

Power plants

Flax fibres have become a crucial component for GREENBOATS' expanding roster of applications, ranging from deck hatches and wind turbine nacelles to daysailers

It may still be early days for flax fibre-based marine composites, but the material certainly has its champions, particularly in the yachting and recreational boat sectors. Not that everybody agrees, mind you.

“When we first announced we were using flax fibres, some people thought it was a joke, or were sceptical and asked how long it would be before the boat became saturated,” says Jan Paul Schirmer, joint MD of GREENBOATS – which, in 2019, unveiled its Flax 27 daysailer, described by the company as “the most complete natural fibre composite project [we have] realised to date”. Measuring 8.2m in overall length (or 6.9m on the waterline) and 2.25m in beam, and drawing 1.4m, the Flax 27 is made up of 80% natural, recyclable materials.

GREENBOATS was founded by boatbuilder Friedrich Johann Deimann in 2013, and currently maintains a production shed in Bremen. When he initially switched from wooden to composite building techniques, Deimann was less than impressed by the more widely used materials and resins on the market – and especially by the toxicity of polyester and glass fibre. In response, he investigated the feasibility of utilising flax fibres as reinforcements instead of glass strands. Once difficult to obtain, with China snapping up the bulk of the supply for clothes manufacturing, this plant-based material has become more available over the past few years.

The company then initiated what it terms its ‘Horizon 1’ phase, working on bespoke, one-off newbuilds, primarily for demonstration purposes and to raise awareness of the properties of flax fibres – and to possibly encourage the sceptics to give the material a second look. Commencing with a kayak in 2013, the company’s first major breakthrough came in 2015/2016 with the launch of the GreenBENTE model – a new spin on the 7.5m, GRP-built Bente24 yacht, though swapping out the glass strand reinforcements for flax fibres.

The Flax 27 daysailer incorporates 80% natural, recyclable materials



Lighter than GRP

Horizon 1 is now drawing to a close, as the group moves into its Horizon 2 phase – the emphasis shifting from proving the material’s performance to making a case for its cost/value benefits. The Flax 27 could therefore be viewed as a fitting end note to Horizon 1 – and, as the company’s ‘flagship’, a taste of things to come.

“The fact that more and more companies, including Baltic Yachts and Sweden’s X-Shore, are starting to adopt the material is an indication that we have been successful,” says Deimann.

Designed by Judel/Vrolijk & Co, the Flax 27 was produced in partnership with epoxy systems manufacturer Sicomin. The boat’s hull, deck and internal structure were vacuum-infused with Sicomin’s GreenPoxy InfuGreen 810 resin, plus flax fibre reinforcement materials. Sicomin says that this resin is produced “with 38% of carbon from plant origin”, giving it a relatively low environmental impact.

Deimann compares flax fibres to aramids in terms of the production process. Perhaps the biggest benefit, he says, is the impressive weight saving that can be achieved, with flax fibres working out to be 50% lighter than GRP, despite having a larger volume. As such, the team was able to restrict the weight of the Flax 27 to 1,200kg, “including the masts, sails, everything”, says Deimann.

In addition to its 19m² mainsail and 11.5m² jib, the Flax 27 carries a 180A lithium-ion battery pack. This is topped up by solar panels, and feeds a Torqeedo electric engine.

Another benefit of flax fibres is that they are UV-resistant, shielding sections of the boat from discolouration. “You just get a little yellow-ish colour on the surface, but flax has a yellow hue to it anyway,” Deimann explains.

Offshore potential

As GREENBOATS enters its Horizon 2 phase, Deimann and Schirmer reveal that they are working to develop a 10m sailing boat. Development won’t be restricted to yachts and recreational craft: the company is also working on a nacelle for an offshore wind turbine. “For those who say ‘no, flax fibres can’t be used’, this will be a good demonstrator, as wind turbine manufacturers are probably the biggest users of composites in the marine sector,” says Deimann. ROV production is a possibility too, he adds.

GREENBOATS is also working to develop a new cockpit for the Flax 27, with the aim of creating a new standardised version of the daysailer. The aim is to complete the first version of this unit in time for next year’s boot Düsseldorf show and to scale up to producing 10 units per year. “This way, we will be able to offer a more competitive price compared to other daysailers of this size,” says Schirmer. **SBI**

The general arrangement of the Flax 27

