

Table of Contents

Preface, Committees and Organizing

Innovative Design Methodology

Application of Optimization Algorithms in Injection Molding Process Parameters Z.H. Hu, W. Wei, J. Liu and K. Liu	3
Development of CAD Systems for Screw Blades A.D. Zhi and S.L. Jiang	9
Election Campaign Optimization Algorithm for Design of Pressure Vessel H. Zhang, W.G. Lv, S.Y. Cheng, S.M. Luo and X.W. Zhang	15
Analytic Method on Vibrate Induced Noise of Engine Block G.Z. Zheng and K. Ohta	21
Elastic-Kinematics Analysis and Numerical Method for Five-Rod Suspension M.W. Lu and W.Q. Zhao	27
Research on Fault Knowledge Base Technology of High-End CNC Machining System X.L. Xu, B. Ren, Y.B. Zuo and G.X. Wu	35
The Improved Design for Automated Teller Machine Based on the Theory of User Requirements Y.J. Hou and X. Zhang	41
Numerical Simulation of Spray Process of Fuel Nozzle R.S. Xu, R. Lin, S.G. Zhang, T.C. Zhou and M.L. Bai	47
Preparation of High Performance Aluminum Foam Using Carbon Fibers as Stabilizing Additive Z.K. Cao, H. Liu, J.J. Du and G.C. Yao	53
Study on a Large Opening in a Pressure Vessel W. Wang, J.B. Shi, M.F. Luo and Y.F. Wang	58
Multi-Domain and Hybrid Behavioral Modeling for Complex Product Systems Y.M. Zhu and J.H. Liu	62
Research on the Face Finder and Behavior Decoding Technology in Synchronous Modeling D.F. Liu, J. Tao, B. Wang and J. Wang	67
A Design Method Based on Healthy Industrial Design (HID) J.F. Li and X. Zhang	72
Knowledge Acquisition from Simulation Data to Product Configuration Rules B. Ren and S.Y. Zhang	77
Study on CAD Modeling Based on Feature Extraction X.J. Hui and P. Cheng	83
The Application of EMD and ARMA Bi-Cepstrum Fault Diagnosis Method in Gearbox of Overhead Traveling Crane H.B. Xu, G.H. Chen, X.H. Wang and J. Liang	88
Design of Beacon Light Switch Based on FPGA X.F. Xing and H.Z. Li	92
Calculation Analysis for Automobile Power Performance and Fuel Economy W. Chen	96
The Research of Evolution Form Listed of Displacement Fluid Machinery Extended From Life Evolutionary Tree J.G. Chen, Y. Yu and X.C. Zhu	100
Load Analysis of Transmitting Gear in Loading Cycles for Earthmoving Vehicle Z.Y. Wang, X.F. Zhang, J.X. Wang and M.Y. Yao	105
Simulation Analysis of Thermal Behavior of a Motorized Spindle B.M. Wang, X.S. Mei, Z.X. Wu and C.B. Hu	111
Design of pH Testing System Based on ARM S.Z. Zhuang, X.F. Wang and Y.L. Wang	115

