

Table of Contents

Preface, Committees and Sponsors

Chapter 1: Designing in Mechanical Engineering

Analysis and Simulation of Parallel Lifting Mechanism for Schnable Car Based on Complex Vector	
Y.Z. Zhao, X.N. Wang, X.G. Bai and Y.B. Ren	3
Analysis of Pressure Wave Model Predictions Considering Diesel Fuel Properties	
H. Qaisar, L.Y. Fan, E.Z. Song, X.Z. Ma, B.Q. Tian and N. Farouk	7
Dynamic Characteristics Analysis and Improvement of TK6920 Spindle Box	
H. Hu, Z.P. Hua and Z. Yang	11
Dynamics Influence of Joints with Clearance on Complex Mechanism	
C. Liu, S.S. Shen and C.L. Zhang	15
Study of Effect of Diesel Fuel Properties on Pressure Wave Profile	
H. Qaisar, L.Y. Fan, E.Z. Song, X.Z. Ma, B.Q. Tian and N. Farouk	19
A High Efficiency Coffee Roaster Development Based on Gas Baking Technology for Home Use	
H.C. Hsu and R.C. Lo	23
Study on the Evaporator Area Effects in the Gravity Feed Liquid Refrigeration System	
Q.J. Liu, X.J. Ma, S.Y. Chen, F. Han and R.Q. Zhan	29
Numerical Simulation of Secondary Flow in a Curved Square Duct	
L.J. Zhang, W.P. Zhang and P.J. Ming	33

Chapter 2: Technologies and Instruments for Measurements

Error Compensation Based on Lagrange Multiplier in Heterodyne Laser Interferometer	
E.H. Oh, W.R. Lee, K.H. Lee and K.H. You	43
Design of Structural Health Monitoring System Based on WSNs	
Y. Zhou, S. Liu and L.X. Zhang	47
Development of Smart Remote Local Information Embedded System Using Global Positioning System	
W.H. Choi and M.S. Jie	51
A Structural Damage Classification Algorithm Based on AiNet Immune Aggregation	
Y. Zhou, L.B. Yue and L.X. Zhang	57
Component Detection Method for Measuring Precision	
B. Yi, X.M. Zhang, X.J. Wang and Z.F. Chen	61
Detection of Seismic Wave with Laser Interferometer	
W.R. Lee, E.H. Oh, M.W. Lim and K.H. You	66
Development of Real Time Harmful Gas Detecting Embedded System	
W.H. Choi and M.S. Jie	70

Chapter 3: Mechatronics, Robotics and Control

A Study of Flexible Force Control Method on Robotic Assembly for Spacecraft	
L.J. Zhang, R.Q. Hu, W.M. Yi, H. Fu and L.Y. Tang	79
Design and Kinematics Analysis of Planetary Sampling Manipulator with Lightweight	
X.X. Sun, B.W. Zhang, J.J. Liu and Q. Chen	86
Local Modal Space Control Design for a 6-DOF Parallel Manipulator	
T.X. Tian, H.Z. Jiang, J.F. He and Z.Z. Tong	90
Mobile Robot Powered by Solar Cells	
P.C. Patric, L. Pascale and G. Măntescu	96

Modal Analysis of the Line Inspection Robot's Manipulator J. Li, X. Dong, Z.C. Zheng, Y. Gao, Z.T. Jiang and H.Y. Xiao	100
Application of Fuzzy Control Technology in the System of Electric Boiler Temperature Control J. Tian	106
Architecture for a Novel STEP-NC-Compliant CNC System Y. Zhang and X.L. Bai	110
Internal Force Decoupling Control of Hyper-Redundant Shaking Table Based on Stiffness Matrix W. Wei, Z.D. Yang, J.W. Han and T. Gao	115
An Increment-Type Multi-Step Predictive and Multi-Step Control Algorithm of Single-Variable Systems Z. Jiang	121

