



ABB AG - EPDS

Test Laboratories in Ratingen

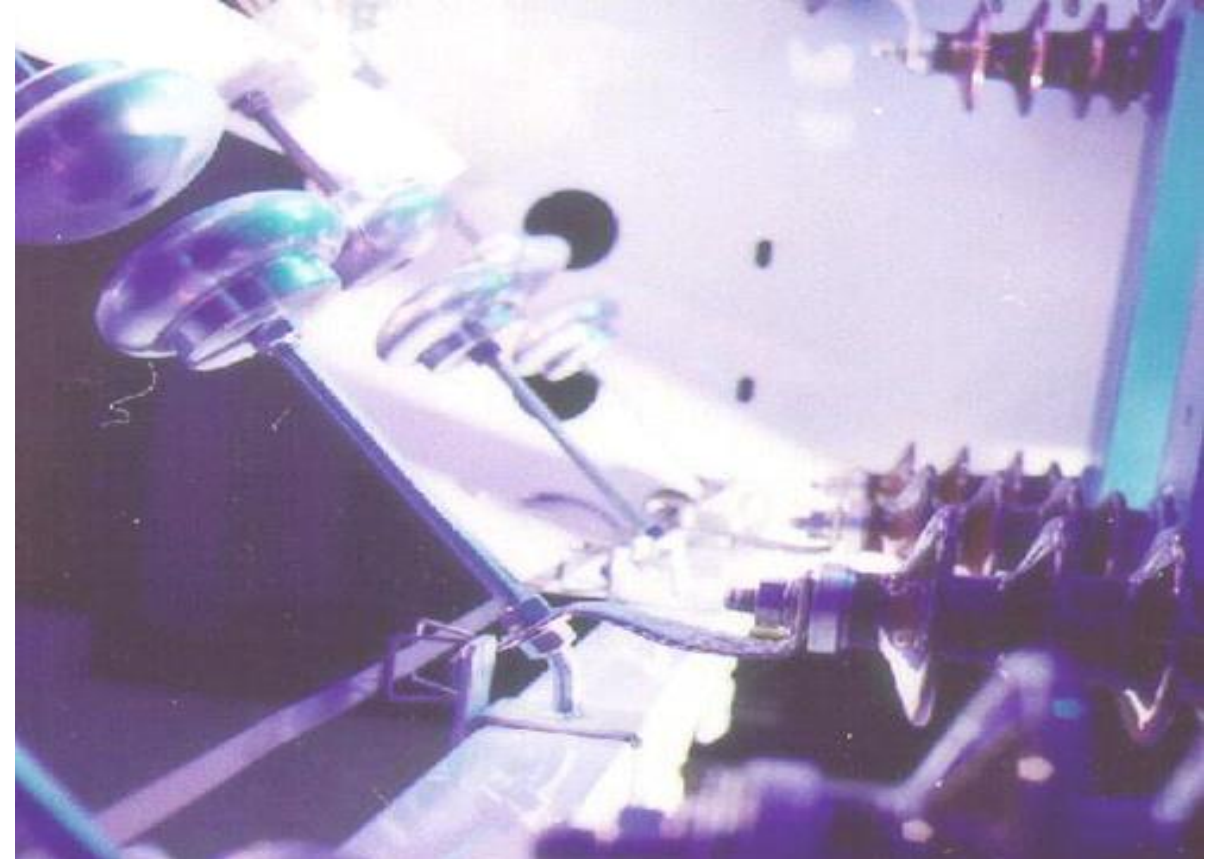


Test Laboratories Ratingen

Overview

Basic Features

- Flexible
- Independent
- Well experienced in testing of medium voltage equipment (testing since 1954)
- Founding Member of **PEHLA** (1960)
- Founding Member of **Short Circuit Testing Liaison** (1969)
- Accredited by DAkkS since 1993
- Very efficient testing due to a high automation standard allowing a quick adjustment of the required test circuit
- Size of laboratories: 4200 m²
- Participant in UL Client Test Data program 2015
- Recognized Intertek Satellite Laboratory since 2015

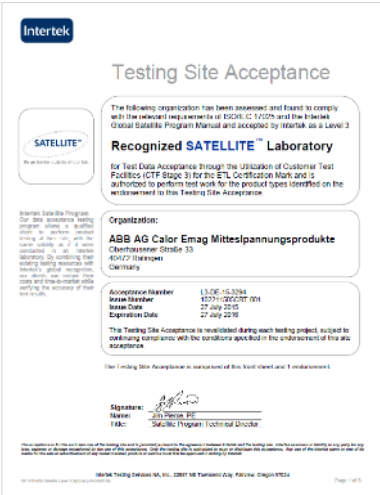


Laboratories

Accredited areas

Testing laboratories

- High power testing laboratory
- Temperature rise testing laboratory
- High voltage testing laboratory
- Mechanical testing laboratory
- Material testing laboratory
- Calibration laboratory



Laboratories

Accreditation by DAkkS



DAkkS is the national accreditation body of the Federal Republic of Germany. It acts in the public interest in accordance with Regulations (EC) No. 765/2008 and the German Accreditation Bodies Act (AkkStelleG) as the sole body providing **accreditation** in Germany



DAkkS is a member of the international accreditation organizations European Co-operation for Accreditation (**EA**), International Accreditation Forum (**IAF**) and International Laboratory Accreditation Cooperation (**ILAC**).

