

Table of Contents

Preface, Committees and Sponsors

Chapter 1: Materials and Technologies of Processing

Finite Element Modeling of Frictional and Material Anisotropy During Forming of Steel Cylindrical Cups T. Trzepiecinski, A. Bazan and H.G. Lemu	3
Investigating the Degradation Resistance Improvement of Polymer Surfactant Complex Drag Reducing Agent H.A. Abdulbari, E.A.M. Basheer, A. Shabrin and W.K. Mahmood	7
Microstructure and Fatigue Fracture of Spot Welded TRIP800 Steel H. Wu, B. Zhao, H. Gao, Z.B. Zhao and C. Liu	15
An Investigation of Machining Time and Surface Roughness in Wire-EDM for Inconel 800 P. Dutta, S.C. Panja and G.R.K. Sastry	20
Modified Stoney's Equation for Evaluation of Residual Stresses on Thin Film K.T. Chen, J.H. Chang and J.Y. Wu	25
Optical Methods for Studying the Drying Dynamics of Fe₂O₃ Nanocolloid Droplets Depending on Variation of Substrate Temperature A. Dmitriev and P. Makarov	33
Experimental Study of Splitting Tensile Strength of Polymer Resin Grout with Fly Ash N.S. Mohammed, A.B. Abd Rahman, N.H.A. Khalid and M. Ahmed	38
Synthesis and Characterization of La₁₀Si₆O₂₇ and Ce_{0.9}Gd_{0.1}O_{1.95} Solid Oxide Fuel Cell Electrolyte Material D. Setsoafia, P. Hing, A. Jung, A. Islam, A.K. Azad and L.C. Lim	43
Synthesis and Investigation of the Structural Properties of Al³⁺ Doped Mg Ferrites S. Hossain, M.K. Hasan, S.K.M. Yunus, A.K.M. Zakaria, T.K. Datta and A.K. Azad	48
YSr₂Fe_{3-x}Co_xO₈ as a Potential Cathode Materials for SOFCs A.A. binti Mohd Kamis, J. Zaini, S. Abu Bakar, C.M. Lim and A.K. Azad	53
DFT/TD-DFT Studies on the Lawsone (Henna) as a Photosensitizer for Dye-Sensitized Solar Cells M.W. Han, P. Ekanayake, L.C. Ming and V.N. Yoong	56
Solder Ball Robustness Comparison between SAC 387 and Polymer Solder Balls under AC and TC Reliability Test B.K. Yap, C.H. Tan and C.Y. Tan	61
Effect of Microwave Absorber towards Pyrolysis Yield of Automotive Paint Sludge S.N.F. Syed Abdul Rahman, N.B.A. Rahman, S.S. Idris, N.F.A. Bakar, R. Mokhtar, Z. Januri and M.F. Mohamad Khalil	66
Effect of Treating Time on Mechanical Properties and Structure of Aramid Fibers during Heat Drawing H.J. Kong, P. Yang, C.Q. Teng, A.M.S. Dawelbeit and M.H. Yu	71
The Effects of Melt Compounding Method on the Ambient and <i>In Vitro</i> Mechanical Properties of EVA/MMT Nanocomposites A.F. Osman, T.W. Hong and A.M. Alakrach	75
Usage of Nano Silica in Synthetic Based Mud: A Comparison Study for High Temperature High Pressure Well M.A. Md Yusof, N. Wahid and N.H. Hanafi	80
Processing Temperature of Sustainable Polymer with Thermoplastics by Injection Molding (Part 2) A.Z.M. Rus, N.S.M. Salim and N.H. Sapiee	85
Optical Properties of Cu₂ZnSnSe₄ Nanocrystalline Thin Films for Photovoltaic Devices A. Dussan, H.P. Quiroz, J.A. Calderón and S.M. López	90
Effect of Cr on Grain Refinement and Mechanical Properties of Al-Si-Mg Alloys A. Kumar, G. Sharma, C. Sasikumar, S. Shamim and H. Singh	95

