



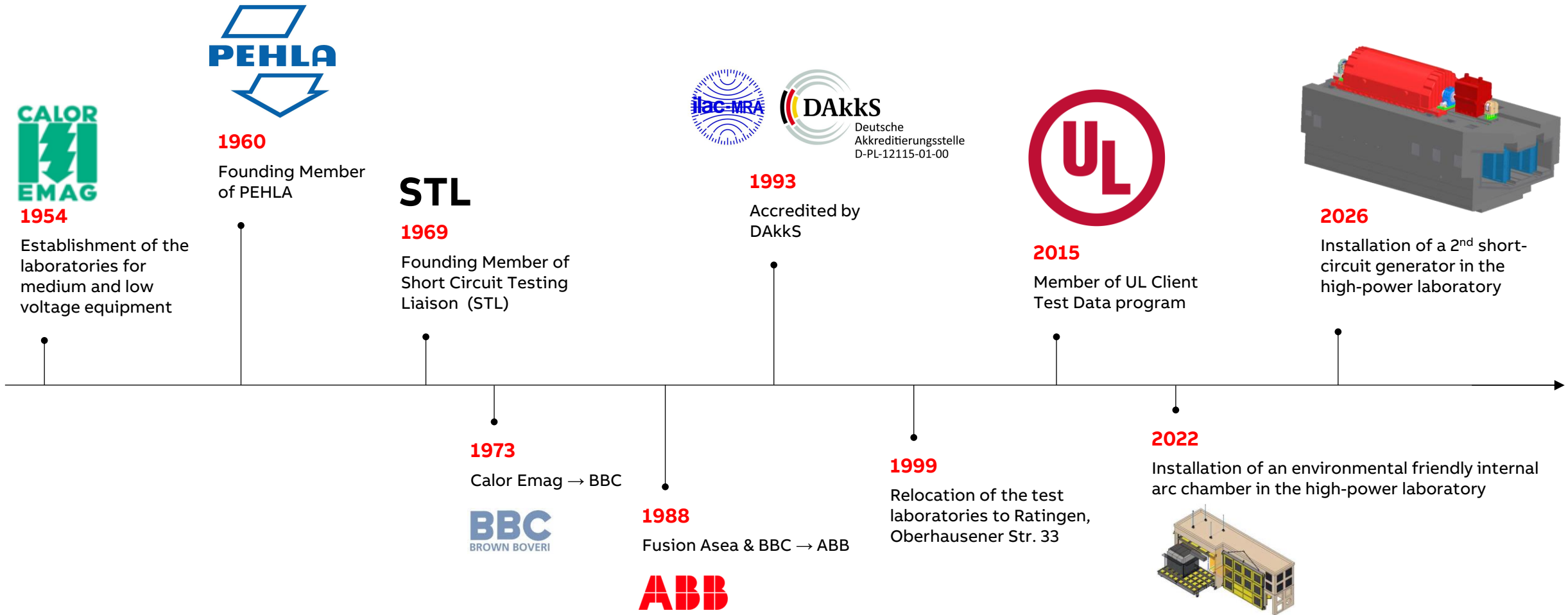
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# ABB and Pehla Test Laboratories in Ratingen

