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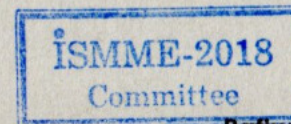
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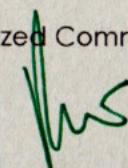


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Ultimate Strength Investigation of Ro-Ro Ship

Muhammad Zubair Muis Alie, Juswan, Taufiqur Rachman and Chairul Paotonan

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Abstract. Ro-Ro ship has special characteristic for cargo handling because the cargo is transferred in horizontal direction. For example, cars can move by using ramp door which is located in front and/or aft of the ship. In conjunction with this, car passenger and other decks such as top including bottom part need to be investigated for local and global of Ro-Ro ship structure. In the present study, the ultimate strength investigation of Ro-Ro ship is conducted. There are three types of Ro-Ro ships are taken as the ship's subject. The cross section of Ro-Ro is considered in the analysis and it is modelled having plate and stiffened plate. The one-frame is represented in longitudinal direction. The simply supported of boundary condition is applied and the cross section is assumed to be remained plane. The calculation of the ultimate strength using in-house integrated program. The ultimate strength of Ro-Ro ship is investigated under hogging and sagging conditions. The vertical bending moment is imposed to the cross section to obtain the ultimate strength including their progressive collapse. The result obtained by in-house program for three types of Ro-Ro ships are summarized and the collapse behaviour for local and global of the decks to the ultimate strength of Ro-Ro ship are also presented in this study.

Keywords: Ro-Ro Ship, Cross Section, Ultimate Strength



The 5th International Symposium on Material, Mechatronics and Energy 2018

Engineering Faculty of Hasanuddin University

Secretariat: Committee Room Kampus Unhas Gowa, Makassar Indoensia 92171

Phone:0411-586015 email:ismme2018@gmail.com

Makassar, Indonesia, August 31, 2018

To:

Muhammad Zubair Muis Alie^{1*}, Juswan¹, Taufiqur Rachman¹ and Chairul Paotonan¹,

¹ Department of Ocean Engineering, Hasanuddin University, Indonesia

zubair.m@eng.unhas.ac.id

Dear Authors,

On behalf of Engineering Faculty of Hasanuddin University, we would like to deliver thank you very much for joining The 5th International Symposium on Material, Mechatronics and Energy 2018.

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The title of your oral presentation is **Ultimate Strength Investigation of Ro-Ro Ship**

by Authors: Muhammad Zubair Muis Alie^{1}, Juswan¹, Taufiqur Rachman¹ and Chairul Paotonan¹,*

¹ Department of Ocean Engineering, Hasanuddin University, Indonesia

If you need any help do not hesitate to contact us. Thank you very much.

Yours,

Chairman of ISMME 2018



Rafiuddin Syam, PhD

Associate Professor at

Engineering Faculty of Hasanuddin University

Cc

Dean of Engineering Faculty of Unhas



Universitas Hasanuddin

Muhammad Zubair Muis Alie, Ph.D <zubair.m@eng.unhas.ac.id>

THE 5TH ISMME 2018 notification for paper 10

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Looking forward to your participation in The 5th ISMME 2018.

Yours truly,

The 5th ISMME 2018 Secretariat



Muhammad Zubair Muis Alie, Ph.D <zubair.m@eng.unhas.ac.id>

THE 5TH ISMME 2018 submission 10

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Title : Ultimate Strength Investigation of Ro-Ro Ship
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Muhammad Zubair Muis Alie, Ph.D <zubair.m@eng.unhas.ac.id>

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Number: 10

Authors: Muhammad Zubair Muis Alie, Juswan Juswan and Taufiqur Rachman

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Ultimate Strength Investigation of Ro-Ro Ship

Muhammad Zubair Muis Alie^{1*}, Juswan¹, Taufiqur Rachman¹ and Chairul Paotonan¹,

