

Abstract

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Determining Ship Resistance Using Computational Fluid Dynamics (CFD).

The resistance of a hull is a consequence of force between air and water which act against the movement of ship vessel. The ship resistance is an important issue for ensuring smooth propulsion. The traditional method to predict resistance on real hull is by using towing tank model running at corresponding Froude numbers, called towing tank experiments. Disadvantages of this method are the associated cost and the limitation on the availability of physical tanks and models for every single design. These disadvantages can be overcome by using computational fluid dynamic, numerical simulation. The objective of the study is to calculate the total resistance and simulate flow around Wigley and DTMB 5415 hull form using computational fluid dynamic. The result obtained from the numerical simulations were found almost similar with the experimental data. The highest percentage of error were only 5.94 percent for DTMB and 5.85 percent for Wigley hull. This result shows that the study had been done correctly and achieved its main objective.