2026

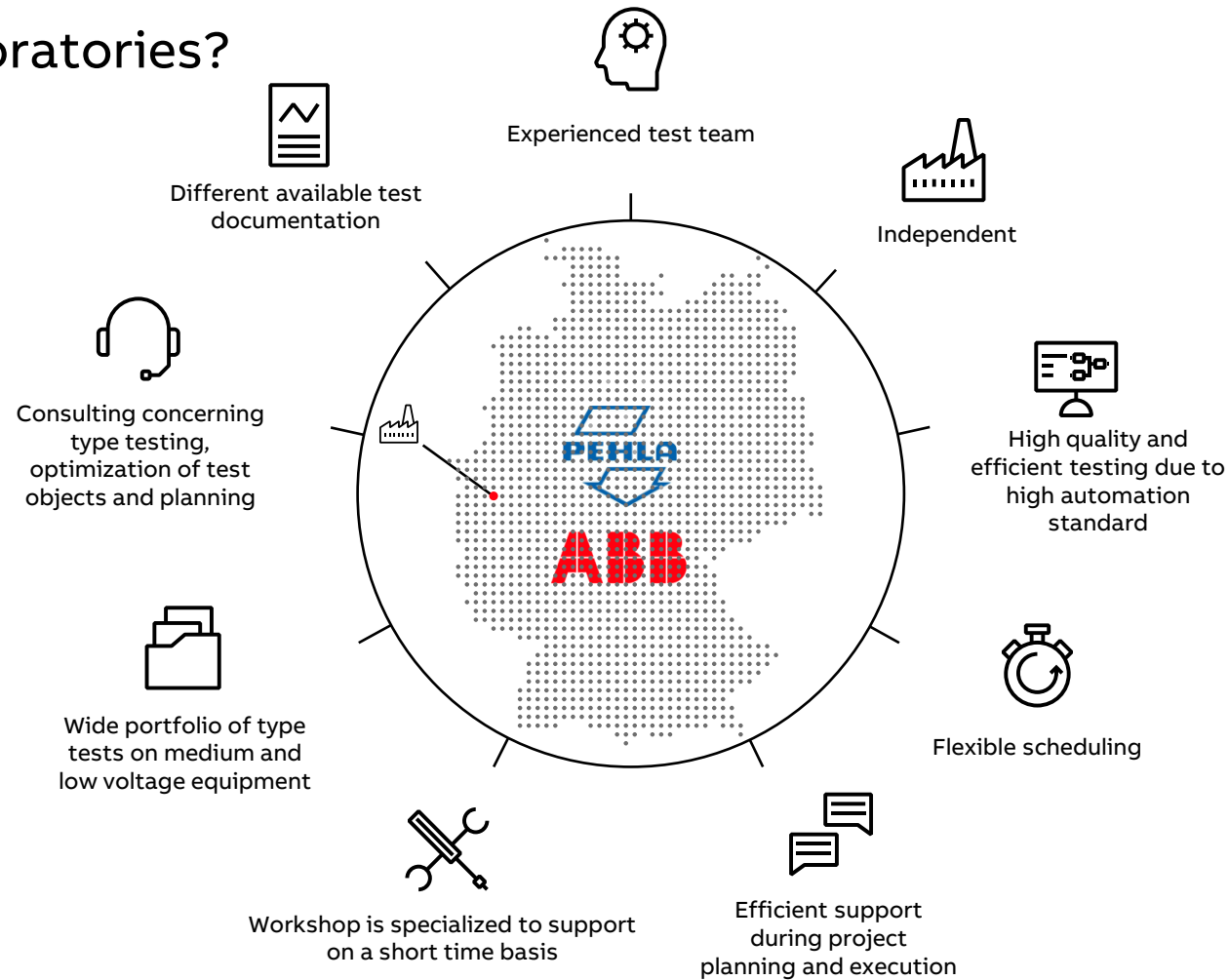
# Test Laboratories Ratingen

## History



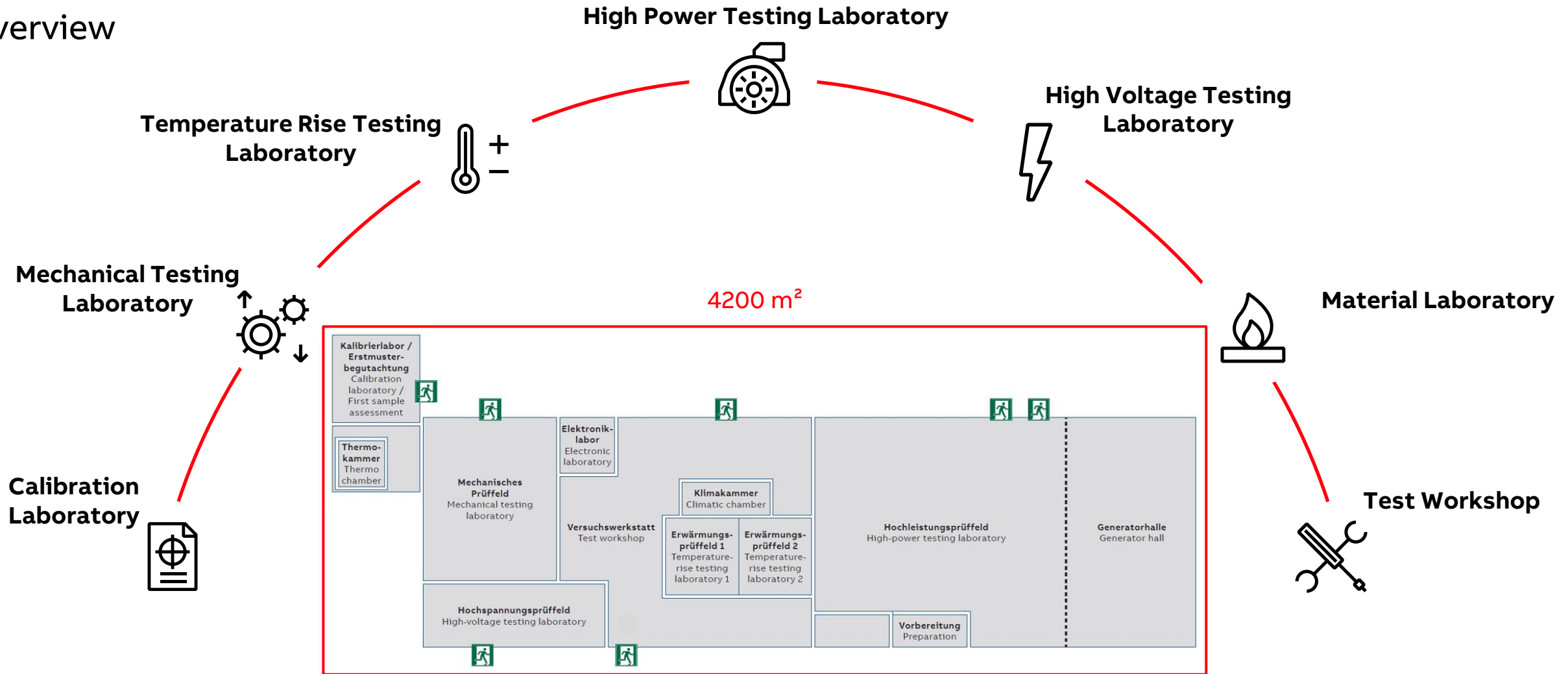
# Test Laboratories Ratingen

Why testing at our laboratories?



# Test Laboratories Ratingen

## Overview



# Test Laboratories Ratingen

## 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)
- 400V/440V up to 100kA, 690V up to 100kA (I<sub>cc</sub>, I<sub>cw</sub>, I<sub>parc</sub>)

### Internal arc fault tests

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



# Test Laboratories Ratingen

## High Current Testing Laboratory

Two test chambers up to 6300 A at 50 Hz and 60 Hz  
Continuously and static measurement of:

- Temperatures and Temperature Rise, up to 270 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



