

9th Annual International Conference on Sciences and Engineering (9thAIC-SE 2019)

Strengthening Academic and Industrial
Collaborations to Enhance Research and
Innovation

IOP Conference Series: Materials Science and Engineering
Volume 796

Banda Aceh, Indonesia
18 - 19 September 2019

ISBN: 978-1-7138-3506-6
ISSN: 1757-8981

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence.
Licence details: <http://creativecommons.org/licenses/by/3.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2021)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

MECHANICAL AND INDUSTRIAL ENGINEERING

EFFECT OF VEGETABLE OILS AS CUTTING FLUID ON WEAR OF CARBIDE CUTTING TOOL INSERT IN A MILLING PROCESS	1
<i>Arya R. Nasution, Z. Fuadi, I. Hasanuddin, R. Kurniawan</i>	
LEAN MANUFACTURING PRODUCTION MANAGEMENT MODEL USING THE JOHNSON METHOD APPROACH TO REDUCE DELIVERY DELAYS FOR PRINTING PRODUCTION LINES IN THE DIGITAL GRAPHIC DESIGN INDUSTRY	11
<i>A Gomero-Campos, R Mejia-Huayhua, C Leon-Chavarri, C Raymundo-Ibañez, F Dominguez</i>	
DESIGN, PROTOTYPING, AND EXPERIMENT OF THE OCEAN CURRENT POWER GENERATION SYSTEM USING BACH SAVONIUS ROTOR	19
<i>Yusiran, Erwin, Lazuardi</i>	
LEAN PRODUCTION MANAGEMENT MODEL BASED ON ORGANIZATIONAL CULTURE TO IMPROVE CUTTING PROCESS EFFICIENCY IN A TEXTILE AND CLOTHING SME IN PERU.....	27
<i>R Cespedes-Pino, J Hurtado-Laguna, I Macassi-Jaurequi, C Raymundo-Ibañez, F Dominguez</i>	
THE EXPERIMENTAL STUDY OF IDENTIFICATION TRIGGER COMPONENTS IN ASH DEPOSITS AT THE BOILER PIPE OF THE ELECTRIC STEAM POWER PLANT IN NAGAN RAYA, ACEH PROVINCE.....	33
<i>A F Syah, A Gani, Khairil</i>	
MAINTENANCE MANAGEMENT MODEL UNDER THE TPM APPROACH TO REDUCE MACHINE BREAKDOWNS IN PERUVIAN GIANT SQUID PROCESSING SMES	39
<i>A Galesi-Torres, A Velarde-Cabrera, C León-Chavarri, C Raymundo-Ibañez, F Dominguez</i>	
PROPERTIES OF NANOCRYSTALLINE CELLULOSE FROM PINEAPPLE CROWN LEAF WASTE	49
<i>Fitriani, N A Sri Aprilia, N Arahman</i>	
TPM MAINTENANCE MANAGEMENT MODEL FOCUSED ON RELIABILITY THAT ENABLES THE INCREASE OF THE AVAILABILITY OF HEAVY EQUIPMENT IN THE CONSTRUCTION SECTOR.....	56
<i>A Palomino-Valles, M Tokumori-Wong, P Castro-Rangel, C Raymundo-Ibañez, F Dominguez</i>	
A FRAMEWORK FOR DEVELOPING LOT-SIZING AND SCHEDULING MODEL FOR MULTIPRODUCT.....	66
<i>Huda Muhamad Badri, Nor Kamaliana Khamis, Mariyam Jameelah Ghazali</i>	
SCOR MODEL FOR A DUAL-CHANNEL SUPPLY CHAIN USING DROP SHIPPING TO REDUCE OVERSTOCK IN SMALL- AND MEDIUM-SIZED RETAIL ENTERPRISES.....	76
<i>G Francia-Arias, J Marín-Vílchez, I Macassi-Jauregui, C Raymundo-Ibañez, F Dominguez</i>	
TRIBOLOGICAL PROPERTIES OF SELF-MATED SUS304 LUBRICATED BY PALM METHYL ESTER MIXED LUBRICANT AT BOUNDARY LUBRICATION	84
<i>Z Fuadi, M Faisal, M Dirhamsyah, M Tadjuddin, R Kurniawan</i>	

