

EKL is a recognised **development and testing centre** for electrical power engineering components. As well as concentrating on electromechanics in general, we also specialise in industrial **low-voltage devices** and systems, and have built up decades of experience in both these areas. Our core area of competence is **switching with contacts**. However, our work also extends to electronic components.

In addition to the lab-based work that undergirds our development projects, we offer a wide range of **testing services**.

The EKL test lab is **independent of any manufacturer** and offers a fast, reliable and cost-effective service. We guarantee absolute privacy and **confidentiality** in the conduct of all tests.

Our test facilities and measuring equipment have primarily been designed for testing devices with **rated currents** of up to **1000 A**.

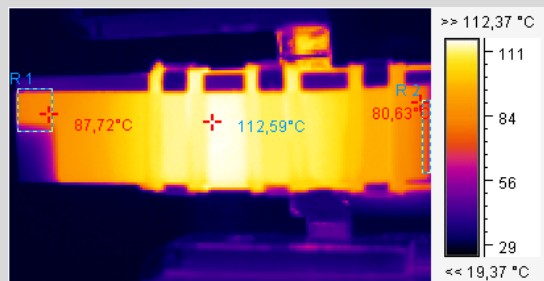
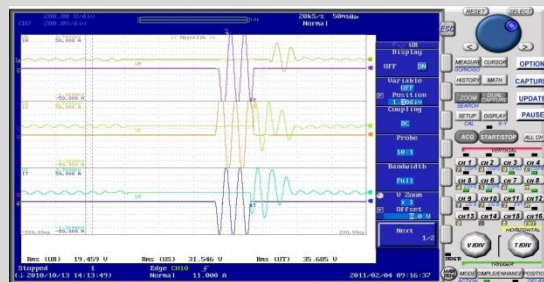
All testing and measuring equipment undergoes **calibration at regular intervals**.

Tests are carried out and documented in **conformity with** national and **international standards** (DIN, VDE, EN, IEC, UL, CSA), the manufacturer's own in-house standards and the testing principles of the relevant German Social Accident Insurance Institutions.

Thanks to the modular structure of our equipment, we are able to respond flexibly to all kinds of testing tasks and can even offer **customised tests** at a competitive price. On request, we can carry out tests in front of the client or a representative from a certification body (German Social Accident Insurance Institutions, UL, etc.).

As well as providing **engineering advice** based on the test results, our engineers also oversee tests at external testing laboratories, e.g. for the purpose of verifying short circuit ratings. If necessary, any tests we carry out in cooperation with others can be conducted with the aid of our specialist equipment.

During the preliminary development stage, EKL's in-house prototyping department will quickly **design** and **build** a theoretical **prototype** without any unnecessary complications and will help our customers to try out your ideas. If necessary, the prototyping department can, of course, also provide support during the actual testing process.



LABORATORY AREAS



ELECTRICAL LAB

- Phase angle controlled switching capacity system
- Systems for testing electrical endurance
- High-current testing system, extra-low voltage and phase angle controlled
- Facilities for testing tripping behaviour, continuous current, temperature rise and insulation
- Facilities for testing terminals and connections



CLIMATE LAB / ENVIRONMENTAL SIMULATION

- Temperature-stabilised testing room
- Walk-in temperature test chamber with reduced circulation air under steady state conditions
- Climatic cabinet
- Heating cabinet
- Vibration testing system
- Shock test stand

MECHANICS LAB

- Extensive sensor technology for measuring distances, angles, forces and torques
- Bespoke superstructural parts for testing of mechanisms, switchgear and locks
- Facilities for testing mechanical endurance, controlled and monitored via PLC
- High-speed camera analysis





TESTING SERVICES



SWITCHING CAPACITY / ELECTRICAL ENDURANCE

	switching capacity, short-circuit	electrical endurance
test voltage	test current	test current
U_p up to 800 V AC single and three phase	I_p up to 10000 A	I_p up to 1000 A
U_p up to 1100 V DC	I_p up to 5000 A	I_p up to 1000 A
U_p up to 1500 V DC	I_p up to 100 A	I_p up to 100 A
load	resistive, inductive, capacitive	resistive, inductive, capacitive
	<ul style="list-style-type: none"> • phase angle controlled test current activation / test specimen activation • selectable number of current half-waves 	<ul style="list-style-type: none"> • test sequences controlled and monitored via PLC • 6 load circuits simultaneously

TRIPPING BEHAVIOUR / LIFTOFF BEHAVIOUR OF CONTACT SYSTEMS

- Test current up to 20 kA AC (single and three phase), high-current testing transformer at extra-low voltage
- Phase angle controlled test current activation, selectable number of current half-waves

<ul style="list-style-type: none"> ① Extremely fast and cost-effective option for carrying out development tests/ experiments on components such as contacts, solenoid actuators (function) or thermal actuators (overcurrent capability) in order to assess the effect of high currents ① Voltage-related secondary damage associated with current path interruption is avoided/ Test specimens are protected ① Eliminates the costs of having to protect testing personnel when working at rated voltage e.g. isolation of the test cell ① Significantly reduced facilities costs

