

North Asia Fiber Optic Cable Fusion Splicing



Overview

North Asia Fiber Optic Cable Splicing in North KoreaExplore North Korea's efforts to develop fiber optic infrastructure, its implications for connectivity.

Key Takeaways

Fusion splicing in North Asia involves precise alignment and welding of fiber optic cables using advanced splicers, ensuring minimal signal loss and high reliability.Overview of Fusion Splicing

Fusion splicing is the process of joining two optical fibers end-to-end by melting them together with an electric arc, creating a seamless joint that allows light to pass with minimal loss and reflection . It is the most widely used method for singlemode fibers and is increasingly applied to multimode fibers and fiber ribbons. The process is essential for network installation, maintenance, and expansion, particularly in high-speed data transmission networks.

Equipment and Standards in North Asia

In North Asia, companies like Jilong Communication provide advanced fusion splicers and related equipment, including OTDRs, fiber cutters, and measuring instruments . Jilong has contributed to the GB/T 17570-2019 national standard for optical fiber fusion splicers, ensuring compliance with regional quality and safety requirements. Their splicers feature optical core alignment and automated software to optimize splice quality, making them suitable for both single-fiber and ribbon splicing .

Fusion Splicing Process

- **Fiber Preparation:** Strip the protective coating carefully using precision strippers to avoid microfractures. Typical strip lengths range from 10 to 20 mm depending on fiber type .
- **Cleaning:** Clean fiber ends with lint-free wipes and 99%+ isopropyl alcohol to remove dust, oil, or other contaminants. Use a microscope or splicer camera to inspect the cleave surface .
- **Cleaving:** Use a precision fiber cleaver to create a flat, perpendicular end face. Imperfections can increase insertion loss by 0.1–0.2 dB or more .
- **Splicing:** Place fibers into the fusion splicer's V-grooves, align cores using optical or LID core alignment, and apply an electric arc to fuse the fibers .
- **Protection:** Cover the splice with a heat-shrink sleeve to restore mechanical strength and protect against environmental hazards .

Best Practices

- Maintain balanced tension during splicing to prevent microbends or breakage .
- Re-clean fiber ends periodically during extended splicing sessions to maintain low-loss performance .
- Use anti-static measures in dry environments to protect splicer electronics .
- Follow manufacturer-specific instructions for splicer settings and cleaver use, as equipment may vary .

Advantages

- Low insertion loss (typically ~0.02 dB), ideal for high-speed networks.
- Durable and permanent connections, resistant to environmental changes and vibrations.
- High reliability for both singlemode and multimode fibers, including dense ribbon cables . Fusion splicing in North Asia combines advanced equipment, adherence to national standards, and precise operational techniques to ensure high-quality optical networks capable of supporting modern telecommunications and data infrastructure.

Article Content

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