

Cable test vans and systems

BAUR
ensuring the flow

Prepared for anything

BAUR's cable fault location and diagnostics systems

Would you like to test and assess new installations and existing cable locations efficiently? To rectify issues in the network as quickly as possible? Or offer your clients the maximum security of supply every day through a reliable and stable network?

Then BAUR's modern cable fault location and diagnostics systems are the ideal solution for you. Save your and especially your clients' time and money with modern and efficient technology.

BAUR offers three types of system solutions for one- and three-phase cables: the cable test vans titron and transcable, as well as the Syscompact series.



➤ The titron system



➤ The transcable system



A system with additional value

Whilst fewer employees carry out more and more work, this doesn't have to impact the quality of the work: BAUR systems counterbalance this evolution through intelligent software. The operator no longer deals with operating the technology but instead provides the system with the tasks. The system carries out the work in an efficient and reliable manner without limiting the operator's work or even imposing on him. Flexibility is our highest priority; this means each step suggested by the system can be selected freely.

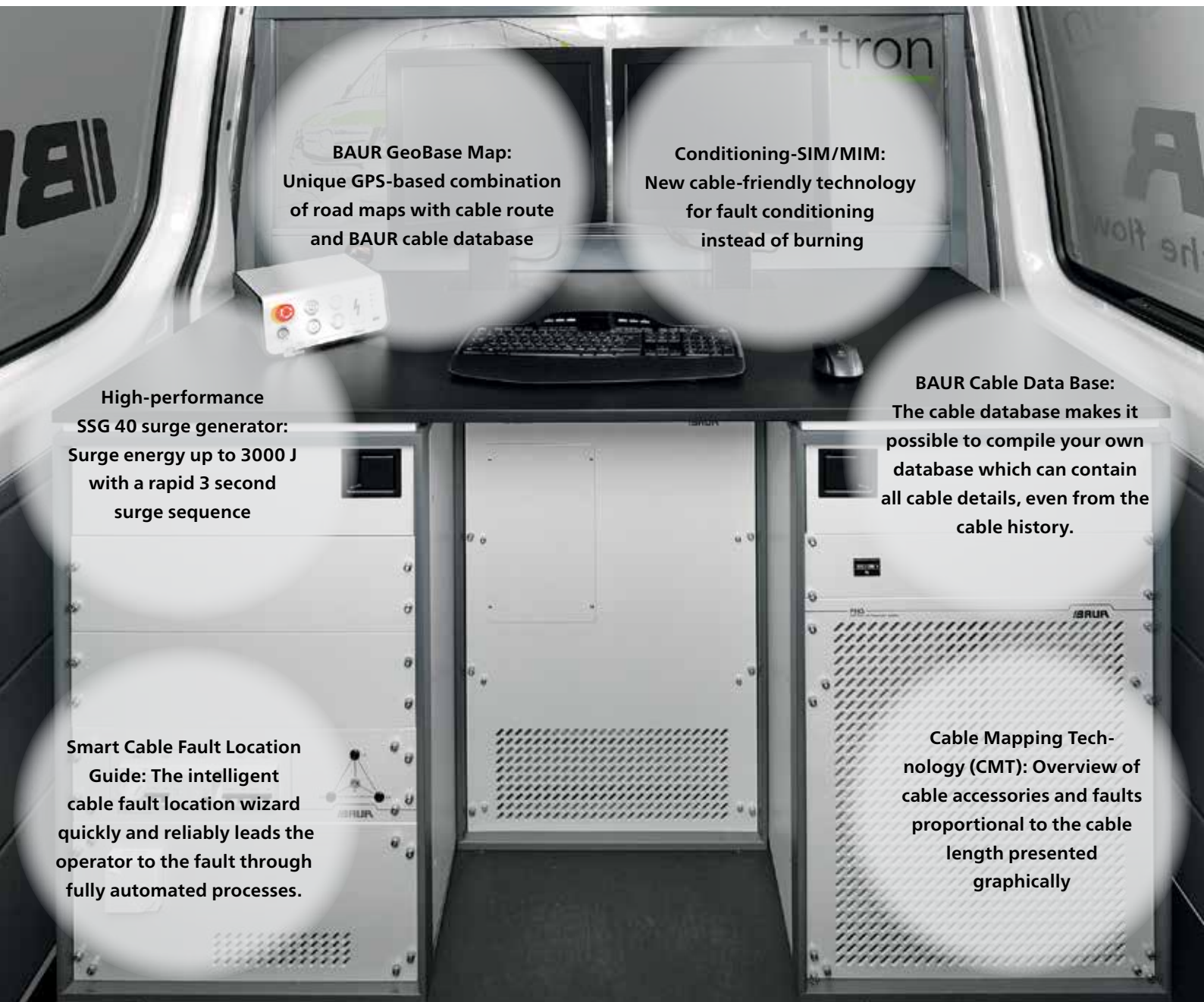


➤ Syscompact 2000

titron

