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Technology of Blowing Optical Cables



Overview

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Key Takeaways

Blowing optical cables is an air-assisted installation method that uses compressed air and mechanical pushing to efficiently install fiber optic cables in pre-installed ducts while minimizing stress and friction.Overview of Cable Blowing

Cable blowing, also known as jetting, is a method for installing optical fiber cables into pre-installed ducts using high-speed airflow combined with mechanical pushing. Unlike traditional pulling, which relies solely on tension to draw the cable through the duct, blowing uses compressed air to “float” the cable, reducing friction between the cable and duct walls and allowing longer installation distances with less stress on the cable .

Equipment and Process

The main components of a blowing installation include:

• Blowing machine: Provides mechanical pushing force via traction rollers or a tractor mechanism.

• Compressed air source: Injected into the duct to create a high-speed airflow that carries the cable forward.

• Ducting system: Pre-installed microducts or standard ducts that guide the cable.

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• Cable preparation tools: Lubricants and end caps (“bullets”) to facilitate smooth entry and reduce friction . The process typically begins by pushing the cable a few hundred meters into the duct using the blowing machine. Compressed air is then introduced, which keeps the cable in a floating condition, minimizing contact with the duct walls. The combination of pushing and air drag allows the cable to travel long distances, often exceeding 1000 meters in microducts under optimal conditions .
Cable Design Considerations

Cable characteristics significantly affect blowing performance:

• Stiffness vs. flexibility: Stiffer cables are better for straight ducts and fast installation, while flexible cables navigate multiple bends more effectively .

• Construction type: Uni-tube, multi-tube, armored, and unarmored cables can all be installed using blowing techniques.

• Outer jacket material: Influences friction and the ability to float within the duct . Microcables, which are smaller in diameter and lighter, are particularly suited for blowing, as the reduced weight and drag force allow for easier installation without the need for pulling ropes .
Advantages of Blowing Technology
• Reduced cable stress: Air-assisted installation lowers tension compared to traditional pulling, preserving optical and mechanical integrity .

• Longer installation distances: Air drag allows cables to travel farther without intermediate splicing or pulling points .

• Efficiency in complex routes: Multiple bends, undulations, and long ducts are easier to navigate with blowing than with manual pulling .

• Flexibility for network management: Cables can be installed, removed, or replaced with minimal disruption .
Best Practices
• Ensure ducts are clean and free of debris to prevent obstruction .

• Use appropriate cable lubrication to reduce friction.

• Monitor air pressure and pushing force to avoid damaging the cable.

• Consider fill ratio (cable-to-duct diameter) for optimal performance, typically 50–80% for air-assisted installations .

• Conduct test runs or use a test bench to verify installation feasibility before full deployment . Cable blowing has become a standard method in modern fiber optic networks, particularly in Europe, due to its efficiency, reduced labor requirements, and suitability for microduct and high-density installations . It represents a significant advancement over traditional pulling, enabling faster, safer, and more flexible deployment of optical fiber infrastructure.

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Article Content

Fiber Optic Cable Blowing Procedure: Full Guide (2024)

What Is The Fiber Optic Cable Blowing Procedure?Maximizing Its PerformanceBlowing vs Pulling Cables: Which Is Better?How Do You Bury Fiber Optic Cable in A Blowing Installation?How Do You Pull Fiber Optic Cable Through A Conduit?Essential Fiber Optic Cable Blowing Procedure EquipmentIts Benefits on Fiber Optical NetworksLearn More About The Fiber Optic Cable Blowing MethodThe fiber optic cable blowing process is often preferred for installations due to its numerous advantages over the pulling method. It minimizes damage to the cable, reduces the risk of jams in the conduit, and is faster, saving on manpower and resources. However, using a pulling eye and a winch may be more suitable in certain situations.See more on thenetworkinstallers STL Tech

Installation of Optical Fiber Cable by Blowing/Jetting

Abstract This application note discusses fiber optic cable installation by blowing technique, the factors effecting blowing performance

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