EXPERIMENTAL STUDY OF MATRIX AND COMPOSITE FIBER AS MATERIAL FOR REMOTE CONTROL BOAT BODY

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ABSTRACT

This research aims to evaluate the performance of composite materials made from woven cloth, fiberglass and banana fronds in making Remote Control Boat bodies. As the need for fast ships and performance efficiency increases, selecting light and tough materials becomes the main key in ship hull design. The research was carried out experimentally with a toughness testing method (impact test) using the ASTM D256 standard. The independent variables used include fiber type (woven cloth, fiberglass, and banana fronds), resin type (epoxy and polyester) with a 3×2×3 factorial design and three repetitions. It is hoped that this research can contribute to the development of alternative materials in the small-scale shipping industry and become a reference in the use of natural fibers as composite reinforcing materials.

Keywords *: Woven cloth, Fiberglass, Banana Steam, Remote Control Boat, Composite*

STUDI EKSPERIMEN MATRIKS DAN FIBER KOMPOSIT SEBAGAI MATERIAL BODI *REMOTE CONTROL BOAT*

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ABSTRAK

Penelitian ini bertujuan untuk mengevaluasi performa material komposit berbahan dasar serat *woven cloth, fiberglass*, dan pelepah pisang dalam pembuatan *body remote control boat*. Seiring meningkatnya kebutuhan akan kapal cepat dan efisiensi performa, pemilihan material yang ringan dan tangguh menjadi kunci utama dalam desain lambung kapal. Penelitian dilakukan secara eksperimental dengan metode pengujian ketangguhan (impak *test*) menggunakan standar ASTM D256. Variabel bebas yang digunakan meliputi jenis serat (*woven cloth, fiberglass*, dan pelepah pisang), jenis resin (*epoxy* dan *polyester*) dengan desain faktorial 3×2×3 dan tiga kali pengulangan. Penelitian ini diharapkan dapat memberikan kontribusi terhadap pengembangan material alternatif dalam industri perkapalan skala kecil serta menjadi referensi dalam pemanfaatan serat alam sebagai bahan penguat komposit.

Kata kunci : *Woven cloth, Fiberglass*, Pelepah pisang, *Remote Control Boat*, komposit