

RIVO MULTITRADE OPTICAL SYSTEMS

What are some methods for detecting leaks in optical cable sheaths



Overview

Precise cable sheath testing with BAUR systems – find out moreThis is firstly achieved by sheath testing, then fault pre-location using the Murray and Glas.

Key Takeaways

Detecting leaks in optical cable sheaths involves a combination of sheath testing, pre-location using bridge methods, and pinpointing faults with specialized tools like OTDRs and visual fault locators.

Sheath Testing

Sheath testing is the first step in identifying potential leaks or damage in the cable outer layer. A high-voltage test (up to 10 kV) is applied to the cable screen for at least one minute while measuring the leakage current to earth. The cable screen must be disconnected from earth at both ends to avoid short-circuiting the measurement. Sudden increases in leakage current, from microamperes to milliamperes, indicate a potential sheath fault that could allow water ingress and degrade insulation over time .

Pre-Location Techniques

Once a sheath fault is detected, bridge measurement methods such as the Murray and Glaser bridges are used to pre-locate the fault. These methods rely on the ratio of resistances before and after the fault and are performed on a cable route disconnected from the network. This allows technicians to estimate the fault location along the cable without causing further damage

Pinpointing Faults

After pre-location, the exact fault can be pinpointed using tools like Optical Time Domain Reflectometers (OTDRs) and Visual Fault Locators (VFLs). OTDRs send pulses of light through the fiber and analyze reflections to identify breaks, bends, or other anomalies along the cable. VFLs emit visible laser light to highlight faults over shorter distances, making them effective for continuity checks and identifying macrobends or breaks .

Additional Considerations

- Dummy fibers may be used with OTDRs to avoid dead zones and improve measurement accuracy .
- Cable design and fiber layout affect measurement, so multiple fibers from different buffer tubes may be tested to obtain an average fault location .
- Cold clamps can provide a local reference marker for precise distance measurement to the fault, especially in jelly-filled or long cables .

Summary

A comprehensive approach to finding leaks in optical cable sheaths involves:

- Sheath testing to detect leakage currents.
- Bridge methods (Murray or Glaser) for pre-locating faults.
- OTDR and VFL testing for precise fault pinpointing.
- Use of reference tools like dummy fibers and cold clamps to improve accuracy. This combination ensures early detection, accurate location, and effective rectification of sheath faults, preventing water ingress and long-term cable degradation.

Article Content

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This is firstly achieved by sheath testing, then fault pre-location using the Murray and Glaser bridge methods and subsequent cable

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