

RANCANG BANGUN SISTEM PENGGERAK PERAHU NELAYAN FIBERGLASS ALTERNATIF SEBAGAI PENGGANTI PERAHU KAYU DI SUNGAI SIAK DESA SELIAU

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ABSTRAK

Rendahnya efisiensi operasional sistem penggerak tradisional pada perahu nelayan fiberglass di desa seliau, sungai siak, menjadi kendala utama dalam meningkatkan produktivitas. Penelitian ini bertujuan merancang, mengimplementasikan, dan menguji sistem penggerak alternatif berbasis modifikasi mesin robin yang digunakan pada perahu nelayan, yaitu dengan konfigurasi mesin tempel yang dilengkapi gearbox dan poros propeller vertikal di dalam lambung. Metode penelitian diawali dengan perhitungan tahanan kapal menggunakan metode van oortmerssen dan perangkat lunak maxsurf untuk menentukan daya mesin optimal. Selanjutnya, dilakukan perancangan dudukan, sistem transmisi, poros, dan instalasi mesin robin. Hasil perancangan kemudian diuji melalui sea trial di perairan sungai siak. Uji coba operasional menunjukkan bahwa sistem yang dirancang memiliki performa stabil, efisiensi transmisi daya yang baik, dan mampu mencapai kecepatan jelajah optimal yaitu 6 knot. Sistem penggerak ini terbukti andal, hemat bahan bakar, serta mampu meningkatkan efisiensi dan mendukung peningkatan produktivitas nelayan di wilayah desa seliau.

Kata kunci: sistem penggerak, mesin robin, perahu nelayan, efisiensi bahan bakar, perhitungan tahanan kapal.

**DESIGN AND CONSTRUCTION OF AN ALTERNATIVE FIBERGLASS
FISHING BOAT PROPULSION SYSTEM AS A REPLACEMENT FOR
WOODEN BOATS ON THE SIAK RIVER, SELIAU VILLAGE**

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ABSTRACT

The low operational efficiency of traditional propulsion systems on fiberglass fishing boats in Seliau Village, Sungai Siak, has become a major obstacle to improving productivity. This study aims to design, implement, and test an alternative propulsion system based on a modified Robin engine used on fishing boats, configured as an outboard-style system equipped with a gearbox and a vertical propeller shaft installed inside the hull. The research began with ship resistance calculations using the Van Oortmerssen Method and Maxsurf software to determine the optimal engine power. Subsequently, the design process included the development of the engine mount, transmission system, shaft, and the overall installation of the Robin engine. The final design was then tested through sea trials in the waters of Sungai Siak. Operational testing showed that the proposed system delivers stable performance, good power transmission efficiency, and is capable of achieving an optimal cruising speed of with a one-person load. The propulsion system proved to be reliable, fuel-efficient, and effective in increasing

Keywords: *Propulsion system, Robin engine, fishing boats, fuel efficiency, ship resistance calculation.*