

Abstract

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Review of operation and performance of marine vertical axis propellers

Vertical axis propellers are normally fitted to ships that require high degree of maneuverability such as tugs and supply boats. They are also advantageous in case of sailing in narrow channels and shallow waters. Nevertheless, the hydrodynamic performance of this type of propellers is relatively low compared to other types of propellers, such as the screw type. In this paper, the merits of the vertical axis propeller are reviewed and its performance investigated and compared to that of the screw propeller. Moreover, some techniques are used to enhance the performance, such as the vortex lattice theory, the momentum theory and CFD. A review on the different methods used to design and/or assess the performance of this type of propellers varying from simple to sophisticated approaches.