Optimization of Multi-Performance Characteristics for a Hybrid Process of EDM and AJM Using Grey Relational Analysis Y.C. Lin, J.C. Hung, A.C. Wang and H.M. Chow	100
Machining Parameters Optimization for Trimming Operation in a Milling Machine Using Two Level Factorial Design S.B. Mohamed, W.N.F. Mohamad, B.S. Yew, M. Minhat, M.S. Kasim, Z. Ibrahim, M.R. Musanih and R. Besar	105
Application of Taguchi Method Machining to CuAl M.R. Ibrahim, A. Abdullah, A.R. Ab Kadir and S. Sulaiman	111
Study on the Spring-Back Effect with Stress Distribution According to Forming Sheet Width in the Roll Forming Process D.H. Kim, H. Yu and D.W. Jung	116
Hard Spots in ADC12 Die Casting Cylinder Block Used for Air Compressor Y. Liu, G. Hua, B. Zhao, B. Guo, Y.J. Chang, Y. Zhou, Z.B. Zhao, Q. Zhang and C. Liu	121
The Impact of Employing Different Quality PA2200 Powder Grades to Shrinkage on Sintered Part in Selective Laser Sintering Process W.A.Y. Yusoff, D.T. Pham and K.D. Dotchev	126
Study of Interfacial Shear of Aluminium/Oil Palm Empty Fruit Bunch Fiber Reinforced Polypropylene Fiber Metal Laminates N.F. Hussain, D. Sivakumar, M.A. bin Daud, Sivaraos and M.Z. Selamat	131
A Review on Ultrasonic Welding Capability: Breakaway from Traditional Plastic M.A. Musa, W.A.N. Wan Saidin, N.I. Kasim, M.I. Ibrahim and N. Mohamad Noor	136
Experimental Investigation to Improve Surface Integrity of Biomedical Devices by End-Milling AISI 316L Stainless Steel M. Yasir, T.L. Ginta, A.U. Alkali and M. Danish	141
Review on Effect of Repetitive Rework on Dissimilar Austenitic Stainless Steel Pipes by Using GMAW Orbital Welding N.I.S. Hussein, M.N. Ayof and T.H. Kean	146
Surface Integrity in Micromilling of Hardened AISI D2 Tool Steel J.B. Saedon, S.L. Soo, D.K. Aspinwall, A. Barnacle and N.H. Mohamad Nor	151
Research of Elliptic Ultrasonic Vibration Mechanism T.X. Sun, M.F. Chen, Q. Sun and Y.X. Zhang	156
A Study on Dynamic Recrystallization Kinetics Model of 45Cr4NiMoV D.H. Yoon, Y. Zhang and D.W. Jung	160
Preheater for Anthracite Carbonization in Rotary Furnaces J. Spišák, B. Vaňko, J. Kerekanič and D. Čuchtová	165
Raman Analysis of Vanadyl Phthalocynnine Layers for Plastic Electronic Applications B.A. Paez-Sierra, F. Mesa and A. Dussan	170

Chapter 2: Researching and Designing of Machines and Mechanisms

A Study with Diesel Additives and Fish Methyl Ester on Diesel Engine at Full Load Condition G.R.K. Sastry, J.K. Panda and P. Dutta	179
Stratified Flow Condensation of CO₂ in a Tube at Low Temperatures P.H. Li, J. Deans and S. Norris	184
Solar Powered Water Pump Lifting Agriculture A. Raza, Y.Q. Zhu, Z. Nasir Khan, M. Ali, D. Khan and A. Hameed	193
Analysis of the Inherent Frequency of Circular Vibrating Screen and Modelling and Simulation of Matlab/Simulink Y. He and Q.J. Gao	200
The Design of the Nozzle for the Nozzle Box Microturbines A.Y. Fershalov, M.Y. Fershalov, Y.Y. Fershalov, T.V. Sazonov and D.I. Ibragimov	205
Topology Optimization of Wing Structure with Manufacturing Constraints D. He, C.J. Lin and Y.C. Deng	209
Design of Machine Tool Based on Reconfigurability Principles K.A. Abou-El-Hossein, N.J. Theron and S. Ghobashy	213

