

Article Overview

Splicing OPGW fiber optic cables on transmission towers involves careful cable preparation, fusion splicing, and secure installation in splice enclosures while maintaining both optical and grounding functions.

Overview of OPGW Cables

OPGW (Optical Ground Wire) cables combine grounding and communication functions, containing optical fibers within a tubular structure surrounded by steel and aluminum layers. They are installed on high-voltage transmission towers to protect lines from lightning and provide high-speed data transmission for utilities or third parties . Common types include Central Tube (OPGW C/CA), Aluminum Pipe (OPGW AP), and Stranded Type (OPGW S), each with different fiber housing and mechanical properties .

Safety and Site Preparation

Before splicing, establish an equal potential zone to prevent electrical hazards. This involves installing temporary ground cables, conductive mats, and using protective equipment such as gloves, face shields, and removable hot-sticks . Safety is critical because splicing is performed at height on energized towers, often in windy conditions.

Cable Preparation

- o Straighten and mark the cable over at least 2-2.5 meters.
- o Wrap tape at the marking point to secure strands during cutting.
- o Remove armor layers: Use a metal saw or mini grinder to cut and unwrap aluminum and steel strands carefully, exposing the inner fiber tubes. For metal loose tubes, inner strands should extend about 10 mm beyond outer strands .
- o Handle fibers carefully to avoid microbends or damage; maintain the minimum bending radius at all times .

Fusion Splicing

- o Use a fusion splicer to join fibers precisely.
- o After splicing, seal the joint with a heat-shrink sleeve to protect against moisture and mechanical stress .
- o Install the spliced fibers in a splice enclosure or joint box, which is armored to protect against electrical fields and environmental exposure .

Installation on Towers

- o Coil extra cable in coiling brackets near the joint box, maintaining a minimum loop diameter of 1.5 meters and total loop length equal to tower height plus 15 meters .

OPGW fiber optic cable tower splicing

- o Clamp the cable using down-lead clamps and vibration dampers as per approved drawings. Maintain torque at 40 Nm for clamps and accessories.
- o Ensure the bending radius exceeds 40 times the cable diameter at corners and strain points to prevent fiber damage .

Post-Splice Testing

- o Perform OTDR (Optical Time-Domain Reflectometer) testing to verify splice quality and optical continuity.
- o Inspect the splice enclosure for proper sealing and secure mounting on the tower .

Key Considerations

- o Always follow manufacturer guidelines for cable type and splice closure.
- o Maintain strict safety protocols due to high-voltage exposure.
- o Proper coiling, clamping, and bending radius management are essential to ensure long-term reliability of both the optical and grounding functions of OPGW cables . By following these procedures, OPGW splicing can be performed safely and effectively, ensuring reliable communication and grounding on high-voltage transmission towers.

This paper will provide a brief overview of the history of fiber-optic communications and types of fibers, and discuss handling,

First, a heat-shrink tube is placed over the OPGW cable. After that, the cable is secured with a clamp or another suitable tool to

This paper, OPGW Grounding Techniques for Safe Fiber Splicing, outlines critical safety protocols and procedures for

This document provides installation guidelines for optical ground wire (OPGW). Section 2 discusses preparation for OPGW

The shield wire constructed with fiber inside it is called the Optical Ground Wire (OPGW). The one shown in the GIF

The document provides guidelines for splicing fibre optic cable. It outlines the

OPGW Installation Joint box. SPLICE ENCLOSURES / JOINT BOX | Splice enclosure is used for the storage of spliced fiber & amp;

OPGW fiber optic cable tower splicing

Zhongtian Hitachi Fiber Optic Cable Co., Ltd. (ZHC) offers OPGW installation services including supervision, splicing,

3. Technical Specification OPGW is an optical fibre ground wire that provides the functionality of a standard earthwire without any

FOSC Metal Joint Junction Box For Pole and Tower ADSS/OPGW 12, 24, 48, up to 144 Cores Aerial Fiber Optic Cable Splice

Students will learn about the latest construction methods and procedures associated with OPGW fiber optic technology including

This Reference Manual spotlights the OPGW installation instructions required in the field. ZION offers detailed

Fibre optic metal joint box/joint closure/splice closure is used for the continuation of the optical cable in the middle of the tower, which

As the world's largest producer of telecoms cables, supporting the infrastructures of many of the world's leading telecoms operators,

This document provides procedures for installing OPGW fiber optic cables on transmission lines between 35kV and 400kV. It outlines

Nevertheless, since there is an optical fibre core, special care should be taken to avoid any damage to the fibres by observing the

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