ABB Calor Emag Laboratories

ABB Power Distribution

Introducing
ABB Calor Emag Laboratories

Since 1954 ABB Calor Emag Laboratories have performed tests on medium voltage equipment. Our laboratories, which are located in Ratingen, Germany, include all main laboratories necessary for tests in the medium voltage range.
We are accredited by the German Accreditation Authority (DATech) as ABB Calor Emag Laboratories as well as PEHLA Testing Laboratories Ratingen. Furthermore, we have a certified calibration laboratory.
We provide our customers with high performance, independent tests carried out according to national and international standards.

Why testing at ABB Calor Emag Laboratories?

With almost 50 years of experience we know how to perform tests professionally. We cooperate closely with the customer in the planning and preparation phase to ensure an optimum test. Our organization provides flexible planning which ensures short-term reservation.

When testing at the ABB Calor Emag Laboratories the customers can choose to prepare the object to be tested in advance or make use of our assembly and installation service. If the customers prefer, on-site tests can also be performed. All test results will be evaluated by our team of highly qualified and experienced personnel in close cooperation with the customers.

Our laboratories are equipped with a SF_6 module to handle and recycle the gas for environmental safety.

The accreditation as ABB Calor Emag Laboratories and as PEHLA Testing Laboratories Ratingen ensures that all tests are fully independent.

Services we provide:

- On-site testing and diagnostics with mobile test equipment
- Independent witnessing of tests
- Inspections, examinations and diagnostics
- Manufacturing of prototypes and individual parts
- Assembly of prototypes and test objects
- Assembly and installation work
- Calibration of electrical and mechanical measuring equipment

Our Documentation to the Customers

When testing at ABB Calor Emag Laboratories, different types of documentation can be issued.

- **Certificates**
  Certificates are issued for type tests, which have been carried out successfully in full compliance with specifications, standards and STL Guides. The test object must be clearly identified by technical descriptions, drawings and additional specifications. A certificate of complete type test can also be issued.

- **Test Documents**
  These are issued for parts of type tests following the same rules as for certificates.

- **Test Reports**
  For all other tests, which have been carried out according to standards, PEHLA Guides or customer instructions a test report can be issued. Technical descriptions and drawings are optional.

Development tests, type tests or acceptance tests – ABB Calor Emag Laboratories are able to offer any kind of test your company needs. The laboratories are fully equipped to perform complete tests on medium voltage equipment with state-of-the-art technology.
All tests can be carried out as ABB tests or as PEHLA tests.

Tests we provide:

- Type tests
- Development tests
- Acceptance tests
  (also in other test laboratories)
- Certification tests

Products we test:

- Switchgear
- Circuit-breakers
- Disconnectors
- Earthing switches
- Switch-disconnectors
- Switch-fuse combinations
- Fuses
- Earthing accessories
- Power transformers
- Cable fittings
- Instrument transformers
- Bushings
- Substations

The ABB Calor Emag Laboratories are coordinating tests very well even if different kind of tests are required. Customers, who need various tests, can therefore rely on well-organized test procedures – quickly and at reasonable costs.

High Power Testing Laboratory

The high power testing laboratory is equipped with a 2800 MVA short-circuit test generator and is therefore able to test at high making and breaking capacity. On demand certain tests can also be carried out with direct connection to the power grid.

The tests, which can be performed at our high power testing laboratory, are:

- **Short-circuit making and breaking capacity test**
  - Single-phase and three-phase
  - Up to 70 kA and up to 36 kV
- **Switching capacity test**
  - Load currents
    - Capacitive
    - Inductive
    - Ohmic
    - Inductive-ohmic
- **Peak withstand current test**
  - Up to 200 kA
- **Short-time withstand current test (3 s)**
  - Up to 70 kA
- **Internal arc fault test**
  - Up to 50 kA

