



Sound research
replaces guess-work

MTU Detroit Diesel sails ahead

Whether investigating a cruise ship worth € 500 m or a rubber boat by means of model tests, tank rates and model manufacturing costs are almost the same. Due to this discrepancy, few if any, small craft are subject to a sound hydrodynamic research program because the costs are disproportionate compared to the size of the vessel.

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One remarkable difference however, is the dedicated model test program for MTU Detroit Diesel which is currently being conducted at MARIN. Despite having previous experience with a successful series of smaller sister ships, MTU requested a diverse team of highly-skilled experts from MARIN and the University of Michigan to improve the successor design by systematic research.

The new 70' sport fisher is designed for top speeds of up to 60 knots. This requires the use of the high-speed basin at MARIN for testing because it facilitates carriage speeds of up to 15 m/s. Special attention needs to be paid to the design of the propellers because being highly loaded, only super cavitating concepts can be applied at top speed.

For all other speeds, the same propellers should show acceptable performance in the non-cavitating regime.

Therefore, the propeller design will be a joint venture between the MTU team and MARIN, each having unique experience in their fields.

The design will be based on full-scale sea trials observations flanked by systematic investigations in the cavitation test facility. This program is virtually unique because vessels for this purpose and size are seldom, if ever tested in this way.

Unique knowledge base

At the end of this project MTU will have a unique store of knowledge on the subject of fast, planing crafts. State-of-the-art cavitation testing will yield new insight into demanding propeller designs, operating from conventional propulsion to super-cavitating. The future owner of the craft will base their investment on sound research rather than pure chance.

Small craft test programs can prove economically viable if an owner is planning a series of vessels. MARIN would encourage other yacht yards and owners to initiate comparable projects because they can spread the costs over the series and such programs certainly result in improved knowledge about smaller craft hydrodynamics. 