

Table of Contents

Preface

Chapter 1: Metallurgy and Metalworking

Briquetting Pressure Roles in Selective Reduction Process of Limonitic Nickel Laterite F. Abdul, F.G.L.L. Rare, Y. Setiyorini, V.A. Setyowati and S. Pintowantoro	3
Toughness Recovery of Welded Pipe API 5L Grade B through Quenching and Tempering Treatment V.S. Hadi, F. Mubarok and M. Fitruallah	10
The Portevin-Le Chatelier Type for 316L(N) SS at Low Deformation Rate I.M.W. Ekaputra, G.D. Haryadi, R.T. Dewa, B. Setyahandana and H.S.M. Tuan	16
Mechanical Properties, Microstructural, and Deep Drawing Formability Analysis on the Annealed CuZn35 Brass Alloy for Cartridge Application W. Widystuti, R. Rochiem, D.M. Felicia, C.F.N. Adrinanda and A.P. Wibowo	22
Straightness Geometric Error Assessment for CNC Milling Machine H.B. Harja, A. Nurbaniah, N.S.B. Muhadi and A. Noviandi	29

Chapter 2: Powder Metallurgy

Optimization of Mixing Speed Parameter for Homogeneous Cu-Sn Composite W. Widystuti, B.A. Kurniawan, R. Sa'di, N. Safrida and A.P. Wibowo	39
Investigation of the Dwelling Time and Compaction Pressure Effect on Mechanical Properties and Microstructure of the Cu-Sn Composite W. Widystuti, R. Fajarin, F. Ali, S.P. Wijaya, E.N. Falah and I. Adityawan	46

Chapter 3: Friction Welding

Friction Stir Welding Process Optimization on 4 Tool pin Geometries with Process Parameters and Shoulder Concave Angle in 6005A-T6 Aluminium Alloy Joining N.A. Pontjonoto, I.M.L. Batan, A.S. Pramono, A. Wahjudi and M. Mulyadi	55
Macrostructure and Shear Strength Analysis on Cu-Al Joint of Micro Friction Stir Spot Welding H. Muzakki, I. Millaily, A. Ahmadi, S. Suwarsono and J.S. Bale	62
Influence of Tool Rotation and Surface Roughness on the Shear Strength of Nylon 6 - SS 304 Dissimilar Joint Resulted by Friction Lap Welding W. Wahono, I. Arnanda, A. Suyetno, A. Aminnudin, A.S. Ansari and Y.R.A. Pradana	68
The Influence of the Tool Concave Shoulder Angle on Heat Generation in the Stir Friction Welding Process with AA6061-T651 Materials M. Mulyadi, A.S. Pramono, A. Wahjudi, I.M.L. Batan and N.A. Pontjonoto	75

Chapter 4: Corrosion and Surface Treatment

Corrosion Behavior of Hastelloy C-276 in Hydrochloric and Sulfuric Acid S. Hastuty, A. Widiatmoko, T. Sudiro, M. Awwaluddin and P. Puspitasari	85
Formation of Protective and Hardening Coatings on Reinforcing Steels V.P. Anishchenko, V.A. Skachkov, O.R. Berezhna, R.N. Volyar, V.R. Rumyantsev, S.A. Vodennikov and O.S. Vodennikova	91
The Orientation and High-Quality Effect of Deposit Layer to Surface Roughness on FDM 3D Printed Part R.D. Bintara, Y.R.A. Pradana, A. Aminnudin and H. Suryanto	97

Application of Psidium Guajava Leaf Extract as an Organic Inhibitor in Acid Solution and Temperature Variation

A. Pradityana, E. Widiyono, H. Subiyanto, N. Husodo and M.S. Rizal 102

Effect of Stand of Distance (SOD) of Abrasive Water Jet Cutting processes on the Corrosion Properties of Material implant Stainless Steel 316L

T.D. Widodo, R. Raharjo, R. Bintarto, A. Wahyudiono and F.A. Alamsyah 108

Effect of HVOF Air Cap Nozzle Grooves on Cr₃C₂+ 20NiCr Coating Characteristics

E. Martides, H. Ardy, V. Vincent, B. Prawara, E. Junianto and E. Riyanto 115

Risk-Based Integrity Management System of Oil Tanker Hull Structure due to Corrosion

H. Kurniawan, T. Pitana and N. Siswantoro 121

Cladding and Natural Aging of Aluminium Alloy 2024 for Aircraft Application

H.C.K. Agustin, I. Sidharta and A.W. Caesarti 130

Chapter 5: Composite Materials

Influences Stacking of Basalt-Glass Fabrics Reinforced Epoxy Matrix Hybrid Composites towards Tension Loads

I.D.G.A. Subagia, N. Sutantra and Y.J. Kim 139

Experimental and Numerical Investigations on the Tensile Behaviour of Bamboo-Glass Fibres Hybrid Reinforced Polymer Composites

S. Sugiman, P.D. Setyawan, A.D. Catur and H. Ahmad 146

Durability Study of Glass/Carbon Hybrid Composites Immersed in Seawater for Marine Application

K. Abdurohman, M. Adhitya and A. Nugroho 153

Experimental Study of Sandwich Strength Materials Made from Banana Fiber, as Advance Materials of the Unmanned Mine Sweeper (UMS) Hull

