

Product Guide

Testers for electric motors and all kinds of windings



Made in Germany



One source. All test solutions.


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Surge voltage, Partial discharge,
High voltage AC, Resistance,
Insulation resistance,



Test systems for windings and electric motors

Speed, Sense of rotation, Power,
Current consumption, Inductance,
Thermal bonding, Vibration...



No-load, Load, Torque,
Dynamometers,
Crash-test simulations,

Automotive, Electric mobility, Charging technology

HV-battery-pack tests,
Charging cables tests,
Charging stations tests...

MotorAnalyzer1

Universal tester for electric motors and windings

The MotorAnalyzer1 is a universal tester to inspect electric motors and windings. It combines **11 different test methods** within one user-friendly and mobile device.

For the inspection of three-phase current motors the three winding connections as well as the motor's housing are connected with the tester. The MotorAnalyzer1 inspects the motor by running a fully-automatic surge and resistance test. Afterwards an additional high-voltage test is performed in order to quickly evaluate the motor's quality.

- › Autotest – Automatic stator/ motor analysis
- › Surge test
- › Resistance test
- › HiPot DC up to 4 kV
- › Polarization index PI & DAR
- › Insulation resistance rest
- › PE/GND resistance test
- › "Neutral-zone"-adjustment at DC motors
- › Sense of rotation at stators or motors
- › Turn-to-turn fault location bg for stators and armatures



› www.schleich.com/en/motoranalyzer1

MotorAnalyzer2

ALL-IN-ONE tester for de-energized motors, generators and windings

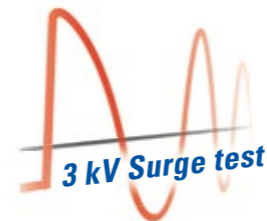
With its **14 different test methods** the **ALL-IN-ONE MotorAnalyzer2** offers almost everything for testing all types of motors like induction, synchronous, single phase, DC, brushless DC, servo and more. Plus all types of windings like DC fields, poles, brake coils and transformers are testable. This makes the tester ideal for the on-site, predictive maintenance, motor health analysis, troubleshooting and fault detection.

For checking a 3-phase motor the three winding terminals and the motor's housing are connected to the tester. Afterwards the MotorAnalyzer2 analyzes the motor fully-automatically via all integrated tests. It automatically switches the different test methods to the 3 motor terminals via its internal relay matrix. You receive all relevant information about the motor's quality quickly and precise.

- › Auto diagnosis – Automatic stator/motor fault and health analysis
- › Surge test up to 3 kV – 100 nF surge capacity
- › Resistance – 4-wire technology – temperature compensation
- › Insulation resistance up to 6 kV
- › HiPot DC up to 6 kV
- › Polarization index PI & DAR up to 6 kV
- › Inductance
- › RIC test
- › Impedance
- › Capacity
- › "Neutral-zone"-adjustment at DC motors
- › Rotating field at stators or motors
- › Turn-to-turn fault location bg for stators and armatures
- › Battery and line powered