KKM Type Theorem and Ky Fan's Inequalities in Abstract Convex Spaces G.S. Tang	121
An Improved TRIZ-CBR Model for Rapidly Innovative Design Z. Hu, Y. Zhao, Y. Chen and D. Xiang	126
Synthesis of Magnesium Oxide Nanomaterials Using Magnesium Carbonate as Precursors G.S. Wang, D.L. Sun, H. Liang and C.Y. Kong	132
Optimization for the Air-Pod Shape Y.C. Qiao, Z.Q. Guo, B.G. Zhang and Y.L. Shi	136
Effect of Mo Addition on Microstructures and Mechanical Properties of Ti₂AlNb Alloy Y.Y. Chen, Z.X. Du, F.T. Kong, S.L. Xiao and Z.X. Zhang	142
New Developments of Product Design Methodology B.C. Wen, X.J. Wang, J.S. Dai, X.G. Ma, Z.H. Ren, X.P. Li, X.M. You, J. Liu and Y. Liu	146
Design and Simulation of Two Stage Pressure-Controlling Spill-Protecting Breathing Valve Y.G. Zuo, J. Chen, J. Yang, H.Q. Lü and Z. Zhang	157
A Business Integration Model Used in Collaborative Engineering Design L.F. Wei, H.Y. Zhang and J. Li	162
Subsystems Change Ranking Methodology (SCRaM) for Complex Product Redesign Process F.I. Romli, K.H. Cheang, J.X. Chew and A.S.M. Rafie	167
The Technology Research on Milling Large-Size Spiral Bevel Gears of the Finger Cutter L. Yang, Z.Y. Wang, S.N. Ren and Y.T. Wang	174
Adsorption of Heavy Metal Ions by Chelate-Fiber Prepared by Chemical Surface Modification X.L. Liu, L.J. Wang, Y.L. Chen, N. Chen and S.F. Wang	178
The Simulation and Comparative Analysis of the Different Structure of Cyclone Separator, and the Construction of Optimal Experimental Model N. Xu and Y. Xu	182
Research on Flow Characteristics of Aerostatic Circular Thrust Bearing with a Cone Cavity L.X. Chen, W.Q. Ma, H.C. Yu, H.Y. Liu and H.W. Du	189
The Review of Photovoltaic Power System and Chaos Phenomenon X.S. Zhou, J. Li and Y.J. Ma	193
Research on Method of Improving Sound Property of Vacuum Cleaner by Means of Sound Forge Technology L.F. Yang and W.J. Ding	197
Design and Fabrication of Wafer Level Dual-Band Thin Film Bulk Acoustic Resonator Filters W.T. Chang, Y.C. Chen, C.C. Cheng, K.S. Kao, R.C. Lin and J.M. Li	201
A Master Model Approach to Multidisciplinary Design and Simulation for Compressor Blisk J. Ji, D.H. Zhang, S. Li and B. Chen	209
Design Study of Prestressed Uplift Cast-in-Place Pile X.Y. Liu, X.Y. Zhang, X. Li, M. Zhang and X.J. Zheng	213
Research on Automatic Replacing Technology of Power Battery Pack Z.P. Wang, H.B. Han and L. Zeng	217
Study on the Stress Intensity Factor of Double Cracks Parallel to and Lying on the Interface in the Cladding Material Structure J.R. Yang, G.L. Chen and L.L. Zhang	224
Properties of Light Sources under Mesopic Vision Y. Yang, L. Wang and W. Li	228
Numerical Study of Effects of Separating Efficiency with the Structural Dimensions W. Wang, F.P. Yang, J.B. Shi and M.F. Luo	232
Design and Application of High-Efficiency and Energy-Saving Liner in Coal Pulverizer X. Lu and L.J. Ren	237
Methionine as Corrosion Inhibitor of Brass in O₂-Free 1M NaOH Solution J.F. Wu, Q. Wang, S.T. Zhang and L.L. Yin	241
The Prediction for the Residual Life of Waste Drive Axle Housing Basing on Neural Network S.X. Song, J.R. Zhao and T. Liu	246

