

INNOVATION IN COMPOSITE DESIGN

FINALIST: M Wright and Sons

Master Weave Suite (MWS) is a state-of-the-art 3D weave design and digital engineering platform that transforms how advanced 3D woven composites are designed, validated and manufactured. Developed for the demanding requirements of advanced composite engineering, MWS combines automation, visualisation and manufacturing intelligence within a single environment.

Its key innovation is closing the design-to-manufacture feedback loop. From a small number of engineering inputs, MWS can automatically generate weave architectures, fibre paths, manufacturing plans, reports and machine-ready outputs. Processes that might otherwise take weeks of specialist engineering can be converted into validated manufacturing data in minutes. Live 2D and 3D visualisations allow engineers to identify fibre-routing conflicts, setup issues and manufacturing risks before material reaches the loom, reducing development time, waste, setup effort and machine downtime while improving repeatability.

MWS is particularly innovative because it was created by a weave designer and built around the practical realities of 3D composite manufacture. Its developer, Dr Sarvesh Dhiman, combines expertise in 3D weave design, manufacturing and software development, enabling the platform to guide engineers through the intricate decisions required from concept to production. Automation and intuitive guidance simplify each stage of the process, reducing manual effort and making advanced 3D weave design more accessible, efficient and intuitive. Developed entirely in-house through an iterative, manufacturing-led approach, MWS has also benefited from engagement with aerospace, defence and research organisations. This has helped ensure that its capabilities are aligned with real-world engineering and manufacturing requirements rather than being developed solely as a theoretical design tool.

Already licensed by leading aerospace and defence organisations, MWS has demonstrated strong commercial relevance. The platform has significant potential across aerospace, defence and space, with future applications in sectors including automotive, marine, wind energy and medical technologies. By reducing the specialist knowledge, time and complexity traditionally associated with 3D woven composite development, MWS provides a scalable route towards wider adoption of advanced 3D woven structures.

Learn more at: www.mwright.co.uk