¹ Department of Ocean Engineering, Hasanuddin University, Indonesia

zubair.m@eng.unhas.ac.id

Abstract. Ro-Ro ship has special characteristic for cargo handling because the cargo is transferred in horizontal direction. For example, cars can move by using ramp door which is located in front and/or aft of the ship. In conjunction with this, car passenger and other decks such as top including bottom part need to be investigated for local and global of Ro-Ro ship structure. In the present study, the ultimate strength investigation of Ro-Ro ship is conducted. There are three types of Ro-Ro ships are taken as the ship's subject. The cross section of Ro-Ro is considered in the analysis and it is modelled having plate and stiffened plate. The one-frame is represented in longitudinal direction. The simply supported of boundary condition is applied and the cross section is assumed to be remained plane. The calculation of the ultimate strength using in-house integrated program. The ultimate strength of Ro-Ro ship is investigated under hogging and sagging conditions. The vertical bending moment is imposed to the cross section to obtain the ultimate strength including their progressive collapse. The result obtained by in-house program for three types of Ro-Ro ships are summarized and the collapse behaviour for local and global of the decks to the ultimate strength of Ro-Ro ship are also presented in this study.

1. Introduction

Generally, a Ro-Ro ship functioned to move cargo in horizontal direction. The ship has passenger and car decks. One of the deck on Ro-Ro ship is car deck where it is very important to be assessed when the ship is under voyage. The ship's hull resists applied loads such as internal and external. Loading and unloading process may have an impact to structural damage of the ship. Therefore, the ultimate strength of ship hull is one of the most important aspects in the ship design criteria and must be taken into account.

Many studies have been conducted to assess and/or evaluate the ultimate strength of ship structure. Muis Alie, M.Z et al [2] assessed the ultimate hull girder strength of Ro-Ro ship after damage. The cross section of Ro-Ro ship is considered to be analysed. Cui, J et al [1] focused on the ultimate strength of typical bottom structure in container ships under both longitudinal and transversal loads in corrosive environment. Muis Alie, M.Z et al [3] analysed the hull girder ultimate strength of asymmetrically damaged ships using Finite Element Method. The collision damage was modelled by removing the plate and stiffened plate elements. Muis Alie, M.Z [4] analysed the residual strength of ship hull girder with bottom damage. The nonlinear finite element method was used and the fully cross section was considered in the calculation. Shu, Z [5] investigated the ultimate strength of a capsized bulk carrier hull girder under combined global and local load in the hogging and alternate hold loading (AHL) condition using nonlinear finite element (FE) analysis with ABAQUS. Amlashi, H.K.K [6]

contributed to establish rational ultimate longitudinal strength criteria for the hull girder under combined loading. An important issue was the significant double bottom bending in empty holds in AHL due to combined global hull girder bending moment and local loads. Paik, J.K [7] investigated the ultimate strength characteristics of ship hulls with large hatch opening under torsion. Axial (warping) as well as shear stress is normally developed for thin-walled beams with open cross sections subjected to torsion.

In this study, the investigation of Ro-Ro ship to the ultimate strength is conducted. There are three types of Ro-Ro ships are analysed. The cross section for each type of Ro-Ro ship is considered. The vertical bending moment is given both left and right sides of the cross section. For the simple calculation, one-frame space represents the length of ship is taken. The ultimate strength calculation is done by considering hogging and sagging condition.

2. Method of Analysis

The ultimate strength of ship hull is performed using the Smith's method considering the cross sectional approach. The Smith's method is adopted and implemented in-house program developed by Yao and Nikolov [8] is used with some modification in the process. The moment-curvature relationship for the ultimate hull girder strength calculation is expressed by,

$$\begin{Bmatrix} \Delta P \\ \Delta M_H \\ \Delta M_V \end{Bmatrix} = \begin{bmatrix} \bar{D}_{AA} & \bar{D}_{AV} & \bar{D}_{AH} \\ \bar{D}_{HA} & \bar{D}_{HH} & \bar{D}_{HV} \\ \bar{D}_{VA} & \bar{D}_{VH} & \bar{D}_{VV} \end{bmatrix} \begin{Bmatrix} \Delta \varepsilon_0 \\ \Delta \phi_H \\ \Delta \phi_V \end{Bmatrix} \quad (1)$$