State of the art

The titron automatic cable fault location system is characterised by efficient technology and intuitive operation. The new generation high-performance system is based on state-of-the-art technology and provides efficient, safe and reliable cable fault location, cable testing and cable diagnostics with its software support.



BAUR GeoBase Map:
Unique GPS-based combination
of road maps with cable route
and BAUR cable database

Conditioning-SIM/MIM:
New cable-friendly technology
for fault conditioning
instead of burning

**High-performance
SSG 40 surge generator:**
Surge energy up to 3000 J
with a rapid 3 second
surge sequence

BAUR Cable Data Base:
The cable database makes it
possible to compile your own
database which can contain
all cable details, even from the
cable history.

**Smart Cable Fault Location
Guide:** The intelligent
cable fault location wizard
quickly and reliably leads the
operator to the fault through
fully automated processes.

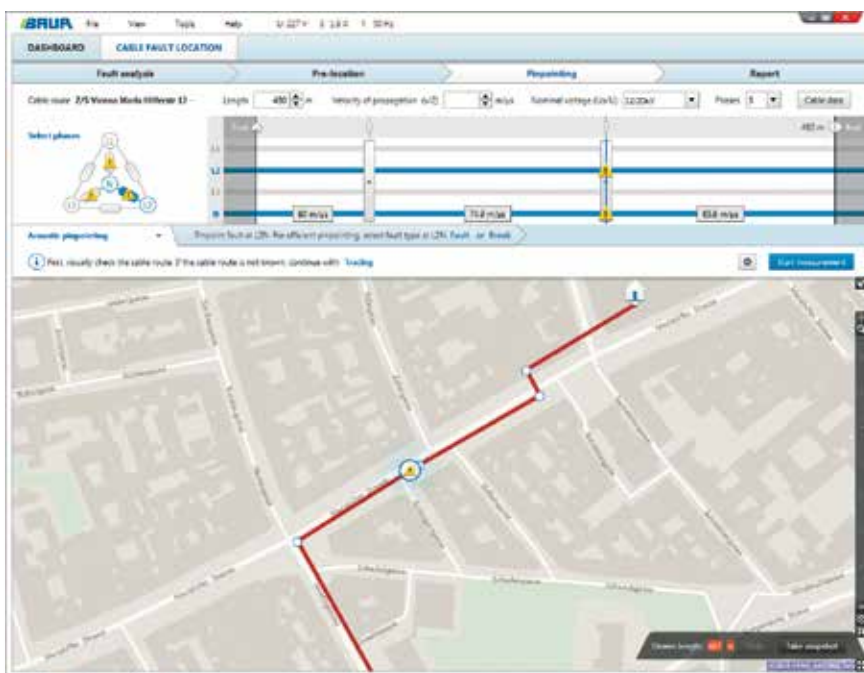
**Cable Mapping Tech-
nology (CMT):** Overview of
cable accessories and faults
proportional to the cable
length presented
graphically

A system with exclusive features

The completely new titron concept makes your work easier. With an intuitive user interface and automated sequences, titron ensures reliable and quick cable fault location. A package full of features that saves time and money.

