

START-UP BUSINESS OF THE YEAR

Winner: iCOMAT

A recent spin-out company from the University of Bristol that develops novel automated material placement machines based on a defect-free fibre steering technology, named Rapid Tow Shearing (RTS), for the production of composite material products.

iCOMAT Limited is a recent spin-out company from the University of Bristol, established in January 2019, that develops novel automated material placement machines. Based on more than a decade of research at the University of Bristol, the team of iCOMAT has developed the world's first production machine that can place wide carbon tapes along curved paths (fibre steering), without generating defects. This process, named Rapid Tow Shearing (RTS), can revolutionise the way we design and manufacture with composite materials. The machines that iCOMAT produces are AFP/ATL end effectors that lay composite/carbon-fibre tape on the surface of a mould and are mounted on robotic platforms.

Fibre steering drastically expands the design space for composite structures, as it allows to place the majority of the fibres directly on the primary load path, improving all aspects of structural performance, from weight saving to aeroelastic tailoring.

Fibre steering allows composite manufacturers to produce components with higher structural efficiency at lower production cost, improving material utilisation and reducing the cost of quality (defect and scrap reduction). Despite the magnitude of these benefits, curved fibre designs have not yet been commercialised, as modern automated composite placement machines have limited capabilities in producing curved fibre paths. They bend the tapes to steer their paths, introducing severe defects such as fibre buckling/wrinkling, which significantly reduces the fibre's ability to carry load.



iCOMAT has developed a fully functioning 2D RTS machine based on a robotic platform, which is currently being tested through 7 development projects, alongside leading OEMs in aerospace and automotive and UK RTOs. The primary objective of the company in the next 12 months is to refine the machine to ensure reliable and productive operation and to obtain the necessary certifications.

iCOMAT aspires to become a supplier of manufacturing machinery based on RTS not limited only to the UK. This incentive will benefit the UK's export economy and contribute in developing and establishing the UK's supply chain of such machines, by becoming first to market this disruptive technology.

Website: [www.icomat.co.uk](http://www.icomat.co.uk)

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