



Recycling of Carbon Fibres



In cooperation with carboNXT and CFK Valley recycling, CTC is developing processing technologies for recycled carbon fibres for all relevant industries.

The focus is not only set on the recovery of the carbon fibres, also subsequent manufacturing processes for the use of recycled carbon fibres are developed – according to the slogan „from cradle to cradle“.

The future generation of aircraft relies on new material technologies to further enhance the performance of the Airbus fleet, while improving the overall ecological efficiency at the same time. But in some areas Airbus has to push the boundaries of the existing and develop new technologies for a future industrial application – as is the case in the area of carbon fibre reinforced composites.

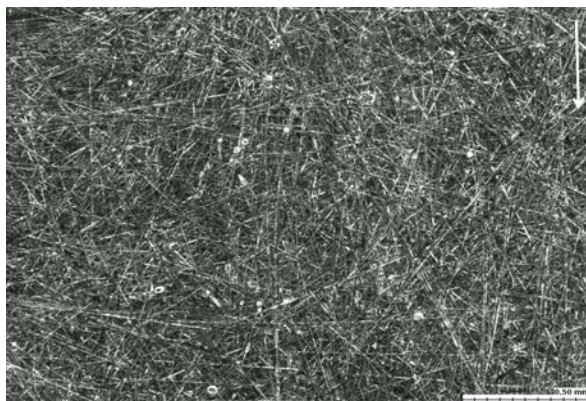
Since the first CFRP-VTP in 1983 the share of this material has increased to a staggering 53% in the A350 XWB. But this increased use also poses the question of material ecology – and the most important question there is:

“What to do with any waste material?”



For carbon fibre composites, other than metals, the term of "waste" has to be carefully differentiated because there are two different kinds of waste:

- Type 1: Cured CFRP (end-of-life-parts, failed quality parts etc.)
- Type 2: Uncured CFRP (esp. production waste)



Part surface with cured rCF-veil

At the moment Airbus Operations and CTC are working together with relevant partners to improve this technology and to advance the application of reused carbon fibres in the aircraft, thereby really closing the material cycle!

The problem that CFRP poses is the composite nature of this material: it is not a homogenous substance like for example an aluminium alloy but consists of partly carbon fibres and partly resins (e. g. epoxy resin). Since the most cost and energy intensive part of this material are the carbon fibres, research activities are primarily focussed on regaining those while future projects aim at regaining the matrices as well.

Two main lines of activity are being pursued:

- (1) Recycling and reuse of cured and uncured material via pyrolysis and subsequent fibre processing
- (2) Direct reuse of uncured production scraps



Production scraps are directly processed

Facing the growing application of CFRP in the aviation industry, as well as all other industries, the need for industrially sustainable recycling solutions has become inevitable.

Airbus, CTC and CFK Valley Recycling have identified this need early on and have worked on this topic for the past years, bringing the technology of recycled C-fibres to its actual state.

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