WAREHOUSE MANAGEMENT MODEL USING FEFO, 5S, AND CHAOTIC STORAGE TO IMPROVE PRODUCT LOADING TIMES IN SMALL- AND MEDIUM-SIZED NON-METALLIC MINING COMPANIES	92
<i>P Espinoza-Camino, I Macassi-Jaurequi, C Raymundo-Ibañez, F Dominguez</i>	
THE EFFECT OF STRAY CURRENT FROM SACRIFICIAL ANODE CATHODIC PROTECTION (SACP) SYSTEM ON THE ADJACENT UNPROTECTED REINFORCING STEEL.....	100
<i>S Fonna, R Kurniawan, Israr, R Fachri, S Huzni</i>	
LAYOUT LEAN MODEL OF PRODUCTION MANAGEMENT BASED ON CHANGE MANAGEMENT TO IMPROVE EFFICIENCY IN THE PRODUCTION OF PACKAGING IN AUTO PARTS SECTOR SMES.....	108
<i>J Mancilla-Escobar, I Maccasi-Jaurequi, C Raymundo-Ibañez, M Perez</i>	
THEORETICAL STUDY OF THE ABSORPTION REFRIGERATION CYCLE USING WATER-LITHIUM BROMIDE AS WORKING PAIR FOR COLD STORAGE APPLICATION.....	117
<i>Sarwo Edhy Sofyan, Muhammad Farhan, Khairil, Jalaluddin, Akram</i>	
LEAN PRODUCTION MODEL ALIGNED WITH ORGANIZATIONAL CULTURE TO REDUCE ORDER FULFILLMENT ISSUES IN MICRO- AND SMALL-SIZED TEXTILE BUSINESSES IN PERU	131
<i>B Martinez-Condor, F Mamani-Motta, I Macassi-Jaurequi, C Raymundo-Ibañez, M Perez</i>	
LEAN MAINTENANCE MODEL BASED ON CHANGE MANAGEMENT ALLOWING THE REDUCTION OF DELAYS IN THE PRODUCTION LINE OF TEXTILE SMES IN PERU.....	138
<i>G Arrascue-Hernandez, J Cabrera-Brusil, P Chavez-Soriano, C Raymundo-Ibañez, M Perez</i>	
PRODUCTION MANAGEMENT MODEL THROUGH MPS AND LINE BALANCING TO REDUCE THE NON-FULFILLMENT OF ORDERS IN LINGERIE CLOTHING MSES IN PERU.....	146
<i>K Flores-Andrade, R Guardia-Miranda, P Castro-Rangel, C Raymundo-Ibañez, M Perez</i>	
LEAN MANUFACTURING MODEL FOR PRODUCTION MANAGEMENT TO INCREASE SME PRODUCTIVITY IN THE NON-PRIMARY MANUFACTURING SECTOR	155
<i>S Flores-Meza, J Limaymanta-Perales, J Eyzagirre-Munarritz, C Raymundo-Ibañez, M Perez</i>	
COMPREHENSIVE MANAGEMENT MODEL FOR INCREASING THE COMPETITIVENESS OF SMALL AND MEDIUM ARTISAN JEWELRY ENTERPRISES IN PERU	163
<i>K Mejia-Pajuelo, K Solis-Galdos, D Mauricio-Sanchez, C Raymundo-Ibañez, M Perez</i>	
LEAN MANUFACTURING PRODUCTION METHOD USING THE CHANGE MANAGEMENT APPROACH TO REDUCE BACKORDERS AT SMES IN THE FOOTWEAR INDUSTRY IN PERU	172
<i>D Dextre-del-Castillo, S Urruchi-Ortega, J Peñafiel-Carrera, C Raymundo-Ibañez, F Dominguez</i>	
PRODUCTION MANAGEMENT MODEL BASED ON LEAN MANUFACTURING AND CHANGE MANAGEMENT AIMED AT REDUCING ORDER FULFILLMENT TIMES IN MICRO AND SMALL WOODEN FURNITURE COMPANIES IN PERU.....	180
<i>R Castro-Chara, R Valenzuela-Leandro, P Chavez-Soriano, C Raymundo-Ibañez, F Dominguez</i>	
LEAN PRODUCTION MANAGEMENT MODEL UNDER THE CHANGE MANAGEMENT APPROACH TO REDUCE ORDER FULFILLMENT TIMES FOR PERUVIAN TEXTILE SMES.....	188
<i>L Durand-Sotelo, M Monzon-Moreno, P Chavez-Soriano, C Raymundo-Ibañez, F Dominguez</i>	

