

DESIGN A WATER JET SYSTEM FOR A RESCUE SHIP ON THE NEW STRAIT COAST

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ABSTRACT

Rescue vessels are vital infrastructure for maritime evacuation and rescue operations. This study designs, fabricates, installs, and evaluates a Waterjet propulsion System for a fiberglass rescue vessel (LPP: 4.00 m, B: 2.00 m, H: 0.45 m, T: 0.15 m) to optimize thrust and maneuverability. Hull Resistance analysis using Maxsurf Resistance (KR Barge method) indicates a total Resistance of 1,965.50 N at a design Speed of 8.450 knots. Based on power requirements at 60% System efficiency, the effective power is 8.542 kW, and the required engine power is 19.09 HP; thus, a 20 HP propulsion engine was selected. The designed Waterjet System consists of an Intake, impeller, stator casing, nozzle, drive Shaft, transmission System, pulley, Shaft connector, and Waterjet steering System. Sea trial results demonstrate that the System functions effectively, achieving a maximum Speed of 5.70 knots, which represents 67.46% of the target Speed with a 32.54% deficit.

Keywords: *Rescue Vessel, Waterjet, KR Barge, Maxsurf Resistance, Propulsion System, Sea Trial.*