

What are the different methods for laying mobile optical cables in ducts

Article Overview

The two primary methods for installing optical cables in ducts are the pulling method and the air blowing (or jetting) method, each suited to different duct lengths, cable types, and site conditions.

Pulling Method

The pulling method involves manually or mechanically pulling the optical cable through a pre-installed duct using a rope or puller machine. This method is typically used for short distances, usually up to 200-300 meters, such as in access networks where ducts are not continuous. The cable is often stored in coils at manholes or handholes along the route, and crews must handle the cable carefully to avoid exceeding its maximum pulling tension or bending radius, which could damage the fibers. Pulling is straightforward but labor-intensive and less efficient for long ducts with multiple bends.

Air Blowing (Jetting) Method

The air blowing method, also called jetting, uses high-speed compressed air combined with a mechanical pushing force to install the cable. The process begins by pushing a short length of cable into the duct, then injecting compressed air to create a drag force that propels the cable forward while keeping it in a floating condition. This reduces friction between the cable and duct walls, allowing installation over longer distances, often exceeding 1000 meters, and through ducts with multiple bends or undulations. Key considerations for air blowing include:

- o Cable stiffness: Stiffer cables travel faster through straight sections, while flexible cables navigate complex routes better.
- o Pushing force: Must be carefully controlled to prevent buckling or sheath damage.
- o Duct integrity: Continuous inner-ducts and well-sealed joints are essential for successful air blowing.
- o Equipment: Specialized blowing machines with traction rollers and air compressors are required.

Duct and Cable Considerations

- o Duct types: Common ducts include PVC, HDPE, steel, and fiberglass-reinforced plastic, chosen based on environmental conditions and mechanical protection needs.
- o Cable types: Standard uni-tube, multi-tube, armored, unarmored, and microduct cables can be installed using either method, with microcables particularly suited for air blowing due to their smaller diameter and lower weight.
- o Planning: Proper duct sizing, route planning, and stress testing of cables are critical to ensure long-term reliability and minimize installation risks.

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Summary

o Pulling: Best for short distances, simple routes, and limited equipment; requires careful handling to avoid fiber damage.

o Air Blowing/Jetting: Preferred for long distances, complex routes, and microduct installations; reduces friction and installation time but requires specialized equipment and duct integrity checks. Both methods are widely used in modern telecom networks, and the choice depends on distance, duct layout, cable type, and available resources. Proper planning and adherence to cable specifications are essential for successful installation.

Discover the essential installation techniques for optical fiber cables, including trenching, direct burial, aerial, and

Fiber optic cables have provided a more optimal use of available underground conduit space because of its small cable diameter and

General Guidelines For Installing Fiber Optic Cable Fiber optic cable may be installed indoors or outdoors using several different

Fiber optic cable duct installation methods, optical cable installation preparations, and optical fiber cable installation

Blowing Method Cable installation by using high speed air flow combined with additional mechanical pushing force is called as

This document provides guidelines for laying optical fibre cables using horizontal directional drilling (HDD) and the cable blowing

The installation of optical fibre cable in duct is becoming the most popular installation method in the FTTH networks; from pulling to

Also plug ducts after cable is installed. Pulling Cable: Do not pull at all when jetting/blowing. Combining pulling and air assisted

Different environments demand different fiber optic cable installation methods: aerial cables

In this paper a review is given of the different cable in duct installation techniques, their

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Route Planning for Optical fiber cable laying It is recommended that a survey of the cable route should be conducted. Manholes and

Placing optical fiber cables in duct systems using air-assisted installation techniques presents different installation requirements than

Installing duct fiber requires specialized techniques to navigate ducts (which may have bends, joints, or obstacles).

Laying High Voltage Cables This technical article discusses twelve different methods for

It discusses the purpose and scope of the work, methods for installing fibre optic cable into HDPE ducts including cable blowing

Automated figure-eight machines that coil fiber optic cable on a drum may exceed cable design limits by exceeding torsion, tension,

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