Dynamic Analysis for Rotors of a Twin-Screw Compressor with Gas-Induced Cyclic Loads Y.R. Wu, V.T. Tran and P.H. Hsu	220
Virtual Prototype Simulation and Transmission Error Analysis for RV Reducer Y.H. Zhang, Z. Chen and W.D. He	226
Study of the Influence of Labyrinth Seal Clearance on Gearbox Leakage with Gas-Fluid Two-Phase Mixture W.D. He, C. Wang and Y.H. Zhang	231
Fatigue Finite Element Analysis of Certain Type of EMU Gearbox Box J. Zhang, X. Li and H. Xie	236
Analysis of the Stability of Elliptical Journal Bearings under Vapor Cavitation Erosion R.H. Yusof and T.V.V.L.N. Rao	241
Sealing Performance of Thin Corrugated Metal Gasket M.A. Chiron and A. Purnowidodo	246
Improvement in CAM Shaft Design: An Experimental Application and Recommendation M.S. Al-Khalidi, M.K.A. Mohd Ariffin, S. Sulaiman, B.T.H. Bahrudin and N.A. Aziz	251
Numerical Study of Fluid Behavior Induced by Anchor Impeller in a Stirred Vessel A. Benmoussa, L. Rahmani and M. Rebhi	257
Thermal Error Prediction of the Spindle Using Adaptive Neuro-Fuzzy Inference System Y.L. Li, M.Y. Wang, Y.M. Hu and B. Wu	263
Efficiency Estimation of Thermoelectric Generators Application in the Liquefied Natural Gas Gasifiers A. Novikov, D.A. Uglov and A. Dovgalyo	268
Research on Inspection Feature Recognition Based on Pro/E G.J. Duan, Y. Ren and H. Duan	273
3D Analysis of Crack Behavior Using XFEM S.H. Lee and I. Jeon	278
A Numerical Investigation of Laminar Mixed Convection Flow and Heat Transfer in a Lid Driven Cavity with Two Cylinders K. Khanafer and M. El Haj Assad	282
Numerical Simulation of Radiation Losses in a Decaying Laser Spark Using LBL Method A. Sharma, A. Bansal, A. Kishan and R. Joarder	287
The Impact of Different Axial Oil Chamber Design on Hydrostatic Spindle S.H. Chen, S.T. Chen and C.C. Hsu	296
Study on the Structure Parameters Simulation and Optimization for Stamping Quality of Plate Heat Exchanger J.W. Wang, S. Chen, R.F. Chi and X.L. Zhao	300
Optimal Cantilever Design by Topology and Shape Optimization Methods J.W. Lee	306
Simulation Analysis of Planetary Gears Train of Semi-Direct Drive Wind Turbine Based on ADAMS Y.L. Cheng, Z.M. Xiao, L.R. Huan and F. Chen	311
Numerical Study for Shape Oscillation of Free Viscoelastic Drop Using the Arbitrary Lagrangian-Eulerian Method Z. Liu, S.W. Tan and G. Brenn	316
Analysis and Optimization of Erosion Wear Tester Design Parameters E. Kosa and A. Göksenli	324
Third Order ENO Scheme on Non-Uniform Grid for Supersonic Flows Y. Moiseyeva, A. Naimanova, Y. Belyayev and N. Shakhan	330
The Effect of Mass Flow Distribution Inaccuracies in a Hydraulic Network Model for OD Zig-Zag Cooled Power Transformer Windings J. Coddé, W. Van der Veken and M. Baelmans	336
Reliability of a Hydrodynamic Journal Bearing K. Diop, A. Charki, S. Champmartin and A. Ambari	342
A Supervisory Power Flow Controller for a Hybrid Power System A. Ouadi and H. Bentarzi	353
Study on the Dimensionless Model of High-Speed Penetration Efficiency M.L. Song, X.M. Wang and W.B. Li	362

Numerical Investigation of Cavity Flow Field Characteristics in Supersonic Flow Y. Liu, Z.G. Dou and L.W. Duan	368
Burners for Rotary Furnace - Proposal and Comparison J. Spišák, D. Naščák, B. Vaňko and J. Gloček	373
Innovative Design and Manufacturing Technology of High Temperature Air Combustion (HTAC) Municipal Solid Waste Incinerator S. Kerdsuwan	377
Failure Analysis of Composite Thin Walled Multi-Cell Closed Cross Section Beams with Multi-Tapered Configuration S. Ahmed and S. Ayub	382