› www.schleich.com/en/motoranalyzer2



MTC2

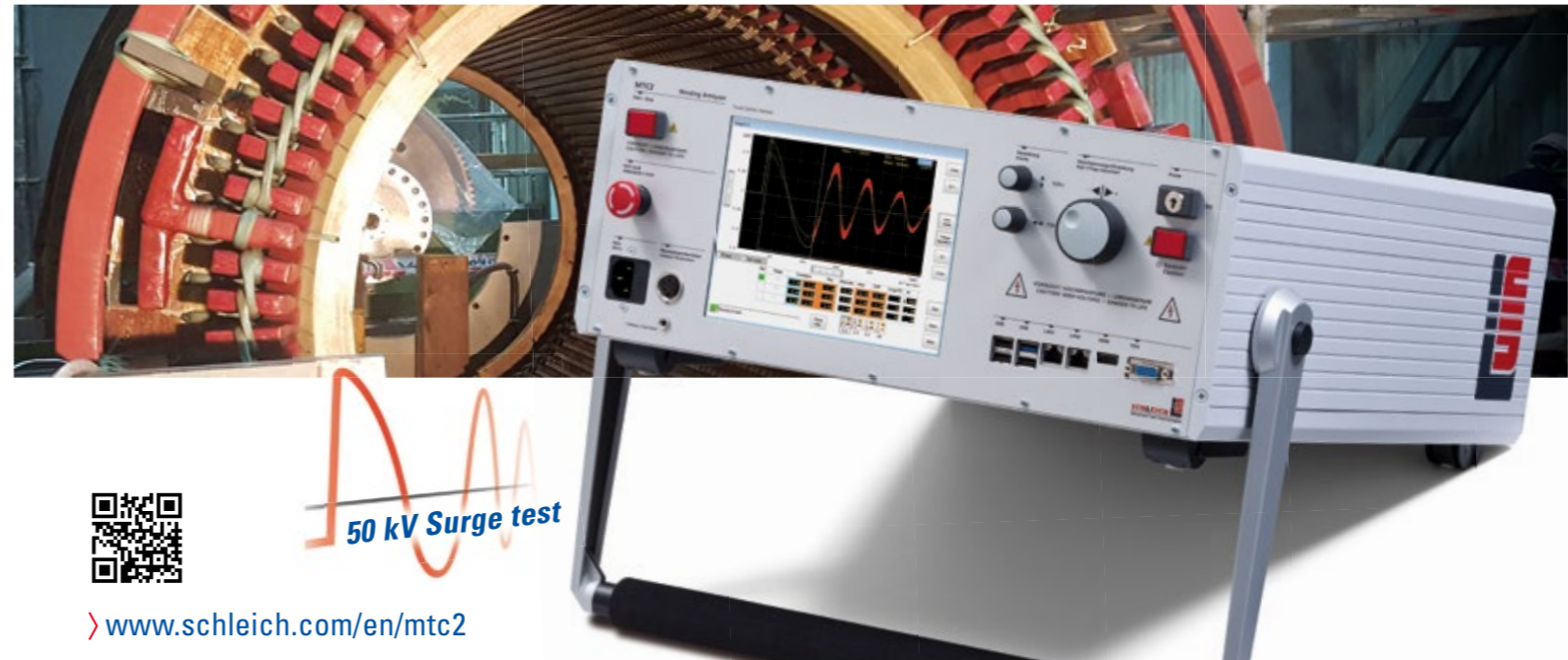
Universal surge tester for all kinds of windings

The MTC2 is a high-end surge tester – it offers surge tests for almost any application. We offer a finely graded variety of testers from 6 kV to 50 kV. With the MTC2 you can inspect coils, stators, armatures and all kinds of windings according to the latest state of the art – uncompromisingly precise.

Typical applications are:

- › Motor service
- › Motor repair
- › Motor production
- › Laboratory
- › Quality control

- › For repair, mass production, automation and laboratory
- › Perfect for motors, generators and all kinds of windings
- › Surge test up to 50 kV – surge energy up to 125 Joule
- › Partial discharge according to IEC 61394, DIN EN 60034-18-41
- › Resistance
- › Inductance
- › Impedance
- › HiPot AC/DC
- › Insulation resistance
- › Polarization index PI & DAR
- › Step voltage
- › ...



50 kV Surge test

› www.schleich.com/en/mtc2

MTC3

High-end tester for mass production

The MTC3 is freely configurable to meet your specific requirements and offers high-end test technology for complex test tasks for various kinds of windings such as electric motors, transformers, solenoid coils... The MTC3 is also available as 8 predefined testers and will be composed according to your requirements.

Typical applications are:

- › Motor production
- › Motor development
- › QA laboratory



Freely-configurable testers

- › Combine test methods according to your test tasks
 - Surge test
 - Partial discharge according to IEC 61394, DIN EN 60034-18-41
 - HiPot AC/DC
 - Insulation resistance
 - Resistance
 - Inductance
 - Impedance
 - Direction of rotation...
- › Unlimited number of winding- and temperature probe connections
- › Interfaces to PLC, ERP- and MES systems
- › Standard and customized contacting, test adapters
- › Test covers, protective devices
- ...



› www.schleich.com/en/mtc3

Dynamic-MotorAnalyzer

Troubleshooting & Online monitoring for motors/generators

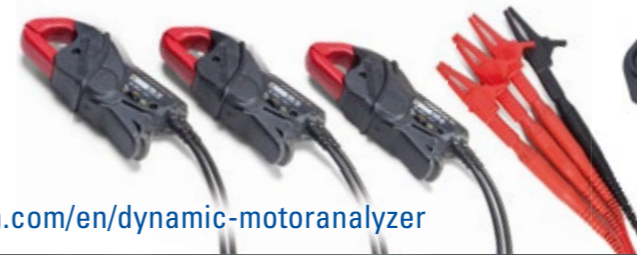
The Dynamic-MotorAnalyzer inspects motors and generators during running operation. Based on the measured electric parameters the Dynamic-MotorAnalyzer calculates further electric and mechanical parameters and provides, amongst others, overall condition- and power data of machines, load, input power and more.

