FibreCoat develops new ‘stealth’ fibre reinforced composite, capable of making assets invisible to radar

The new fibre reinforced composite goes well beyond traditional radar-shielding technology by absorbing, rather than reflecting, radar waves.

LONDON, LONDON, UNITED KINGDOM, July 16, 2025 /EINPresswire.com/ -- FibreCoat, a world leader in materials technology, has developed a groundbreaking fibre reinforced composite capable of making aircraft, tanks and spacecraft invisible to radar.

> “This is a leap forward. We’re moving stealth technology beyond the limits imposed by needing to reflect, rather than absorb radar waves. Absorption opens up a range of new possibilities.”
> *Robert Brüll, CEO of FibreCoat*

The company, founded in Germany in 2020 but developing its materials since 2014, is known for inventing a novel technology to coat metals and plastics onto fibres, thus combining the properties of the fibres and the coating material, during the fibre-spinning process.

The new fibre reinforced composite – still at the proof-of-concept stage – goes beyond traditional radar-shielding technology. Where existing solutions rely on reflecting radar waves, FibreCoat’s fibre reinforced composite, a thin and flexible radar absorbing material (RAM), absorbs them.

It uses bicomponent multifilament yarn dispersed in composites and is made from carefully engineered blends of PMMA, carbon nanotubes, and Alucoat fillers. These are tuned for precise thicknesses (ranging from 0.5 mm to 6 mm) and for key radar frequency bands such as the X-band (8–12 GHz).

It is a major leap forward that increases the number of possible applications, from military stealth to electronic protection. The RAM has achieved reflection losses of up to -40 dB, equivalent to 99.99% radar absorption – making it among the most effective RAMs available today.

Unlike many stealth solutions that degrade at angle, FibreCoat's multilayer composites maintain performance across curved surfaces and slanted radar exposure. In testing, they have achieved ≥ -10 dB reflection loss up to 60° in Transverse Electric (TE) mode and up to 45° in Transverse Magnetic (TM) mode.

Current stealth technology typically requires thick plating or specialised paints. Rival materials are narrow-band, so targeting a single radar frequency. FibreCoat's solution, in contrast, is lightweight, flexible, and broadband: absorbing radar across a wide spectrum of frequencies and outperforming existing materials by up to 100 times.

The fibre reinforced composite, a type of 'meta-material', is soon to be commercially available. The company has completed successful laboratory tests and measurements, and expects field testing to be complete this year. FibreCoat may offer the fibre to partners for integration into final products.

Dr Robert Brüll, CEO of FibreCoat, said:

'This is a leap forward. We're moving stealth technology beyond the limits imposed by needing to reflect, rather than absorb radar waves.

'Absorption opens up a range of new possibilities. We expect this fibre reinforced composite to give the space, defense and automotive sectors more design freedom.

'It's lightweight, broadband, and highly effective.'

The stealth technology market is a critical part of the defence sector. At a time of geopolitical unrest, there is surging demand for materials that do more without adding weight, complexity or cost.

FibreCoat's range of products offer strength, conductivity, shielding, and recyclability at a fraction of the weight and cost of their competitor products. FibreCoat now employs 42 members of staff and has three production sites: Aachen, Germany; Rustavi, Georgia; and Gorlice, Poland.

ENDS

About FibreCoat:

Founded in Germany in 2020, FibreCoat is changing materials technology. Its products, developed through a novel fibre-coating process, combine the strength and flexibility of coated fibres with unmatched cost efficiency. FibreCoat's materials are lightweight, strong, conductive, and recyclable. These qualities make them crucial in defense, space, automotive, and construction.

FibreCoat solves major sector challenges. Satellites face radiation, extreme temperatures, and E.M.I. but must remain efficient at minimal cost. Defense equipment needs to be durable and effective in conflict zones. Electric vehicles must stay light while managing their heat and protecting drivers from E.M.I., while the construction industry requires specialist materials for building insulation and E.M.I. shielding.

FibreCoat's production process also uses around 90% less energy than traditional methods, bringing down costs dramatically. And with modular production lines that can be set up anywhere in the world within two weeks, FibreCoat helps to ensure the resilience of supply chains in an increasingly volatile world.

Find out more: http://fibrecoat.de/

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