LEAN MANUFACTURING PRODUCTION MANAGEMENT MODEL FOCUSED ON WORKER EMPOWERMENT AIMED AT INCREASING PRODUCTION EFFICIENCY IN THE TEXTILE SECTOR.....	195
<i>V Sosa-Perez, J Palomino-Moya, C Leon-Chavarri, C Raymundo-Ibañez, F Domínguez</i>	

ELECTRICAL ENGINEERING AND PHYSICS

APPLICATION OF QR CODES AS A NEW COMMUNICATION TECHNOLOGY AND INTERACTIVE TOURIST GUIDE IN JABOI, SABANG.....	203
<i>Marwan, M Yanis, Muzakir, G S Nugraha</i>	

ANALYSIS OF ELECTRICITY ENERGY SAVINGS WITH GRID-TIE SYSTEM CONNECTED TO UTILITY GRID	210
<i>Y Away, A Adria, Syahrizal, M S Rizal, H Walidainy</i>	

DESIGN AND TESTING OF PORTABLE LASER-BASED VISCOMETER	218
<i>E Yusibani, I R Sasmita, L Ardiah, E Yufita, M S Surbakti, Rahmi</i>	

USER REQUIREMENTS ELICITATION IN WEB-BASED PARTICIPATORY GEOGRAPHIC INFORMATION SYSTEM INTERFACE DESIGN	226
<i>Z Sofyan, Zulkifli, Bustami</i>	

IMPLEMENTATION OF SMS GATEWAY IN THE FLOOD NOTIFICATION SYSTEM USING RASPBERRY PI.....	233
<i>D Satria, S Yana, R Munadi, S Syahreza, E Yusibani, T Hidayat</i>	

INVESTIGATION INTO TIME EVOLUTION OF CHLORINE EMISSION IN PULSED CO2 LASER INDUCED BREAKDOWN SPECTROSCOPY (LIBS)	239
<i>A M Sari, K Lahna, M Ramli, K Kurihara, N Idris</i>	

SPATIAL ANALYSIS FOR CALCULATING CLOSEST DISTANCE OF OPERATORS' LOCATION TO BASE TRANSCIEVER STATION (BTS) IN BANDA ACEH CITY	244
<i>Nizamuddin, R P F Afidh, Ardiansyah, H Sofyan, N Anisah</i>	

THE RELATION BETWEEN RICE PRODUCTIVITY IN INGIN JAYA SUBDISTRICT AND NDVI (NORMALIZED DIFFERENCE VEGETATION INDEX) FROM SURFACE REFLECTANCE DATA OF LANDSAT 8	251
<i>Ardiansyah, Nizamuddin, S Amalia</i>	

A GENETIC ALGORITHM TO DETERMINE RESEARCH CONSULTATION SCHEDULES IN CAMPUS ENVIRONMENT	258
<i>R Idroes, A Maulana, T R Noviandy, R Suhendra, N R Sasmita, A Lala, Irvanizam</i>	

CIVIL ENGINEERING, GEOLOGY AND GEOPHYSICS

PROPERTIES OF BLENDED CEMENT PASTE WITH DIATOMITE FROM ACEH PROVINCE INDONESIA	266
<i>M Hasan, T Saidi</i>	

RAPID MATERIAL ESTIMATION FOR REINFORCED CONCRETE CONSTRUCTION UTILIZING A PARAMETRIC TOOL FOR ACEH'S POST-DISASTER CASE	272
<i>Atthailah, E Saputra, B Karsono, E Fahrizal, C A Fithri</i>	

