

PROJECT: KNIERIM MINI
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“We have launched studies for a new mini 6.50 racing yacht 2 years ago in order to develop new structural composite technologies. We have called on the services of Thomas Tison for the design and engineering, and the Alfred Wegener Institut’s bionic lightweight design department to provide additional analysis in the development of the structural layout. We have decided to give them full freedom from the start, with a clear vision to push commonly used boat building techniques” said Steffen Mueller, managing director of Knierim Yachtbau GmbH.

The yacht is built using today’s best construction methods using female moulds, several types of prepreg carbon reinforcements and nomex core, arranged in a new structural layout which provides added stiffness and lower weight. The racing yacht is also the first mini 6.50 designed specifically to be capable of foiling, given the right conditions.

“When Knierim Yachtbau approached me, the idea of working with the Alfred Wegener Institut was obvious, as saving weight is key to enable foiling, and the method of the bionic lightweight design department and my own, which are based on using numerical optimization, complement each other. The use of artificial intelligence in the development of racing yachts brings valuable insights” said Thomas Tison.

The boat is due to be launched in the second half of 2019 and will be raced following a period of load measurement and testing. To this aim, the yacht is fitted with load sensors in key parts of its structure and appendages and will contribute in increasing the knowledge of loads all foiling boats are subjected to.

“It perhaps was one of the most challenging structures to go through our optimization process and the end result is unique for a yacht this size. We have gained valuable knowledge in the design of composite and marine structures and look forward to seeing the boat sailing and how the structure will perform” said David Leidenfrost, project lead at the Alfred Wegener Institut.

Mini 6.50 racing yachts are designed to an open class rule which provides maximum freedom of innovation, setting only a few parameters such as length and mast height to allow for different boats to compete against one another. Sailed by one person only, the main race consists in crossing the atlantic and constitutes for most sailors, an entry into pro level sailing. <https://www.classemini.com/>

Knierim Yachtbau is one of the internationally leading yacht builders based at the Kiel canal with over 50 years of tradition. The innovative boat yard is specialized in the building, repairs and refit of custom sailing and racing yachts made out of carbon or glass fiber. <https://www.knierim-yachtbau.de/>

Thomas Tison Yacht Design & Engineering is a naval architecture and structural engineering company with experience of several America's Cups, specialized in the design of racing and custom yachts and advanced structures. <http://www.thomastison.com>

The Alfred Wegener Insitut is one of the internationally leading institutions for research in polar regions and oceans of temperate and high altitudes. It coordinates German polar research and provides infrastructure for polar research to national and international science. Besides, its department of bionic lightweight design transfers principles of natural lightweight structures to technical systems with the bionic product development process. <https://www.awi.de/>