By means of the preset evaluation of measured values the line and/or battery powered Dynamic-MotorAnalyzer significantly simplifies the motor inspection – without requiring special knowledge or skills from the operator. It is the perfect supplement to our SCHLEICH-winding testers MotorAnalyzer2 and MTC2.

- › Measurements at running motors – even for dynamometers
- › For mains and VFD operation
- › For all modern measurements as voltage, frequency, harmonics, THD, HVF...
- › Current, electric input power, $\cos \varphi$
- › Speed, torque, torque ripple, efficiency...
- › Unique multifunctional oscilloscope
- › Unique Smart-FFT for broken rotor bar analysis
- › Data recorder with real-time measuring values for subsequent analysis
- › Data recorder for long-term measurements with event trigger
- › Energy measurement and energy cost forecast
- › Trend analysis for predictive maintenance
- › ...



› www.schleich.com/en/dynamic-motoranalyzer



EncoderAnalyzer

Inspection and adjustment of encoders and resolvers

Modern drives are often equipped with rotary encoders. For the operator, a detailed inspection is made difficult due to the large diversity of encoders in the market. This applies in particular for repairers of electric motors but also for analyses in production. An extensive inspection without special measuring technology is not possible.

The EncoderAnalyzer allows inspections of rotary encoders even without special know-how. It supplies the rotary encoder with voltage, measures all signals and evaluates them automatically.

Furthermore it supports the mechanical angle adjustment of resolvers and encoders after motor repairs.

- › Automatic inspection of all encoder signals as
 - Number of pulses
 - Duty cycle
 - Signal voltage level of digital and analog sine and cosine outputs
 - 90° phase shift...
- › Integrated voltage supply for encoders and resolvers
- › Resolver test inspection of AC-servo motors
 - EMF-measurement
 - Rotary encoder angle adjustment
- › Data interfaces for absolute rotary encoders



› www.schleich.com/en/encoderanalyzer



HiPot testers

From 1 kV up to 100 kV AC/DC

Our HiPot testers provide test voltages for almost each application. We offer a finely graded variety of testers from 1 kV up to 100 kV AC/DC with different currents and powers.

The testers are perfectly suitable for fast and easy tests during repair or in production. They can either be carried out manually by the means of the safety test pistols or automatically.

- › Manual and automatic tests
- › HiPot AC/DC
- › Test current max. 1 A
- › Electronic voltage regulation
- › Adjustable voltage profiles and test sequences
- › Graphic TFT display for digital and analog presentation
- › 2-circuit safety inputs
- › Interfaces to PC or PLC
- ...



≤ 100 kV

› www.schleich.com/en/highvoltage

HiPot testing facilities

From 1 kV to 150 kV AC/DC

Our HiPot testers provide test voltages for almost each application. We offer a finely graded variety of testers from 1 kV up to 150 kV AC/DC with different currents and powers.

The testers are perfectly suitable for measurements in production, in test laboratories and for type tests. As soon as the DUT has been connected, the test sequences start to run fully-automatically.

Typical applications are:

- › Winding inspection
- › HiPot tests with PD
- › Inspections of insulators
- › Inspections of leads, cables, cable harnesses and more

- › Automatic and manual tests
- › HiPot AC/DC
- › Test current up to max. 25 A
- › Fully-automatic voltage regulation
- › Freely-adjustable voltage ramps and test sequences
- › Extension by standard-compliant PD-test
- › 2-circuit safety inputs
- › Interfaces to PC or PLC
- › ...