Chapter 4: Power Engineering, Electrical Machines and Apparatus

A Model for Planning of Generalized Power Source in Active Distribution Network Based on the Glowworm Swarm Optimization Algorithm C. Pan, T. Meng, H. Yin and K. Su	127
Application of Fibonacci Method in Amending Bidding Strategy for Hydropower Plant J. Wang and J. Lu	131
Design of a Fault Diagnosis Model for Power System with Based on Multi-Source Information Fusion J.D. Wang	136
Research and Simulation of STATCOM Based on PSCAD/EMTDC Y. Deng and Y. Gao	141
Research on Protection Distance of 500kV Arrester H.M. Qiu and R. Bie	147
Research on User Electrical Safety Monitoring System Based on Cloud Computing Technology E.G. Zhu, L.J. Ge, X.Q. Zhong and L.J. Dong	152
Review of Condition Assessment for Power Transformer J.J. Kong, F. Wang, Y.L. Li, X.T. Wu and J.G. Bi	160
Simulation of SVPWM in PSCAD/EMTDC Y. Deng and Y. Gao	164
Study of System Stability Based on the Combination of Low Voltage Protection and Security Automatic Device S.M. Liu, Z.J. Wang, C.Y. Lin, H. Wang and S.T. Chen	169
The Electrical Properties and Impedance Analysis of ZnO Varistors Doped with Different Cu₂O Contents J.W. Fan, H.J. Zhao and X.L. Zhang	173
The Setting Calculation of the Current Increment Protection of the Traction Power Supply System for High-Speed Railways C. Zhao and S.B. Gao	177

Chapter 5: Technologies in Construction

A Comparative Study between Welding and High-Tensile Vertical Bolt Methods in PHC Pile Coupling Work Y.S. Shin and G.H. Kim	183
Complicated Super High-Rise Structural Model Conversion Technology X. Zhang and Q. Cheng	187
Experimental Study on the Effect of Road Rollers Construction Vibration F.B. Chen	195
Finite Element Analysis on Acoustic Wind Tunnel Structure of Special-Shaped Thin-Walled Concrete B.P. Li, G.L. Bing and Z.J. Wang	200

Reliability Analysis of Pre-Stressed Concrete Continuous Girders Bridge Using Incremental Launching Method on Different Codes F.H. Dong, Y.T. Du and F.K. Cui	205
Simulation Research for the Excavation Stability of IV Brittle Rock Based on Vault Settlement Effect K.L. Liu and L. Guo	209
Discuss on Key Techniques of Salvage of Foundation Pit X.X. Wu, Q. Cheng and H.L. Ye	214
The Study on the Cathodic Protection Effect of the ICCP Anodes with Exposed Conditions J.A. Jeong and C.K. Jin	218
Aerial Steel Platform Overall Lifting Process and Stress Calculation S.T. Yao, W.C. Zhao and Q. Cheng	222

Chapter 6: Information Technologies, Data Processing and Networks

A New Efficient Method for DCT8x8 with CUDA	231
A Novel Energy-Balanced Dynamic Routing Algorithm for Wireless Sensor Networks X.X. Zhou and Y. Zhao	235
A Structural XPath Query Expansion Approach Based on XML Schema in Publish Subscribe System J.B. Pei, J.C. Gao, Y.A. Liu and X.L. Ma	239
Service Selection Based on Rule and Statistics Model in WoT Smart Home D. Wei, C.H. Zhang and X.N. Zhu	244
The Security Study of an EC Protocol Based on Casper/FDR2 F. Wang	249
Wireless Sensor Network Routing Optimization Based on Improved Shuffled Frog Leaping Algorithm Y.C. Ma and H.G. Shao	253
Research on Decision Forest Classification-Model Based on Feature Counting J.D. Wang	258

Chapter 7: Production Management

A Constraint-Based Approach for Multi-Skilled Project Scheduling Problem Y. Li and Z.R. Xiao	265
Application of TVAC-PSO for Optimal Taiwan Power Dispatch with Carbon Emission Control W.M. Lin, C.S. Tu, M.T. Tsai and F.S. Cheng	270
Extraction of Humanized Design in Industrial Design Application Y.Q. Tong	275
The Study of Product Configuration Information Model and Repository H.L. Xie and M.B. Shen	279