MECHANICAL PROPERTIES OF JOINT FOR ALUMINIUM 5083, MILD STEEL AND COMPOSITE

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MECHANICAL PROPERTIES OF JOINT FOR ALUMINIUM 5083, MILD STEEL AND COMPOSITE

BY

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A Thesis submitted in partial fulfillment
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DEPARTMENT OF MARITIME TECHNOLOGY
FACULTY OF MARITIME STUDIES AND MARINE SCIENCE

DECLARATION AND VERIFICATION REPORT

FINAL YEAR RESEARCH PROJECT

It is hereby declared and verified that this research report entitled: **MECHANICAL PROPERTIES OF JOINT FOR ALUMINIUM 5083, MILD STEEL AND COMPOSITE** by **MOHD HAFIZUDDIN BIN SAKRI**, Matric No. **UK 17891** have been examined and all errors identified have been corrected. This report is submitted to the Department of Maritime Technology as partial fulfillment towards obtaining the **BACHELOR DEGREE OF APPLIED SCIENCE (MARITIME TECHNOLOGY)**, Faculty of Maritime Studies and Marine Science, Universiti Malaysia Terengganu.

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DECLARATION

I hereby declare that this thesis entitled Mechanical Properties of Joint for Aluminium 5083, Mild Steel and Composite is the result of my own research except as cited in the references.

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MECHANICAL PROPERTIES OF JOINT FOR ALUMINIUM 5083, MILD STEEL AND COMPOSITE

ABSTRACT

The joint of composite, mild steel and aluminium structures have been applied in numbers of engineering fields, including composite boat and ship structures. From a production viewpoint, large and complex structures cannot be formed in one process, thus introducing the need for several components to be joined to produce the completed structure. Each of material joint is very important in order to ensure ships can always be sturdy and durable. Each material has their own advantages in making material joint such as possible reductions in topside weight and increased resistance to corrosion. While each types of joint have different strength and its own advantages. As for this matter, different material is used to determine the strength of the joint material using universal testing machine. Mechanical characteristic of each material joint which is composite, mild steel and aluminium is carried out. A comparison was done by identified the strength of the joint between butt joint and lap joint with three different materials.The results of experiment indicate that mild steel is the strongest joint between aluminium and composite while butt joint is the strongest joint compared to lap joint.

CIRI-CIRI MEKANIKAL SENDI BAHAN UNTUK ALUMINIUM 5083, MILD STEEL DAN KOMPOSIT

ABSTRAK

Bahan-bahan seperti komposit, keluli dan aluminium telah diguna pakai dalam berbagai bidang kejuruteraan termasuk bot dan struktur komposit kapal. Dari segi pengeluaran, struktur yang besar dan kompleks tidak boleh dibentuk dalam satu proses, lantas memperkenalkan keperluan untuk beberapa komponen bersatu untuk menghasilkan struktur yang lengkap. Setiap sendi adalah sangat penting untuk memastikan kapal sentiasa kukuh dan tahan lama. Setiap bahan mempunyai kelebihan tersendiri dalam sendi bahan seperti ringan dan juga mempunyai rintangan hakisan yang tinggi. Sementara setiap jenis sendi mempunyai kekuatan dan kelebihan yang tersendiri. Oleh itu, bahan yang berlainan digunakan untuk menentukan kekuatan bahan menggunakan "universal testing machine". Ciri-ciri mekanikal setiap sendi bahan iaitu komposit, besi dan aluminium akan diperoleh. Perbandingan akan dilakukan untuk mengenal pasti kekuatan sendi antara "butt joint" dan "lap joint" dengan menggunakan tiga bahan yang berbeza untuk mengetahui sendi manakah yang sesuai dan lebih baik untuk digunakan. Keputusan eksperimen menunjukkan sendi keluli paling kuat berbanding dengan sendi aluminium dan komposit manakala "butt joint" lebih kuat berbanding "lap joint".