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Strength analysis of propeller shafting on orca class fisheries inspection boat using finite element method

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Abstract

Propeller shafting system is machinery elements which important for ship propulsion. The function of propeller shafting is to distribute the power from the main engine or main gearbox to shaft propeller. The rigid coupling system is a type of shafting system which is simpler and most used in ship machinery. The disadvantage of this coupling is not permiting any misaligned in the mids of coupling to shaft end and cannot reduce the transmission impact. The torsion that taken out by main engine will be causing failure or breaking the coupling, particularly on key and bolt. Damage in coupling is a major problem because the main engine cannot distribute the power to the propeller. Thus, the ship cannot be able to move. The goal of this investigation is known the proper material with considering the yield

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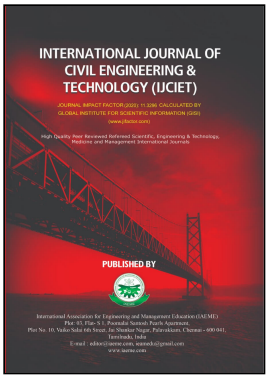

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STRENGTH ANALYSIS OF PROPELLER SHAFTING ON ORCA CLASS FISHERIES INSPECTION BOAT USING FINITE ELEMENT METHOD

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ABSTRACT

Propeller shafting system is machinery elements which important for ship propulsion. The function of propeller shafting is to distribute the power from the main engine or main gearbox to shaft propeller. The rigid coupling system is a type of shafting system which is simpler and most used in ship machinery. The disadvantage of this coupling is not permiting any misaligned in the mids of coupling to shaft end and cannot reduce the transmission impact. The torsion that taken out by main engine will be causing failure or breaking the coupling, particularly on key and bolt. Damage in coupling is a major problem because the main engine cannot distribute the power to the propeller. Thus, the ship cannot be able to move. The goal of this investigation is known the proper material with considering the yield strength of materials. Finite Element Method is a numerical simulation which not needed a real test. Contact mechanics are considered for the bearing frictions which the shaft using the water-lubricated seal, which required a durable material against corrosion. According to the results, the maximum stress which is obtained located on keyway element when maximum continuous rating condition. This condition should be damaged the shaft and key Meanwhile the maximum stress which is obtained under 75% of engine rating condition was in safety limit. Thus, UNS 41600 is a superior choice for aluminum used parts.

Key words: Propeller Shafting, Rigid Coupling, Contact Mechanics, Water-Lubricated Bearings**.**

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DETERMINING THE FACTUAL CONSUMPTION OF THERMAL ENERGY FOR INDIVIDUAL ENERGY ACCOUNTING IN MULTIAPARTMENT BUILDINGS

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ABSTRACT

In this article we propose innovative techniques and unusual means of determining the heat consumption by individual apartments, based on the use of high precision wireless meters. Gauges conduct metering and control the heat consumption; they include various reading devices connected to a central server. Heat consumption indications are displayed on the central server with very high accuracy in real-time mode. So users can easily monitor heat consumption patterns and adapt to reduce thermal energy consumption.

Key words: Accounting of Individual Heat Consumption, Hardware and Software, Energy Monitoring System, Wireless Temperature Meter.

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1. INTRODUCTION

Currently, technical requirements for functional and operational parameters of metering devices and controlling equipment for energy resourse consumption are constantly growing. The proliferation of wireless computer networks and wireless personal digital devices was phenomenal in the last few years. Therefore the greatest preference is given to instruments equipped with microprocessor control systems.

Thermal energy monitoring technique in multicompartment building allows solving the problem on streamlining of calculations for heat supply in residential buildings. Using wireless

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ABSTRACT

This research aims to determine the geophysical parameters differences for the subsurface structures. In particular, two geophysical methods employed were 2-D Resistivity Imaging and Ground Penetrating Radar (GPR). The 2-D Resistivity Imaging data was inverted and interpreted using RES2DINV and Surfer8 software while the GPR data was processed using MALA Ground Vision software. Concrete structure and sediment-filled cavity can be compared based on the attenuation value of EM wave obtained from GPR method. Research was conducted at two study areas which are located at Universiti Sains Malaysia (USM) and Gunung Baling. Within USM, investigations were conducted at two sites to analyze geophysical parameters of the concrete structure while in Gunung Baling was to analyze geophysical parameters of sediments-filled cavity. The geophysical parameters results obtained from Gunung Baling are then compared with the results at USM. It was found that all study areas exhibit low resistivity value and have the same hyperbolic curve. However at USM, the attenuation value of electromagnetic (EM) wave was found to be higher compared to the value at Gunung Baling. Based from geophysical parameters obtained, Gunung Baling survey area was considered as mainly dominated by sediments-filled cavity. Method and results of this study could be useful in solving problems related to subsurface structures in environmental engineering.

Keywords: Geophysical Parameters, Subsurface Structures, Environmental Engineering