

A New Generation of Yachts

The yacht industry, a laboratory of creativity

Thanks to the developments in hydrodynamic tools, with regard to the production techniques and materials, Marin is witnessing the birth of a new generation of yachts that cannot be easily labelled.

In recent times, the yacht industry has become an incredible laboratory of creativity, in which the designers' visionary ideas are made possible by the naval architects within the evermore stringent classification rules. The specialised magazines label these yachts with the most attractive terms such as classic, modern, explorer, yacht support vessels, high performance motor yacht, et cetera. Together they form a new generation.

The Right Hull Form

The hull forms of the "early" days are used as inspiration, but re-interpreted in a modern key. Marin's contribution is not only in the execution of the model tests. On the contrary, some clients have understood that the involvement of specialised hydrodynamic

institutes at the early design stage can be of great significance to the success of the project by shortening the large design loops. By means of a large database of hull forms and the availability of powerful and accurate hydrodynamic simulation tools, it is possible to evaluate the motion responses and the resistance characteristics of specific hull forms including variations of their geometries. This allows easy comparisons between different design options in a relatively quick and reliable way. The results of these advanced desk studies are often in favour of hull forms with high L/B ratios.

The possible reduction in roll damping of slender hull forms is compensated by the use of active and passive control surfaces (bilge keels, stabiliser fins, trim flaps, rudders, and so on) or other stabili-

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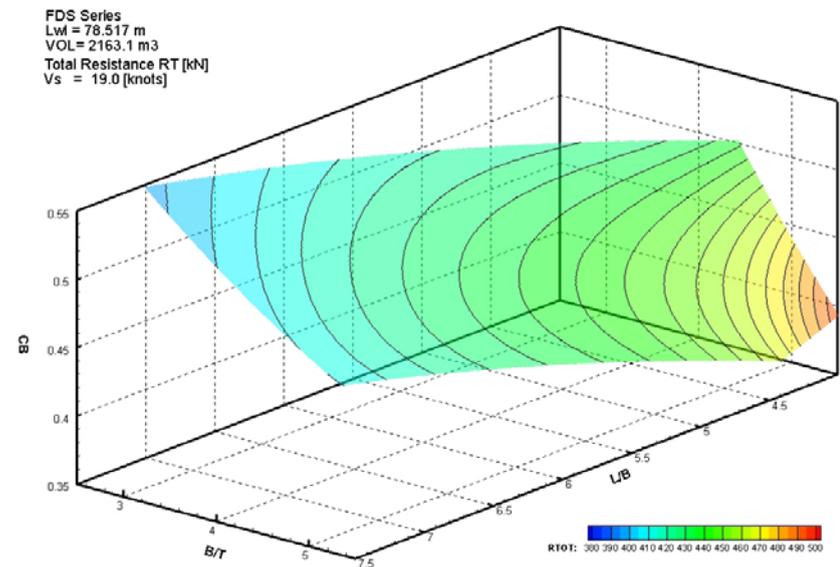
sation systems (gyros, anti-roll tanks, et cetera). Once the main dimensions and the hull form are fixed, the ship model is finally built and tested.

Improved FEM Calculations Open up New Possibilities

Similar developments have also occurred on the production side, which is nowadays done almost exclusively in environment-controlled areas. The use of the most efficient welding and production techniques and the use of the most advanced composite materials have led to an incredible weight-saving in the production of yachts with an increased level of quality and finishing. Furthermore, the introduction and use of segmented ship models for the assessment of the deformation of the yacht in waves has contributed to increasing the accuracy and value of FEM results. The availability of the improved assessment tools on strength and stiffness now allows the application of materials like glass, which was unthinkable only a few years ago. An additional indirect consequence is the increase in the size of mainly sailing yachts with quite a few yachts currently under construction with a length of more than 100 metres.

