

Table of Contents

Preface and Organizing Committee

Chapter 1: Hydraulic and Fluid Power Technologies and Applications

Simulation of Utilisation of Pressure Propagation for Increased Efficiency of Secondary Controlled Discrete Displacement Cylinders R.H. Hansen, A. Hansen and T.O. Andersen	3
Effect of Viscosity on the Separation Ability of a Hydrocyclone L.C. Ren, J. Meng, Z.Z. Lei and J.H. Wang	7
Numerical Simulation and Design of Flow Field of Water-Cooled Roller Based on FLUENT X. Zhou, E.P. Wan and P. Zhang	11
Multidomain Modeling of Jet Pipe Electro-Hydraulic Servo Valve Y.J. Cheng, S.H. Wang, X.Y. Xu and W.Y. Li	17
Analysis of Temperature's Influence on a Digital Displacement Pump's Volumetric Efficiency H.C. Pedersen, P. Johansen, C. Yigen, T.O. Andersen and D.B. Rømer	24
Analysis for Coupling Relationship of Oil Pocket under Eccentric Load in Hydrostatic Worktable J.H. Zhao and D.R. Gao	28
The Influence of the Damping Hole Parameters on the Performance of Double Nozzle Flapper Valve Basing on the Orthogonal Test X.H. Lu and D.R. Gao	35
Modeling and Simulation of Hydraulic Wind Turbine Y. Zhang, X.D. Kong, C. Ai and W.J. Cai	39
The Simulation of the Circumfluence and Inhomogeneous Flow Field in Pulsing Electro-Floation X.G. Deng and X. Zhou	43
Structural Design and Simulation Optimization of New Type Telescoping Heavy Hydraulic Trailer Steering System R. Guo, J.Y. Zhao, Y.C. Wang and D.C. Han	47
Development Practices of the Pump Performance Test Bed for Agricultural Sprayers M.T. Yang, H.W. Jin, X.M. Wang and Y.G. Yang	51
Simulation Analysis of the Counterbalance Valve Used in Cranes Based on AMESim Software X. Ji and X.H. Liu	55
Dual-Pump Hydraulic Hybrid Excavator with Combined Common Pressure Rail and Valve-Controlled System W. Shen and J.H. Jiang	62
Study on Variable Universe Fuzzy PID Control for Landing Gear Based on MRF (Magneto-Rheological Fluid) Damper S.X. Zhu and C.J. Chen	66
Influence and Utilisation of Pressure Propagation in Pipelines for Secondary Controlled Discrete Displacement Cylinders R.H. Hansen, A. Hansen and T.O. Andersen	72
A Hydraulic Control System Design for Change-Wheel Garage of Light Rail Based on PLC Y.G. Yang, J. Sun and M.T. Yang	76
Numerical Simulation of Two-Phase Flow in a Rotating Packed Bed Y. Cheng, X.J. Zhang and S.L. Nie	80
Shear Transmission of Magnetorheological Fluid in Fan Clutch J.H. Wang, L.C. Ren and Z.Z. Lei	84
Design and Analysis of Nut Crimping Machines Z.L. Wei and B. Fu	88
The Research and Design about Hydraulic Shears of Medium Plate Milling P.F. Wang and Y.Q. Ding	92