› www.schleich.com/en/highvoltage



Freely-configurable testers



GLP3-M | Standard motors

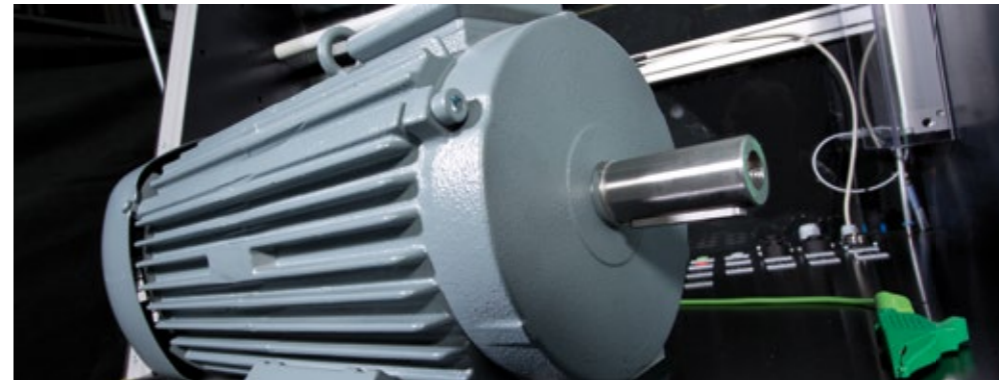
Universal testers for motor mass production & engineering

The GLP3-motor test stands allow standard-compliant safety- and complete function test. Standard motor test stands are designed and manufactured as stand-alone test station, dual-/multi stations or they are integrated in automatic production lines.

Beyond no-load-/short-circuit measurements and load tests – with and without VFD-operation, all typical and special test applications are possible.

As test system manufacturer we also provide all mechanical adaptations and complete mechanical test stands. Due to our modular test method concept (SMC) we are able to configure your tester exactly matching to your applications and test tasks.

- › No load- and load test stands, dynamometers
- › Function test 1-/3-phase up to 800 A
- › Surge voltage, partial discharge, resistance and more
- › Speed, torque, direction of rotation, vibration and more
- › Inspection of all additional components like brakes, encoders, temperature sensors etc.
- › Inspection of integrated motor electronics
- › Inspection of all VFD-functions
- › Temperature-rise test at ATEX motors
- › Integration of all safety tests
- › Interfaces to PLC, ERP- and MES systems
- › Contacting, test adapters
- ...



Freely-configurable test systems

› www.schleich.com/en/glp3-m

GLP3-M | e-mobility

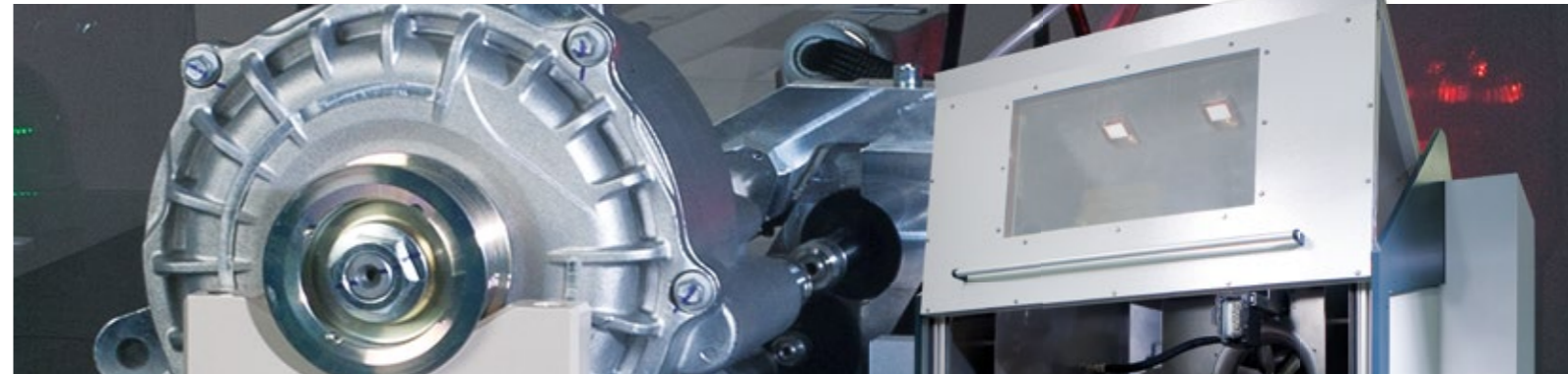
Universal test stands for mass production & engineering

The GLP3 motor test systems assure safety tests and complete function tests according to standards. The motor test systems are configured and manufactured as stand-alone test station or integrated in automatic production lines.

Beyond no-load-/short-circuit measurements and load tests, even with VFD-operation, all typical and special test applications are possible.

As test system manufacturer we also provide all mechanical adaptations and complete mechanical test stands. Due to our modular test method concept (SMC) we are able to configure your tester exactly matching to your applications and test tasks.