Where

$$\begin{aligned} \bar{D}_{AA} &= \sum_{i=1}^N D_i A_i \\ \bar{D}_{HH} &= \sum_{i=1}^N D_i y_i^2 A_i \\ \bar{D}_{VV} &= \sum_{i=1}^N D_i z_i^2 A_i \\ \bar{D}_{AH} &= \bar{D}_{HA} = \sum_{i=1}^N D_i y_i A_i \\ \bar{D}_{AV} &= \bar{D}_{VA} = \sum_{i=1}^N D_i z_i A_i \\ \bar{D}_{HV} &= \bar{D}_{VH} = \sum_{i=1}^N D_i y_i z_i A_i \end{aligned} \quad (2)$$

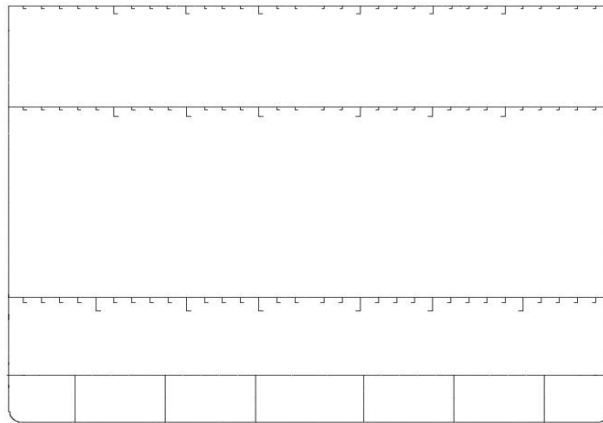
To obtain the ultimate hull girder moment capacity, the above expression can be simply expressed by,

$$\begin{Bmatrix} 0 \\ \Delta M_H \\ \Delta M_V \end{Bmatrix} = \begin{bmatrix} \bar{D}_{AA} & 0 & 0 \\ 0 & \bar{D}_{HH} & \bar{D}_{HV} \\ 0 & \bar{D}_{VH} & \bar{D}_{VV} \end{bmatrix} \begin{Bmatrix} \Delta \varepsilon_0 \\ \Delta \phi_H \\ \Delta \phi_V \end{Bmatrix} \quad (3)$$

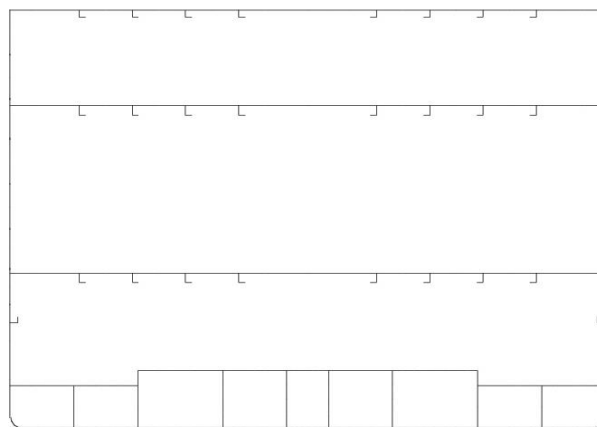
Where

$$\begin{aligned}
\bar{D}_{AA} &= \sum_{i=1}^N D_i A_i \\
\bar{D}_{HH} &= \sum_{i=1}^N D_i (y_i - y_G)^2 A_i \\
\bar{D}_{HV} = \bar{D}_{VH} &= \sum_{i=1}^N D_i (y_i - y_G)(z_i - z_G) A_i \\
\bar{D}_{VV} &= \sum_{i=1}^N D_i (z_i - z_G)^2 A_i
\end{aligned}
\tag{4}$$

