

INNOVATION IN COMPOSITE MANUFACTURE

FINALIST: Zünd and Loop Technology

FibreLINE is a pioneering automation system delivering true end-to-end preforming in composite manufacturing. Integrating advanced end effectors with robots or gantries, it performs cutting, kitting, picking, forming, placing, tacking, and consolidation of composite plies, handling larger formats than any other system globally. Compatible with both dry fibre and prepreg fabrics, FibreLINE provides unprecedented flexibility and production rates, enabling aerospace and defence manufacturers to produce lighter, more efficient aerostructures at scale. Its originality has been recognised with the JEC Award and shortlistings for the CAMX and ACE Awards.

FibreLINE addresses a critical industry need: current composite manufacturing methods are limited in speed, scalability, and precision. By automating the layup of very large plies - up to 5 m × 20 m - directly into moulds, it accelerates production of wings, spars, stringers, and fairings while protecting material integrity. Core tools, FibreFORM and FibreROLL, manage complex three-dimensional geometries and large flat surfaces, reducing reliance on multiple AFP/ATL cells and mitigating material waste. Combined with the Aero Q Line digital cutting system from Zünd, FibreLINE enables sub-millimetre precision on plies up to 21.4 metres long, further increasing efficiency.

Technologically, FibreLINE represents a step change in automation. It employs servo-driven end effectors and a custom kinematic solver to simultaneously control hundreds of axes, achieving ± 2 mm repeatability.

The market potential is significant. With global demand for lighter, fuel-efficient single-aisle aircraft projected to double by 2027, FibreLINE enables manufacturers to meet production targets, reduce costs, shorten lead times, and support sustainability goals. By consolidating the full composite workflow into a single scalable system, it reduces factory footprint, minimizes waste, and improves throughput.

Partners were critical to delivery: Zünd provided the Aero Q Line cutter, FANUC supplied high-payload M-2000-iA robots, and Güdel delivered track systems for extended mobility. FibreLINE has been deployed in major aerospace programmes, creating high-value jobs and delivering both economic and environmental benefits.

Learn more at: www.zund.com | www.looptechnology.com

