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Large marine structures assembly: COMPOSITE MASTS FOR MEGAYACHTS



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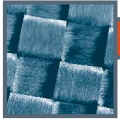


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A partnership between Boeing and recycling company ELG Carbon Fibre, expanding uses of pultrusion in the automotive industry, research into bio-based carbon fiber and more.



CARBON FIBER

Boeing to supply ELG carbon fiber for recycling

The Boeing Co. (Seattle, WA, US) and carbon fiber recycling specialist ELG Carbon Fibre Ltd. (Coseley, UK) announced that they have signed a five-year agreement whereby Boeing will supply to ELG cured and uncured carbon fiber composites that will be converted by ELG into secondary products for use in other composites manufacturing applications.

The cured and uncured carbon fiber waste will come from 11 Boeing composites manufacturing operations, including the 777X Composites Wing Center in Everett, WA, Boeing South Carolina in Charleston, SC, and eight other Boeing US sites involved in manufacturing commercial airplanes, rotorcraft and other products. The agreement also includes carbon fiber composites waste from Boeing's composites fabrication operations in Melbourne, Australia.

Boeing says it provided about 380,000 lb of waste material to ELG during an 18-month pilot project, begun in March 2017. Under the new agreement, the company anticipates the initial volume will be about 1 million lb/year from its Puget Sound sites. That amount is expected to double over the next five years as excess material is collected from all of Boeing's composite manufacturing sites. This will support Boeing's goal to reduce the amount of solid waste going to landfills by 20% by 2025.

The agreement marks the first formal material supply relationship between a major aircraft OEM and a carbon fiber recycler. Frazer Barnes, managing director of ELG, says his company has been working with Boeing for four years to evaluate and characterize the properties of materials derived from Boeing's carbon fiber waste. ELG, he says, expects to integrate the Boeing waste into carbon fiber nonwoven products ELG manufactures, as well as chopped carbon fiber for use in thermoplastics compounding, both under the CARBISO trade name.

Although the technology to recycle cured and uncured carbon fiber materials has existed for several years, the composites recycling industry is still in the nascent stages of developing markets for materials it produces from recycle. Barnes also notes that growth has been limited by concern among some potential users who desire supply stability: "One of the things that most concerns



Source | ELG Carbon Fibre



Source | Boeing

the end user is supply chain security. Obviously, this agreement goes a long way toward establishing that security."

Boeing, for its part, is eager to make sure that its composites manufacturing operations are as efficient as possible. Kevin Bartelson, senior director of 777 and 777X wing programs at Boeing, and a major recycling proponent at the company, says the ultimate goal with its unused composites is zero waste/zero landfill.

ELG's Barnes says that in the initial phase of the five-year contract, ELG will transport waste from Boeing facilities to ELG's UK plant via ship. "This is quite economical, actually," Barnes says, but adds that "this contract with Boeing is another step forward in closing the business case for an ELG recycling facility in the US."

Bartelson says that although Boeing would not characterize the exact quantity of carbon fiber waste the company expects to deliver to ELG (Barnes calls it "a lot of material"), he does report that the ratio of cured to uncured material is currently about 1:1. However, he reports, Boeing is increasing efforts to re-use uncured carbon fiber waste in-house via tow respooling and other methods. As a result, he says, Boeing expects, eventually, to reduce the amount of uncured carbon fiber it sends to ELG for recycling.

As a result of the partnership with Boeing, ELG estimates the number of its employees will nearly triple from 39 in 2016 to an expected 112 by the end of 2019, as the recycling market continues to expand. ELG employs 73 people today. Boeing and ELG, a subsidiary of global metals recycling leader ELG Haniel Group, are considering expanding their partnership to include excess composite material from Boeing manufacturing sites in Canada, China and Malaysia.