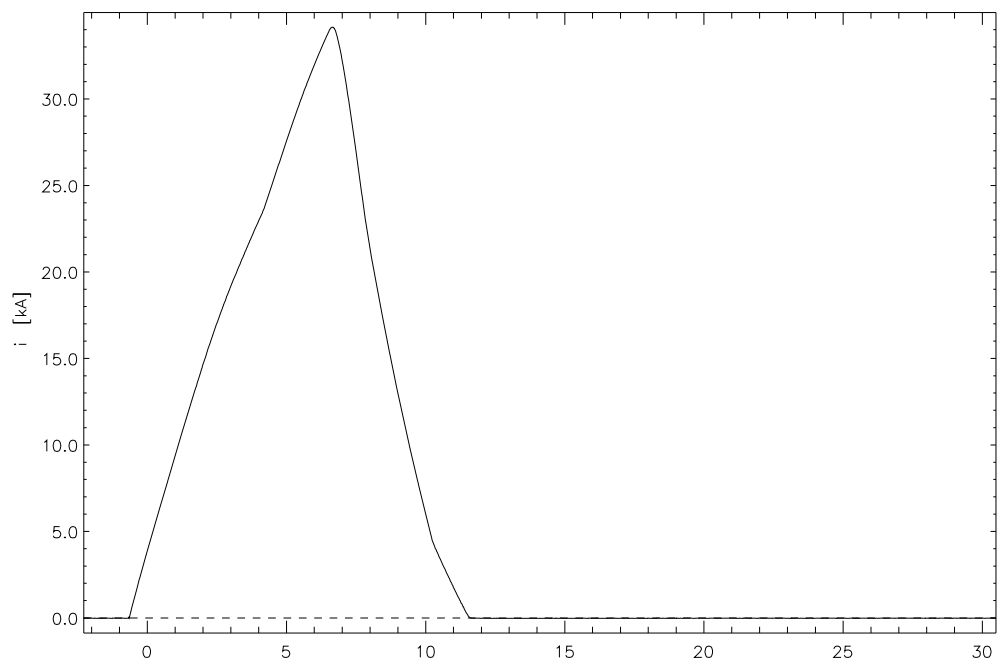


Photo 5: Test object No. 18 after test

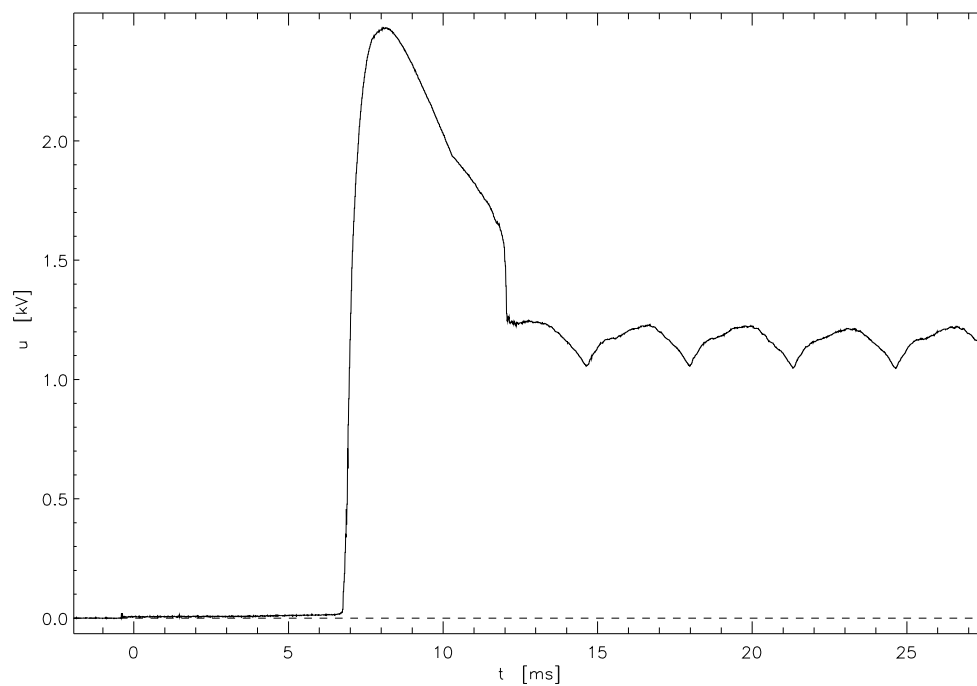
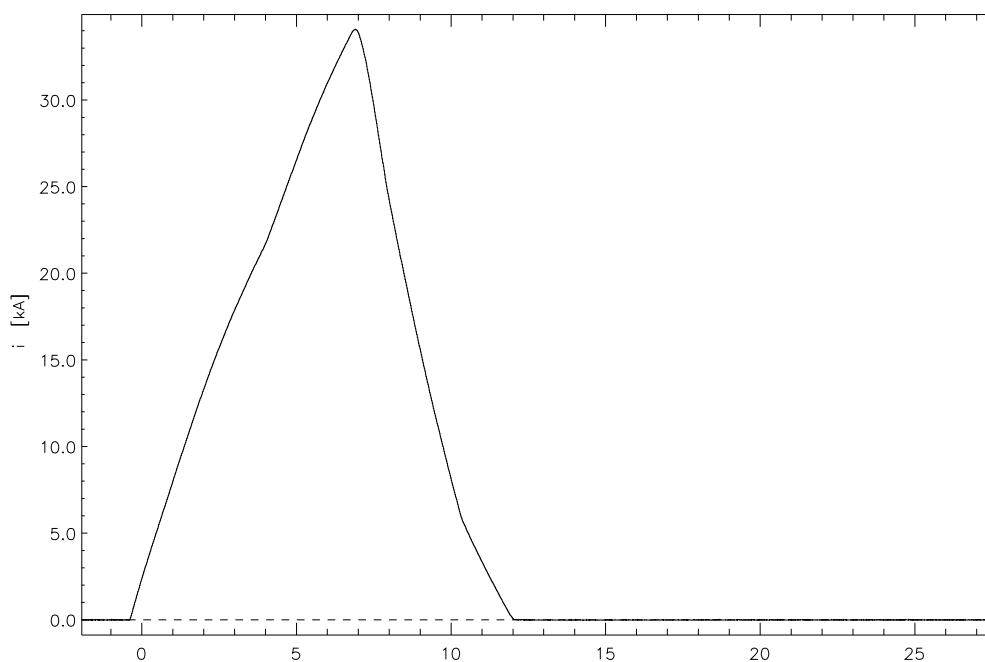
5. Oscillograms



Test-No. 2092503



Test-No. 2092504



Test-No. 2092505