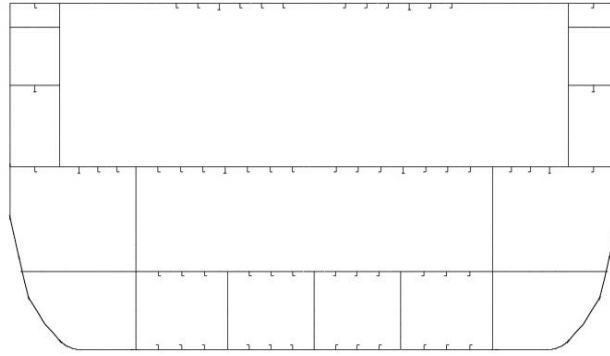
There are three types of Ro-Ro ships as shown in Figure 1. The investigation of Ro-Ro ship to the ultimate strength is conducted by considering cross section. Welding residual stress, crack and initial deflection are not included in the calculation.



(a) Type-1



(b) Type-2



(c) Type-3

Figure 1 Cross sections of Ro-Ro types

The ultimate strength calculation is done under vertical bending moment in hogging and sagging conditions. All the types of Ro-Ro ships are calculated for intact only. Damages such as collision, grounding and so on are not considered in the analysis. The vertical bending moment is given on the cross section in right and left sides. The one-frame space represents the length of ship is taken as a fundamental calculation. The calculation of the ultimate strength of Ro-Ro ship considers two frame-spaces under hogging and sagging conditions.

3. Results and Discussions

The bending moment-curvature relationships for three types of Ro-Ro ship are shown in Figures 2-5 for two frame-spaces under hogging and sagging conditions, respectively. The larger ultimate strength of Ro-Ro ship is found on type-3 than followed by type-1 and type-2. These differences may be caused by dimension of scantling, configuration shapes, section properties of the hull girders and so on of the Ro-Ro ships.