TEMPERATURE RISE / CONTINUOUS CURRENT

- up to 2500 A AC single & three phase
- up to 1500 A DC
- Overload testing at devices with fuses
- Derating curves determination
- Temperature measurement thermocouples, pyrometer, thermography
- Continuous recording of temperatures and voltages (AC / DC) with data loggers (sampling rate $\geq 1s$) over large time range



CLIMATE

- Low temperatures 0,6 m³ up to -70 °C
8,0 m³ up to -40 °C
- Dry heat 8,0 m³ up to 80 °C
0,6 m³ up to 100 °C
0,1 m³ up to 250 °C
- Damp heat 0,6 m³
constant and variable climate
10...95 °C / 10...95 % rel. humidity
- Climatic storages
- Electrical and mechanical tests under defined conditions
- follow testings after climatic burden e.g. insulation resistance, voltage drop

① **The walk-in temperature chamber** with reduced circulating air under steady state conditions means that functional tests e.g. temperature compensation heat rise derating can be performed for large devices or multiple devices at the same time under normal conditions

VIBRATION / SHOCK TEST

- Vibration test (sinusoidal)
 - frequency: up to 3000 Hz
 - acceleration: up to 100 ms⁻²
 - deflection: max. ±10 mm
 - test load: max. 40 kg
- Shock, continuous shock (half-sine)
 - acceleration: up to 300 ms⁻²
 - shock time: max. 20 ms
 - test load: max. 40 kg

INSULATION

- AC voltage up to 6 kV
- Impulse voltage up to 10 kV (1,2 µs / 50 µs)
- Protection against accidental contact
- Clearance and creepage distance measuring / testing / designing

TERMINALS AND CONNECTORS

- Insertability of conductors
- Long-term heating, durability
 - Current Cycling Test acc. to IEC 61545
 - Heat Cycling Test acc. to UL 486E
- Mechanical strength, Flexion test, Pull-out test
- Connectors, terminal blocks, plugs
- Terminals with and without screws
- Test with aluminium conductors

MECHANICAL INSPECTIONS

- Test of mechanical endurance
- Force-displacement-measurements torque-angle-measurements
- Displacement-time-measurements velocity-time-measurements
- Bounce time- / switching time measurement
- Release point repeatability of locks and switching mechanisms

RELEASE THERMAL MAGNETIC AND ELECTRONIC / SOLENOID SWITCHES

- Adjustment and threshold values
- Pull-in and Drop-off
- Test current AC up to 1000 A regulated PLC-controlled test sequences 3 phases separate adjustable
- Please inquire test voltage AC / DC as well as DC and high current values
- Test ambient temperature -40 ... 80 °C

FURTHER TESTS

- Contact safety
- Filament test
- Ball-pressure test
- Needle-flame test
- Fall test

OTHER TESTING SERVICES

- Engineering advice concerning tests and test results, plus conception and organisation of testing programmes
- Execution of development / information / type approval tests, as well as preliminary tests for approvals
- Experiments, weak point tests and reliability tests
- Acceptance tests
- Competitive comparison tests / Benchmark
- Execution of tests with constant function monitoring of specimens during testing and, if necessary, with video monitoring as well

DEVELOPING AND TESTING COMPETENCIES

Confidentiality is a top priority for us, so we do not advertise with references. Evidence for the reliability and quality of our services are the long-term presence and the wide field of activity of EKL.

EKL has accomplished development and testing services for the following devices:

- Electromagnetic contactors and relays
- Thermal and electronic overload relays and releases, transformer relays
- Motor protection switch/ starters and controls
- Electronical components of switching devices, current sensors, hybrid switches
- Circuit breakers, switch-disconnectors with or without fuses
- Modular DIN rail components, miniature circuit breakers and accessories
- Undervoltage releases, shunt open releases and short-circuit releases
- Commanding and Signalling devices, microswitches, control and safety switches
- Motor drive for switching devices
- Special-purpose switchgear such as for railway applications
- Switchgear for photovoltaic applications
- Connectors and terminals

DUMMY FUSE-LINKS

We also produce dummy fuse-links / fuse replicas for the use in temperature rise tests according to the relevant regulations

- NH-system
- D/D0-types
- F-type fuses
- Blade type fuses
- Micro fuses





CONTACT

EKL Schaltelektronik
Dresden GmbH



CONSTRUCTION OF TEST EQUIPMENT

We plan, design and build test equipment (test control units, test adapters and specimen, test pieces, etc.) in accordance with relevant standards and regulations or customized test equipment.

CHECK US

Your requirements exceed the parameters outlined here? Please feel free to contact us anyway! Thanks to the modular structure of our equipment, we surely find a solution to satisfy your requirements.

Some tests (e.g. those involving certain forms of environmental stress) are carried out in cooperation with tried and tested partners. However, you still receive all the results directly from us.

CONTACT

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For your notes:

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