New intuitive operational concept

BAUR GeoBase Map: The unique GPS-supported combination of road maps with the cable route and the BAUR cable database shows the current location, the cable route and the fault locations. The selection of maps can be extended at any time.



The Cable Mapping Technology (CMT) provides an overview of the cable accessories and faults proportional to the cable length. All data on the cable route such as geographic position, voltage level, joints, measured values, etc. are automatically saved and can be accessed at any time. Clearly arranged and precise measurement logs can be quickly and easily compiled with individual comments and figures of the traces.

Smart Cable Fault Location Guide

Our intelligent Smart Cable Fault Location Guide software leads you to the cable fault step-by-step. In this process, special, experience-based algorithms continuously analyse the current measurement results which are used to generate optimum recommendations regarding the further procedure required to quickly and efficiently locate the cable fault.

The voltage wizard recommends voltage values that comply with the standards according to the present cable data, the type of fault and the application. A user-specific adjustment can be carried out at any time.



➔ Voltage assistant

With the cable mapping tool and its clear graphic display, the automatic fault analysis provides you with a better overview and a direct, detailed comparison of the trace of the cable. The system automatically adjusts the required measurement parameters and marks the cable end and the fault position.



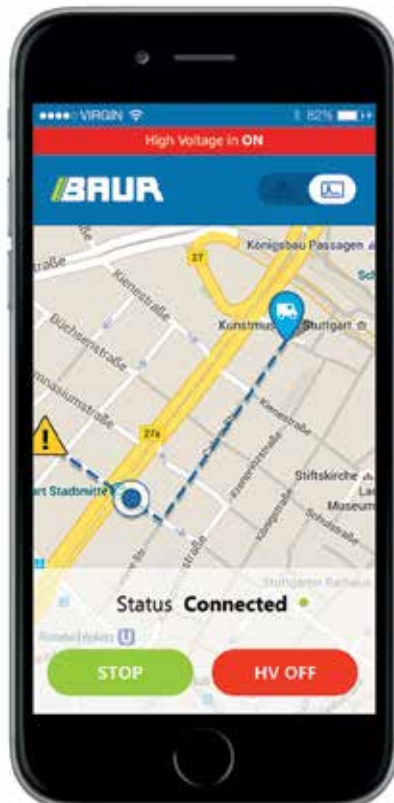


Remote control of the cable test van with the BAUR Remote Control app

The app gives you the option of remotely controlling the functions of the titron. In this process, the priority is to only activate the high voltage after reaching the pre-located fault and to switch off the system after successfully locating the fault so as to minimise the load and wear and tear for the cable and system. This ensures that the system and the cable route remain in good condition for a significantly longer period.

In conjunction with the BAUR GeoBase Map, the titron system transmits the existing map data to the app and creates a map view from which you can read your position, that of the cable test van and of the cable route with the approximate position of the fault. If there is no exact cable route, the measurement system visualises the area in which the fault could be located.

In addition, when in operating mode, the cable test van's SSG surge voltage generator can be switched on and off and the HV release can be cancelled. Important values, e.g. the charge and performance of the surge generator, are displayed and the surge sequence can be varied right down to a single surge.





Central automatic control with complete system monitoring

The titron system software with a high performance industrial PC controls the phases and choice of device and simultaneously monitors all safety-relevant functions and parameters. The optimally adjusted measurement procedure and the modern digital signal processing achieve the highest level of efficiency and measurement precision. In this process, the system is ready for operation in just a few seconds.