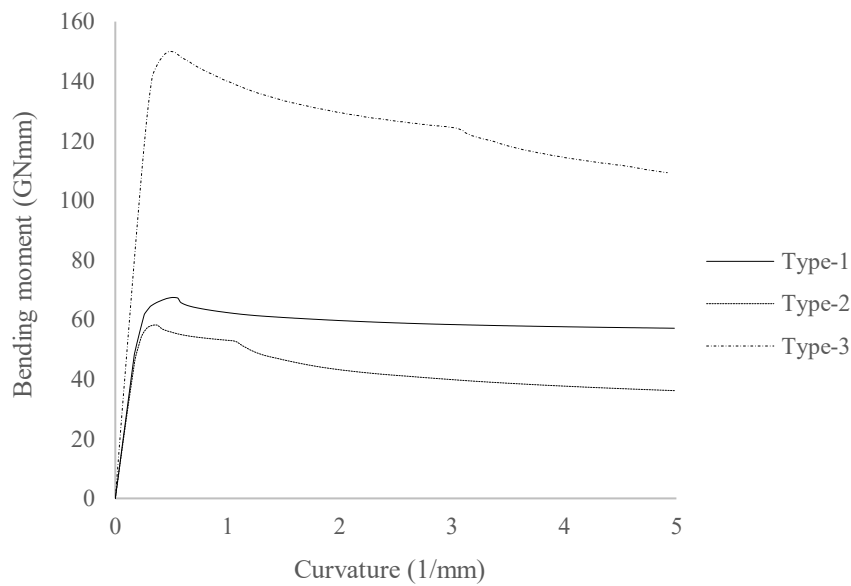


Figure 2 Bending moment-curvature relationship of 550 mm frame-space in hogging

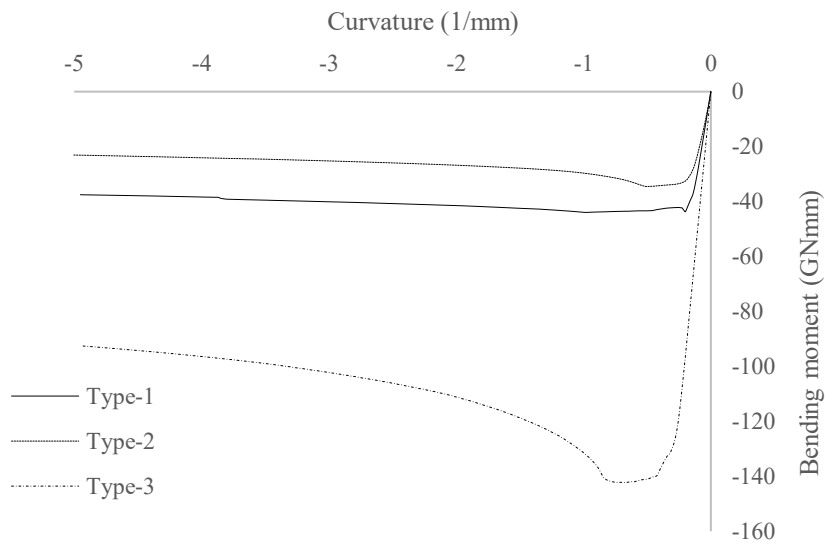


Figure 3 Bending moment-curvature relationship of 550 mm frame-space in sagging

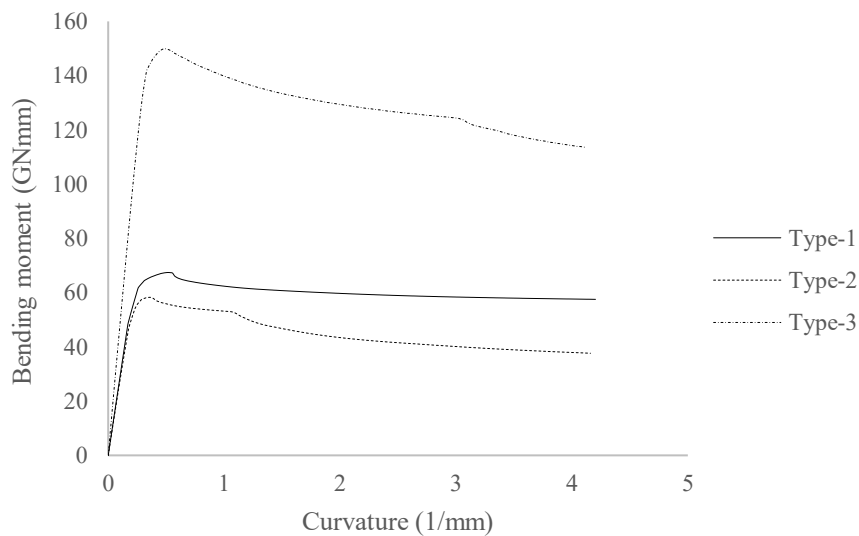


Figure 4 Bending moment-curvature relationship of 650 mm frame-space in hogging

It is also observed that the bending stiffness for type-3 is different with type-1 and type-2 for hogging and sagging. The tendency of the bending stiffness for type-3 tends to coincide to the vertical axis. This behavior may be influenced by the shape of bilge. It should be noted that the cross section of Ro-Ro ship for type-1 and type-2 is almost identical for the case of bilge. Perhaps, it is also affected by the shape of side shell for type-3, because there is a little different for the bottom part near to the bilge shell. This part is generally contributed to the effect of the ultimate strength including their tendency of the stiffness.

