HULL FORM DESIGN OF DOUBLE STEPPED HULL USING CFD:

A CASE STUDY WITH A 15 METER FAST PATROL BOAT

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"I declared that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. This thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree."

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ABSTRACT

The resistance and the drag reduction which associates with the speed, has become the key point when designing boat. This paper focuses on the double Stepped Hull concept applied on 15 meter length of fast patrol boat. The goal is to design the transverse step on the hull and analyze the performance of the fast patrol boat in terms of resistance. Simulation were carried out with a model drawn using MAXSURF and then applying the stepped hull concept via CATIA. The Double Stepped Hull then will be analyzed by using the Computational Fluid Dynamics. Computational Fluid Dynamic simulation was performed to calculate the resistance of model double step hull on different position of transverse hull ranging from rear until to the middle of the boat using different speed. The numerical simulation indicates that the fast patrol boat with applied stepped hull concept can reduce the drag coefficient in comparison with the original hull form. From the result and the discussion, it is determined that the best location and height that gives higher percentage of reduction compared to the original planning hull is at the midship of the boat (half of the boat length) with the height of 5 inches.

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