# Test Laboratories Ratingen

## 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

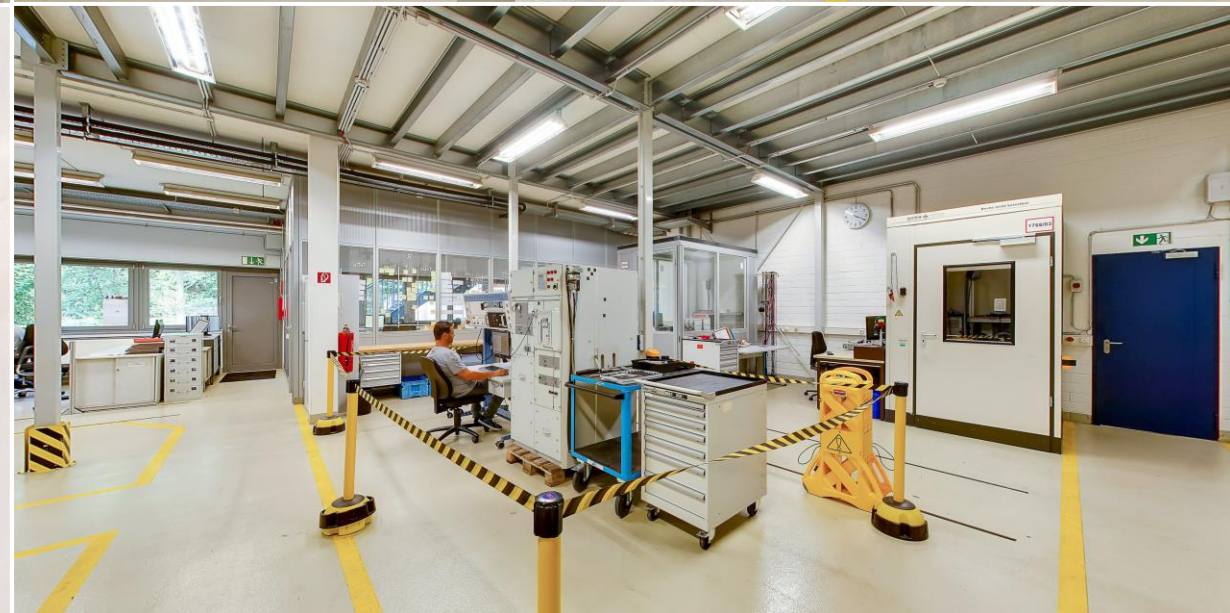


# Test Laboratories Ratingen



## 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



# Test Laboratories Ratingen

## Workshop of Laboratories

Our workshop is specialized to support on a short time basis in case repair work or modifications on the test objects are required:



- Prototypes and test arrangements
- Assembly and installation services
- Repair services
- Mold manufacturing and machining
- Prototype assembly
- 3D prints



# Test Laboratories Ratingen



## Material Laboratory

Testing of

- Solid Materials (Insulation materials and metals)
- Liquids
- Gases

Destructive and non destructive mechanical tests

Thermal tests and ageing tests

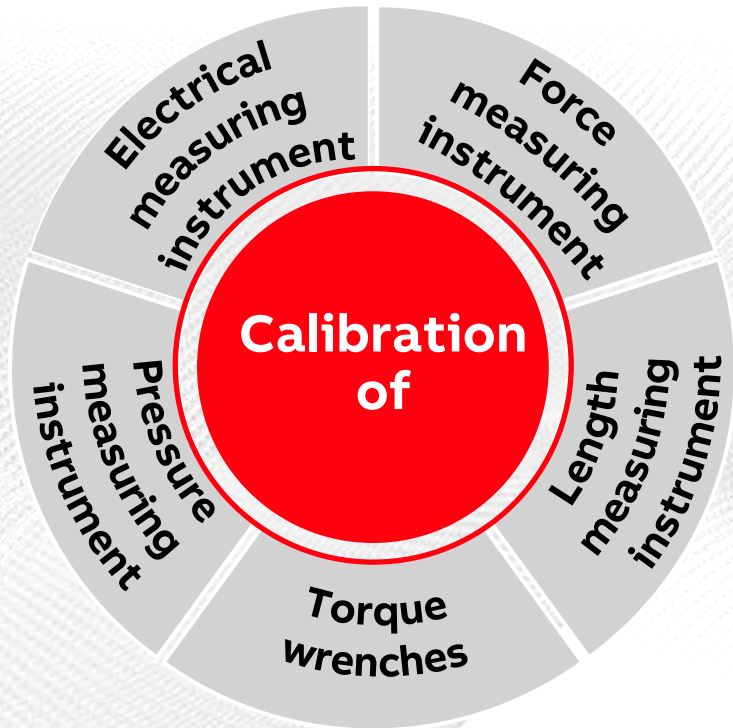
Tests to verify the dielectric behavior of insulation materials

- Measurement of conductivity
- Measurement of tan d

Chemical and physical analyses (RFX, FTIR, EDX)

# Test Laboratories Ratingen

## Calibration Laboratory



# Test Laboratories Ratingen

## Technical data of the climatic chambers

### 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



# Test Laboratories Ratingen

## Test Packages



### 1. Consultancy

- What need to be tested?
- Test Matrix
- Optimization of the test program (No. of test of objects/derivations)
- Timeline / Costs



### 2. Testing

- R & D Tests
- DIN EN ISO/IEC 17025 accredited laboratory
- DIN EN ISO/IEC 17025 accredited laboratory + STL witness