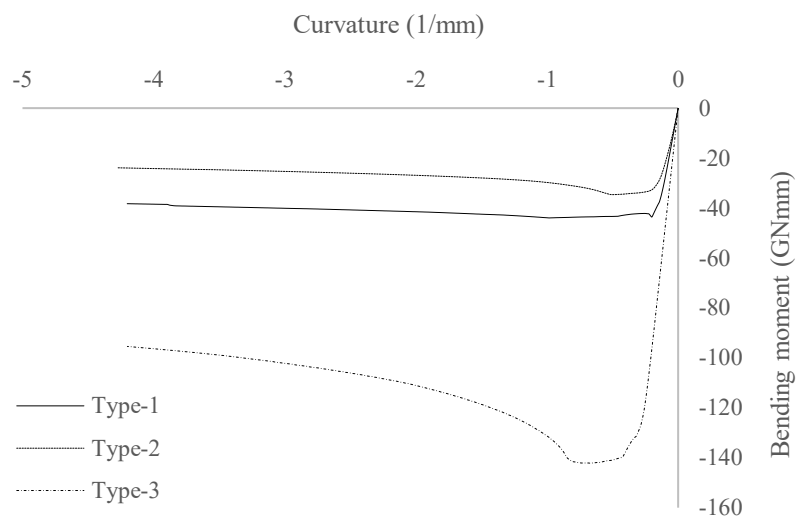


Figure 5 Bending moment-curvature relationship of 650 mm frame-space in sagging

4. Conclusions

The investigation of the ultimate strength on Ro-Ro ships has been done using Smith's method. The following conclusions may be summarized as; the ultimate strength of Ro-Ro ship for type-3 gives significant influence toward type-1 and type-2. This effect cause by the shape of cross sectional including their dimensions and hull girders. For the case of the influence of the frame-space, the effect is not so significant. The percentage of the biggest one is only about 0.5%.

References

- [1] Cui, J. Wang, D. Ma, N. A Study of Ultimate Strength for Container Ship Bottom Structures under Bi-axial Loads Considering Corrosion Effects. Proc. 27th Int Offshore and Polar Eng Conf, ISOPE, 990–997, 2016.
- [2] Muis Alie, M.Z, Sitepu G, and Latumahina, S.I, Proc. The Assessment of the Ultimate Hull Girder Strength of Ro-Ro Ship after Damages. Proc. 27th Int Offshore and Polar Eng Conf, ISOPE, 913–919, 2017.
- [3] Muis Alie, M.Z, Sitepu G, Juswan, Wahyuddin, Nugraha, A.M and Alamsyah. Finite Element Analysis on the Hull Girder Ultimate Strength of Asymmetrically Damaged Ships. Proc. 35th Int Conf. on Ocean, Offshore and Arctic Engineering, OMAE, 2016.
- [4] Muis Alie, M.Z. Finite Element Analysis on the Hull Girder under Longitudinal Bending with Bottom Damage. Proc. 3rd Int Conf. on Ship and Offshore Technology, ICSOT, 1-4, 2014.
- [5] Shu, Z and Moan, T, J. Mar Sci. Technol, 94-113, 2012
- [6] Amlashi H, K.K and Moan, T. Ultimate Strength Analysis of a Bulk Carrier Hull Girder under Alternate Hold Loading Condition – A Case Study : Part 1 : Nonlinear Finite Element Modelling and Ultimate Hull Girder Capacity. Marine Structures, 327-352, 2008.
- [7] Paik, J.K, Thayamballi, A.K, Pedersen, P.T and Park, Y.K. Ultimate Strength of Ship Hulls under Torsion. Ocean Engineering, 1097-1133, 2001.
- [8] Yao, T and Nikolov, P.I. Progressive Collapse Analysis of a Ship's Hull Girder under Longitudinal Bending (2nd Report). J. Soc. Naval Arch of Japan, 437-446, 1992.