Chapter 3: Applied Thermodynamics and Heat Transfer

Thermal Analysis of a Solar Powered ORC in Libya R.Z. Mathkor, B. Agnew, M.A. Al-Weshahi and S. Etaig	391
Study of the Mixed Convection in a Horizontal Channel Heated from below N.M. Sahraoui, S. Houat and N. Saidi	398
Natural Convection in an Annular Porous Medium: Effect of Brinkman Correction on the Bifurcation Point J. Belabid and A. Cheddadi	403
Method of Heat Balances for Calculating Heat Transfer in Flat Multilayer Nanostructures V.I. Khvesyuk and D.A. Vorobyov	407
Simulation Research on the Hydraulic and Thermal Operation for Complex District Heating System Z.G. Zhou and P. Wang	411
Field Evaluation of Five-Level Heat Dissipation Models under PV Array Structure Installed in the Tropics M.E. Ya'acob, H. Hizam, Y. Hashimoto, B. Adam and N.F. Othman	416
Circulation Effectiveness of Working Fluid in Inclined Micro Heat Pipes F.L. Chang and Y.M. Hung	422
Numerical Procedure for LMTD Correction Factor Calculation for One Tube and One Shell Pass Shell-and-Tube Heat Exchangers F. Neves Teixeira, L.G. Monteiro Guimarães, M. dos Santos Guzella, L. Cabezas-Gómez and J. Antônio da Silva	426
ANSYS Analysis on Thermal Structure of Bionic Brake Discs L.X. Wang, Y.Y. Gao, L.Q. Peng and L.G. Zhai	430
Development of a Plasma-Dump Combustor for VOC Destruction Y.N. Chun, E.H. Kim, M.S. Lim and W.I. Cheon	436
A Differential Quadrature Method for Solving Multi-Dimensional Inverse Heat Conduction Problem K.T. Chen, J.H. Chang, J.Y. Wu and M.J. Lin	441
The Nonlinear Multi-Fuel Combustion Equation: Comparison between the Model of Heat in SIE for Ethanol-Gasoline Blended and High Order Iteration Method T. Soontornchainaksaeng and P. Juntarakod	448
Numerical Determination of the LMTD Correction Factor for Shell-and-Tube 1-2 Heat Exchangers L.G. Monteiro Guimarães, M. dos Santos Guzella, L. Cabezas-Gómez and F. Neves Teixeira	457
Natural Convection for Air and Molten Gallium in Square- and Elbow-Shaped Enclosures E. Evren-Selamet and A. Selamet	462
The Simulation of Molecular Return Flux in Thermal Vacuum Test of Spacecraft Z.L. Jiao, L.X. Jiang, J.P. Sun, J.G. Huang and Y.F. Zhu	471
Significant of Isothermal Flow Studies for High Swirling Flow in Unconfined Burner A.R. Norwazan and M.N. Mohd Jaafar	477
Numerical Simulation of Turbulent Thermal Fluid in Tee Water Duct Cooled Nuclear Reactor F. Saidi, M. Aounallah, M. Belkadi, L. Adjilout and O. Imine	484
Experimental Analysis of the Pool Boiling Phenomenon of Sugarcane Juice D. Marcelo, P.V. Yacila and R. La Madrid Olivares	489

Cooling Profile Analysis of Hot Strip Coil Using Finite Volume Method S. Chakraborty, S. Datta, S.K. Mukherjea and P.P. Chattopadhyay	496
Application of PTFE Heat Exchanger in Low Temperature Waste Heat of Big Coal-Fired Power Plants W.P. Hong and H. Zhang	503
 Chapter 4: Instrumentation and Measurement Technologies, Monitoring and Fault Detection	
A W-Band Dual-Mode Band-Pass Filter Based on LTCC Technology Z.G. Wang and H. Ding	511
A Millimeter-Wave SIW Gain Equalizer Using LTCC Technology Z.G. Wang and H. Ding	515
Dew Point Measurement Error due to Tube Length in a Calibration Instrumentation and the Evaluation of Measurement Uncertainty Y.K. Bae and D.H. Hyun	519
A Neural Based Fuzzy Logic Model to Determine Corrosion Rate for Carbon Steel Subject to Corrosion under Insulation M.M. Khan, A.A. Mokhtar and H. Hussin	526
Research on Automatic Programming and Process Diagnosis in On-Machine Measurement G.J. Duan, S. Gao and Z.D. Cui	531
New Test System of Infrared Earth Sensor X.L. Zhang, F. Li and J.H. Zhao	536
Experimental Measurements of Pressure Losses in the Inter-Turbine Duct of a Gas Turbine C.F. Cuciumita, D. Olaru, V. Vilag, I. Porumbel, S. Riznyk and S. Khomylyev	540
Using Infrared Thermograph of Chip Temperature to Monitor Cutting Edge Performance M.S. Alajmi and S.E. Oraby	549
Chemiresistor Gas Sensor Array Based on Conducting Polymers for the Discrimination of Virgin Coconut Oil R.A.G. Rañola, K.S. Santiago and F.B. Sevilla	554
Sea Bed Logging Applications: Predicting Hydrocarbon Depth Using Mathematical Equations H. Daud, R. Razali and V. Asirvadam	560
Coal-Rock Character Recognition in Fully Mechanized Caving Faces Based on Acoustic Pressure Data Time Domain Analysis G.H. Xue, E.M. Liu, X.Y. Zhao, B.H. Hu and W.J. Ding	566
Modeling and Analysis of a Novel Flexible Capacitive-Based Tactile Sensor B. Gh. Elkilany and E.A. Sallam	571
Smart Diagnosis Using an On-Board Middleware A. Bouroumine, Z. Mustapha and A. Maach	577
An Equivalent Condition Score Method for the Calculation of the Failure Rate for Power Transmission Equipment with Condition Maintenance Z.J. Meng, X.X. Zhu and X.F. Song	582
Fault Detection and Diagnosis in Gears Using Wavelet Analysis Techniques and Comparison on their Diagnostic Capability M. Loksha, M.C. Majumder and K.P. Ramachandran	587
Solving the Issue of Electronic Breakdown of Hobbing Machine through Kobetsu Kaizen Methodology: A Case Study Y. Dave and N. Sohani	592
Intelligent Diagnostic of Induction Machine for Faults Detection and Classification Using Wavelet and Fuzzy Inference S. Bourdim, K.E. Hemsas and Y. Harbouche	597
Control Valve Fault Detection Based on Acoustic Emission Signal J.M. Juhani, R. Ibrahim and I.N. Mohd Shukri	604
Verification of Faulty Mechanism for Fan-Out Wafer Level Package Using Numerical Analysis H.S. Yoon and I. Jeon	609

