



Alex Steffens – General Lab Manager

# PEHLA Testing Station Ratingen ABB Medium Voltage Laboratories

# Contact

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**ABB AB**

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# Location



# PEHLA - Membership



## PEHLA Laboratories Ratingen Member Laboratory of STL with the following Testing Facilities

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

# Focussed Lab Accreditation & STL-Membership (PEHLA)



**STL is the body responsible for STLA, the EOTC agreement group No. 0007 recognized by the EC in 1992 considering testing and certification of high power equipment for the European market**  
 \*(The members indicated by the asterisk)

- ASTA: ASTA Certification Services, (ASTA: Association of Short-Circuit Testing Authorities)
- CESI: Centro Elettrotecnico Sperimentale Italiano S.p.A.
- ESEF: Ensemble Des Stations D'essais à Grande Puissance Francaises
- JSTC: Japanese Short-Circuit Testing Committee
- KEMA: N.V.tot Keuring van Elektrotechnische Materialien
- PEHLA:** Gesellschaft für Elektrische Hochleistungsprüfungen ← !
- SATS: Scandinavian Association for Testing of Electrical Power Equipment
- STLNA: Short-Circuit Testing Liaison North America



# Introduction of different departments

## Workshop



- R&D Support
- Prototyping
- Assembling and Maintaining of Test Arrangements
- Mechanical Service for DECMS
- Tool and Mould Building and Repair
- Production of small series (just in time)
- External customer service

# Introduction of different departments

## High Voltage Laboratory



- Power-frequency voltage tests
  - Stationary up to 260 kV
  - Mobile up to 230 kV
- Standard lightning impulse voltage tests
  - Up to 400 kV
- Partial discharge tests
  - Stationary up to 150 kV
  - Mobile up to 230 kV
  - Background level < 1 pC

# Introduction of different departments

## Mechanical & Electronic Laboratory



- Mechanical operating tests
- Mechanical endurance tests
- Tests of interlocking systems
- Logic tests of control units
- Recording with high-speed camera
- Electronic measurements
- Measurement of material forces
- Support Seismic Tests
- Pressure and Tightness Tests
- Temperature Limit Tests



# Introduction of different departments

## Temperature Rise & Material Testing Laboratory



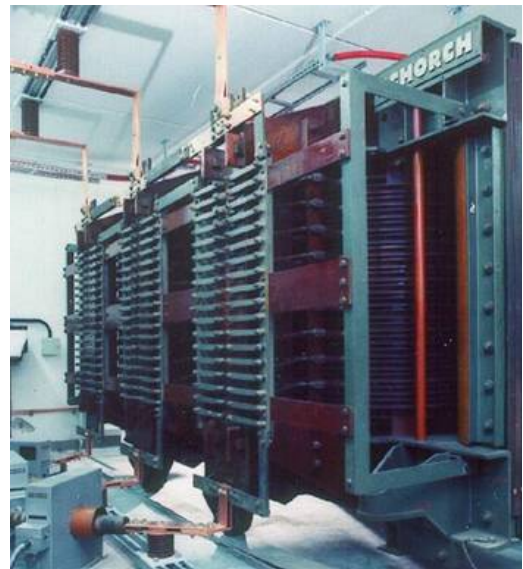
- Tests up to 5000 A (50Hz / 60Hz)
- Measurement of temperatures:
  - up to 120 thermocouples type T, 16 PT 100
- Currents automatically controlled
- Accessible thermo-chamber
  - Temperature range: -70°C - +150°C
- Accessible climatic chamber



- Temperature range: 10°C - 60°C
- Humidity range: 20 - 100%
- Test voltage (3 phase): 42 kV
- Corrosion tests:
  - Salt fog, SO<sub>2</sub> fog, Condensed water

# Introduction of different departments

## High Power Laboratory



- Generator power up to 2800 MVA
- Short-circuit making and breaking capacity
  - single-phase and three-phase
  - up to 70 kA and up to 40.5 kV
- Withstand capability tests
  - Peak withstand current test up to 250 kA
  - Short-time withstand to 70 kA / 3 s (100 kA / 1 s)
  - Internal arc fault tests up to 50 kA
- Load current switching
  - capacitive, inductive, ohmic

# Introduction of different departments

## Calibration Laboratory



### Calibration of:

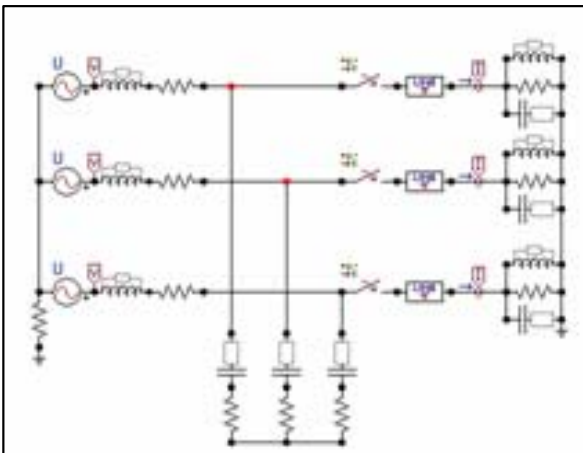
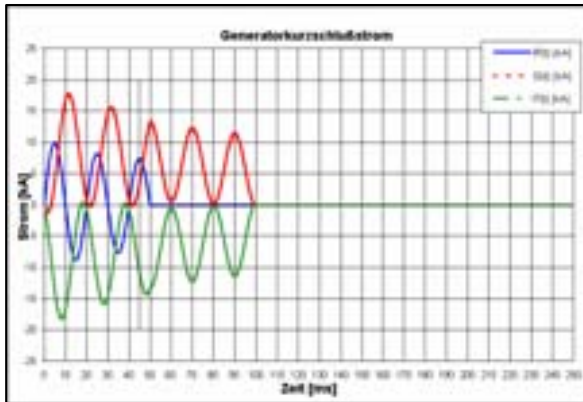
- Electrical measurement instruments
- Length measurement equipment
- Torque wrenches
- Pressure gas equipment

