

## HETAIROS - THE PANAMAX KETCH PROJECT

**For four years Gurit worked with Baltic Yachts on the Panamax Ketch project. This included the supply of composite materials and a large structural engineering design consultancy project. It is the largest and most challenging project ever undertaken by all those involved. The boat, named "Hetairos", was launched in May 2011, and handed over in July 2011.**

The trend in the marine industry is for ever larger sailing yachts to be built in composite materials. Gurit has witnessed first-hand how this trend has impacted on the complexity of engineering and composite solutions required for several of its projects. Baltic Yacht's 60m Panamax is one such example of Gurit's work that illustrates a number of 'firsts' in composite construction. The brief for the custom-built Hetairos presented some seemingly conflicting requirements, embracing light-weight modern technology for offshore and inshore racing capability, combined with a classic look and luxurious finish.

Revolutionary in both concept and design, Hetairos is notable not only for its sheer size but also a number of novel features; the unique ketch is at the forefront of innovation. Featuring a plumb-bow, long bowsprit and traditional sheer line, the boat combines classic looks and comfortable cruising with powerful performance.



Using a combination of Nomex honeycomb, Gurit Prepregs, **Corecell™** foam, carbon, adhesives and laminating resins, Baltic's largest yacht to date was built with the finest composite materials available.

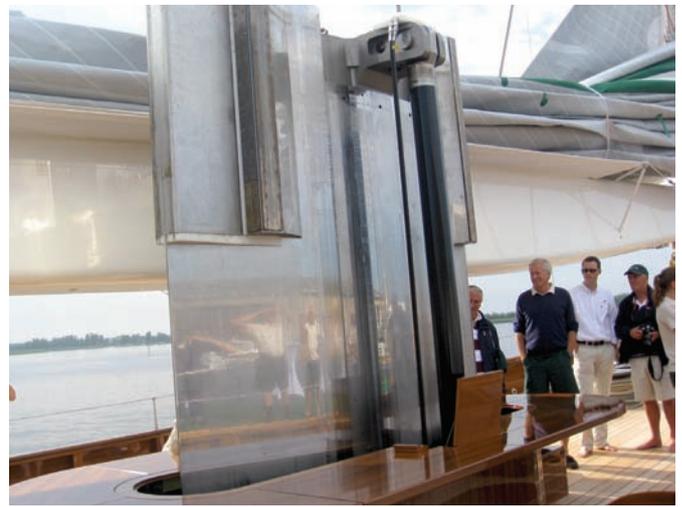
"Panamax" is a term applied to the maximum size ship that can navigate the Panama Canal, and defines the bounds of the largest container ships traversing the oceans. Similarly, the brief was to design the largest and fastest superyacht capable of navigating

the Panama Canal. At 60m hull length and around 700m<sup>2</sup> she is believed to be the largest single pre-preg moulding ever built. The project marked a collaboration between Baltic Yachts, who built the yacht, Gerard Dijkstra & Partners and Reichel/Pugh the Naval Architects, APM Srl for the keel design and manufacture, M&H Finland Oy for the Hydraulics, Jens Cornelsen for the project management and Gurit for the composite engineering and materials.

Principal Engineer of Gurit, Rod Fogg said: "Hetairos was our biggest project and one of the longest as we have worked on the design since early 2007. The sheer scale of the yacht created constant challenges for everyone involved, but that is only part of the story. Its ground-breaking systems and engineering mean it is not just another large sailing yacht. To help with the flow of such construction information, Gurit also had an engineer on-site for a year".

"One of the biggest challenges of the structural design was that of the two-stage lifting keel, which can operate in three positions. Conventional internal rams inside the fin raise the keel from its offshore to its inshore racing position. Where a shallower "harbour" draught is required, a second set of external rams then lifts the keel to over 3m above the deck. Designing for an ultimate grounding load of some 3,000 tonnes means this could also be one of the highest point loads ever in composite design."

The sheer scale of the boat was one challenge, but Panamax is not about merely scaling up known solutions. From the outset there were no known solutions for many of her features, and even for some construction details that might be considered standard, further investigation showed that these were no longer valid at this scale. In many such areas, the project called on Gurit's experience due to the need to construct other parts in advance of the design information being available.



Panamax benefited from the experience Gurit gained from such milestone composite sailing superyacht projects such as Wallygator 2, Mari-Cha 3 and 4, Visione etc., and raised the bar of what is achievable in this market.

Rod Concluded "Having lived this project for over four years, a project that seemed to develop its own language, it is hard to see it with fresh eyes. Usually when looking over a boat at completion, it is possible to see all the parts that you have been involved with. However, with Hetairos the outstanding quality finish that gives it that classic wooden boat look masks so well the high-tech composite construction that it almost feels like you are looking at a different boat. It has been an honour to be part of this milestone"