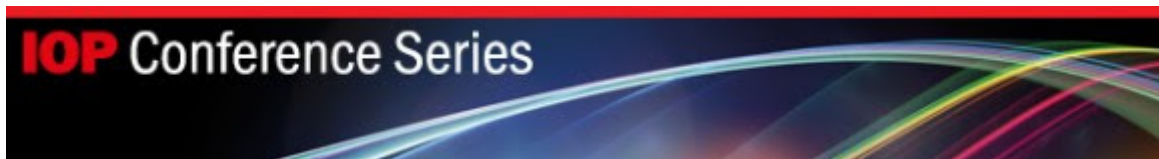
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Tue, Mar 27, 2018 at 3:48 PM

To: Muhammad Zubair Muis Alie <zubair.m@eng.unhas.ac.id>

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49	Azwar Hayat, Andi Erwin Eka Putra, Novriany Amaliyah and Shyam S. Pandey
50	Dermawan Dermawan, Hammada Abbas, Rafiuddin Syam, Zulkifli Djafar and Abdul Kadir Muhammad
51	Andi Amijoyo Mochtar and Rafiuddin Syam
52	Luther Sule, Andi Amijoyo Mochtar and Jalaluddin Jalaluddin
53	Rafiuddin Syam, Amiruddin Teru, Andi Amijoyo Mochtar, Azwar Hayat, Zulkifli Djafar and Abdul Hay Muchsin
54	Rafiuddin Syam, Fahrudin Amir, Amiruddin Teru, Adi Tonggihroh and Abdul Mufti Radja
55	Suryanto -, Nur Hamzah and Akhmad Taufik
56	Hery Sonawan and Puji P. Sumantri
57	Syafruddin Syarif, Zaenab Muslimin, Adik Putra Andika, Elyas Palantei, Dewiani Dewiani, Ansar Suyuti, Indrabayu Amirullah and Imran Habriansyah
58	Moh Ivan Azis, Rafiuddin Syam and Azwar Hayat
59	Moh Ivan Azis
60	Moh Ivan Azis
61	Moh Ivan Azis
62	Moh Ivan Azis
63	Moh Ivan Azis
64	Moh Ivan Azis and Budi Nurwahyu
65	Moh Ivan Azis
66	Moh Ivan Azis
67	Moh Ivan Azis
68	Moh Ivan Azis and Suharman Hamzah
69	Syahrudin Rasyid, Muas Mochtar and Tri Agus Susanto

Title
Transactions of Real-Time Medical Services Using Smart Card to Support the Role of Smart Campus
Effect of Current and Wire Speed on Surface Roughness in the manufacturing of straight gear using Wire-cut EDM Process
Modeling of Vertical Dynamic Vibration Characteristics on Vehicles Suspension System
The influence of mechanical dispersivity on mixing zone under active seawater intrusion
THE EFFECT OF POLE DENSITY ON PERMEABLE GROIN DUE TO CONTROLLING LONGSHORE CURRENT
EFFECT OF COOLANT CONDITION ON SURFACE ROUGHNESS AND TOOL WEAR DURING DRILLING OF AUSTENITIC STAINLESS STEEL
Impacts of Grid Frequency Variation on Dynamic Performance of DFIG Based Wind Turbine
Ultimate Strength Investigation on VLCC under Longitudinal Bending
The Ultimate Strength of FPSO with 370.000 BOPD Capacity
Ultimate Strength Investigation of Ro-Ro Ship
Sodium Hydroxide and Potassium Permanganate Treatment on Mechanical Properties of Coconut Fibers
Aging Study Of Oil Distribution Transformers
Environmental Geochemistry of Bawakaraeng Mountain Soil : Implication for Anthropogenic Impact Gowa South Sulawesi Indonesia
Combustion reactivity of low rank coal by the mixture of candlenuts shell
The Influence of Topography to the distribution of Ni-laterite deposits of Mangguruh area, Sebuku Island, South Kalimantan
CALCAREOUS NANNOFOSSIL ASSEMBLAGES OF TONASA FORMATION PALAKKA AREA, SOUTH SULAWESI: IMPLICATION OF PALEOENVIRONMENTAL APPLICATION
Beneficiation of Lateritic Iron Ore from Malili Area, East Luwu Regency of South Sulawesi Using Magnetic Separator
Numerical solutions for BVPs governed by an Helmholtz equation of anisotropic FGM
Experimental Study on The Influence of Draft Relative Due to Wave Transmission Energy Coefficient on Hanging Sheet Pile Breakwater
Control Design for Preventing Dengue Infections using Input-Output Linearization Method
Car Driver Drowsiness Recognition Android-Based System
Numerical Examinations of Metamaterial Concentrator Design for High Efficient Thermal Energy Harvester
Evaluation of Finite Control Set - Model Predictive Control for Dynamic Resources Management in A Shared-Resources System
Analysis of Natural Light Distribution in the Building