# Introduction of different departments

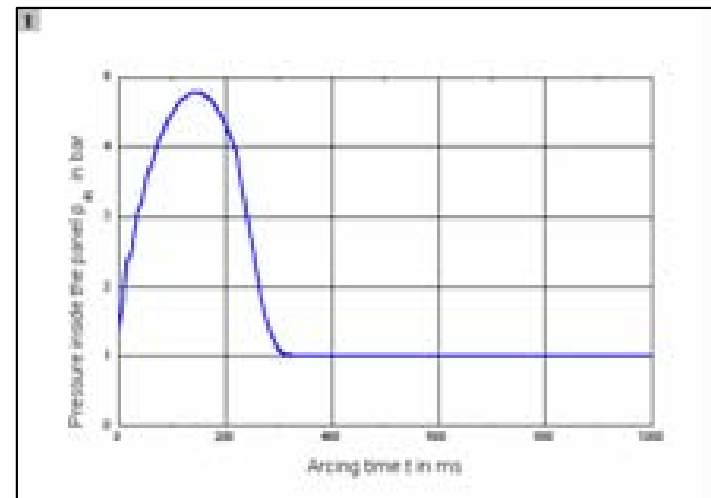
## Simulation Activities

### Calculations and studies for MV applications

- Calculations for Generator Circuit-breakers

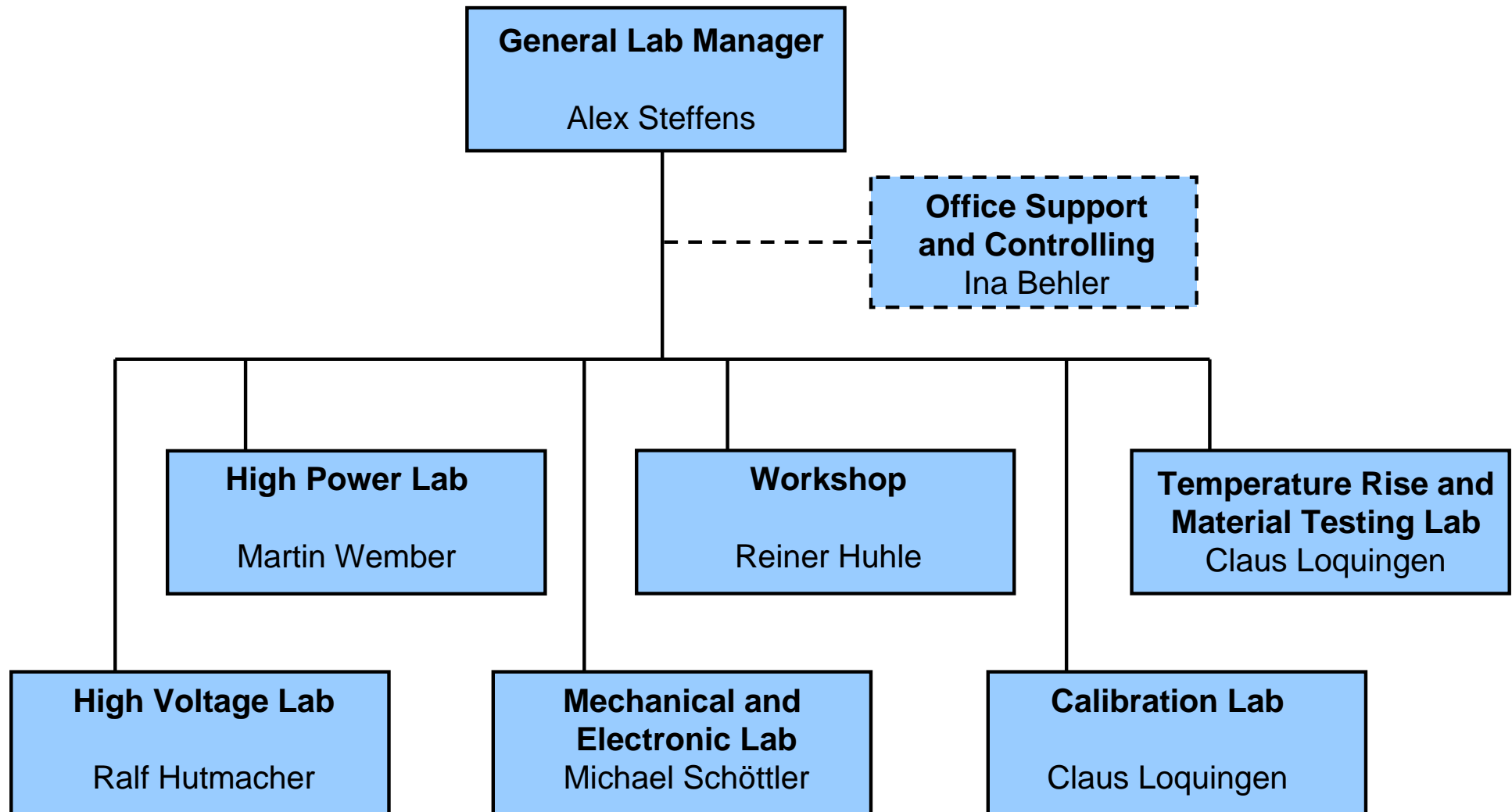


- Calculation of the pressure rise in a switchgear in case of an internal fault



- Further activities  
EMTP/ATP calculations  
Heat distribution simulation

# Organization



**Power and productivity  
for a better world™**

