WILD OATS - Reichel/Pugh 60ft

Canting Ballast Twin Foil Racing Sloop

Gurit was contracted to conduct the composite structural engineering for this revolutionary 60' sloop from the drawing board of John Reichel and Jim Pugh in California, which was built by Paul Wrench of Azurra Yachts in Queensland, Australia.

Although there is an increasing number of yachts with canting keels, *Wild Oats* differs from these as it incorporates DynaYacht's "patented" CBTF technology. The DynaYacht CBTF design, known as the Canting Ballast Twin Foil technology, is exclusively offered through Reichel Pugh Yacht Design Inc.

The keel is allowed to pivot via a bearing located at the hull and keel intersection, with keel angle controlled by a hydraulic ram inside the boat that enables up to ±55° swing either side of the centreline. By rotating the keel out to windward it is possible to achieve the required righting moment with a significantly lighter keel. Apart from the obvious advantage of a much lower overall displacement, this also has knock on effects such as reduced pitching in a seaway. The downside is that by rotating the keel to such an extreme angle the effectiveness of the keel at producing a hydrodynamic side force to counteract the aerodynamic side force from the sails is greatly reduced. On a 'standard' canting keel boat this is generally achieved with an additional centreboard or 'canard' forward of the keel. On *Wild Oats* this is achieved with the twin rudders. By setting both rudders at a slight incidence to the hull centreline it is possible to sail to windward with little or even no leeway.

The main structural implication on a boat of this type is to make it even more weight critical than usual since the structure accounts for a greater proportion of the overall sailing displacement. There must also be additional internal structure for the keel bearings and canting mechanism, and for the forward rudder attachment. Some of this can be offset to an extent by the reduced displacement that generally ensures reduced loads.

Gurit met the structural requirements of this design by specifying SE 84 carbon prepregs combined with Nomex cores throughout to achieve an all up structural weight of less than 2 tonnes and an all up sailing weight of just 11 tonnes. By combining experience in Open 60 class racing yachts and several large racers and racer cruisers, Gurit was able to design a fully composite canting keel structure that houses the entire keel mechanism without unduly obstructing the interior.

The effectiveness on the racecourse was proven in the yacht's debut regatta at the Hamilton Islands Hahn Premium Race Week 2002 where she won the big boat class with an impressive 1,2,1,1,1,1,4,1 score line, with a race to spare, beating off heavyweight opposition and often keeping pace with yachts over 20' longer.