Parameter Estimation Study of Batch Ethanol Fermentation Kinetic Model Using Markov Chain Monte Carlo Method
Audial Comfort's Optimization of The Lanraki Biringkanaya Makassar Church Room
Experiments on Motion and Oscillation Controls of a Gantry Crane System Using Parallel Proportional Controllers
Optimization of stirring parameters on the rheocast microstructure and mechanical properties of aluminum alloy ADC12
Performance analysis of rack type solar dryers with mass variations of dried material and types of fins
MJO Anomalies relationship with Volcanic Eruption in Indonesian Archipelago
Pyrolysis Characteristic of Corn Cob as Fuel for Power Plant
Identification of Ground-fault Current in Various Transformer Connection and Generator Grounding using Symmetrical Components Method
Application of Hybrid Solar and Wind Energy Generation for Paddle Wheel Aerator
LEARNING TECHNOLOGY DEVELOPMENT OF FLEXIBLE MANUFACTURING SYSTEM USING SIMULATION SOFTWARE
Evaluation of CO ₂ , CH ₄ and N ₂ O gas emissions in biodegradation of oil sludge
Experimental Study for Measuring Density of slag melts by An Established Archimedean Double-bob Method
Analysis of ignition delay and burning rate of damar resin
Design and Development of Cooking and Stirring Machines for Palm sugar
The Development Mechanism of Microcontroller-Based Water Level and Temperature Control
Investigation of Creep Behaviour of Al-9Zn-4Mg and Al-9Zn-4Mg-5Cu Alloys
Experimental study on machinability in sub-millimeter range of the Aluminum Alloy using Face Turning Method
Performance of Candlenut Shell (<i>Alleuretus moluccana</i>) Based Supercapacitor with Acid Electrolytes
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Thrust analysis of propulsion mechanisms with pectoral fins in a Manta robot
Development of a foldable personal mobility vehicle with one drive wheel
Interacting Propeller Thrust for Navigating Omni-Directional Remotely Operated Vehicle

Clitoria ternatea flower as natural dyes for Dye sensitized solar cells
Finite element analysis on vibration of a flexible single-link manipulator moved translationally
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EXPERIMENTAL STUDY ON VACUM DRYING USING THE STEAM EJECTOR
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A Green and Compact Electrical Power Supply for Automobile Space Vehicles
Numerical solutions to anisotropic FGM BVPs governed by the modified Helmholtz type equation
BEM solutions to BVPs governed by the anisotropic modified Helmholtz equation for quadratically graded media
Numerical solutions for the Helmholtz boundary value problems of anisotropic media
Numerical solutions to anisotropic BVPs for quadratically graded media governed by an Helmholtz equation
BEM solutions to BVPs governed by an anisotropic Helmholtz equation for exponentially graded media
Numerical solutions to BVPs governed by the anisotropic modified Helmholtz equation for trigonometrically graded media
BEM solutions to a class of elliptic BVPs for anisotropic trigonometrically graded media
Numerical solutions to a class of scalar elliptic BVPs for anisotropic quadratically graded media
Numerical solutions to a class of scalar elliptic BVPs for anisotropic exponentially graded media
Numerical solutions to a class of scalar elliptic BVPs for anisotropic functionally graded media
On some examples of BEM solution to static elasticity problems of quadratically graded materials
Optimization of engine speed parameters and number of grinding wheels on the quality and production capacity of chicken feed pellets

