

Automation Technology for Tail Fiber Processing



Article Overview

Automated Fiber Placement (AFP) enables precise, repeatable, and optimized production of composite tail structures using robotic systems and advanced process control.

Overview of Automated Fiber Placement

Automated Fiber Placement (AFP) is a robot-guided manufacturing process where pre-impregnated fiber tapes or tows are placed on complex molds under controlled pressure and heat. AFP allows for varying fiber orientations, which is critical for optimizing the structural performance of tail components such as helicopter tail booms or aircraft stabilizers . The process can handle thermoset and thermoplastic materials, including carbon fiber reinforced polymers (CFRP), and supports both 2D and 3D geometries .

Key Components and Process Steps

- **Robotic Placement Head:** A multi-axis robot positions the fiber tapes accurately on the mold surface. The robot can move linearly and rotationally to accommodate complex shapes .
- **Material Feeding:** Prepreg slit tapes or tows are automatically fed from cooled storage to the lay-up head, ensuring continuous and consistent placement .
- **Heat and Pressure Control:** For thermoplastic AFP, in-situ consolidation is achieved by applying controlled heat (often via lasers) and pressure, reducing the need for post-curing

Article Content

Automated Fiber Manufacturing | JR Automation

JR Automation specializes in delivering cutting-edge fiber automation solutions, helping manufacturers streamline their processes

Automated Fiber Placement Machines | Composite Automation

Mikrosam's wide range of Automated Fiber and Automated Tape Placement machines are designed for flexibility, easy of use, and

Tail threading for board and paper | Valmet

Valmet's tail threading technology provides the safest and most efficient ropeless threading solutions as well as rope feeding systems

QUALIFICATION METHOD FOR AUTOMATED FIBRE PLACEMENT

Abstract: Automated Fibre Placement (AFP) is an advanced process for the manufacturing of high-performance composite structures

The Insane Engineering Behind Automated Fiber Placement

Automated Fiber Placement (AFP) technology has found its way into a diverse range of industries, revolutionizing the manufacturing

Staple fibre spinning

Thanks to these solutions, we are meeting the growing demand for cost-effective automation of spinning and further processing in

Composites Manufacturing Equipment | Composite Automation

Composite Automation specializes in integrating state-of-the-art equipment into complete, scalable production systems. From initial

Fiber Processing Solutions | JR Automation

Automated fiber processing refers to the use of advanced technologies such as robotics, sensors, and software to enhance the

Automatic Tail Threading: Keeping Skilled Personnel Safe

The automatic tail threaders have different designs for different stations along the line, and all are tailored individually to the particular

Automated Tail Threading Systems

Automated Tail Threading - Safety Ensure a safe workplace environment for employees. Minimize operator-to-machine interface

Automated fiber placement

Automated fiber placement (AFP), also known as advanced fiber placement, is an advanced method of manufacturing composite

Fiber Processing | Innovative Technologies (robotics, Automation, It ...

Fiber processing automation means using automated equipment like robotics, sensors, and artificial intelligence to make fiber

Automated Composite Manufacturing

Automated composite manufacturing is defined as the use of machines, such as automated tape layup (ATL) or automated fiber

Fiber and Textile Automation

Textile automation refers to the use of advanced technology, robotics, and digital solutions to perform various processes in textile

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