Testing Facilities

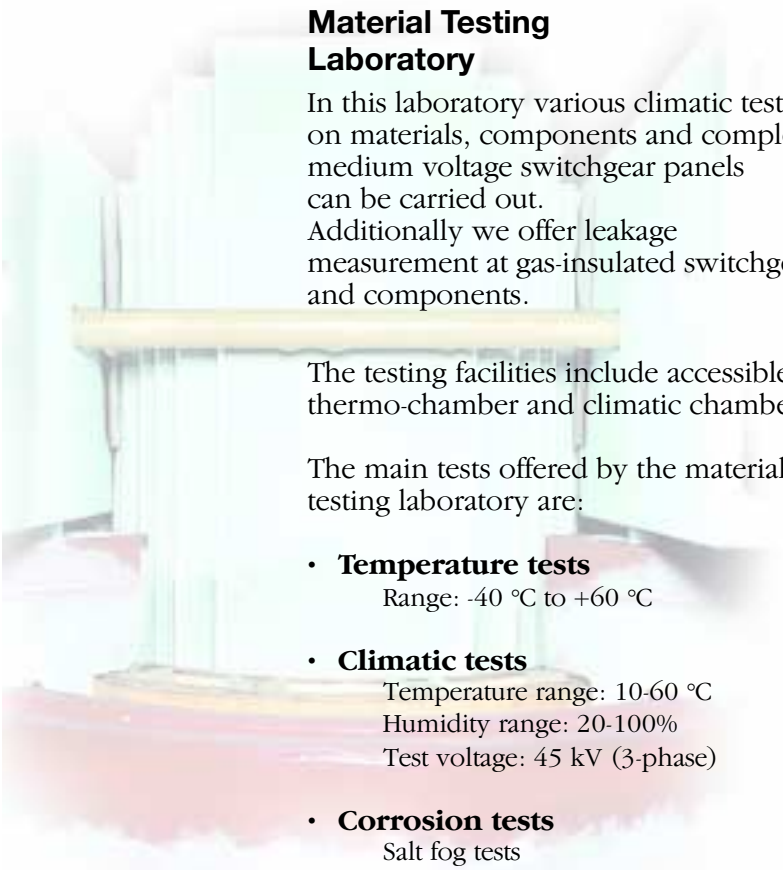
Temperature-Rise Laboratory

The temperature-rise laboratory is suited to perform tests with a continuous current up to 5000 A at 50 Hz on panels and switchgear. Through automated and computer controlled tests we utilize our resources optimally as we are able to test day and night and we offer our customers precise, reliable and fast tests.

During the test, currents and temperatures are checked every 10 minutes. A control circuit guarantees a constant three-phase current through the entire test. The test is automatically terminated if a temperature limit is exceeded or when the end of the test is reached.

- **Temperature-rise tests**
  Up to 5000 A, 50 Hz
  Up to 128 measuring points can be connected

Testing Facilities



Material Testing Laboratory

In this laboratory various climatic tests on materials, components and complete medium voltage switchgear panels can be carried out.
Additionally we offer leakage measurement at gas-insulated switchgear and components.

The testing facilities include accessible thermo-chamber and climatic chamber.

The main tests offered by the material testing laboratory are:

- **Temperature tests**
  Range: -40 °C to +60 °C
- **Climatic tests**
  Temperature range: 10-60 °C
  Humidity range: 20-100%
  Test voltage: 45 kV (3-phase)
- **Corrosion tests**
  Salt fog tests
  Fog tests with sulfur dioxide
  Tests with condensed water containing climate

Calibration Service

At the calibration laboratory we are able to calibrate electrical measurement instruments, length measurement equipment, torque wrenches and pressure gas equipment.

High-Voltage Testing Laboratory

With the test facilities in our high-voltage testing laboratory all dielectric and partial discharge tests for medium voltage equipment can be carried out.

For sensitive partial discharge tests a special test chamber is available with a background level < 1 pC.

In order to offer on-site testing the high-voltage laboratory has mobile test equipment.

The high-voltage testing laboratory performs the following tests:

- **Standard lightning impulse voltage tests**
  Up to 400 kV
- **Power-frequency voltage tests**
  Stationary up to 260 kV
  Mobile up to 230 kV
- **Partial discharge tests**
  Stationary up to 150 kV
  Mobile up to 230 kV
- **Degree of protection tests**
- **Tests on auxiliary and control circuits**

Testing Facilities

Mechanical Testing Laboratory

We offer mechanical operating tests including time-travel measurement and on-line diagnostics with high-speed camera.

It is also possible to monitor tests electronically and thereby receiving more data on the test object. Synthetic tests are also carried out.

Electronic measurements or high-speed camera are also used for error detection in mechanical tests to determine failures as precise and fast as possible.

In our mechanical testing laboratory we provide:

- Mechanical operating tests
- Mechanical endurance tests
- Tests of interlocking systems
- Logic tests of control units
- Recording with high-speed camera
- Electronic measurements

Workshop of the Laboratories

The workshop manufactures prototypes and test arrangements as well as provides complete assembly and installation service in connection with tests.

If defects occur during tests our workshop offers immediate repair service and manufacturing of spare parts. In order to offer optimal service the workshop is fully equipped for all kind of metal processing.

If you need more information on ABB Calor Emag Laboratories or if you would like to make reservations for a test please contact:

Telephone: +49(0)2102/12-1260
Fax: +49(0)2102/12-1713
E-mail: decms.test-labde.abb.com

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ABB Calor Emag Mittelspannung GmbH

Oberhausener Strasse 33
D-40472 Ratingen

Petzower Strasse 8
D-14542 Glindow

Phone: +49(0)21 02/12-12 60, Fax: +49(0)21 02/12-17 13
E-Mail: decms.test-lab@de.abb.com
Internet: http://www.abb.de/calor