Cable test vans online

The titron data can be automatically synchronised with other cable test vans or stationary computers via a network or the Internet. BAUR online support is available for you via the Internet. With your permission, our customer service department can access the computer of your cable test van, identify your problem and quickly find a solution. Or, during the fault location, our engineers can share the desktop with the test engineer on site and support him in the analysis of the measurement results.

Easy and convenient to operate

You can work as usual with the mouse and keyboard of a reliable Windows 7 operating system. Office programs such as MS Office, in-house ERP systems, GIS and web applications can be installed that support you e.g. in logging and reporting. Printers, laptops and data carriers can be optionally connected via USB ports and network connections.



**Comprehensive safety concept
in accordance with the latest standards**

- Safety concept in accordance with EN 61010-1 and EN 50191
- Monitoring of all safety-relevant parameters (protective and auxiliary earthing, rear door and HV connection sockets)
- Partition between work and HV area, red and green signal lamp
- Emergency stop button in the operating area and optional external emergency stop feature in accordance with EN 50191
- Key switch against unauthorised operation
- All operation-related error messages are displayed clearly on the screen and are immediately visible to the user.



More detailed information and data sheets on the titron can be found on our website at www.baur.eu/titron

The right measurement method counts

Our system software has a wide spectrum of measurement methods and provides you with the maximum support in locating the fault. The Smart Cable Fault Location Guide offers an automatic pre-selection of the method best suitable.

