

Title: Design of Reliable Steerable Thrusters by Enhanced Numerical Methods and Full Scale Optimization of Thruster- Hull Interaction using CFD

Authors: Dick Jürgens, Michael Palm, Andreas Amelang, Torsten Moltrecht,
Voith Turbo Marine (Heidenheim, Germany)

Abstract

An optimized propulsion system is important for many offshore operations. The target of Voith Turbo Marine is the development of reliable and efficient thrusters for the offshore industry. Additionally Voith is offering support for the hull design and the prediction of the hydrodynamics of the whole system. Voith is using Computational Fluid Dynamics (CFD) methods ([1], [12]), a simulator of the motions of marine systems and experimental methods [2]. 360°- steerable thrusters are widely used in the offshore industry for efficient dynamic positioning. A target for an economical and ecological application of steerable thrusters is the minimization of efficiency losses.

The reasons for these losses are

- 1) interaction effects between thruster and hull,
- 2) interaction effects between thruster and thruster,
- 3) momentum and friction losses of the thruster itself
- 4) mechanical losses.

This paper focuses on the interaction of thruster and hull. This interaction has been analyzed experimentally and by numerical methods. The target of the research activities was to achieve a better insight into the physical effects of the relevant flow phenomena. Therefore pressure calculations, force determinations and flow visualizations have been carried out, respectively by numerical methods and in the model tank test.

Click below to:

[**Review the complete paper**](#)

[**Review the presentation**](#)

[**Return to the Session Directory**](#)