Chapter 5: Designing and Development of Robots

Model Predictive Control for Tendon-Driven Balloon Actuator under Constraints on Simulation	
J.Y. Nagase, K. Hamada, T. Satoh and N. Saga	615
Investigation of the Influence of the Wings and Tail in Flight of the Jumping Robot	
S.F. Jatsun, O.G. Loktionova, L.Y. Vorochaeva and A.V. Vorochaev	621
Development and Validation of the Kinematic Analysis of a Low Low-Cost 4-Link Robot	
O.O. Ajayi, E.O. Onyemaechi and O. Obumneme	626
Simulation and Determination of the Influence of the Gait Function on the Change of the Shape of a Snake-Like Robot	
E. Prada, M. Valášek and A. Gmitterko	636
A New Method to Solve the Kinematic Problem of Parallel Robots Using an Equivalent Structure	
T.T. Trang, W.G. Li and T.L. Pham	643
A Low Cost Robotic Wheelchair System Using a Pan-Tilt Camera and a Visual Marker	
B.K. Kim, H. Tanaka and Y. Sumi	652
A Novel Dual-Loop Control Scheme for Payload Anti-Swing and Trolley Position of Industrial Robotic 3DOF Crane	
M. Faisal, M. Jamil, U. Rashid, S.O. Gilani, Y. Ayaz and M. Nasir Khan	658
Mechanical Analysis of a Hybrid Approach for a Lower Limb Rehabilitation Robot	
N. Wanichnukhro, T. Maneewarn and S. Songschon	665
A Framework of <i>In Situ</i> Model Error Compensation for Adaptive Robotic Task Execution	
Y.C. Pradeep, S.F. Zhou, A.G. Dharmawan, K. Otto, I.M. Chen and P. Chen	675
Hardware-in-the-Loop Test Platform Design for UAV Applications	
E. Atlas, M.I. Erdoğan, O.B. Ertin, A. Güçlü, Y.E. Saygi, Ü. Kaynak and C. Kasnakoğlu	681
The Motion Planning for Spherical Robot with Two Motors	
X. Wang	688
Intelligent Control System Design for a Teleoperated Endoscopic Surgical Robot	
A. Khalifa and A. Ramadan	693
Mathematical Model Based Attitude Control of Inverted Pendulum Type Mobile Robot	
J.H. Yoon, A.D. Ko, K.H. Choi, H.B. Park and M.J. Chung	700
Design Guidelines for an Embedded Permanent Magnetic Matrix Wheel Climbing Robot	
A. Boonyaprapasorn, K. Thung-od and T. Maneewarn	705
Increase the Space Trajectory Precision by Using the Proper Assisted Research Method for Inverse Kinematics Problem	
A. Olaru, S. Olaru and N. Mihai	711
KSU-IMR Mobile Robot Navigation Maps Building and Learning	
E. Mattar, K. Al Mutib, M. AlSulaiman and H. Ramdane	717
Dynamic Optimization of a Three Translational Degrees of Freedom Parallel Robot Based on a Multi-Objective Genetic Algorithm	
X.G. Lu, M. Liu and M.X. Kong	723
Modeling and Control of a Robot Arm on a Two Wheeled Moving Platform	
M. Onkol and C. Kasnakoğlu	735
Mars-500 Program Space-Based Mobile Robot “Turist”	
V. Ivchenko, P. Krug, E. Matyukhina and S. Pavelyev	742
Modelling of the Human's Leg as a Switched Linear System	
A. Babiarez, A. Czornik, M. Niezabitowski and R. Zawiski	747
The Design of a Multifunctional Remote-Control Intelligent Vehicle Based on STC89C52	
J.H. Wang and E.C. Cui	754
Synthesis of Seven-Bar Linkage with Two DOF for Body Guidance	
W.Y. Chung	758
Simulation-Based Analysis of a Linear Switched System Based on Human Arm's Dynamics	
A. Babiarez, J. Klamka, M. Niezabitowski and R. Zawiski	763
A Clustering and Outlier Detection Scheme for Robust Parametric Model Estimation for Plane Fitting	
R. Verma and A.K. Verma	770