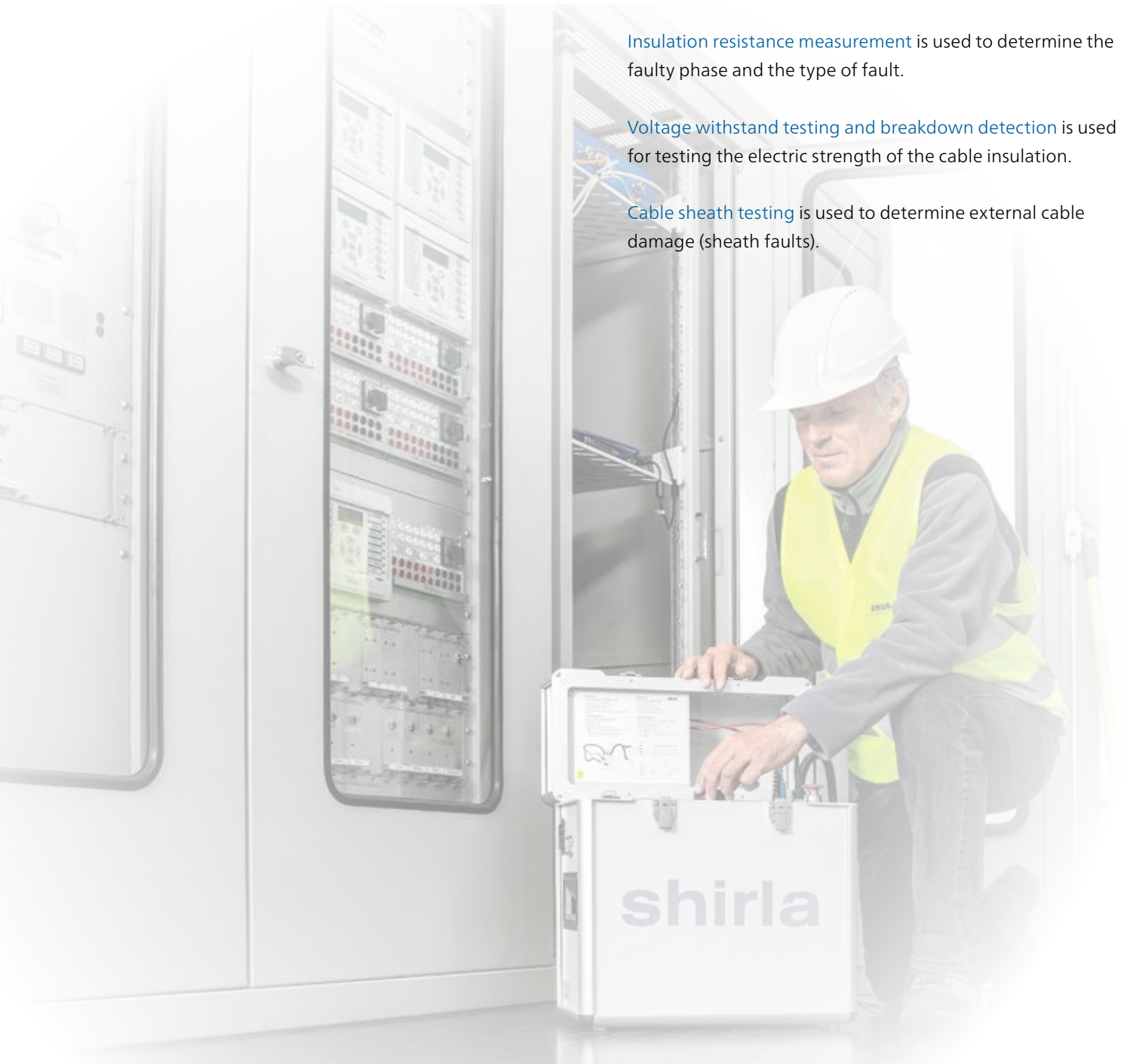
Fault analysis

The analysis serves to ascertain the fault characteristics and determines the further procedure in the fault location, the selection of methods and also the voltages.

[Insulation resistance measurement](#) is used to determine the faulty phase and the type of fault.

[Voltage withstand testing and breakdown detection](#) is used for testing the electric strength of the cable insulation.

[Cable sheath testing](#) is used to determine external cable damage (sheath faults).



Pre-location

The objective of the pre-location is to determine the fault position as precisely as possible to keep the subsequent pinpointing activities as brief and efficient as possible.

TDR: Time Domain Reflectometry is used to locate low-resistive faults and cable interruptions and to determine the cable length.

SIM/MIM: The Secondary / Multiple Impulse Method is the best and most precise cable fault pre-location method with the highest level of efficiency. High-resistive and intermittent faults are triggered by one single HV pulse, then the fault distance is measured accurately multiple times with the TDR technology and automatically analysed.

DC-SIM/MIM: Secondary/multiple impulse method in DC mode for pinpointing intermittent faults; voltage is applied to the cable; at the breakdown a SIM/MIM measurement is automatically and simultaneously carried out.

Conditioning-SIM/MIM: The fault conditioning with SIM/MIM measurement has been developed specifically for wet faults that are difficult to locate. First, the fault is conditioned with surge voltage, then a SIM/MIM measurement is carried out.

Decay: Voltage-coupled decay method for pinpointing intermittent cable faults; the oscillating reflected waves are automatically analysed to determine the fault distance.

ICM: The Impulse Current Method is used to locate high-resistive and intermittent cable faults. The fault distance is determined by analysing the impulse current diagrams.

DC-ICM: The Impulse Current Method is used in DC mode to locate flashover faults.

Measurement mode with envelope curve display for intermittent faults; reflection measurements are carried out continuously. In this process, even small changes to impedance are made visible by means of an envelope curve and are automatically saved.

Pinpointing

As precise as pre-location is, it is not able to detect or recognise the existing deviations in the ground. These can only be corrected by precise pinpointing.

Cable route tracing: used to precisely determine the cable route; precise positioning is essential, particularly with unknown or imprecise cable routes, and saves both time and money.

Acoustic pinpointing: the most common method used to pinpoint the location of high-resistive and intermittent flashover faults; the high-voltage flashovers at the fault generate acoustic and electromagnetic signals that are used for locating the fault position.

Step voltage method: used to pinpoint the location of cable sheath faults; a voltage drop is generated at the fault which can be pinpointed using an earth rod and a universal locator (UL 30).