Laboratories

PEHLA

The members

PEHLA (Prüfung Elektrischer Hoch-Leistungs-Apparate) is an association of owners of high-power testing laboratories in Germany and Switzerland.

ABB	ABB Calor Emag Mittelspannung ABB Schweiz AG, High Voltage Products
ALSTOM GRID	ALSTOM Grid GmbH, High Voltage Products
FGH	Engineering & Test GmbH
IPH	Institut „Prüffeld für elektrische Hochleistungstechnik“
SCHNEIDER ELECTRIC	Schneider Electric Sachsenwerk GmbH
SIEMENS	Siemens Aktiengesellschaft (Frankfurt and Berlin)



Laboratories

Information about Short Circuit Testing Liaison (STL)

The members of STL are organizations which deal with the testing of high-power electrical components and have testing facilities with a short-circuit capacity of at least 500 MVA (e.g. 12 kV, 25 kA) in a three-phase test circuit.

The members are expert testing organizations which are independent of manufacturers and cooperate actively within STL.

PEHLA is a founding member of STL.

CESI, Italy



CESI, Italy



CPRI, India



ESEF ASEFA, France



JSTC, Japan



KEMA, The Netherlands



KERI, South Korea



PEHLA, Germany



SATS, Norway



STLNA, USA



VEIKI, Hungary



ZKU, Czech Republic



Laboratories

High Power Testing Laboratory

Short-circuit making and breaking capacity

- Single-phase and three-phase
 - 50 kA at 12 kV
 - 31.5 kA at 17.5 kV
 - 25 kA at 24 kV
 - 16 kA at 40.5 kV

Switching capacity tests

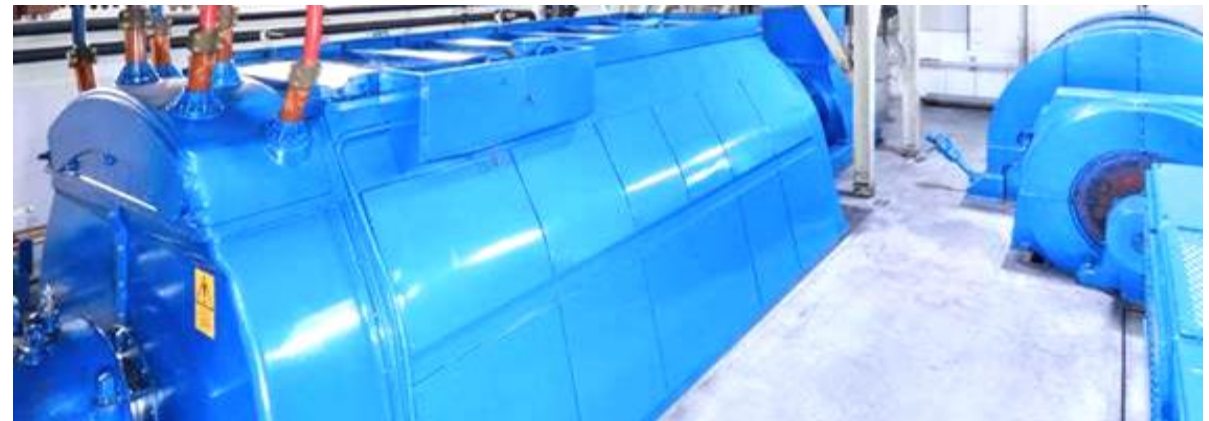
- Capacitive, Inductive, Ohmic Load currents

Peak withstand and short time current tests

- Up to 250 kA_{peak}; 100 kA_{rms} (1-3 s)

Internal arc fault tests

- Up to 50 kA – 1 s
- 63 kA – 0.5 s



Laboratories

Temperature Rise Test Laboratory

Tests up to 5500 A

Measurement of temperatures

- Up to 180 thermocouples

Safety system allows to carry out tests over night

Currents automatically controlled

Continuously measurement of currents and temperatures

Automatic calculation of temperature rises



Laboratories

High Voltage Testing Laboratory

Power-frequency voltage tests

- Stationary up to 260 kV
- Mobile up to 230 kV

Standard lightning impulse voltage tests

- Up to 800 kV

Partial discharge tests

- Stationary up to 150 kV
- Mobile up to 230 kV
- Background level < 1 pC



Laboratories

Mechanical Testing Laboratory

- Mechanical operating tests
- Mechanical endurance tests
- Tests of interlocking systems
- Logic tests of control units
- Leakage tests
- High/low temperatures tests
- IK rating tests
- Pressure tests



