

ABB AG, ELDS-L

# Test Laboratories in Ratingen

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# Test Laboratories Ratingen

## Overview

### Basic Features

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- 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 high automation standard
- Size of laboratories: 4200 m<sup>2</sup>
- Member of UL Client Test Data program 2015

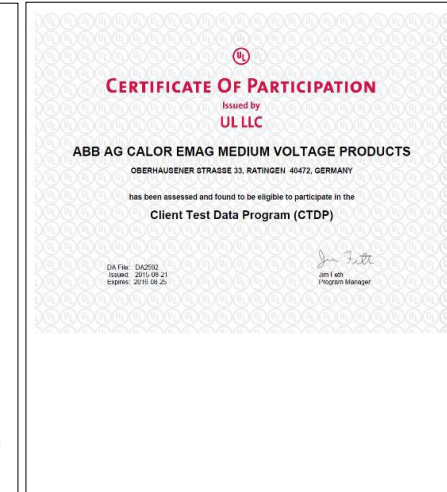


# Laboratories

## Accredited areas

### Testing laboratories

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





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# Laboratories

## Accreditation by DAkkS

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### 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

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### ILAC

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

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

ABB	ABB AG Distribution Solution Deutschland
Hitachi	Hitachi Energy Switzerland Ltd
GE GRID	GE Grid GmbH
SCHNEIDER ELECTRIC	Schneider Electric Sachsenwerk GmbH
SIEMENS Energy	Siemens Energy (Berlin)
SIEMENS	Siemens Aktiengesellschaft (Frankfurt and Berlin)



# Laboratories

## Accredited areas

### 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.

Intertek (ASTA), UK



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
  - 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<sub>peak</sub>; 100 kA rms (1-3s)

Internal arc fault tests

- Up to 50 kA -1s/63kA -0.5s



# Laboratories

## High Current Testing 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



# Laboratories

## 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



# Laboratories

## Environmental Testing Laboratory

### 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

### 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

### Climatic Shock-Chamber

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



# Laboratories

## Material Laboratory

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Testing of

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

Destructive and Nondestructive mechanical tests

Thermal tests and ageing tests

Tests to verify the dielectric behavior of insulation materials

- Measurement of conductivity
- Measurement of tan  $\delta$

Chemical and physical Analyses (RFX, FTIR, EDX)



# Laboratories

## 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

## Our main service

Available test documentation

- STL Type test certificates
- Type Test certificates
- Test reports

Execution of development tests based on clients instruction

Approval tests (also outside our laboratories)

Testing in an STL 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

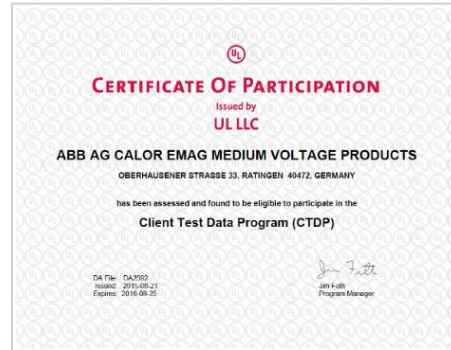
### PEHLA

German Accreditation Body  
PEHLA – Testing Station  
Ratingen



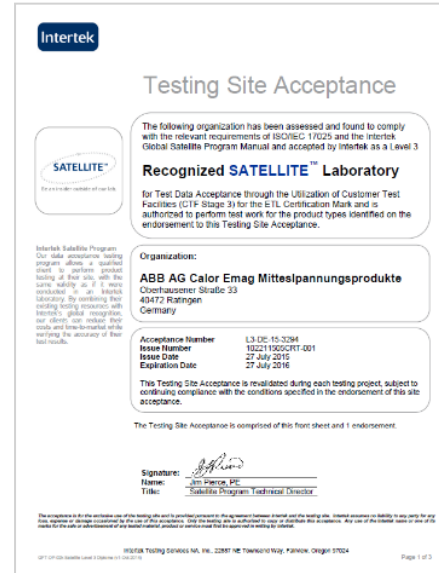
### Underwriters Laboratory

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



### Intertek (ETL)

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





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# Test Laboratories Ratingen

## Why testing at our laboratories

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- Over 67 years experience in testing of Medium Voltage and Low Voltage Switchgear and Controlgear
- Efficient support during project planning and execution will be provide 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





**ABB**