Twist method or minimum turbidity method: applied when pinpointing short circuits depending on the cable type; in this process, the disturbance in the otherwise homogeneous magnetic field that is caused by the fault is measured and precisely located.

Testing and diagnostics

Testing and diagnostics make it possible to determine the quality of the cable. They also help in a preventive manner by using suitable measures to maintain the highest quality of the cable installation.

Testing: DC, VLF sine and square wave voltage are available depending on the system configuration.

A **partial discharge diagnosis** is used to determine possible fault locations in cables and fixtures before they lead to failure. This makes it possible to rectify the problem in a timely manner and prevent any subsequent damage resulting from uncontrolled failure.

The **tan delta dissipation factor measurement** is used to determine the ageing condition of a cable. Possible exchange activities can be controlled in a targeted manner in the framework of professional asset management.





transcable

Proven quality

The transcable is an automatic or semi-automatic, one- or three-phase cable fault location system. Through the modular design, the individually functional modules work independently from one another. This makes it possible to modify or expand the transcable system without any problems at any time.

The functional scope of the transcable is very versatile. In addition to the required testing technology for cable fault location and cable testing, meaningful software-supported cable condition assessments with dissipation factor and partial discharge measurements are possible due to the VLF truesinus® based smart testing technology.



Testing up to 110 kV DC

Surge generators up to
3000 J

Modular concept

Integrated diagnostics

VLF truesinus® up to
57 kV_{rms}

Universal application

Due to its modular design, the transcable system enables the integration of multiple options: e.g. the integration of a PHG VLF testing system but also surge generators up to 60/100 kV or DC voltage testing up to 110 kV. Therefore, the system is universally applicable, even on HV cables and offshore.



➤ transcable system, 1-phase



➤ Extended Syscompact 3000 system



➤ Semi-automatic transcable system, 3-phase, 110 kV



More detailed information and data sheets on the transcable can be found on our website at:
www.baur.eu/transcable

Cable test van equipment

Options that leave nothing to be desired

In terms of equipment and convenience, BAUR systems offer you every option you can think of:

- BAUR GeoBase Map
- Accessories for various fault location methods
- Diverse safety and protective devices (e.g. isolation transformer)
- Cable drum rack with motor drive
- External emergency stop unit according to EN 50131
- Heating or air conditioning systems

Our experts will gladly help you plan and equip your personal fault location system.



➤ Example of options in the high voltage area: motor-operated cable drum rack, external emergency stop unit and TDR connection cable



➤ Example of options in the operating area: two industrial screens and transparent partition



➤ Example of optional seat console with storage space



➤ Example of optional adjustable seat console with pull-out draw



➤ Example of optional drawer with matching inlay



➤ Example of an air conditioner



➤ Example of a synchronous generator, underfloor



➤ Example of an electronic generator



➤ Light signalling system



➤ Warning light system



➤ Cable test vans of all sizes are equipped by BAUR.



Syscompact

Mobile cable fault location to meet your needs

The devices in the Syscompact series are multifunctional cable fault location systems in modular 19 inch rack technology, making them an attractive alternative to the large systems. These systems comprise different cable fault location methods making them quick and reliable. The equipment and structure is designed individually according to your needs. Syscompact is available as a portable system on wheels or as block units for installation in a cable test van – the foundation for smaller budgets without compromising on performance.



