

SUSTAINABILITY: CIRCULARITY

FINALIST:

The Centre of Expertise in Advanced Materials and Sustainability (CEAMS) and Partners

This project brought together organisations across the carbon fibre value chain to address a major circularity challenge: retaining more of carbon fibre's inherent value by enabling its reuse in high-performance applications.

Building on three years of innovation through the CEAMS programme, Cygnet Texkimp, SHD Composites, NCC and Teledyne CML Composites demonstrated a world-first: 100% recycled continuous carbon fibre prepreg and its use in an aerospace component demonstrator.

Using the DEECOM® process, Cygnet Texkimp recovered continuous carbon fibre from composite waste while preserving its high-performance format. SHD Composites then produced 300mm-wide unidirectional prepreg containing 100% recycled carbon fibre on its industrial prepregging line. NCC and Teledyne CML Composites subsequently manufactured an aircraft access panel using established industrial processes.

Testing demonstrated that laminates made from the recycled prepreg achieved stiffness and strength comparable to equivalent standard-modulus virgin carbon fibre systems. Fibre-level testing by NCC also found no reduction in strength or stiffness compared with virgin fibre.

Crucially, the recycled fibres were converted into prepreg materials using established industrial processes and subsequently used in established manufacturing routes, demonstrating a credible pathway for adoption without fundamental changes to existing aerospace manufacturing processes

The achievement addresses both environmental and supply chain challenges. Previous CEAMS work estimated a carbon footprint of approximately 5 kg CO₂e per kg for recycled continuous carbon fibre, compared with 25–30 kg CO₂e per kg for virgin fibre – a potential reduction of up to 80%.

By enabling recycled carbon fibre to displace virgin material in high-value aerospace applications, the project creates a higher-value outlet for composite waste while supporting more resilient, secure and circular UK carbon fibre supply chains.



Learn more at: www.ceams.org.uk