Composites UK Trade Association

ROCKWOOD AEROSPACE

INNOVATION IN COMPOSITE MANUFACTURE

FINALIST: Rockwood Aerospace: VX4 Prototype Propeller Blades

Rockwood Aerospace has pioneered a novel manufacturing process for propeller blades tailored to electric vertical take-off and landing (eVTOL) aircraft, addressing the urgent need for ultra-lightweight, high-strength components. For Vertical Aerospace's VX4 Prototype Aircraft, Rockwood developed a proprietary single-shot compression moulding technique that integrates pre-preg carbon fibre, foam cores, and metallic hardware in one cure cycle. This eliminates secondary bonding requirements, producing blades that are lighter, stronger, and more fatigue-resistant than those made with traditional resin infusion or bonded skin-and-spar methods.

The innovation is reinforced by Rockwood's advanced tooling systems and custom hot platen presses, enabling complex spar geometries and optimised fibre placement. Few UK manufacturers possess this combination of process precision, tooling expertise, and scalability, giving Rockwood a distinctive competitive edge in the fast-growing eVTOL sector. For end users, the benefits are direct: Rockwood's blades reduce aircraft weight, equalling extended battery endurance, and enhanced safety—critical for making sustainable urban air mobility viable. Vertical Aerospace relies on these blades to meet performance targets for the VX4 prototype, with 20 FWD blades mounted per aircraft.

The development phase followed a Design for Manufacture strategy, combining bespoke tooling, investment in advanced inspection systems, and capacity expansion, including a new aerospace facility in Morocco. Specialist expertise in composites, moulding, and metrology was essential. Close collaboration with Vertical Aerospace ensured that design requirements translated into manufacturable, airworthy components.

The market potential is significant. With the global eVTOL sector forecast to grow from $700 million today to $17 billion within a decade, Rockwood's technology positions it to capture high-value contracts with OEMs such as Vertical Aerospace, Joby, and Archer. Beyond eVTOLs, its compression moulding process applies to wider aerospace and defence markets, supporting the UK's £20 billion aerospace industry and contributing to a £65 billion composites opportunity by 2050.

Learn more at: www.therockwoodgroup.co.uk