

Principles of Automated Control for Fiber Tail Processing



Overview

Controlled tow tension, reliable cut and restart, and stable compaction behavior help maintain predictable adhesion and clean course edges, reducing gaps, overlaps, wrinkles, and tow wandering—especially during steering. Among these, Automated Fiber Placement (AFP) stands out as a transformative approach, offering a leap forward in the production of complex, high-performance parts. This technology, which melds the precision of automation with the flexibility of composite materials, has not only revolutionized the. In automated fibre placement (AFP), quality is defined at the nip point, where heat, compaction, feed, and material handling interact in real time. AEC uses the AFP process to manufacture wing skins and other structures. A robot-guided placement head places tapes of CFRP material surfaces heat.



Article Content

Dec 26, 2025

Overview of Automated Fiber Placement Process

This blog delves into the history, principles, and impact of the Automated Fiber Placement process, exploring its advantages, limitations, and potential applications.

Dec 17, 2025

A short review on recent advances in automated fiber placement and ...

In addition, automated placement processes allow for the optimization of material usage, minimizing waste and ensuring efficient use of expensive raw materials. The ability to control the

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Modeling and Control of Fiber Orientation in Papermaking Machines

The control algorithm utilizes local linear models reflecting the change in fiber orientation angle as a function of the edge flow rates and slice bolt adjustments of the head box.

Apr 28, 2026

Automatic process control of an automated fibre

To demonstrate the concept, this study augmented an AFP process with profilometry sensors and software control. Description of the machine, its

Aug 25, 2025

Automated Fiber Placement Systems in Aerospace Manufacturing

This paper reviews automated fiber placement systems, architectures, materials, and economics for aerospace composite manufacturing.

Nov 04, 2025

Precision in Layers: Enhancing Automated Fiber

Automated Fiber Placement (AFP) stands at the forefront of composite manufacturing, providing an advanced method for producing lightweight, high

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ANDRITZ PrimeFeeder tail threading systems

ANDRITZ offers a wide range of tail threading solutions tailor-made to our customers' needs to improve production efficiency as well as safety in

Aug 08, 2025

QUALIFICATION METHOD FOR AUTOMATED FIBRE PLACEMENT TO OPTIMIZE PROCESS

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Abstract: Automated Fibre Placement (AFP) is an advanced process for the manufacturing of high-performance composite structures and is established in the aerospace industry. The main challenge

May 02, 2026

Machine Learning Approach for Optimization of Automated Fiber Placement ...

Automated Fiber Placement (AFP) processes are commonly deployed in manufacturing of lightweight structures made of carbon fibre reinforced polymer. In general, AFP is connected to

Oct 04, 2025

Automated Fiber Placement

AEC uses the AFP process to manufacture wing skins and other structures. With the capability to place and independently control 32 individual fiber tows, each 1/8"

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Automated Fiber Placement Process: Design Cycle

The article will discuss the history and development of automated fiber placement systems, as well as their benefits and limitations.

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Fiber Laser Cutting: The Ultimate Guide | MachineMFG

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Overview of current design and analysis of potential theories for ...

Automated tape laying (ATL) and automated fibre placement (AFP) are currently the two major automation technologies for producing large composite components, and these automated

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Adaptive Feeding Roller with An Integrated Cutting

Automated Fiber Placement (AFP) has been used for more than 30 years as a manufacturing process for large components such as aircraft fuselage

May 21, 2026

A short review on recent advances in automated fiber placement and ...

One of the primary advantages of ATL and AFP lies in their ability to achieve unparalleled precision and consistency in the placement of tapes and fibers. Automation eliminates the variability

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Automatic process control of an automated fibre placement machine ...

Their differences demonstrate the feasibility of real-time inspection and repair control of AFP preform thickness during deposition, as well as highlighting the advantages of in-situ process

Nov 29, 2025

Automated Fiber Placement

AFP enables the fabrication of highly customized parts, as each layer can be placed at speci ed angles to best carry the required loads. The use of robotics gives us active control over all process-critical

Apr 09, 2026

Automated fiber placement: A review of history, current technologies ...

Since the inception of AFP, the entire process has been made up of several isolated pillars: (1) Design, (2) Process Planning, (3) Manufacturing, and (4) Inspection. The personnel and data from

Sep 20, 2025

THERMAL CONTROL SYSTEM DESIGN FOR AUTOMATED FIBER PLACEMENT PROCESS

Automated Fiber Placement (AFP) process is the degradation of thermoplastic resin, resulting from the overheating or the lack of proper heating by the heating system used in the automated fiber

Mar 27, 2026

Überschrift 1 läuft über gesamte Papierbreite

In the topicfield the interaction of various process parameters for both AFP technologies is being investigated experimentally and with simulation support in order to optimise component quality and

Oct 25, 2025

Review of automated fibre placement and its prospects

Fibre placement is a research hot spot for the intelligent manufacturing of advanced composites, and the efficiency of fibre placement has become an important index

Jan 27, 2026

Automatic process control of an automated fibre placement machine ...

Deposition defects arising during automated fibre placement (AFP) reduces production rate and creates wastage from rejected parts. This issue can be alleviated by identifying and reacting

Nov 05, 2025

Advancements in Automated Fiber Placement Technology: The

Automated Fiber Placement (AFP) is one of the manufacturing processes used to produce products with composite materials. AFP layers tapes of materials (tows), such as thermoset fiber, thermoplastic

Dec 22, 2025

Continuous Improvement in Composite Manufacturing: A Review of ...

Continuous improvement and refinement on the application level of composites is essential for advancing the capabilities and reliability of various industries. Automated Fibre

Oct 14, 2025

(PDF) Recent Developments in Automated Fiber

The advantages of in-situ automated fiber placement (AFP) of thermoplastic composites (TPC) are well known and have been widely used in

Sep 23, 2025

Fiber tension prediction and control methods in automated fiber ...

Sharp fluctuations in fiber tension are unacceptable in AFP process. The focuses of this article are on fiber tension modeling and control methods for AFP.

Mar 08, 2026

Automatic Tail Threading

Automatic Tail Threading: KEEPING SKILLED PERSONNEL SAFE It is a credit to the skills of pulp makers across the globe that there are not more accidents

Oct 07, 2025

Guide to Fiber Optic Pigtails: Introduction, Applications

Fiber optic pigtails are a cornerstone in the architecture of modern communication systems. Their role, although often understated, is critical in

Dec 21, 2025

(PDF) A Review on the Automated Stress-Constrained

In contrast to manual manufacturing processes for fiber reinforced composites (FRC), automated or semi-automated fiber placement processes are

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