### 3. Support and Service

- Design Review (before test)
- Building support of the test objects (before test)
- Root cause analysis (after test)
- Support to upgrade the test objects (after test)

# Test Laboratories Ratingen

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	•	•		•									

- Tests in Ratingen possible
- Tests for the product not applicable

# Test Laboratories Ratingen

## Extract of Accreditation Scope

High-voltage switching devices	IEC 62271-100 IEC 62271-104 IEC 62271-110	IEC 62271-102 IEC 62271-105 IEC 62271-111	IEC 62271-103 IEC 62271-106
High-voltage switchgear and controlgear	IEC 62271-1 IEC 62271-200 IEC 62271-203	IEC 62271-201 IEC 62271-304	IEC 62271-202 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 61439-1 IEC 61439-4	IEC 60947-2 IEC 61439-2 IEC 61439-5	IEC 60947-3 IEC 61439-3 IEC 60439-1
ANSI/IEEE	IEEE C37.04 ANSI C37.54	IEEE C37.06 ANSI C37.60	IEEE C37.09

# Laboratories

## Accreditation by DAkkS

### 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

### 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).



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# 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
Hitachi	Hitachi Energy Switzerland Ltd
GE GRID	GE Grid GmbH
SCHNEIDER ELECTRIC	Schneider Electric Sachsenwerk GmbH
SIEMENS	Siemens Aktiengesellschaft (Frankfurt and Berlin)
SIEMENS ENERGY	Siemens ENERGY Aktiengesellschaft (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



# Test Laboratories Ratingen

## Our testing service

### Available test documentation

- Type test certificate of complete type test
- STL type test certificates
- Test certificates
- Test reports

Execution of development tests based on clients instruction

Approval tests (also outside our laboratories)

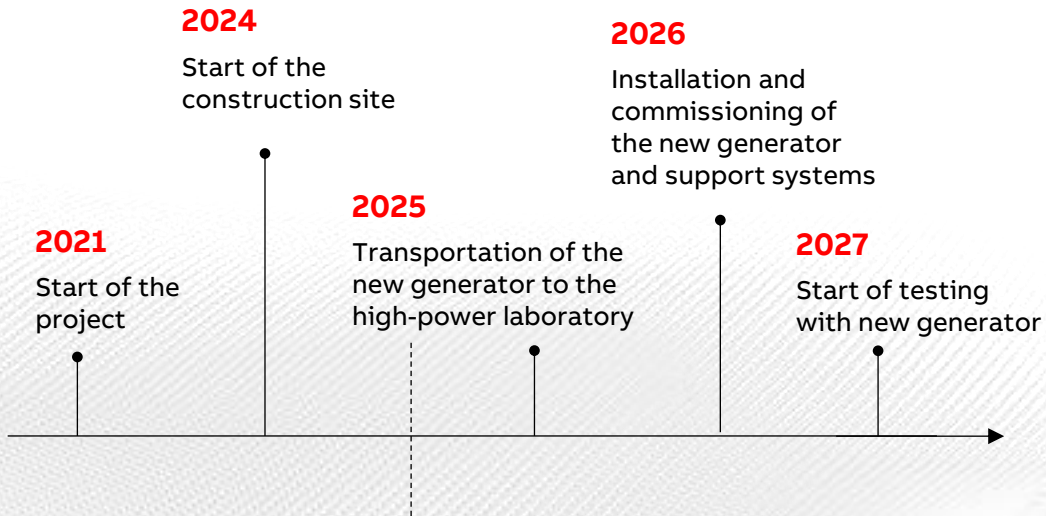
Testing in an STL laboratory

Testing to obtain UL qualification for MV and LV products



# Test Laboratories Ratingen

## New Short-Circuit Generator High Power Laboratory



### New ratings for the short-circuit making and breaking capacity

- Frequency **50 Hz**, single-phase and three-phase
  - Up to 63 kA at 12 kV
  - Up to 50 kA at 17.5 kV
  - Up to 40 kA at 24 kV
  - Up to 31 kA at 40.5 kV
- Frequency **60 Hz**, 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




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# Contact

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 **<https://new.abb.com/medium-voltage/laboratories-ratings>**





**ABB**