More detailed information and data sheets on the Syscompact series can be found on our website at www.baur.eu/syscompact



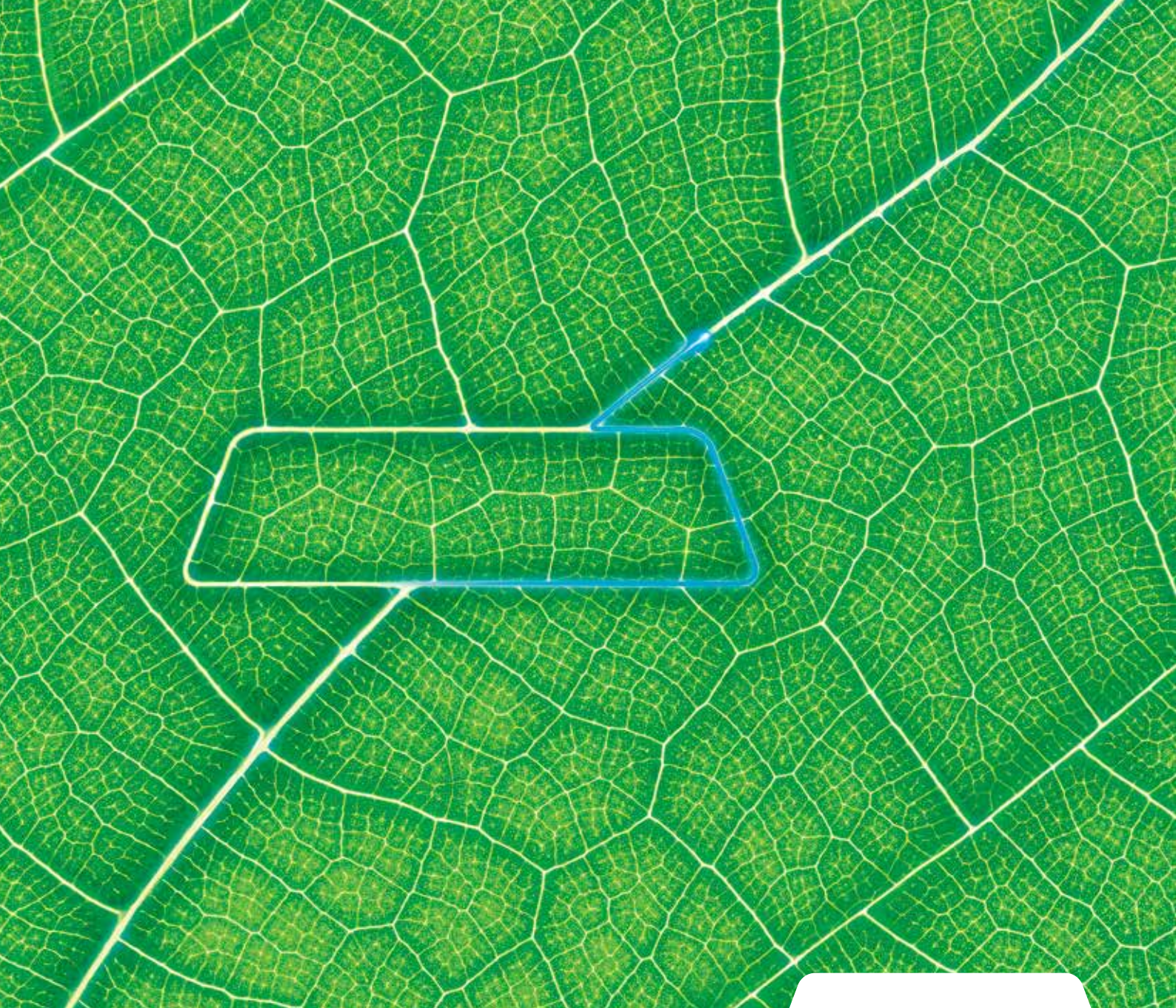
Professional consultation and service worldwide

We offer reliable service by competent experts and a comprehensive range of services. We are happy to offer assistance in the following areas:

- Technical support for questions on devices, software or applications
- Maintenance and repair of devices
- Calibration and measurement
- Training



For further information or competent consultation, contact us at www.baur.eu/services



Other BAUR Brochures



BAUR company brochure



BAUR product overview



Cable testing and diagnostics



Cable fault location



Insulating oil testing



Our brochures and manuals are also available online at: www.baur.eu/brochures