Chapter 6: Mechatronics

Cooling Performance Analysis of the Permanent Magnet Motor W. Liu, H.R. Zou, S.J. Tang and P. Wang	779
Design on Electric Vehicle Battery Management System with FlexRay Bus J.K. Peng, H.W. He and D. Pan	784
The Impact of Different Direct-Driving Motor Design on Swivel Spindle Head S.H. Chen, C.M. Hsu, K.L. Chiu and C.P. Chan	791
Stability Control of Electric Vehicles with Two-Motor-Wheel Drive M. Khessam, A. Hazzab and A. Boucha	795
A Unifying Model for Mechatronic Systems Specification S. Al-Fedaghi and A. Abdullah	803
Investigation of Relation between Straightness and Cutting Force in CNC Turning Process T. Shansungnoen and S. Tangjitsitharoen	812
A Systematic Approach for Modeling and Analyzing Mechanical Assemblies that Require Remote Handling L.M. Orona, J. Mattila and H. Weick	821
Instruction Format Design for Low Power Embedded Systems J.H.M. Youn, D.J. Park, J.H. Cho and D.S. Cho	829
Data Cluster Detection for Low Power Embedded Memory Subsystems D.J. Park, J.H. Cho and D.S. Cho	833
Stress-Strain Behaviour of Dielectric Elastomer for Actuators R.K. Sahu, K. Patra, S. Bhaumik, A.K. Pandey and D.K. Setua	837
Fractional Order Modeling and Analysis of Buck-Boost Converter L.F. Yi, K.R. Zhang and J. Liu	842
The Turning Speed of Stability Control in Electric Learner-Driven Vehicle Driving X. Chen, Y.L. Ma and Y.Z. Cheng	849
Innovative Algorithm and Software for Three-Dimension Topography Evaluation in Laser-Micro Machining L.B. Guo, F.L. Yao, Z.H. Zhang and Y.F. Duan	853
Finite Element Analysis on Vibration of a Piezoelectric Micro Pump B.W. Huang, J.G. Tseng and C.H. Chang	861
Simulation of Closed Loop Electro-Hydraulic Actuator Using PID Based on AMESim M. Qaiser	865
Automatic Recognition of Multi-Axis Machining Features Based on Machining Process from 3D Solid Model P.X. Lan and H.V. Sinh	873
Control Strategy and Deterministic Optimization Research for Parallel Compound Braking System B. Lu, H.W. He and Q.C. Wang	878
Extended Modeling of Vertical Axis Motion Dynamics of VTOL Vehicle W. Janusz, R. Czyba, G. Szafranski and M. Niezabitowski	883
Kinematics Optimization of a 3-SPS Parallel Redundant Motion Mechanism Using Conformal Geometric Algebra J.H. Park, J. Kim and J.H. Jeong	889
Design of Transfer Alignment for Micro-Inertial Attitude Measurement System Based on Distributed Y.K. Wang, S. Han, Z.H. Liu and X.H. Yu	896
A Study on Influence of System Parameters on Servo Pneumatic System and Multi-Response Optimization Using Taguchi – Grey Methodology D. Saravanakumar, B. Mohan and T. Muthuramalingam	901
A Study on Slip Controller for Safety Improvement of Running Flat Road for Motorized Wheelchair B.M. Kim, W.Y. Lee and E.H. Lee	906
Ground Semi Active Damping Force Estimator (gSADE) for Magnetorheological Damper Suspension System Using Quarter Heavy Vehicle Model S. Sulaiman, P.M. Samin, H. Jamaluddin, R.A. Rahman and S.A. Abu Bakar	913