- › No load- and load test stands, dynamometers
- › Function test 1-/3-phase up to 1000 A
- › Surge voltage, partial discharge, resistance and more
- › Speed, torque, direction of rotation, vibration and more
- › Inspection of all additional components like brakes, encoders, temperature sensors etc.
- › Inspection of integrated motor electronics
- › Integration of all safety tests
- › Interfaces to PLC, ERP- and MES systems
- › Contacting, test adapters
- › Test covers, protective devices
- ...



› www.schleich.com/en/glp3-m



Freely-configurable test systems

Motor test stand

Motor dynamometers for R&D, engineering and quality

SCHLEICH motor test stands are used to determine a large number of different characteristics during R&D, validation and production. They are individually configured for a wide variety of motor types and applications. Manual or fully automatic – high ease of use and very flexible processes ensure high productivity and save a lot of time. The load motor can be operated in torque or speed mode. The energy absorbed by the load motor is fed back into the power grid by high-efficiency inverters.

for

- > Asynchronous and Synchronous motors
- > DC motors
- > Servo drives
- > Controllers combined with motors

- > Torque/speed characteristics and different charts
- > Electrical and mechanical performance
- > Efficiency and heating characteristics
- > Cogging, friction, braking and inertia torque
- > Torque ripple
- > Testing components such as brakes and encoders of all kinds
- > Temperature-rise and endurance testing under load
- > Your special application

...



> www.schleich.com/en/motorteststand

Automation

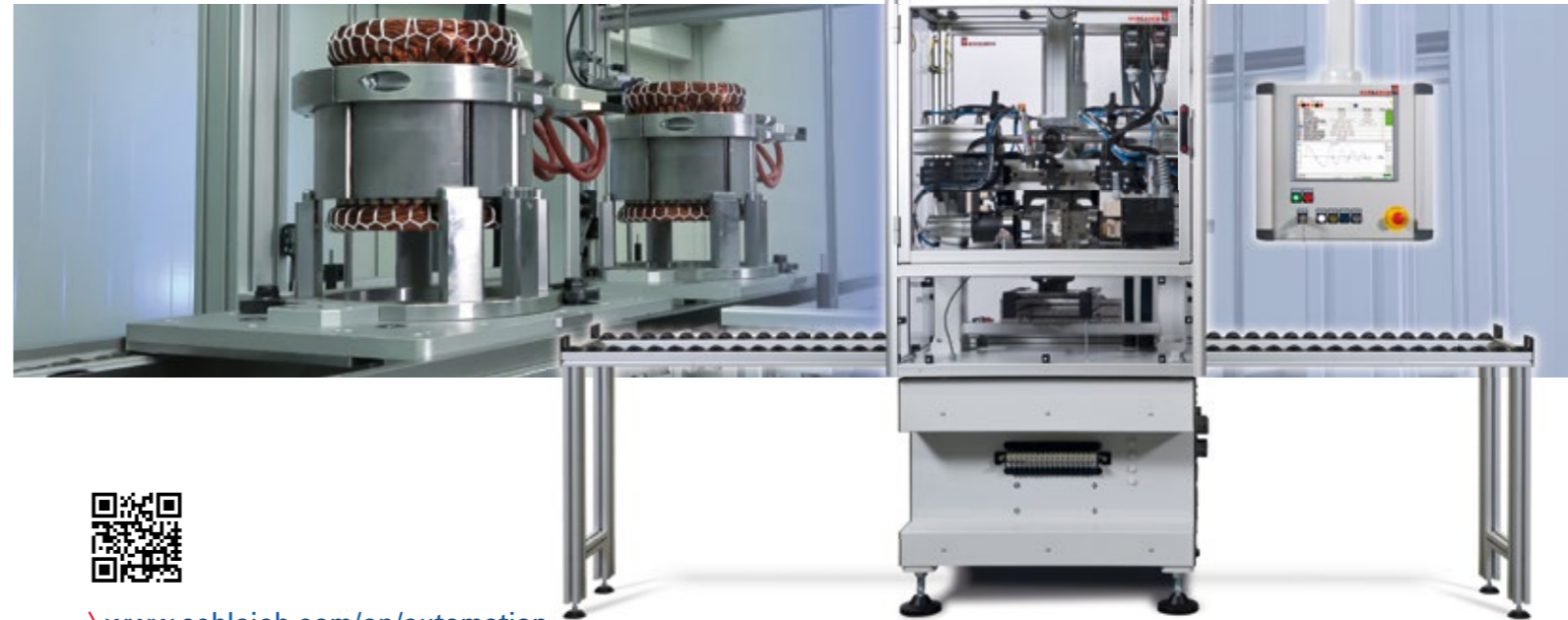
Test systems, production lines, EOL

SCHLEICH develops, designs and manufactures complete test workstations, production lines with transfer systems, EOL-test stations and large industrial installations with various testers according to your specific requirements.

