Loop Technology

FibreROLL

Compact pick and place end effector

FibreROLL is a scalable twin roller storage and deposition system for dry fibre composite plies. The tool picks and loads a ply onto interchangeable storage rollers. This is combined with a vision system that monitors ply edges during layup for positional correction and verification.

FibreROLL is ideal for automating the lay-up of a wide range of component types especially, but not limited to, longer length items such as wing skins, stringers, spars and turbine blades.

COMPACT

Transfer of large plies, up to 20m long, with a smaller footprint than other automated deposition systems.

SHAPE AND MATERIAL COMPATIBILITY

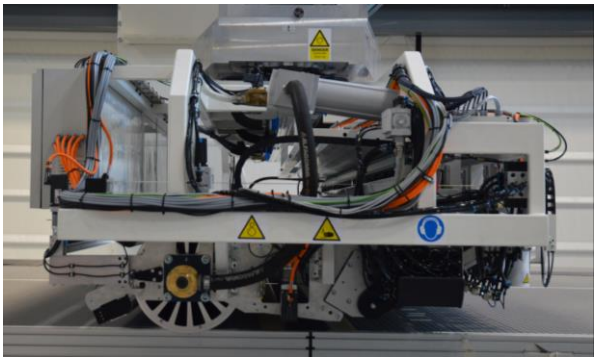
Handles a wide range of materials, shapes, and sizes including high porosity materials such as woven composite plies.

PRECISE AND ACCURATE

Integrated vision systems provide high level of precision, accuracy, and verification vital for manufacturing safety critical parts.

How does it work?

The system uses precision drive and pinch rollers to allow handling of a wide range of ply types and shapes. Ply pickup is initiated by high flow vacuum grippers embedded within the rollers. The drive rollers in this configuration has distinct functionality. One roller is used for pick up and deposition while the other acts as a lower cost core onto which the material is wound. The core roller is removable and can be used in the kitting system as a means of storing large plies in a high-density configuration.

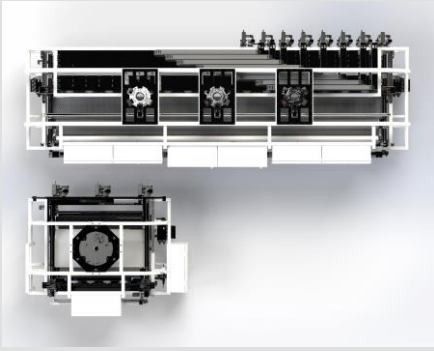


Modular and scalable design

Standard roller widths between 1.3m and 5.0m are ready to roll or we can custom tailor to suit your needs.

Technical Specification

	1.3m	5.0m
Dimensions excl. tool storage frame (L x W x H including FibreTACK)	1985 x 2741 x 913mm	2045 x 5900 x 1080mm
Dimensions including tool storage frame (L x W x H including FibreTACK)	1985 x 2741 x 1212mm	2045 x 5900 x 1270mm
Maximum ply size	1.3m x 20m	5m x 20m
Maximum gradient along roll path (applicable if using vision system layup inspection)	±6°	±7°
Approximate mass (including FibreTACK)	600kg	2000kg
Max Deposition speed	1 m/s	1 m/s



Kitting solutions - FibreSTORE

A rolled ply storage rack can be supplied. Each rack includes self-aligning, pinch arms for each individual roll to hold the material on the roll, and prevent unwanted unravelling.

To minimise the footprint, the compact design is achieved with liftable actuators for each individual roll. This gives PLC control over each roll bay between its pick or place position, enabling rolls to be stored closer together.

Ply stabilisation solution - FibreTACK

When streamlining your process with automation, efficiency is key. This often means combining some features within an existing tool. FibreTACK can be incorporated on the back of FibreROLL, deployed on an X/Z stage, to provide localised ply stabilisation capability.

FibreTACK features a heated, weighted sphere that can be engaged with the preform at periodic intervals during the layup process.

A dwell time is added to allow heat penetration into the material stack to activate the binder. An area of approximately 25mm can be joined together, preventing movement or slippage of the composite stack, and maintain the relative locations.

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