Laboratories

Material Testing Laboratory

Accessible Climatic-Chamber

- Dimensions 2 m (W) x 2 m (H) x 2 m (D)
- Temperature range: -70 °C - +130 °C /1K/min
- Humidity range: 10 – 98 %
- AC Test voltage (single phase): 100 kV

Accessible Climatic-Chamber

- Dimensions 2.4 m (W) x 3.5 m (H) x 3.2 m (D)
- Temperature range: -70 °C - +150 °C /1K/min
- Humidity range: 10 – 98 %
- AC Test voltage (single phase): 70 kV

Laboratories

Mechanical Testing Laboratory

Calibration of

- Electrical measuring instrument
- Force measuring instrument
- Length measuring instrument
- Torque wrenches
- Pressure measuring instrument



Laboratories

Workshop of Laboratories

Prototypes and test arrangements

Assembly and installation services

Repair services

Mould, die and equipment construction

Prototype assessment



Laboratories

Which tests can be carried out

Tests	Products											
	Mv circuit-breaker	Metal enclosed switchgear	Power transformers	Disconnecter & earthing switch	Switch fuse units	Earthing facility	Bushing	Instrument transformers	Fuses	Cable accessories	Auxiliary circuit	Substations
Making and Breaking test	•	•		•	•				•		•	•
STC test	•	•	•	•		•	•	•		•	•	•
Internal arc test		•										•
Capacitive switching test	•			•								
Temperature rise test	•	•		•	•	•	•	•	•	•	•	•
Climatic test	•	•	•	•	•	•	•	•	•	•	•	
Dielectric test	•	•		•	•	•	•	•	•	•	•	•
IP/IK –coding test	•	•		•	•	•	•	•			•	•
Partial discharge test	•	•	•	•	•	•	•	•	•	•		•
Mechanical operation test	•	•		•	•						•	
Mechanical endurance test	•			•	•						•	
High and low temperature test	•	•		•			•		•		•	
Tightness test	•	•		•			•					
Pressure test		•		•								

Laboratories

Accredited for

High-voltage switchgear and controlgear	IEC 62271-1	IEC 62271-100	IEC 62271-102
	IEC 62271-103	IEC 62271-104	IEC 62271-105
	IEC 62271-106	IEC 62271-110	IEC 62271-111
	IEC 62271-200	IEC 62271-201	IEC 62271-202
	IEC 62271-203	IEC 62271-304	IEC 60529
Power transformers	IEC 60076-5	IEC 60076-11	
High-voltage fuses	IEC 60282-1	IEC 60282-2	
Instrument transformers	IEC 61869-1	IEC 61869-2	IEC 61869-3
Low-voltage switchgear and controlgear	IEC 60947-1	IEC 60947-2	IEC 60947-3
ANSI / IEEE	IEEE C37.04	IEEE C37.06	IEEE C37.09
	ANSI C37.54	ANSI C37.60	

Laboratories

Our main services

Type testing

- Type certificates
- Test documents
- Test reports

Development tests

Approval tests (also outside our laboratories)

Testing in an STL member laboratory

Testing to obtain UL qualification for MV and LV products

Testing to obtain Intertek (ETL) recognition for MV and LV products



Laboratories

Available Accreditations

PEHLA

German Accreditation Body
PEHLA – Testing Station Ratingen



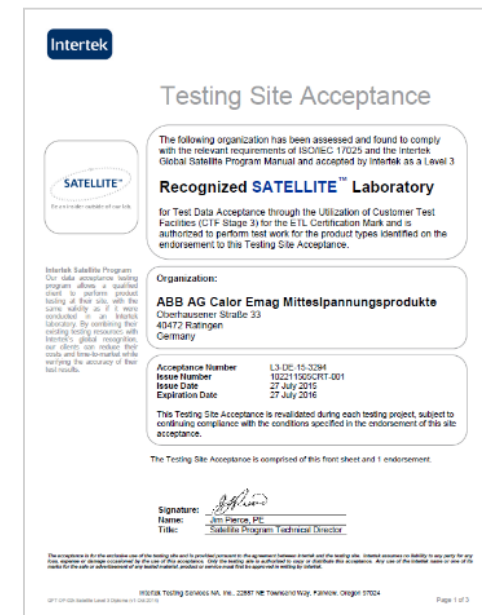
Underwriters Laboratory

Underwriters Laboratory (UL)
Member of Client Data Program (CTDP)



Intertek

Intertek (ETL)
Member of CTF (Customers Testing Facility Stage 3) at Intertek



Laboratories

Why testing at our laboratories

- Over 50 years experience in testing of Medium Voltage Switchgear and Controlgear
- Efficient support during project planning and execution will be given by our test engineers
- Our workshop is specialized to support on a short time basis in case repair work or modifications on the test objects are required
- Short term availability of components for ABB products
- Whole range of mandatory type tests can be carried out in our test facility
- High Quality testing and flexible scheduling will be provided to our customers



ABB