



Building blocks of the past give a firm basis for the future

# Roll on the

**As MARIN celebrates its 75th Jubilee, Report interviews president, Arne Hubregtse about the institute's milestones and he takes a look at future challenges.**

**R**ight from the beginning, MARIN was founded by the industry and for the industry. Hubregtse stresses that the fundamentals of the organisation in 1929 became the building blocks for the future. Unusually at the time, the institute was half funded by shipowners. “We have always been driven by customer and industry needs”, he says.

MARIN spent many years building up its vast knowledge base and this eventually resulted in the well-known B Series of propellers, which are still used throughout the world today. These propellers were the first time that any technical institute had managed to translate state-of-the-art propeller design into a systematic series of propellers.

The Dutch institute then broadened its knowledge to include manoeuvring, sea-keeping and nautical services and in the 1970s-1990s, technical developments moved on apace and of course, the first computer models came into being. In the 1990s new facilities were introduced and MARIN broadened its focus to full-scale services.

Hubregtse says the major differences between the MARIN now and the institute in the past,

is a change in how it serves clients. “We simply provided clients with model test results but nowadays this has changed into giving advice based on the interpretation of those results. It is not limited to the design of a ship or structure but also on the operational use.” For instance, in sea-keeping, a translation is made from the model tests into workability, comfort analysis and crucially, MARIN can use these results to examine the economics of a vessel over its whole life-time. MARIN is very keen to see more cooperation between yards and owners to obtain a better product, he emphasises, pointing to the cooperation that took place for vessels such as Emma Maersk and Color Fantasy.

#### **JIPs fundamental**

One part of MARIN’s work which is still of fundamental importance is the Joint Industry Project. In fact, surprisingly JIPs are nearly approaching their 40th anniversary!, he adds. The very first one, Cooperate Research Ships, is still going strong. This really was a milestone, says

# centenary!

Hubregtse, because rather than doing a project for a company, this represented a true cooperative approach.

“JIPs give companies the opportunities to make incredible steps forward in knowledge and at the same time, they result in very practical tools which are developed at low costs because these are shared between participants. They are very important for the industry because the research is well targeted, with deliverables that they can use.”

Another milestone really has to be the start of computer simulations. MARIN carries out 150 Computational Fluid Dynamics’ tests a year. “We try to use models and computers together to get better answers and to get them faster and more cheaply, which is important for our customers. The pressure

on design schedule is enormous.” When looking at CFD tools such as Rapid for instance, this means that a ship can be optimised in computer simulations in only two weeks, stresses Hubregtse. It used to involve three to five actual models and take five times as long, at 10 times the cost!, he adds.

Full-scale measurements were another breakthrough. It was no longer about speed trials alone. These enabled MARIN to validate the prediction methods and obtain insight from full-scale performance. New techniques facilitated measurements in other areas, for instance, looking at the phenomena playing a role in cavitation or at the long-term structural behaviour.

Perhaps the best way to sum up the future challenges is the devil will be in the detail. Hubregtse says customers demand that MARIN has the capability to model very extreme conditions and detailed problems accurately. The sea-keeping and offshore basins that opened around 2000, are still unique in the world. They enable MARIN to look at very complex wave, current and wind conditions and make very specific measurements. “We are extending the boundaries about what is achievable.”

#### **Demand for detail**

High-speed vessels have to operate in more confined waters and more challenging waves and there is deeper water in offshore. Faster speeds in high waves, hydrofoil lift, sail by wire and a huge focus on energy savings methods, are all issues being addressed by MARIN. Other research areas include developments in the LNG sector. Equipment is being placed near-shore, in shallow water, in high currents, and often structures are operating very closely together. Vessels are also getting larger. “This is really challenging – to understand things that are going on and to translate that into design and knowledge.”

“These are enormous challenges and we are extending the boundaries about how to design and use vessels. The building blocks of the past have given us the basis for our future knowledge. We have the experience, the people and the facilities to give MARIN a firm basis for the future.” **MARIN**