Test Laboratories in Ratingen
Test Laboratories Ratingen

Overview

**Basic Features**

- Flexible
- Independent
- Well experienced in testing of medium and low 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
- Size of laboratories: 4200 m²
- Member of **UL Client Test Data program** 2015
- **Intertek Satellite Laboratory** since 2015
- **ASTA Laboratory** since 2017
Laboratories

Accredited areas

Testing laboratories

- High power testing laboratory
- Temperature rise testing laboratory
- High voltage testing laboratory
- Mechanical testing laboratory
- Calibration laboratory
- Material laboratory
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).
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 GmbH, ABB Schweiz AG, High Voltage Products
- **GE GRID**: GE Grid GmbH
- **FGH**: Engineering & Test GmbH
- **IPH**: Institut „Prüffeld für elektrische Hochleistungstechnik“
- **SCHNEIDER ELECTRIC**: Schneider Electric Sachsenwerk GmbH
- **SIEMENS**: Siemens Aktiengesellschaft (Frankfurt and Berlin)
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.
High Power Testing Laboratory

**Short-circuit making and breaking capacity**
- Single-phase and three-phase
  - Up to 50 kA at 12 kV
  - Up to 31.5 kA at 17.5 kV
  - Up to 25 kA at 24 kV
  - Up to 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\textsubscript{peak}; 100 kA\textsubscript{rms} (1-3 s)

**Internal arc fault tests**
- Up to 50 kA – 1 s / 63 kA – 0.5 s
Laboratories

Temperature Rise Test Laboratory

Two times up to 6300 A at 50 Hz and 60 Hz

Continuously and static measurement of:
- Temperatures and Temperature Rise, up to 240 thermocouples
- Test currents and frequency
- Gas pressure and airflow
- Magnetic fields

Safety system allows to carry out tests over night
Currents automatically controlled
Thermal imaging
Airflow imaging
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 below 1 pC
Mechanical Testing Laboratory

- Mechanical operating and endurance tests
- Mechanical Tests of interlocking systems
- Leakage and pressure tests
- IK rating tests
- Classification of auxiliary contacts
- Electrical continuity of earthed metallic parts test
- Support in execution of environmental tests
- Kinematic chain test on position indicating devices
- Tensile, cantilever load and compression tests
**Accessible Climatic-Chamber**
- Dimensions 2 m (W) x 2 m (H) x 2 m (D)
- Temperature range: -70 °C - +130 °C / 1 K/min
- Humidity range: 10 – 98 %
- AC Test voltage (single phase): 100 kV

**Climatic Shock-Chamber**
- Dimensions 0.8 m (W) x 0.6 m (H) x 0.6 m (D)
- Temperature range: -85 °C - +220 °C / <1 min

**Accessible Climatic-Chamber**
- Dimensions 2.4 m (W) x 3.5 m (H) x 3.2 m (D)
- Temperature range: -70 °C - +150 °C / 1 K/min
- Humidity range: 10 – 98 %
- AC Test voltage (3-phase): 100 kV
Laboratories

**Material Laboratory**

Testing of
- Solid Materials (Insulation Materials and Metals)
- Liquids
- Gases

Destructive and Non destructive mechanical tests
Thermal tests and ageing tests
Tests to verify the dielectric behavior of insulation materials
  - Measurement of conductivity
  - Measurement of tan δ
Chemical and physical Analyses (RFX, FTIR, EDX)
Calibration 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
- Mold manufacturing and machining
- Prototype assembly
## Laboratories

### Which tests can be carried out

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## Laboratories

### Extract of Accreditation Scope

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<th>High-voltage switchgear and controlgear</th>
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<th>IEC 62271-100</th>
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<th>IEC 60076-11</th>
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<th>High-voltage fuses</th>
<th>IEC 60282-1</th>
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<th>Instrument transformers</th>
<th>IEC 61869-1</th>
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<th>Low-voltage switchgear and controlgear</th>
<th>IEC 60947-1</th>
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<th>ANSI / IEEE</th>
<th>IEEE C37.04</th>
<th>IEEE C37.06</th>
<th>IEEE C37.09</th>
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<tr>
<td></td>
<td>ANSI C37.54</td>
<td>ANSI C37.60</td>
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</table>
Labs

Our main services

Available test documentation
- Type test certificates
- Type Test documents
- Test reports

Execution of development tests based on clients instruction

Approval tests (also outside our laboratories)

Testing in an STL / ASTA 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

<table>
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<tr>
<th>PEHLA</th>
<th>Underwriters Laboratory (UL)</th>
<th>Intertek (ETL)</th>
<th>Intertek (ASTA)</th>
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<tr>
<td>German Accreditation Body</td>
<td>Member of Client Data Program (CTDP)</td>
<td>Member of CTF (Customers Testing Facility Stage 3) at Intertek</td>
<td>Member of the ASTA Recognized Laboratory Program</td>
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<td>PEHLA – Testing Station Ratingen</td>
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</table>
Laboratories

Why testing at our laboratories

- Over 50 years experience in testing of Medium Voltage and Low Voltage Switchgear and Controlgear
- Efficient support during project planning and execution will be provided by our test team
- 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