SAFETY FACTORS AND STABILITY ANALYSIS OF ESCAPE HILL CRITICAL HIGH TOWARDS TSUNAMI FREE-BOARD AND RUN-UP LEVEL	278
<i>Munirwansyah, M Irsyam, R P Munirwan, H Yunita, H Munirwan</i>	
MODELING OF GROUNDWATER LEVEL FLUCTUATION IN THE TROPICAL PEATLAND AREA OF RIAU, INDONESIA.....	284
<i>H Pratama, S Sutikno, M Yusa</i>	
STRUCTURAL STYLE OF THE NORTH SUMATRA BASIN, OFFSHORE ACEH.....	292
<i>Muchlis, Chris Elders</i>	
APPLICATION OF PRECAST FOAMED CONCRETE PANELS FOR THE STRUCTURAL DECK OF GREEN ROOF SYSTEM	298
<i>A Munir, Muslimsyah, M Afifuddin, Mahlil</i>	
RESPONSE STRUCTURE ANALYSIS OF PRESTRESSED BOX GIRDER CONCRETE BRIDGE DUE TO EARTHQUAKE LOADS	305
<i>M Miranda, R Suryanita, E Yuniarto</i>	
FIRE RISK ANALYSIS BASED ON GROUNDWATER LEVEL IN REWETTING PEATLAND, SUNGAITOHOR VILLAGE, KEPULAUAN MERANTI DISTRICT, RIAU PROVINCE	314
<i>SH Silviana, BH Saharjo, S Sutikno</i>	
APPLICATION OF PAPER DISC VELOCIMETER FOR GROUNDWATER FLOW MEASUREMENT IN TROPICAL PEATLAND	324
<i>S Sutikno, RD Ramawilis, FA Hutapea, Rinaldi, K Yamamoto</i>	
PREPARATION OF MAGNETIC CHITOSAN MICROSPHERES USING IRON SAND PARTICLES PREPARED BY BALL MILLING METHOD	331
<i>Rahmi, Lelifajri, ASW Ayu</i>	
SLOPE STABILITY ANALYSIS DUE TO EXTREME PRECIPITATION	336
<i>H Gunawan, N Al-Huda, M Sungkar, A Yulianur, B Setiawan</i>	
CHEMICAL AND MICROBIOLOGICAL CHARACTERISTICS OF PACIK KULE, A TRADITIONAL FERMENTED CARP FROM SOUTHEAST ACEH.....	343
<i>M Muzaiifa, Martunis, C Nilda, Nurhayati</i>	
SPRAY DRYING OF MANGOSTEEN (GARCINIA MANGOSTANA L.) JUICE AND ANALYSIS OF ANTIOXIDANT ACTIVITY AND TOTAL PHENOLIC CONTENT	350
<i>DM Setyawati, E Mardliyati, S Rahman, AF Wijaya</i>	
ENDOPHYTIC BACTERIA ISOLATED FROM THE LEAF OF LANGUSEI (FICUS MINAHASSAE TESYM. & DE VR.) AND THEIR ANTIBACTERIAL ACTIVITIES	357
<i>T E Tallei, Y T Linelejan, S D Umboh, A A Adam, Muslem, R Idroes</i>	

CHEMICAL ENGINEERING

K2O/NBOP04 SOLID ACID CATALYST FOR BIODIESEL PRODUCTION.....	364
<i>N Nurhazanah, Y Sy, H Husin, CM Rosnelly, A Maulana</i>	
FABRICATION OF ACTIVATED CHARCOAL FROM COCONUT SHELL COMBINED WITH COAL FLY ASH FROM PLTU NAGAN RAYA FOR ADSORPTION OF METHYLENE BLUE	371
<i>Mariana, F Mulana, Fauzi M Djuned, M Fadli, M Meilian</i>	

