

The sky is the limit...

As shipowners make the choice for even larger vessels, MARIN has been playing its part in the development of the next generation of the world's largest container vessels.



Courtesy A.P.Møller.

One name is synonymous with the very large container vessels – Maersk Sealand. A description of MARIN's involvement in the development of the Cornelius Maersk, the then, largest container vessel in the world, follows.

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The MARIN Ship Powering department has been involved in the development of a number of the world's leading large container ships but in July, 1993, it got involved in the early development stages of a new generation of very large container vessels when it worked on a vessel built on behalf of the AP Møller Group at the Odense Steel Shipyard in Denmark.

An extensive series of model tests followed a period of hull form optimisation by means of potential flow code DAWSON (at that time one of the best linearised potential flow codes operational). In these resistance and propulsion tests special attention was paid to the wake distribution and the flow around the ship. Based on the results, the hull form was further improved by a modification of the bulbous bow region to optimise the bow wave systems and a modification to the aftbody shape to improve the wake distribution. A propeller design was tested on propulsion and cavitation aspects. In this period the MARIN and Odense staff worked closely together to meet the objectives set by the shipyard on the propulsive aspects of the new generation of vessels.

A series of ships with a length of more than 300 m were built accordingly and they have already been successfully operating for many years.

Meanwhile, the development of this class of vessels has continued. To enlarge their container capacity the yard made a new design by lengthening the midship body, while at the same time, the speed requirement remained unchanged. However, because of the more critical propeller power density, the propeller design became very complicated. Despite the increased power the propulsive efficiency required by the yard remained at a high level and the cavitation properties had to be acceptable to avoid vibration problems. Again the various propulsive aspects were successfully tested. The first class of these lengthened ships is under operation and no problems related to speed loss, cavitation or vibration hindrance have been reported. Also the seakeeping behaviour of the vessels was studied and model tests were performed. **MARIN**