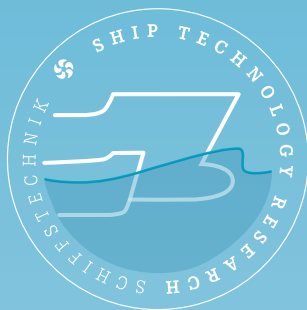


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4 Experimental and Numerical Study of Stem Shape Influence on Speed Loss in Waves

By Zhenju Chuang & Sverre Steen

This paper addresses prediction of ship motion and propulsion system behaviour to demonstrate the effect of waves in real sea states. For a 8000 t deadweight tanker, three different stem shapes are studied experimentally and numerically. Numerical simulations of speed loss were performed in time and frequency domain, generally agreeing well with experimental results. While a conventional bow with bulb and flare gave least calm water resistance, a bow without bulb and flare gave least total resistance in severe wave conditions.

18 Revisiting Traditional Curve Lofting to Improve the Hull Surface Design Process

By Marcus Bole

This paper discusses characteristics of presently used hull surface design and associated generation algorithms which may cause imperfections. The paper presents a parallel strategy in the form of a modern interpretation of traditional curve lofting. It may be used to explore hull form shape in shorter time scales and supports a greater range of shape generation algorithms. The technique may be used both as a way of indirectly improving a surface representation through visual comparison or used to directly improve a surface using fitting techniques.

34 Decision Support Framework for Exploiting Northern Sea Route Transport Opportunities

By Stein Ove Erikstad & Sören Ehlers

This paper presents a decision-support model identifying the most viable ice class for a liner vessel transiting along the Northern Sea Route. As input, this model requires parameters, some of which are uncertain. These include the time-dependent length of the Northern Sea Route sailing season and corresponding roundtrip times, the additional capital expenditure and operational expenditure for ice class capabilities for the vessel, as well as fuel price. Furthermore, the sensitivity of the model is discussed on the perspective ice extent, respectively the ice class allowed to enter the Northern Sea Route and possible delays, on the basis of current trend predictions.

44 Sliding Grids and Adaptive Grid Refinement for RANS Simulation of Ship-Propeller Interaction

By Patrick Queutey, Garbo Deng, Jeroen Wackers, Emmanuel Guilmineau, Alban Leroyer & Michel Visonneau

The paper describes a computational approach for a numerical propulsion test. Key techniques concern the computation of free-surface viscous flows around propellers using the sliding grid technique and accurate wave capturing around the hull. An advanced numerical technique resolves very small-scale flow motion such as tip vortex. Efficiency and accuracy are balanced using an adaptive mesh refinement technique. This approach is validated against the KCS test case proposed for the Tokyo 2005 and Gothenburg 2010 CFD validation workshops.

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