State Grid Communication Optical Cable Construction

Overview

OPGW Cables: What Are They and Why Power Grids Need ThemDiscover what OPGW cable (Optical Ground Wire) is, its technical structure, key benefits for power.

Key Takeaways

State Grid optical cable construction primarily uses OPGW cables, integrating lightning protection and high-speed fiber communication to support smart grid operations.Overview of OPGW Optical Cables

OPGW (Optical Ground Wire) is a specialized cable installed at the top of high-voltage transmission towers, combining grounding and optical communication functions. It serves as a protective shield against lightning strikes while simultaneously providing a high-speed data channel for grid monitoring, dispatching, and automation systems ( ). This dual-purpose design allows for “one-time installation, double benefits”, optimizing infrastructure costs and enhancing grid reliability.

Structural Components

An OPGW cable typically consists of four main components:

• Outer Protective Layer: Stranded aluminum or aluminum alloy wires provide corrosion resistance, conduct short-circuit currents, and integrate with the grounding system for lightning protection ( ).

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• Central Tube (Fiber Optic Unit): A sealed tube made of stainless steel or aluminum alloy protects the optical fibers from moisture, dust, mechanical compression, and temperature variations ( ).

• Internal Optical Fiber: Usually single-mode fibers (e.g., G.652D) for long-distance, high-capacity transmission, with low attenuation (

Article Content

Standard for Installing and Testing Fiber Optics

Safety in fiber optic installations specifically includes avoiding exposure to light radiation carried in the fiber; disposal of fiber scraps

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