LWComposites

From Innovation to Creation

LWC I-Beam Case Study

Carbonfiber I-Beams, in Sailing Yacht Floorboards

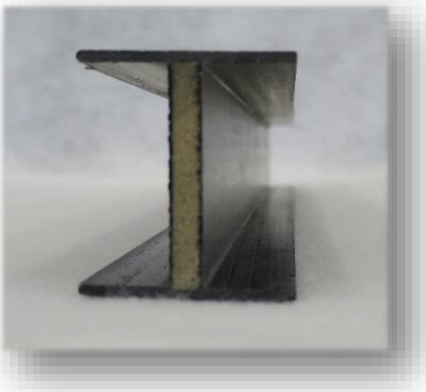
Weight reduction in performance sailing yachts, can be a tricky business. So a good rule is to take away a little, wherever you can.

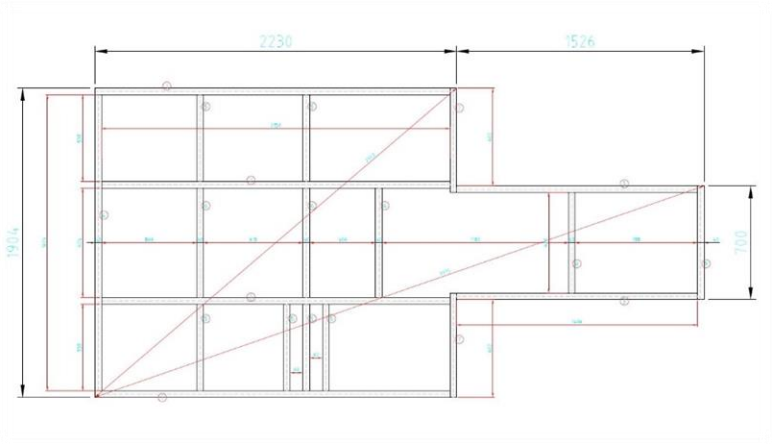
In this case, the LWC-Ibeam concept, where used instead of aluminum square tubes as floorboard beams.

<u>In high performance sailing yachts, every kilogram counts</u>

By changing from aluminium square tubes to LWC- Ibeam concept,the weight savings can be tremendous.

In this case, 68% compared to aluminium beams





As a first step, an evaluation of the floorboard plan was done. Since unsupported spans were short and attachment points plenty, the 43x40T beam were chosen. That also allowed as much weight savings a possible.

Type	Tot needed	Weight/m	I-Beam weight	Total weight incl, fasteners e.t.c
43x40T	21,4m	280g/m	5990g	8,07kg
45x40	21,4m	387g/m	8280g	11,15kg
Aluminium 40x40x2,5	21,4m	1093g/m	23380g	25,46kg

For this project, the customer wanted the structure precut and pre-assembled to ensure a good fit.

The beams were then cut, pre-assembled, checked for structural integrity and disassembled. Then shipped to the customer for a fast and easy assembly

Summary

From an aluminium beam weight of 25,46kg, down to an I-beam weight of totally 8,07kg, produced a massive 17,36kg´s in weight savings

Or, an average of 0,8kg/m.

Needless to say, but.. The customer was very happy