

Experimental and Computational Mechanics in Engineering

Selected peer-reviewed extended articles
based on abstracts presented at the
International Conference on Experimental and
Computational Mechanics in Engineering
(ICECME 2021)

Aggregated Book

Edited by

Dr. Akhyar Akhyar and Dr. Mohd Iqbal



Copyright © 2022 Trans Tech Publications Ltd, Switzerland

All rights reserved. No part of the contents of this publication may be reproduced or transmitted in any form or by any means without the written permission of the publisher.

Trans Tech Publications Ltd
Seestrasse 24c
CH-8806 Baech
Switzerland
<https://www.scientific.net>

Volume 28 of
Scientific Books Collection
ISBN 978-3-0357-1631-3

Full text available online at <https://www.scientific.net>

Distributed worldwide by
Trans Tech Publications Ltd
Seestrasse 24c
CH-8806 Baech
Switzerland
Phone: +41 (44) 922 10 22
e-mail: sales@scientific.net

Printed with permission by
Curran Associates Inc. (2023)



Additional copies of this
publication are available from:

Web: www.proceedings.com/68416.html

Table of Contents

Preface

v

Chapter 1: Steel and Alloys, Metalworking Technologies

Characterization of Magnesium Alloy AZ31 due to Thermal Oxidation

Temperature

Sutiyoko, Lutiyatmi and R. Afandi 3

Effect of Oil Quenching and Shot Peening to Improve Hardness Behavior of S45C

Carbon Steel

B.H. Priyambodo, Margono, K.C. Nugroho, N.T. Atmoko and R.I. Yaqin 9

Experimental Study of MQL Performance on the Titanium Material Drilling

Process

M. Alayaini, M. Rizal, M. Iqbal and M. Dirhamsyah 16

Microstructural Investigation of Acicular Nodular Cast Iron Used for Work Rolls

H. Oktadinata, S.B. Pratomo, S.A. Dwiwanto, Y. Nugraha and U. Mardono 27

Simultaneous Double-Sided Metal Inert Gas Welding of AA5052 Aluminum Alloy

T-Joints

R.A. Himarosa, Mudjijana, R.K. Adi, M.B. Nur Rahman, Sudarisman, A. Wisnujati, A. Yusuf and D. Hidayat 33

Effect of Welding Parameter Conditions of 304L SS and AISI 1015 Dissimilar Steel

Weld Joints to Macrostructure and Mechanical Properties

H. Kadir, Riswanda, A.D. Saragih, Sugianto, M. Budi and Akhyar 40

Chapter 2: Corrosion and Metal Failure

The Failure Analysis of Crankshaft of Four Cylinder Diesel Engine Using Experimental Method

Husaini, A. Rizqullah, I. Hasanuddin and S. Muammar 51

A Comparative Study on Corrosion Rate of Carbon Steel in *NaCl* Solution with Continuous and Discontinuous Weight Loss Methods

N. Ali, M.S. Mustapa, Z.I. Vega, T. Sulaiman and I. Hasanuddin 60

Analysis of the Leaf Spring Failure in Light Duty Dump Truck

Husaini, M. Farhan, N. Ali, T.E. Putra, R. Anshari and K. Suherman 67

Chapter 3: Composites

Effect of Silane Coupling Agent on the Mechanical Properties of Oil Palm Frond Fiber Composite

Sabri, Z. Fuadi, R. Kurniawan, S. Rizal and H. Homma 79

Finite Element Analysis of the *Jaloe kayoh* Boat Structure with Load Variations by Using E-Glass and Ramie Fiber Composite Materials

A. Tamlichha, S. Rizal, I. Hasanuddin, M.M. Noor and Nazaruddin 85

Chapter 4: Building Materials**The Effectiveness Evaluation of Sacrificial Anode in Reinforced Concrete that has
been Installed for One Year**

M. Isra, S. Huzni, B.M.I. Israr and S. Fonna 97

**Flexural Strength and Physical Properties of Cement Board Reinforced with Abaca
Fiber**

M. Iqbal, S.A. Azan, R. Rahmadtullah and L.B. Abhang..... 106

Keyword Index 117**Author Index** 119