

# Countering cable risks with Brugg Cables' diagnostics mix

**Asset Management & Services**  
Preventive Maintenance





**Risks in high-voltage cable systems often remain undiscovered – Preventing failures and faults failed.**



## Determining the status of high-voltage cable systems

Based on extensive experience in resolving incidents and repair situations, Brugg Cables has compiled a set of cable diagnostic measures that can be used to determine the status of cable systems, derive risks and recommendations for action, and define further investigation points to analyse a range of measurement points.

Based on the specific on-site situation, the Brugg Cables experts recommend applying a combination of different diagnostic methods (diagnostic mix) that best illustrate the status and risks of the cable system. The diagnostic results are evaluated, the risks are identified and recommendations are derived. The customer receives documentation and the relevant test reports.

## The diagnostic mix Cable diagnostics for timely identification of risks

### Sheath check

Damage to the outer sheath is still one of the main causes of faults in plastic-insulated cables. During the dielectric strength test, a DC voltage in the range of 5 to 20 kV (1-5 min) is applied to the cable shield (below the sheath) and earth potential.

### High Voltage check

This diagnostic test is mainly performed before commissioning of or following conversions to the cable system to check the dielectric strength of the main insulation. This is a cable system load test performed over a defined period of time using test voltages that are higher than the operating voltage.

### Recording and analysing partial discharges

Diagnostic PD measurements localise local partial discharges in the cable system's insulation, which could lead to breakdowns in the longer term. The measurement can be performed using a variety of proven methods.

The cable diagnostics from Brugg Cables are performed for oil and XLPE cable systems. There are also other, specified diagnostic procedures to choose from.

### Thermographic examinations (temperature analyses)

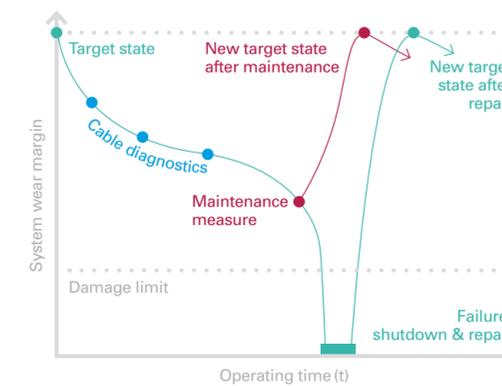
Thermal imaging cameras are used to identify thermal heating of system components without any contact. Our experts can recognise and interpret abnormalities on the images.

**Detailed material analyses** of the insulating oil from fittings, as well as the oil and the lead sheath in paper/oil-insulated cables (gas analysis, foreign substances, etc.)

### Quality check fibre optics

Attenuation measurements are used to examine optical conductors installed in the context of high-voltage cables for potential defects such as fibre breaks, bends, defective connectors and excessive insertion loss.

**Comprehensive, visual checks** of the complete cable system based on the Brugg technicians' experience



Cable diagnostics help to plan for maintenance measures on time to avoid failures, to prevent shutdowns and to expand the operating time and service life.

### Customer benefits of the cable diagnostic process

- Objective evaluation of the condition and possible risks in the cable system
- Timely introduction of measures, such as repairs or regular inspections to prevent consequential damage and downtime
- Ensuring reliable operation of the cable systems
- Expanding the cable system usage duration and therefore its profitability
- Preventing possible faults and failures
- Reduction of the total operating costs due to avoided fault and failure costs

**We are your expert for cable-based power transmission.**

## Brugg Cables

Brugg Cables is an innovative cable manufacturer from Switzerland that offers an extensive range of power transmission and distribution services. Established by Gottlieb Suhner more than 120 years ago, Brugg Cables is now one of the world's leading cable manufacturers. Throughout our history, our defining characteristics have been our strong customer focus and a highly skilled and professional workforce. Our emphasis has been on innovation and outstanding Swiss quality – since 1896.

### Cable projects

Brugg Cables is the high-performance partner for high-voltage cable projects. From planning, production and logistics to installation and commissioning. As a general contractor, we coordinate all trades, monitor all phases and, with our experts, are the central point of contact for the customer on site.

### Asset Management & Services

Our Asset Management & Services package is specifically designed for the demands of energy suppliers, transmission system operators and electricity customers in the high and extra-high voltage sector. This encompasses diverse services to ensure that the planning, construction, operation and maintenance of high-voltage cable systems is safe, efficient and cost-effective.