- › Customized test stations, EOL-test stations
- › Integration into existing production lines
- › Supply of complete new production lines incl. conveyers
- › Test cells with rotary indexing table
- › Integration of robots incl. robot grippers
- › Integration of camera systems
- › Mechanical adaption, contacting and test adapters
- › Interfaces to PLC, ERP- and MES systems
- › Result evaluation according to statistical methods
- ...



Freely-configurable test systems



› www.schleich.com/en/automation

Thermal-bonding machines

Controlled heating with current-generated heat

Reliable bonding technology as stand-alone station or integrated in automatic production lines. We individually design and manufacture bonding machines and - systems according to your requirements.

- › DC- and AC bonding machines
- › Up to 2500 A, 1000 V, incl. online temperature monitoring
- › Standard- and speed bonding with up to 200 A/mm²
- › 3 bonding techniques: voltage, current or temperature controlled
- › Combinable with additional test methods as
 - Resistance tests
 - Surge tests
 - HiPot tests
 - PD-tests
 - and more



Freely-configurable test systems



› www.schleich.com/en/bonding

Impregnation systems

Resistive-heating UV-dipping method

Reliable impregnation technology as stand-alone station or integrated in automatic production lines. We individually design and manufacture impregnation machines and - systems according to your requirements.

- › Fully-automatic impregnation process
- › Varnish-hardening according to current-UV-method
- › DC- and AC heating
- › Up to 2500 A, 1000 V, incl. online temperature monitoring
- › Standard- and speed heating with up to 200 A/mm²
- › 3 heating techniques: voltage, current or temperature regulation
- › Combinable with additional test methods as
 - Resistance tests
 - Surge tests
 - HiPot tests
 - PD-tests
 - and more



Freely-configurable test systems



› www.schleich.com/en/impregnation

Accessories

Test pistols, test probes and safety accessories

We offer a large variety of ergonomic test probes for numerous test methods.

Our warning lights serve to inform the operator and others to indicate that the DUT is connected to (possibly high) test voltage.

In cases, where no automatic protection against accidental contact is given, as e.g. no test cover is installed, we offer various two-hand start variants for the operator's protection.

- › HiPot-test pistols up to 15 kV
- › Resistance test probes in 4-wire technology
- › Armature test probes & armature test adapters
- › Warning lights in numerous designs
- › Two-hand start
- ...



› www.schleich.com/en/accessories

Accessories

Test covers

SCHLEICH test covers focus on the operator's safety: According to current standards the operator is either protected by test covers or by light grids.

Beside an extensive range of standard covers, we also offer customized solutions in different designs, especially constructed for your requirements.

Of course, also the appropriate contacting for different test objects belongs to our scope of delivery.

- › Single test covers
- › Dual test covers
- › Test chambers
- › Test tables
- › Test covers integrated in production lines
- ...



› www.schleich.com/en/accessories



Accessories

Standard- and customized contacting

One of SCHLEICH's strength is the mechanical adaption of test objects and their special contacting. We design, manufacture and provide standard- and customized contacting.

Full automatic CNC-machines in our mechanical department assure the production of professional and cost-effective components.

- > Kelvin clamps in numerous sizes
- > Kelvin clamps for a large application variety
- > Modular contacting (terminal units)
- > Motor terminal plugs for different motor sizes
- > Modular special contacting
- ...



> www.schleich.com/en/accessories



One source.
All test solutions.



Whatever you want to test...

...SCHLEICH has the solution!