Optimal State Feedback Controller Design for Vibration Attenuation in a Class of Image Transfer Belt J. Yu and H. Yamaura	918
Proportional Derivative Controller Using Discrete Kalman Filter Estimation Method for Spacecraft Attitude Control M.F. Mehrjardi, H. Sanusi, M.A. Mohd Ali and M.A. Taher	923
Skid Control of Small Electric Vehicles with In-Wheel Motors (Effect of ABS and Regenerative Brake Timing Control on Emergency Braking) M.H. bin Peeie, H. Ogino and Y. Yamamoto	927
Predictive Functional Control for a Pneumatic Cylinder Y. Hashimoto, T. Satoh, J.Y. Nagase and N. Saga	932
Development and Implementation of an Automated Car Parking System T.S. Mohammed, W.K. Al-Khairi, A.T. Al-Jubouri and O.S. Shamas	939
Adaptive Fuzzy Sliding-Mode Position Control of a Shape Memory Alloy Actuated System S. Kuntanapreeda	946
Estimation of Unknown Disturbances in Gimbal Systems B. K�rk�� and C. Kasnako��lu	951
Tire Force Control Strategy for Semi Active Magnetorheological Damper Suspension System Using Quarter Heavy Vehicle Model S. Sulaiman, P.M. Samin, H. Jamaluddin, R.A. Rahman and S.A. Abu Bakar	957
Sensorless Control Based on Virtual Neutral Voltage for BLDC Motor Drive C.H. Yu and C.Y. Tseng	962
Vibration Control of Strain Gradient Nonlinear Micro-Cantilevers Using Piezoelectric Actuators R. Vatankhah, M.A. Nojournian and H. Salarieh	967
Independent Control of Force & Displacement Using Shape Memory Alloy Tactile Display H.M. Alalem	972
Computational Simulation and Experimental Validation on Safe-Flight Control for a Six-Rotor Craft T. Simada, S. Okamoto and J.H. Lee	982
A Grating Monopole Antenna on Metamaterial Using MSRR for DVB-T Application C. Zebiri, M. Lashab, F. Benabdelaziz, R.A. Abd-Alhameed and F. Elmegri	989

Chapter 7: Theory and Practice of Control

Predictive Functional Control of a Table Drive System Using Disturbance Observer and Preview Feedforward Controller T. Satoh, H. Hara, T. Sogawa, N. Saito, J.Y. Nagase and N. Saga	995
A New Variable Structure Control Scheme for Mismatched Uncertain Large Scale Systems Y.W. Tsai, P.V. Duc and V.V. Huynh	1005
Reactive Power Control of Reversible Electric Drives by Using Industrial Smart Grid Technology A.A. Radionov, A.S. Maklakov and V. Gasiyarov	1011
Development of an Experimental Setup for the Altitude Control of a Ball in a Pipe �. Aky�rek, G.S. �zden and C. Kasnako��lu	1016
Adaptive Optimal Digital PID Controller Y.X. Sun and Z.H. Wang	1021
On the Reducibility of the Discrete Linear Time-Varying Systems J. Klamka, E. Ferenstein, A. Babiarz and M. Niezabitowski	1027
Prescheduled Controller for Split Unit Air Conditioner Reduce Energy Consumption S.A. Salauddin, L.C. de Silva and I. Petra	1034
Optimisation of a PID Controller for an Inverted Pendulum Using the Bees Algorithm M.A. Sen and M. Kalyoncu	1039
Trajectory Controllability of Semilinear Systems with Delay in Control and State J. Klamka, E. Ferenstein, A. Babiarz, A. Czornik and M. Niezabitowski	1045
Properties of the Lower Bohl Exponents of Diagonal Discrete Linear Time-Varying Systems M. Niezabitowski	1052

Providing Security of Vital Data for Conventional Microcontroller Applications B. Akdemir and H. Üzülmöz	1059
An Affine Parameter Dependent Controller of an Helicopter for Various Forward Velocity Conditions I.H. Şahin and C. Kasnakoğlu	1067
A Systematic Approach for Optimal Design of SVC Controller to Reduce the Disturbances in Electric Arc Furnace Using Generic Algorithm M. Abbasian, D. Noorzadeh, S. Hasanzadeh and V. Hanaeinejad	1073
The Dipole Magnets Temperature Monitoring and Interlocking Protection System of HIRFL-CSRm J. Yin, L.L. Li and Y.Y. Wang	1078
Development of a Cloud Based Remote Mobile Monitoring and Control System for Manufacturing A.W.L. Yao and R.T. Lin	1082
Analysis and Initialization of GE Wind Turbine Control Model E. Becirovic, J. Osmic, D. Toal, M. Kusljagic and N. Peric	1087
On PID-Controller Parameters Neural Tuner Usage for Nonlinear Plants Control Y. Eremenko, D. Poleshchenko, A. Glushchenko and A. Fomin	1101

