JAMES CROPPER

PRESS RELEASE

James Cropper Unveils VECTIS, An Industrial-Scale Aligned Fibre Technology Platform for Next-Generation Composites

James Cropper
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VECTIS technology enables UNIMAT to deliver directional performance, formability, and circular material pathways at an industrial scale.

James Cropper Advanced Materials has unveiled VECTIS, a proprietary aligned fibre technology platform designed to overcome one of the composites industry's longest-standing challenges: achieving high levels of fibre alignment in discontinuous nonwoven materials at an industrial scale.

While alignment of short or recycled fibres has been demonstrated at laboratory and pilot scale, translating that performance into commercially viable production widths, grammages, and volumes has historically proven difficult. VECTIS addresses this barrier by enabling the industrial-scale manufacture of aligned nonwoven materials using established nonwoven manufacturing infrastructure.

Through the VECTIS platform, James Cropper manufactures UNIMAT, an aligned nonwoven fibre mat designed to be impregnated or combined with existing resin systems in downstream composite manufacturing.

UNIMAT delivers directional mechanical performance while retaining the formability and process compatibility required for complex composite components. It is supplied as a non-impregnated material and can be processed using existing composite manufacturing routes, including prepreg layup, compression moulding, stamping, RTM, and autoclave processing.

Unlike previous aligned fibre concepts that struggled to progress beyond laboratory or pilot production, VECTIS operates on James Cropper's existing industrial nonwoven equipment, enabling high-volume production at widths of up to 1200mm and a wide range of areal weights from 20 – 200 g/m².

UNIMAT achieves alignment levels approaching 95 per cent and can be manufactured using a wide range of fibre formats, including recycled carbon fibre, post-industrial waste, virgin carbon fibre, glass fibre, and hybrid blends. The material offers excellent conformability, enabling complex geometries to be formed

without wrinkling or fibre distortion, while supporting higher fibre volume fractions than conventional recycled nonwovens.

The VECTIS technology platform has been engineered to address both performance and manufacturability, enabling aligned nonwoven materials to move from niche experimentation into industrial composite programmes. This makes UNIMAT suitable for applications where manufacturers seek to balance mechanical performance, process efficiency, and a more circular use of fibres.

Tom Sharrock, Head of Sales at James Cropper, said: *"Alignment of discontinuous fibres has been demonstrated many times at a small scale, but industrialisation has been the missing piece. VECTIS changes that by enabling aligned nonwoven materials to be manufactured at an industrial scale that can realistically support commercial composite programmes, with UNIMAT demonstrating what that capability can deliver."*

Dr. Mandy Clement, Innovation Director at James Cropper, said: *"This technology has been more than a decade in the making. By bringing together deep expertise in fibre behaviour with proven nonwoven manufacturing know-how, we have created a platform that opens new possibilities for aligned composite materials across multiple sectors."*

UNIMAT, enabled by the VECTIS technology platform, has been developed for applications across aerospace interiors, advanced air mobility, automotive, and sporting goods, where manufacturers are seeking lightweight, high-performance materials that can also support more circular material strategies.

James Cropper will showcase VECTIS and UNIMAT at JEC World, where it will highlight early collaborative development work with industry partners.

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About James Cropper Advanced Materials

James Cropper Advanced Materials works at the edge of material science, creating future focused solutions across a broad portfolio of products. From ultra-fine glass non-wovens found on most commercial aircraft, to electrochemical coatings supporting the generation of green hydrogen using PEM electrolysers. James Cropper specialises in providing innovative solutions for current and next-generation technologies.

CONTACTS:

Media Contact:

For further information or images please contact:

Kim Hayton

Marketing Communications Manager

T: +44 (0) 1539 818 429

E: kim.hayton@cropper.com