Finding a Balance between Space and Performance

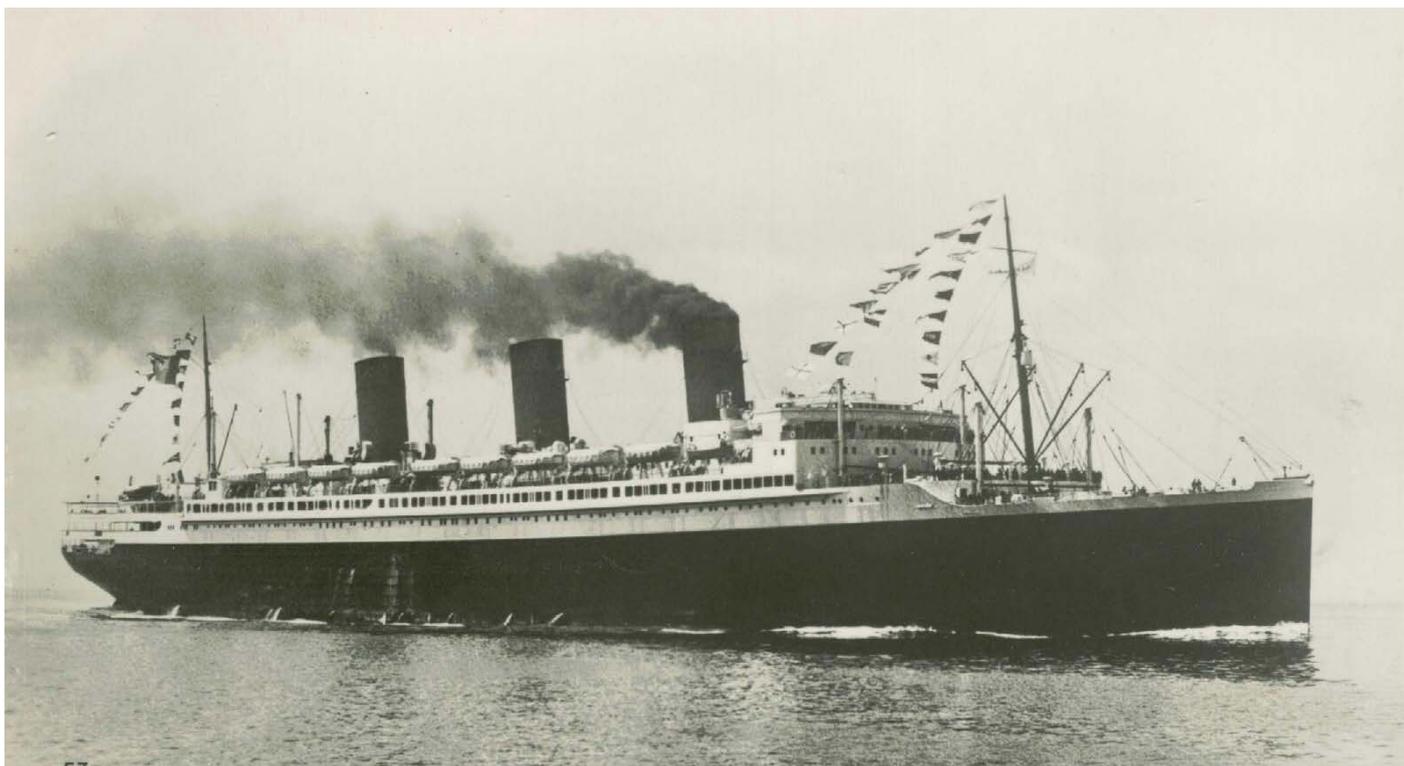
Sleek superstructures or peculiar shapes are not left to chance: the effects of green water and spray are thoroughly investigated. Furthermore, the effects of the wind on the superstructure and the paths of the exhaust gasses are evaluated in detail to avoid the suction of undesired odours and chemicals in the inlet of the ventilation system and the spread of exhausts in the outside living areas and



decks. Sometimes even the helicopter landing operation is studied with the same accuracy as for naval vessels.

The current strive to create a unique design, the mature awareness of the environment and the need for efficient propulsion systems has led to an interesting balance between the ship's performance and the available space on board. More value is given to the "quali-

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A classic liner with a vertical bow, the Ile de France (source: internet page cruiseshipand-liner.blogspot.com)

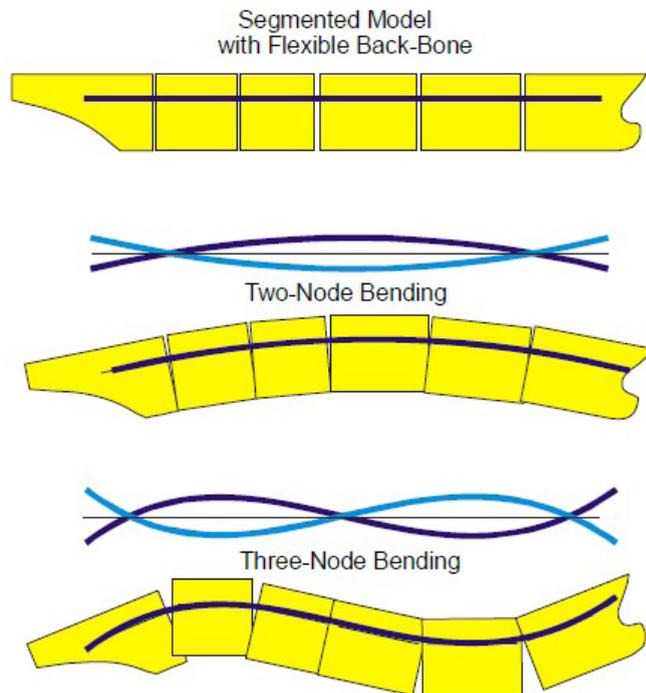
ty” of the space onboard than to the maximum usage. This is also due to the generous dimensions of the latest superyachts and to the endless creativity of the designers.

New Designs on the Horizon

Experienced clients who decide to start a new adventure in purchasing a new yacht, are more aware of what they are looking for in terms of comfort, safety and how they intend to use their new yacht. It is therefore essential to be able to assess the characteristics of the proposed designs in comparison to an existing reference.

The global economic crisis has hit mainly the yacht market in the small to medium-size range (less than 50 metres). That is why in 2008-2009 and 2012-2013 not many new designs had become an order or been researched. The second-hand market has been challenged with repetitive price reductions, which was not beneficial for the yacht industry. The refit market has profited slightly from this situation.

As soon as the market picks up again, many new designs will appear in the medium-size range too, perhaps taking inspiration from the developments in the superyacht industry, which will probably keep on growing in ship size.



With segmented ship models the deformation of the yacht in waves can be assessed

L_{pp} range of yachts studied at Marin