Analysis of Internal Flow Field for Centrifugal Fan in Series Y.J. Fan, Z. Xu and D. Wensi	96
Robust Position Tracking for Electro-Hydraulic Drives Based on Generalized Feedforward Compensation Approach L. Schmidt, T.O. Andersen, H.C. Pedersen and M.M. Bech	100
The Design of the Pilot Type Zero Steady-State Error of Water Hydraulic Overflow Valve L. Zhang, J. Luo, R.B. Yuan and Y.B. Zhang	104
Sliding Mode Control Applied to Aerodynamic Servo System P. Yi, R.B. Yuan, J. Luo and H. Zeng	109
Simulation and Analysis on the Molding Pressure Roller of Lead Flake Based on AMESim and ADAMS R. Li, J. Luo, Z.S. He and Z.F. Peng	114
The Principle of a Novel Load Sensing Hydraulic System and Design of the Electronic Control System Y.J. Li, T.Y. Cui, J.H. Jiang and C.X. Yu	119
DSPACE Implication of HILS for Mill Control System W. Zhang and Y.M. Wang	123
2-SMC of Electro-Hydraulic Drives Using the Twisting Algorithm L. Schmidt, T.O. Andersen, H.C. Pedersen and M.M. Bech	131
Study of the Hydraulic Mold System Basing on the Power Bond Graph L. Li, K.S. Chen and S.G. Fu	135
Research on Synchronous Control Technique of the Tube Hydroforming J. Yu, D. Xu and G.Q. Huang	142
Simulation Analysis on Four Corners Leveling System of FRP Products Hydraulic Press J. Yu, Q.L. Yan, G.Q. Huang and J.P. Li	146
Simulation and Analysis on Main Synchronized Hydraulic Cylinder of Huge Hydraulic Press J. Yu, M.Z. Fan, G.Q. Huang and M. Yu	150
Numerical Simulation and Vibration Analysis of Inner Flow Field for Lage-Sized Throttle Valve G.Q. Huang, Y. He and J. Yu	154
Speed Servo Control of Pneumatic Manipulator Based on Sliding Mode Variable Structure Control H. Zeng, R.B. Yuan, Z.S. He and P. Yi	158
The Modeling and Simulation of Water Hydraulic Overflow Valve with Giant Magnetostrictive Actuator Y.B. Zhang, Z.S. He, R.B. Yuan and L. Zhang	163
Sliding Control with Chattering Elimination for Hydraulic Drives L. Schmidt, T.O. Andersen, H.C. Pedersen and M.M. Bech	168
The Research of Electro-Hydraulic Proportional Control on Copper Anode Lifting Platform Z.F. Peng, R.B. Yuan, J. Luo and R. Li	172
Research on Low Cost Automatic Polishing Machine for Die/Mold Manufacturing J.X. Liu, J.J. Lv and P. Tan	177
Dynamic Analysis of 6-DOF Large Displacement Composite Simulation Platform X.M. Liu and H.Y. Yan	181
Co-Simulation of Mechanism-Hydraulics Working Device of Loader ZL-50 Based on ADAMS X.H. Zhang, H.S. Xie and Q.S. Tang	186
Mechanical Model of Nonmagnetic Mineral Particles in Magneto Hydrostatic Static Separation Y.Q. Zhang, J.T. Wei, T.Y. Wang and Z.Y. Wu	192
Optimal Design for the Hydraulic AGC System of Thick Steel Plate Miller Y.Q. Ding and P.F. Wang	196
Air Leak Localization Method Based on Infrared Thermography Using Local Gray-Entropy Difference Algorithm H.H. Qin, T. Wang and W. Fan	200

Analysis and Numerical Simulation of Leakage Flow of Low Speed High Torque Water Hydraulic Motor's Plain Flow Distribution Pair	
Z.Q. Wang, D.R. Gao and J.H. Fei	204

Chapter 2: Mechanical and Electrical Control Engineering and Automation

A New Method for Adaptive Blind Source Separation Based on the Estimated Number of Dynamic Fault Sources	
X.Y. Yang, X. Zhou and Y.K. Tang	211
Experimental Research on Drilling and Sampling of Lunar Soil Simulant	
X. Shi, Q. Quan, D.W. Tang, S. Jiang, X. Hou and Z. Deng	218
Discrete Element Method Analysis of Mechanical Properties of Railway Ballast during Tamping Process under Different Amplitude	
T.Y. Zhou, B. Hu, X.J. Wang and B. Yan	224
Simulation of Gauge Control System Based on Single Neuron PID	
M. Xu	228
The Feature Extraction of Rolling Bearing Fault Based on Wavelet Packet-EMD Energy Distribution	
C. Wen and C.D. Zhou	234
Investigation of Pantograph Effect on High-Speed Train Noise	
X.F. Zhang, Y.G. Xiao, H.L. Deng and J.F. Huang	239
System Trimming for Improvement of Atomization Device	
R. Wu, P.F. Chen and C.L. Lei	243
Simulation of Vision-Based Royal Jelly Collecting Robot	
Z. Wang, X.M. Dun and X.Y. Dun	247
Research on the Expert System of Detection and Management for the Tire Wear of Straddle Type Monorail Vehicle	
M. Liu and Y.H. Gao	255
The Adaptability Problem Analysis on Structural Response Calculation with Wideband Signals Excitation	
Z.L. Lv, B.P. Tang and Z. Yan	262
Research on Intake System of Motorcycle Engine to Obtain High Torque at Low and Medium Speed	
Q. Huang, Y.Q. Li, C.K. Liu and X.L. Lai	266
A Method of Measuring Rotational Speed for a High-Speed Rotator Based on DSP	
H. Peng and Z.L. Li	270
3D Registration Based on Planar Feature Segmentation and Plane Fit	
H.K. Wang and X.F. Wang	274
Package-Platform-Mode and the Application on Research of Compressor Maintenance Management System	
C.J. Liu, F.Y. Tan, H. Zeng and X.L. Deng	278
Application of DC Motor Digital Speed Control System in Submerged Arc Welding Machine	
G. Zhang and J.Q. Zhu	283
Optimization on Engine Mounting Based on Energy Decoupling Technique	
Y.F. Zhang	288
Research on Modeling Method Based Kernel Principal Component Analysis for Ball and Beam System	
Z.F. Wang and M. Song	292
Research on a Rotary-Perussive Coring Drill for Lunar Exploration	
S. Li, Q. Quan, D.W. Tang, S. Jiang, X. Hou and Z. Deng	297
Experimental Study on Reflective Optical Fiber Hydrogen Sensor Using Two-Wavelength Light Sources	
X.L. Deng, C.D. Zhou, Z.L. Li and X.G. Wang	303
Test and Analysis on Motorcycle Noise by Synthesized Transmission Route Method	
Q. Huang, T. Wen, C.K. Liu and Z.L. He	307