PREPARATION AND CHARACTERIZATION OF ACTIVATED CARBON FROM GAYO COFFEE SHELL AS AN ADSORBENT FOR REMOVAL OF LEAD (PB) IN LIQUID WASTE	380
<i>L Juniar, Mariana, S Mulyati, D Fathira, R Safitri</i>	
PERFORMANCE OF TANNIC ACID/TETRAETHYLENEPENTAMINE COATED POLYMERIC MEMBRANE FOR THE SEPARATION OF DIFFERENT SURFACTANT-STABILIZED OIL IN WATER EMULSIONS	388
<i>F Senusi, S Ismail</i>	
PHARMACEUTICAL EMERGING POLLUTANT REMOVAL BY THIN ACTIVATED CARBON COATING: EQUILIBRIUM, KINETIC, AND THERMODYNAMIC STUDIES.....	395
<i>Muhamad Sharafee Shamsudin, Suzylawati Ismail</i>	
EFFECT OF SODIUM DODECYL SULFATE (SDS) ON POLYSULFONE/ZEOLITE MEMBRANE FOR THE REMOVAL OF COPPER IONS.....	405
<i>S A Hamid, S Ismail</i>	
STABILITY AND DURABILITY STUDIES OF ZWITTERIONIC ADSORBENT COATING FOR THE REMOVAL OF ORGANIC POLLUTANTS: CHEMICAL AND THERMAL TOLERANCE	412
<i>S F Azha, S Ismail</i>	
PRODUCTION OF 5-HYDROXYLIMETHYLFURFURAL FROM STARCH OF DURIAN SEED (DURIO ZIBHETINUS) THROUGH DEHYDRATION REACTION USING SOLVENT-BASED CHOLINE CHLORIDE: GLYCEROL	420
<i>R Manurung, I Zulkarnain, A G Siregar</i>	
TRANSESTERIFICATION OF REFINED BLEACHED DEODORIZED PALM OIL (RBDPO) USING NOVOZYM® 435 TO PRODUCE BIODIESEL	427
<i>R Manurung, R Hasibuan, B I Sari, R Wulandari, A G Siregar</i>	
PREPARING OF CARBON NANODOTS FROM BINCHOTAN CARBON BY ELECTROCHEMICALLY SONIFICATION AND DIALYSIS.....	433
<i>Nirwan Syarif, Dedi Rohendi, Sri Haryati, Lee Chew Tin</i>	
DEGRADATION OF NITRATE, AMMONIUM AND PHOSPHATE IN DOMESTIC WASTEWATER BY AQUATIC PLANTS, ACTINOSCIRPUS GROSSUS IN FLOATING TREATMENT WETLAND SYSTEM (FTWS)	441
<i>Syafrizal, Suhendrayatna, Muhammad Zaki, Elvitriana</i>	
PERFORMANCE OF TERMINALIA CATAPPA LEAVES EXTRACT AS BIO-CORROSION INHIBITOR FOR MILD STEEL IN H ₂ SO ₄ SOLUTION.....	447
<i>Marta Pramudita, Sukirno, M Nasikin</i>	
<u>STATISTICS</u>	
PHOTOCATALYTIC DEGRADATION OF ORGANIC WASTE IN VISIBLE LIGHT USING TiO ₂ NANOTUBES ARRAY	453
<i>Indar Kustiningsih, Cecep Saripudin, Siti Suwansih, Denni Kartika Sari, Jayanudin, Slamet</i>	
HYDROTHERMAL SYNTHESIS OF ACTIVATED CARBON/A-FE ₂ O ₃ NANOCOMPOSITE AND ITS APPLICATION FOR REMOVING TARTRAZINE DYE	460
<i>S Lubis, M Ramli, Sheilatina, Y Ermanda</i>	

OPTIMIZATION ADSORPTION OF LEAD (II) USING ACEH NATURAL-BENTONITE BY RESPONSE SURFACE METHODOLOGY	469
<i>J. Jakfar, H. Husin, A. Muslim, D. Darmadi, F. Nasution, A.R. Thursina, E. Rahmawati</i>	
APPLICATION OF CLUSTERING AND VARIMA FOR RAINFALL PREDICTION	476
<i>Asep Rusyana, Nidya Tatsara, Rozatul Balqis, Syafinatur Rahmi</i>	
GROUPING OF RETENTION INDEX ON GAS CHROMATOGRAPHY USING CLUSTER ANALYSIS	485
<i>I Husna, A Rusyana, Muslem, G M Idroes, R Suhendraand, R Idroes</i>	

Author Index