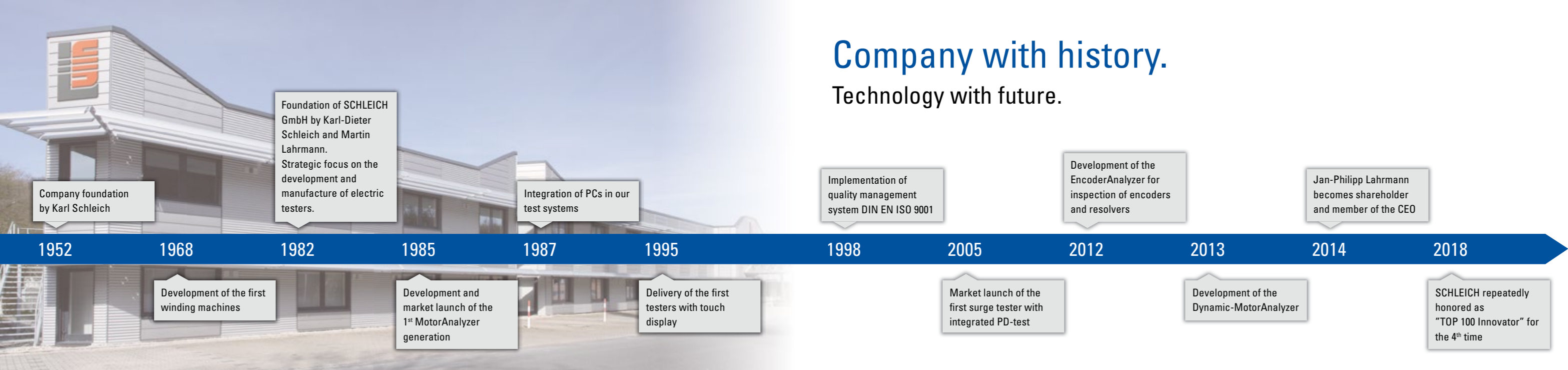
SCHLEICH is leading system provider for all kinds of electric safety- and function technology as well as for motor- and winding testers. By means of our great variety of testers, test systems and complete production lines we are able to provide solutions for almost every test task.

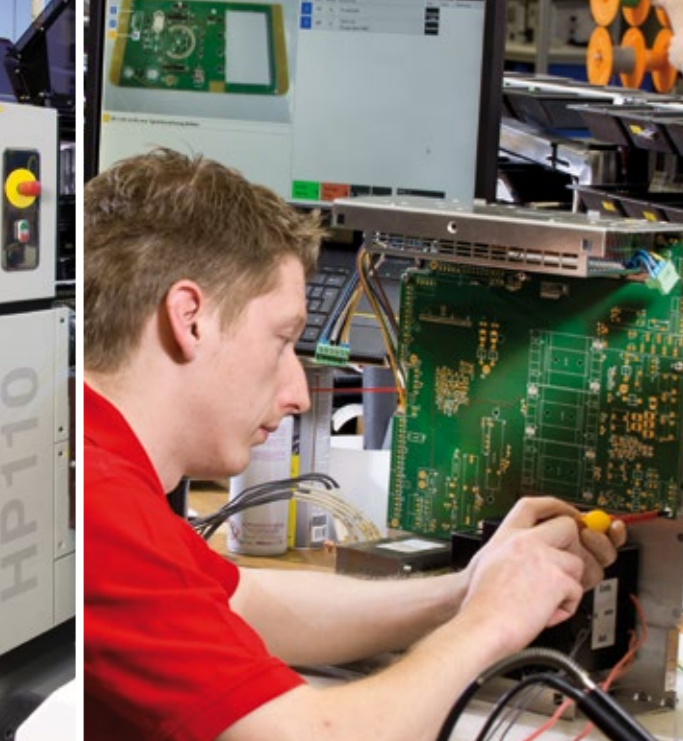
Decade-long experience, listening to customers and considering their requests, facing individual tasks with technical creativity and realize them in a team of skilled engineers and designers – these are our strengths. That is SCHLEICH.

Every day each and every one of our more than 100 employees passionately works on guaranteeing and optimizing the high standard of our testers. Our customers, sales, our many motivated engineers and manufacturing staff – they all mutually support the innovation process by their ideas and optimization proposals.

Company with history.

Technology with future.