Chapter 8: Civil Engineering

Fabrication of High Strength Concrete from Recycled Concrete Aggregate Utilizing Taguchi Method E. Magdaluyo Jr., L.C.E. Aterrado, J.C.B. Paz and I.R.B. Gonzales	1109
Investigation of Wind around Buildings of Different Heights Using an Environmental Wind Tunnel M. Elhakeem and A.M.A. Sattar	1114
Identifying Radius of Rebar Buried in Concrete Massif by Using Electromagnetic Penetrating Radar Z. Mechbal and A. Khamlichi	1119
Evaluation of the Use of a Solar Source for Air Conditioning for Home in Algeria N. Rebah and B. Benyoucef	1123
Numerical Modeling of Wind around Buildings of Different Heights A.M.A. Sattar and M. Elhakeem	1129
Grouted Pipe with Double Spirals for Precast Concrete Connections A.B.A. Rahman, G.H. Miang and Y. Ahmad	1134
Seismic Performance Improvement of 3D Reinforced Concrete Frames with Different Strengthening Applications F. Bahadir and F.S. Balik	1140
Sustainable Manufacturing Processes of Building Materials: Energy Efficiency S.K. Öztaş	1145
Heating or Cooling Buildings with PV Walls in Reunion Island D. Bigot, F. Miranville, S. Guichard, E. Lebon and A. Jean	1150
Influence of Very Old Masonry in the Seismic Damage of an Historic Tower I. Aldreggetti, S. Ientile and S. Russo	1156
The Study of the Multichannel Solar Chimney Ventilation Performance W.B. Zhao, Y.G. Lei and F. Wang	1162
Effects of Wetting on the Soil Fabric of Compacted Clay J. Zaini, A.K. Azad, S. Abu Bakar and Q.H. Nam Cheok	1166
Fiber Reinforced Composite Materials in Architecture S.K. Öztaş	1171
Performance of Grouted Splice Sleeves with Tapered Bars under Axial Tension A.B.A. Rahman, L.H. Yoon, I.S. Ibrahim, R.N. Mohamed, S. Mohammad and A.A. Saim	1176
The Statistical Verification of Significance of Airtightness and Energy Performance M. Kraus, K. Kubeková and D. Kubečková	1181

Chapter 9: Product Design, Product Quality and Rapid Prototyping

Applying P-Diagram in Product Development Process: An Approach towards Design for Six Sigma	
O.F. Enoch, A.A. Shuaib and A.H. bin Hasbullah	1187
Evaluation of Product Quality Using Standardized Distance from Target	
S.J. Hong, M.K. Park, J.H. Na and W.S. Cho	1192
Using the Fuzzy-QFD for Product Development: A Case Study for 3D Printer	
R. Vongvit	1196
Design of Experiment – An Integration of Fisher, Taguchi and Shainin DOE Methodology	
T.O. Kowang and C.S. Long	1201
Rapid Prototyping Technology: The Next Keystone for Small and Medium Ceramic Industry	
A.A. Shuaib, F.E. Olalere and K.A. bin Mat Daud	1207
A Roll Powder Sintering Additive Manufacturing Technology	
V.R. Shulunov	1212
The Manufacture of Molar and Dental Bridge through 3D Printing	
S.L. Chang, C.H. Lo and C.P. Jiang	1217
Image Processing of Product Surface Defect Using Scilab	
N. Awang, M.H.F.M. Fauadi and N.S. Rosli	1223

Chapter 10: Industrial Engineering

Genetic Modelling for Selecting Optimal Machine Configurations in Reconfigurable Manufacturing System	
F. Hasan and P.K. Jain	1229
A Productivity Improvement of a Packing Line	
P. Jitchaiyaphum and S. Prombanpong	1240
Modeling of Order Oriented Planning for Printed Circuit Board Assembly Line	
U. Saif, Z.L. Guan, Z.D. He, C. He and C. Jun	1245
Re-Layout and Robust Machine Layout Design under Stochastic Demand	
S. Vitayasak and P. Pongcharoen	1252
Construction of a Cloud Manufacturing Platform for Service Sharing in Manufacturing Industry Park	
M.Z. Tan, S.P. Yi, R. Zeng and Z.L. Guo	1258
Improving Quality Control Plan of Flexible Printed Circuit	
R. Nunthaporn and P. Chutima	1264
An Optimization of Automated Process Planning for Manufacturing Prismatic Parts on a Machining Center	
J. Kongchuenjai and S. Prombanpong	1270
Virtual Reality for Manufacturing Engineering in the Factories of the Future	
M. Bougaa, S. Bornhofen, H. Kadima and A. Rivière	1275
An Application of Value Stream Mapping in Ceramic Tile Industry: A Case Study	
O. Joochim and S. Jungthawan	1283
The Effect of Unforeseen Disruption on Different Types of Manufacturing Industry-Layout	
J.M. Ikome, S.P. Ayodeji and M.G. Kanakana	1287
A Heuristic Approach for Type 2 Assembly Line Balancing Problem	
B. Pakeeza, A. Riaz and M. Umer	1296
Study Concerning the Increase of Productivity in Machining by Lapping	
A. Deaconescu	1301
A Unified Measure to Assess Universally Industrial Products for Ecological Balancing	
M.R. Ramadan	1306
Modeling the Collaborative Design of the Automotive Powertrain System Based on the Design Structure Matrix	
T.C. Nguyen and Y. Jin	1311

