Budowa Silesia Photonics

Application Scenarios of Temperature Measuring Optical Cables in Power Systems

Overview

The conclusions of this paper are summarized as follows:At the same radial position within the cable, the axial temperature difference measured by the fiber was much smaller than that of the thermocouple. The maximu. The conclusions of this paper are summarized as follows:At the same radial position within the cable, the axial temperature difference measured by the fiber was much smaller than that of the thermocouple. The maximum temperature differences between the fibers and thermocouples at the segmental conductor center, insulation shield surface, and waterproof compound center were 4.9 °C, 3.2 °C, and 3.7 °C, respectively. The reason for the large differences was that the thermocouples were laid into the cable by manually drilling, and the actual radial position may be difficult to control accurately, while the laying environment of water for the cable may increase this effect. Therefore, the distributed optical fiber is more feasible and reliable for cable intern. To investigate the optimal radial-arranged-position of the optical fiber in the cross-linked polyethylene (XLPE) power cable, the fibers were arranged into three positions, including segmental conductor center, the insulation shield surface, and the waterproof compound center, respectively, and temperatures were measured based on the Brillouin optical time-domain reflectometry (BOTDR) technology while the thermocouples were arranged at the same positions mentioned above for comparison, respectively. Four cases of cable temperature rising experiments under the laying environments of duct and water were carried out. The conductor temperatures were calculated using the temperatures measured by the fibers at the insulation shield surface and waterproof compound center, and the diff. ••The temp...

Article Content

Power Cable Monitoring for Overheating

Optical fiber sensors can detect abnormal heating of power lines in cable trays and high voltage power cables in cable tunnels. They enable blind-spot–free monitoring—24 hours a day 365 days a ...

Application of Distributed Optical Fiber Temperature Measurement in ...

This paper studies a distributed optical fiber temperature measurement system using smart cables, which combines fiber Bragg grating arrays and multi-core commu

Application Research on Online Power Cable Temperature Detection ...

Traditional thermocouple measurement fails to ensure real-time monitoring, risking cable operation. Leveraging Raman scattering principles, this study establishes a method for continuous...

Internal temperature measurement and conductor temperature calculation ...

Four cases of cable temperature rising experiments under the laying environments of duct and water were carried out.

Distributed temperature sensing in OPGW with multiple optical fibres ...

In this study, it was demonstrated the possibility of monitoring, in a distributed form, the temperature in an OPGW cable in a 230 kV transmission line (TL) composed of three different optical ...

TST cable GaAs fiber optic temperature measurement system: ...

The TST cable gallium arsenide optical fiber temperature measurement system is not only a technical innovation, but also a key infrastructure for the transformation of power systems to ...

Temperature Monitoring in Power Cables Monitoring System

If left undetected, these thermal problems can expedite material aging and reduce overall cable performance. Through continuous, real-time temperature monitoring of power cables operators can ...

Guide for the Application of Distributed Fiber Optic Temperature ...

In response to this challenge, EPRI developed this application guide to help utilities in assessing the selection and application of DFOTS technology.

Fiber Optic Temperature Measurement for Power Asset Monitoring Systems

This article explores three primary fiber optic temperature measurement technologies: Fluorescence-based sensors, Distributed Temperature Sensing (DTS), and Fiber Bragg Grating ...

Application Research on Online Power Cable ...

Traditional thermocouple measurement fails to ensure real-time monitoring, risking cable operation. Leveraging Raman scattering principles, this ...

Multi-Parameter Optical Monitoring Solution Applied to ...

The monitoring system demonstrated herein uses Fiber Bragg Grating (FBG) sensors to measure multiple parameters, such as the distributed temperature of the power cable, external ...

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