Another word for "Made in Germany": SCHLEICH

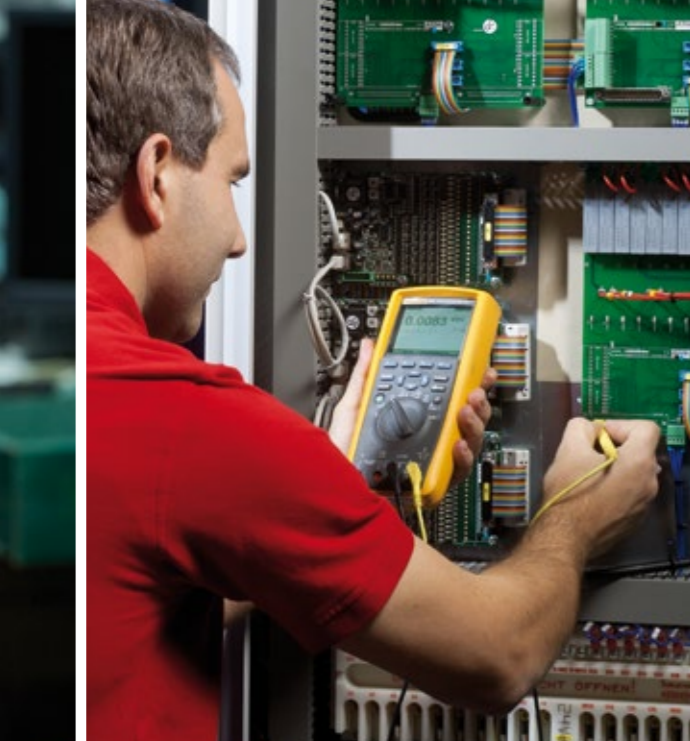
Comprehensive production facilities allow the design and manufacture of almost all tester components at our site in Hemer.

Our measuring and electronic cards are reliably produced with an ultra modern in-line-SMD-placement-technology which assures stable quality of our test systems.

Modern high-end processors in our testers process your test tasks in a fast, precise and reliable way.

Thanks to our modern CNC-machines we also design and manufacture diverse accessory components such as test covers, contacting, goods carriers with DUT-holder or robot gripping tools as well as complete production lines.

SCHLEICH provides everything from under one roof –
Made in Germany.



Service without limits.

No matter where you are, we are with you.

First-class customer service is our top priority. From detailed consulting during the planning phase to training and After-Sales-Service – we support you during the entire process.




In training sessions adapted to your requirements, our technicians will teach you the necessary know-how allowing you to avail yourself of the functional variety of our testing devices to the full extent. Should there be questions or malfunctions, our technical support team will assist you by phone, on-line or on-site fast and reliably. Constant software updates and extensions make sure that you can always work with up-to-date test software.

The periodic calibration of test equipment is an essential requirement for quality assurance. We calibrate your test equipment according to standards – in our factory in Hemer, at your premises or via remote maintenance. It goes without saying that we calibrate in accordance to national and international standards.

Our Service Centers support you around the world – with dedication, competence and reliability.

Distribution- & service center around the world



-  Production, management and distribution center in Germany
-  Distribution- & service center
-  Distribution center



> www.schleich.com/en/international

Companies trust our products around the globe.

ABB	Bernal Tore	DOM	Franklin Electric	inmotion	MAN	Papst	Sauer-Danfoss	Trilux	WEG
ABM	BMW	Dometic	Gildemeister	Kessler	MDEXX	Partzsch	Schabmüller	Thyssen-Krupp	WILA
AEG-Milwaukee	Bombardier	E.G.O.	Grohe	Kärcher	Mercedes	Philips	Schorch	TÜV	WILO
Arcelik	Bosch	Electrolux	Grundfos	KaVo	Miele	Philips medical	Severin	UPS	Zanussi
Airbus Industries	Braun	ELNOR	Hanning	Kress	Motory International SRO	Phoenix Contact	SEW	USK	Zeiss
Alcatel	BSHG	Embraco	Heidelberger Druck	KSB	Murr Elektronik	Preh Automation	Siemens	VDE	ZF
Alstom	Caterpillar	EMU	HEW	Leica	Nettelhof	Premiere	Siemens Wind Power	VDO	Ziehl-Abegg
AMK	CERN	Enercon	HILTI	Lenze Antriebstechnik	Nidec	PSA	Stahl	VEM	Zumtobel
Ansorg	Continental	Engel	Hirschmann	LEONI	Nilfisk	Rexroth	Staff	Vestas	
ATB	Daimler	ERCO	Hoffmeister-Leuchten	Leroy-Somer	Novoferm Tore	Rittal	Stöber	Vossloh-Schwabe	
Audi	Danfoss	Fagor	IFM	Liebherr Aerospace	Oase Pumpen	Rotomatika	TCM	VW	and more...
BAG	DAL	Fein	Ihne + Tesch	Loher	Ocean	Salmson	Tecumseh	WAP-ALTO	
Baumüller	Dematig Cranes	Festool	INA	Lufthansa	Opel	Saeco	TEE	WDR	
Becker Antriebstechnik	Deutsche Bahn	Flygt	Indramat-Rexroth	Maiko	Osram	Salzgitter AG	Temic	Weidmüller	



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