Composites UK Trade Association

ICOMAT

INNOVATION IN COMPOSITE MANUFACTURE

FINALIST: iCOMAT

The GENACOM project has established a new approach to designing and manufacturing aerospace composite curved beams using iCOMAT's patented Rapid Tow Shearing (RTS) technology.

RTS is the world's first and only composites manufacturing technology capable of placing wide composite tapes along complex curved paths without wrinkles, gaps or overlaps. Unlike AFP and ATL, which are limited in steering capability, RTS shears the tape to follow complex paths while maintaining defect-free deposition. Its unique lay-flat-and-form process enables pre-steered tapes to be deposited in 2D before forming into the final geometry, potentially reducing component weight by 15–30% and increasing production rates by up to 10x.

GENACOM delivered the world's first RTS-based lay-flat-and-form pilot line for aerospace curved beams, integrating deposition, forming, curing and inspection with an end-to-end digital design thread. The technology was successfully validated through defect-free 1m and 3m A320 fuselage frame demonstrators.

Curved beams such as fuselage frames, stringers, wing spars and ribs are fundamental aircraft structures, yet current manufacturing methods cannot efficiently produce highly curved components with optimally aligned fibres. GENACOM addresses this limitation, enabling lighter, higher-rate composite structures for next-generation aircraft.

The project required specialist expertise in composite design, structural analysis, forming simulation, robotics, tooling, CAM, automation and inspection. iCOMAT led the programme, while the AMRC supported de-risking trials, forming analysis and structural validation. Airbus, Boeing, Embraer, BAE Systems and Leonardo provided industrial requirements and validation.

The primary target is the next-generation single-aisle aircraft market, with an estimated £2.3bn revenue opportunity for iCOMAT between 2035 and 2050. GENACOM provides the foundation for a UK-based manufacturing capability that could strengthen domestic aerospace supply chains, create high-value jobs and position the UK at the forefront of next-generation composite manufacturing.

Learn more at: www.icomat.co.uk