BAUR
ensuring the flow

When speed is of the essence

Cable fault location in Switzerland's Simplon Tunnel

Customer:
Gasenzer AG specialises in measurement technology and measurement services relating to fault location, testing, and condition evaluation of cable systems, and is the exclusive trade partner for BAUR devices in Switzerland.

BAUR solution:
The location of around 98% of all medium-voltage cable faults can be found quickly using the SIM/MIM fault pre-location method from BAUR.

When it comes to cable failures, speed is of the essence – especially if the cables are used to operate important infrastructure. So Swiss Federal Railways (SBB AG, Bern) didn't waste any time when a 16 Hz cable failed in the Simplon Tunnel. SBB turned to Gasenzer AG to help locate the fault. The company specialises in locating faults in cable systems and has comprehensively equipped BAUR test vans.

"Fault location is often a routine matter thanks to the measurement technology," explained Willi Bohler, "but getting at the fault location is not always easy." This was also true in this case: a service train from the SBB civil engineering department had to be used to get the test van to the place of use. The measurement engineers set out from Brig into the approximately 20 km long and over 100-year-old railway tunnel towards the cable section thought to contain the fault.

Fault location in the historic railway tunnel: Challenges and solutions

The BAUR cable test van was transported into the Simplon Tunnel using a service train from the SBB civil engineering department.

> "Fault location is often a routine matter thanks to the measurement technology."
>
> Willi Bohler, Gasenzer AG

Once at the site, the measurement engineers initially used the secondary/multiple impulse method (SIM/MIM). This pre-location method invented by BAUR quickly finds the location of around 98% of all medium-voltage cable faults – as was the case here. It was possible to read the pre-located fault location on the display of the IRG 3000 time domain reflectometer.

Willi Bohler – shown here in the cable test van – is a measurement engineer at Gasenzer AG (the exclusive trade partner for BAUR devices in Switzerland and responsible for cable fault location here).

Precise fault location with high-voltage pulses and ground microphones

To establish the fault location more precisely, the technicians fed high-voltage pulses into the cable using a surge voltage generator. These generated audible breakdowns at the fault location. Using a ground microphone and the UL 30 receiver, the fault location was quickly found at a track crossing and could be immediately rectified by the cable fitters.

BAUR solutions (successor products)

IRG 400 portable time domain reflectometer

The IRG 400 portable time domain reflectometer is used for fault pre-location on 1- and 3-phase cables. Thanks to the intuitive operational concept, cable faults can be located more rapidly and easily with the IRG 400 portable.

The measuring device and tablet are connected via Wi-Fi. The measurement can therefore be controlled and traced safely and conveniently outside of the danger zone using the tablet.

The key features at a glance:

- Intuitive user interface in multiple languages
- Measurement controlled via a tablet using the BAUR BUI-F app
- Length-dependent gain for better display of remote events
- Greater convenience, as measurements can be controlled remotely
- Integrated separation filter (can be enabled/disabled) for TDR measurements on live cables
- Everything needed for measurement in one handy case: time domain reflectometer, tablet, and accessories
- Splash water and dust protection
- Operation via rechargeable battery or mains voltage

More information:
www.baur.eu/en/irg-400-portable

protrac® pin-pointing system, "Acoustics" set

The protrac® pin-pointing system is used for the precise pin-pointing of cable faults and cable sheath faults. It provides methods for both tracing and joint location, making it ideal for universal use.

Thanks to the use of the latest technologies, locating the exact fault position with the protrac® is extremely fast and precise. The innovative two-level signal processing concept permits a high degree of sensitivity and accuracy, and maximum suppression of ambient noise.

The "Acoustics" set

- Part of protrac®, the multifunctional all-in-one solution for acoustic pin-pointing
- Simplified tracing function
- Noise signals are suppressed using statistical methods and through intelligent linking of signal information
- Clear distinction between cable fault noise and surge noises
- Direct transmission of signal data via Bluetooth®

More information:
www.baur.eu/en/protrac

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