The Design of Mechanical Grates Experimental Device of Municipal Solid Waste X.C. Zhu, P. Li, L. Guo, Y.Q. Ding and S.H. Lin	311
Research on the Control System of the Voice and Motion Synchronism Teaching Group Z.L. Lv, P.W. An and B.P. Tang	316
A Research on Improvement of Vertical Power Centrifugal Spraying Gun with High Speed Based-On ARIZ R. Wu, P.F. Chen and X.T. Zhao	320
The Study on the Performance of Two Drive Forms of Centrifugal Atomizer X.C. Zhu, T.F. Hu, L. Guo, X. Zhou, Y.Q. Ding and X. Deng	324
The Optimization Design of Brake System in Mine Dump Truck J.Y. Zhao, C.H. Zhang, R. Guo, D.C. Han and Y.C. Wang	328

Chapter 3: Other Related Topics

Optimization of Injection Molding Process Parameters Based on Taguchi Design of Experiment X.F. Li and H.B. Liu	335
Prediction of High Temperature Flow Stress for AISI 4120 Steel during Hot Compression M.P. Zou, W.J. Xu and P.C. Wang	339
Research on Optimal Cutting Parameters of High-Speed Hard Machining Based on the Principal Component Analysis and Taguchi Method W.H. Cao, H.B. Liu, S.S. Wang and T. Yang	343
The Research of Industrial Robots Design Based on Synchronous Technology X.J. Wang, Y.L. Chi, F.Y. Li, L. Gao and Y.X. Peng	347
Study on the Design of Corner Conveyor Driven by “V” Belt with Friction X.J. Wang, Y.L. Chi and L. Gao	351
Experiments and Study of the Static Rigidity of Workpiece Spindle of Direct-Drive Gear Hobbing Machine J. Hu and G.B. Zhang	355
Study on Parametric Design of Roller Conveyor Based on Top-Down Assembly Modeling Technology X.J. Wang, Y.L. Chi, F.Y. Li, L. Gao and P. Xu	361
A Framework of STEP-NC Manufacturing System Integrating CAD, CAPP, CAM and CNC Z.Y. Han, P. Hu, D.D. Han and H.Y. Fu	365
Finite Element Analysis for Mechanical Characteristics of Resistance Spot Welding Process with Three Sheets Assemblies Z.Z. Lei, H.T. Kang, J.H. Wang, L.C. Ren and Y.G. Liu	369
Analysis about the Jointing Status for Dissimilar Metals of Steel with Magnesium Z.X. Yao, D.P. Jiang, C. Pan and X.M. Wang	374
Study on the Safety Design of Main Arm Mechanism in Slag Pot Carrier R. Guo, J.Y. Zhao, D.C. Han and Y.C. Wang	380
Study on Mechanism of Welding Hot Crack for Magnesium Alloys D.P. Jiang and Z.X. Yao	384
The Classification of Non-Asbestos Gasket Formulation Using Clustering Method M.H. Liu, Z.H. Li, Y.X. Li and J.R. Chen	388
The Application of 7 Diamond Process in the Automobile Quality Control T. Chen, Y. Gao and Q. Yuan	392
Analysis of Water Jacket Furnace Air Coil Blockage Y. Chen, Y.B. He and T. Wang	396
The New Methods for Non-Steady Productivity Prediction of Condensate Gas Reservoir and the Application Evaluation J. Pang, H. Liu and X.N. Yu	401
Study on Issues Management of Software Project Based on SDP-21 Framework in the Automobile Industry Y. Gao, T. Chen and Q. Yuan	405
Modeling for Production Rate Measurement of Hydrocyanic Acid Based on PSNN Z.J. Tang and M. Song	409

Three Dimensional Simulation and Repair of Skull Maxilla and Dentition Based on CT Scanning and Laser Sintering Technologies	
X.R. Wang and S.W. Chen	416
The Research on Material Balance Considering In-Seam and Intrabed Water	
X.N. Yu, H. Liu, J.H. Cao and J. Pang	420
Theoretical and Experimental Analysis of the Influence of Abrasives on Nozzle in Pre-Mixed Abrasive Water Jet	
Y.Y. Jiang, L.H. Gong, H.T. Wang, C.C. Gong and X.L. Xu	425
The Application of Foundation IE in the Improvement Production Line Balancing of Hot Galvanizing Steel Grating	
X.X. Hu, H. Yin and J. Zhang	429