C. Kusuma, F. Himam and W. Kusdiana 160

Experimental Study of Sound Absorption Coefficient Characteristics of Oil Palm Frond Reinforced Composite

S. Khem, S. Sutikno, P. Suwarta and B. Istana 167

Effect of Post-Curing Heat Treatment on Tensile Properties of Carbon UD/Vinyl Ester Composite with VARI Manufacturing Method

L.R. Isna, K. Abdurohman, A.R. Nuranto, A. Pratama and W.F. Arum 174

Ballistic Performance of Epoxy-Ramie Composite - SiC Layered Body Armor Using Finite Element Analysis

A. Safaat and S. Sutikno 180

Effect of Alkali Treatment and Particle Size on Sound Absorption Coefficient of Particleboards Made from Oil Palm Frond

B. Istana, S. Sutikno, P. Suwarta and I.M.L. Batan 187

Effect of Surface Treatment of Tire Rubber on the Tensile Properties of Ground Tire Rubber/Epoxy Composites

S. Sugiman, D. Rizaldi, S. Salman and B. Anshari 194

Performance of Tri-Adhesive Joints to Improve the Shear Stress Distribution of Lap Joints

W. Hardi, A.S. Pramono and Y. Yohanes 201

Chapter 6: Materials and Technologies for Biomedical Applications

Preparation and Characterization of Hydroxyapatite/Zinc Composites with Alginate for Bone Scaffold Application

J. Ramadhani, G.U.N. Tajalla, A.W.Y.P. Parmita, R. Rachmantyo and A. Wibowo 209

Microstructural Characterization of Polylactide/Poly -Caprolactone Blends for Plate Fixation Internal Application

S. Solechan, A. Suprihanto, S.A. Widjianto and J. Triyono 216

Numerical Study on the Effects of Coefficient of Friction to the Dynamic Sliding Contact between Bearing and Talar Components of Metal on Polymer Total Ankle Replacement Implants

H. Handoko, B. Basuki and R. Dharmastuti 223

Fatigue Detection System Based on Heart Rate and Eye Blink Equipped with Email and Buzzer Alerts to Increase Health Workers Productivity	
V.B. Callista, M.F. Firnanda, R.F. Anugraheni and A. Wikarta	232

Chapter 7: Waste and Biomass Conversion

Domestic Waste Incinerator Design with Bio-Mass Fuel	
V. Antono, R. Nurhasanah and A.S.N. Chairat	241
The Effect of Temperature Controller on the Gasification Performance Using Downdraft Gasifier with Three-Stages Gasifying Agent	
S. Mujiarto, B. Sudarmanta and H. Fansuri	250

Chapter 8: Research and Design of Machine Parts

Stress and Fatigue Life Simulation of Camshaft with Structural Static ANSYS Approach	
A. Andoko, R. Prasetya and F. Gapsari	263
Synthesis Analysis to Improve Coupling Strength of Automatic Coupler	
J. Mario, A. Syaifudin, A.S. Pramono, A. Windharto and A. Farid	268
SAND as Granular Damper Material to Increase Stability Limits during Turning of Steel Pipe	
S. Suhardjono, A. Wahjudi and S. Sampurno	275
Normal Modes Study on Half Wing Structure of N219 Aircraft Using Computational Method	
M. Sari, H.L. Guntur and M.B.S. Pratama	281

Chapter 9: Thermal Engineering

Study of Modified Absorber Plate with Aluminium Foam of Solar Water Heating System	
M.H. Basri, J. Jalaluddin, R. Tarakka, M. Syahid and M.A. Ilahi Rahmadhani	289
Experimental of the Influence of Blade Pitch Angle Cooler Fan on the Performance of Closed Cooling Water System Gas Turbine	
S. Budi and B.A. Dwiyantoro	296
Effect of Propylene Glycol on Supercooling NaCl-H₂O Solution as PCM to Reduce Energy Consumption in Hybrid Reefer Container	
I.N. Rokhim and S.P. Fitri	302

Chapter 10: Mechatronics

On-Line Quality Control in the Injection Molding Machine for the Process Statistic of Thermoplastics Material	
R.I. Media	311
The Performance of Magnetostrictive Material for Wind-Induced Vibration Power Generator	
L.O.A. Barata, E. Ngii, T. Takahiro and T. Ueno	319
Automatic Number Plate Recognition Application for Metropolitan Toll Road Payment System	
D.G. Alzamora, H.S. Fathoni and V.B. Callista	326
Artificial Neural Network (ANN) Based Meta-Model Design Optimization of Direct-Drive Wheel Hub Motor for an Electric Scooter	
I. Mahartana and H.L. Guntur	331

Chapter 11: Quality Control and Failure Analysis in Power Plant Equipment

Root Cause Failure Analysis of Waterwall Tube Boiler	
A.M. Kokong, R.H.N. Safitri, M. Jannah and S. Suwarno	341

Analysis of Cooling Water Quality Improvement to Increase Cooling Tower Efficiency at Kamojang Geothermal Power Plant Unit 1

F. Afriyanti, T. Yuwono and A. Masduqi

347

Numerical Study Impact of Coal Optimization on the Erosion Rate of the Low Temperature Superheater (LTS) Pipeline PLTU West Java 2 Palabuhan Ratu 3x350 MW

A. Sastrowibowo, W.A. Widodo and F. Mubarok

353