Fiber Optic Sensor Stripper Principle



Overview

A fiber stripper is a precision tool used to remove the protective polymer fiber coatings from an optical fiber.

Key Takeaways

Fiber optic sensor stripping involves precisely removing the protective polymer coatings from an optical fiber to expose the bare glass core and cladding without causing damage, enabling accurate splicing, connectorization, or sensor integration.

Purpose of Stripping

The primary goal of fiber optic stripping is to remove the outer protective layers—such as the buffer coating, acrylate coating, or outer jacket—so that the 125 µm glass core and cladding are exposed for sensor or splicing applications. This is essential because the coatings, while providing mechanical protection and flexibility, interfere with optical connections and sensor interactions if not removed. Proper stripping ensures minimal signal loss, prevents back reflections, and maintains the integrity of the fiber.

Operating Principles

Fiber optic stripping can be achieved through several methods: Mechanical Stripping: Uses precision tools with calibrated notches or holes to cut and remove the coating without touching the glass itself. The notches are sized to match the coating thickness, allowing the polymer to be removed cleanly while leaving the fiber intact. Thermal Stripping: Applies controlled heat, often via hot air or specialized heating units, to soften or burn off the coating, which can then be removed without mechanical stress on the fiber.

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Chemical Stripping: Involves using hot acids or solvents to dissolve the polymer coating selectively, exposing the bare fiber for further processing.

Non-

Contact Methods: Advanced techniques, such as plasma or laser ablation, can remove coatings without physical contact, reducing the risk of micro-cracks or scratches.

Key Considerations

Precision: Stripping must be done with micron-level accuracy to avoid nicking or scratching the glass, which could compromise sensor performance or lead to fiber breakage. Coating Compatibility: Different fibers have coatings like acrylate, polyimide, or UV-cured polymers, requiring specific stripping tools or settings. Length Control: The stripped section must match the requirements of the sensor or splice, often around 30–40 mm, or shorter for specialized applications like fiber Bragg gratings.

Conclusion

The principle behind fiber optic sensor stripping is controlled, precise removal of protective coatings to expose the bare fiber for optical connectivity or sensor integration. By using mechanical, thermal, chemical, or non-contact methods, technicians ensure the fiber remains intact, maintains optical performance, and is ready for accurate sensor deployment or splicing.

Article Content

Fiber Strippers – tools, mechanical, thermal, chemical,

A fiber stripper is a precision tool used to remove the protective polymer fiber coatings from an optical fiber. This process exposes the bare glass without

The Ultimate Optical Fiber Stripper Guide

What is an Optical Fiber Stripper and Why Is It Essential? At its core, an optical fiber stripper is a specialized tool engineered to precisely remove the

Stripping (fiber)

Fiber optical stripping can be done using a special stripping and preparation unit that uses hot sulfuric acid or a controlled flow of hot air to remove the coating.

Cladding Mode Strippers – high-power fiber lasers and amplifiers, fiber ...

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The operation principle of a cladding mode stripper typically involves one or two of the following aspects: One may have a medium surrounding the fiber core which has a refractive index at least as high as

The Role And Importance Of Fiber Optic Strippers-

By enabling technicians to perform accurate and controlled stripping of optical fibers, fiber optic strippers uphold the reliability and functionality of modern fiber optic infrastructures,

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In order to take into account the strength of the stripper, the size of the marking area is limited, and the stripping efficiency of the stripper is low. The invention solves the problems of...

Fiber Optic Sensors: Types, Working Principle

This article explores the different types of Fiber Optic Sensors, their working principles, and various applications. We''ll delve into Intrinsic, Extrinsic, and

What is a Fiber Optic Sensor?

Outline The fiber optic sensor has an optical fiber connected to a light source to allow for detection in tight spaces or where a small profile is beneficial. Principle and major types The optical fiber consists

Fiber Strippers

Our fiber optic stripping equipment is specifically engineered for end stripping and mid-span window stripping of optical fiber coatings, such as acrylate, PVC, polyimide, carbon, and gold.

Fiber Stripper

Fiber jacket stripper cuts and strips jackets from simplex fiber cables. The dual V-notch in this fiber optic cable stripper blade allows the quick removal of jacket

(PDF) Investigation of cladding and coating stripping methods for ...

Many sensing principles require that the cladding or coating layer should be removed or modified. In addition, since different sensing systems are needed for different types of optical fibers, it is very

Optical Fiber Sensors: Working Principle, Applications,

Fiber-optic sensors based on Bragg gratings, long-period gratings, interferometry, surface plasmon resonance (SPR), fluorescence, and light

Investigation of cladding and coating stripping methods for specialty ...

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Fiber optic sensing technology is used extensively in several engineering fields, including smart structures, health and usage monitoring, non-destructive testing, minimum invasive sensing,

Fiber-optic sensor

A fiber-optic sensor is a sensor that uses optical fiber either as the sensing element ("intrinsic sensors"), or as a means of relaying signals from a remote sensor to the electronics that process the signals

Stripping (fiber)

Stripping is the act of removing the protective polymer coating around optical fiber in preparation for fusion splicing. The splicing process begins by preparing both fiber ends for fusion, which requires

Investigation of cladding and coating stripping methods for specialty ...

Since the stripping methods proposed for the various specialty optical fibers were tested through microscopic and OTDR investigations, they should be useful in applications for fabrication of

Fiber Optic Sensors: Fundamentals, Principles & Applications

Extrinsic Fiber Optic Sensors Fiber is Only an Information Carrier To and From a Black Box Light Signal Generation in Black Box Depending on the Arriving Information

What is a Fiber Optic Sensor?

A fiber optic sensor operates with an optical fiber cable connected to a dedicated light source. These sensors offer great mounting flexibility and can be used is in a variety of environments.

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