Brick Kiln Stacking-Destacking Robot Mechanism Design and Kinematics Analysis Z.T. Zhang and X.B. Liao	251
Simulation of the Truck Crane Slewing Mechanism Hydraulic System Based on AMESim Y. Fei, X.F. Zhang and Q. Wu	256
Key Technology of Refined Cotton Centrifuge Unloading W.H. Wang, L.D. Zhang, G.Z. Hu and M. Zhou	260
A Form-Oriented Innovative Product Design Approach S.X. Yang, T. Li and X.J. Li	266
Min-Max Partition Method of Product Modularization Based on Fuzzy Clustering Y.H. Chen and D.J. Zhou	273
Free Form Surface Reconstruction Method Based on LS-SVM F.Z. Wu	280
Design and Research of Micro-Displacement Amplifier Driven by Piezoelectric Actuator X.P. Chen, Y.M. Xiao and K. Lv	284
Representing the Evolving Design Rationale to Support Design Reuse J.H. Liu and X.J. Hu	288
Displacement of Elevator Boom Interference and Suppression on Rated Capacity G.Y. Lin, W.T. Li and D.S. Chang	293
Research of Usability Testing Method of Mobile Phone C.L. Tang and X. Yang	299
Expression Regulation of Design Process Gene in Product Design B. Li, S.R. Tong, L.S. Fang and J.C. Liu	303
Research on Dynamic Characteristic of Planetary Gear Train by Visualization Technology X.M. You, L. Meng, X.G. Ma and B.C. Wen	307
Preparation and Characterization of Thermally Compatible Leucite-Reinforced Dental Ceramics J. Wen and S.Z. Sun	311
Conceptual Book Design's Morphosemantic Meaning and its Expression M. Wang	315
Inspiration of Science Fiction Products to Innovative Design of Realistic Products M. Wang	319
Terahertz Confinement and Dispersion in Subwavelength Slot Waveguide X.B. Xing and B.J. Li	323
A Study on the Design of the Vision-Centered Digital Reading Interface R.S. Yan	328
Numerical Simulation Method for 3D Low Speed Micro Flapping-Wing with Complex Kinematics W.Q. Yang, B.F. Song, W.P. Song, Z.K. Li and Y.F. Zhang	332
Ergonomic Design of Computer Keyboard Base on the Finger Workspace Analysis J.K. Cui	336
Study on the Design of Longitudinal-Torsional Composite Ultrasonic Elliptical Vibrator Based on FEM Z. Yin, H. Li, B.F. Wang and K.F. Song	341
Thermal Analysis of High-Power LED Tube Lamp X.J. Ma, L.G. Wu, S.X. Dai, B.Y. Zhou, K. Bai and Z.Y. Zheng	346
3D Coordinate Measurement System Using Single Camera and IMU S.G. Shah, G.L. Xu, W.J. Ni and Y.Q. Ye	351
LST Based Function Modeling Based on for Mechanical Products H.B. Yan and H. Ju	356
The Application Study in Computer Aided Design Based on the Hand-Drawn Performance K. Zhao and W.P. Hu	360
Preliminary Study on Innovative Mechanical Design Method Classification Y.L. Cui, B.X. Zhang and Z.K. Song	364
Structural Dynamic Topology Optimization of the Transmission Housing S.W. Yao, J.L. Lv and Q.D. Peng	368
Green Innovation Design Based on TRIZ Theory Z.F. Liu, Y. Gao, L. Zhang and D. Hu	373

Application Research on TRIZ Physical Contradiction Solving Principles in Armored Vehicles	
Y.L. Cui, W. Wu and D.H. Tang	380
Analysis on Actuating Mechanism for Tomato Color Sorting Robot Based on High-Speed Photography	
R.Y. Zhang, Z. Kan, X.G. Yan and W.C. Hu	384
The Performance Analysis and Experimental Research of Multiple Oil Ports Axial Piston Pump which Able to Control the Movement of Differential Cylinder Directly in the Closed Circuit	
X.G. Zhang and L. Quan	388
A Method of Design Process Reuse and Optimization Based on Design Process Gene	
B. Li, S.R. Tong, C.X. Wang and X. Shi	401
Kinematic Analysis and Synthesis of Geneva Mechanism Combined with Elliptic Gear	
J.G. Han	405
Modern SOHO Office System Design in China	
J.F. Xu and H.N. Zhang	411
Structure Design of the New Roller Conveyor	
H.S. Zhao and Y.Z. Wu	415
Innovative Application of Chinese Traditional Modeling Elements to Design of Modern Home Textile Products	
X.K. Zhang	419
Innovative Design and Analysis on Bicycle Driving Mechanism	
Y.F. Bu, W.Z. Wang, Z.W. Hou and S.Q. Cao	424
Survey on New Energy of Smart Grid	
Y.J. Ma, B.Y. Ma and X.S. Zhou	428
Research on Intelligent Diagnosing Model Based Similarity Distance	
W.X. Tan and X.P. Wang	432
Research on Dissolvant-Based Infrared Yarn Dyeing Process of Polyacrylonitrile Fiber	
Z.Y. Zhang, H. Xu and C.L. Zheng	436
A Integrated Methodology for Product Life Cycle Design	
Z.G. Yan, J. Yang, A.G. Xuan and Y.X. Wu	442
Effect of Size of the Common Cup on the Injection Molding Process	
Q.Q. Liu and W. Guo	450
Optimal Electromagnetic Pump Design Based on Bond Graph Methods	
Y.L. Bai, Y.J. Ma, H.S. Gao and S.P. Wei	455
Research on Extended Design Platform Recognition Method	
J.L. He	461
The Preparation and Characterization of Carboxymethyl Chitosan Wound Dressings	
Y.M. Qin and L.Q. Huang	465
Noncontact Angle Measuring System Based on Laser and Capacitive Sensor	
Y.J. Feng, Z.Y. Xiong, Y.Q. Li, C.Y. Huang, W.Q. Shi and J.M. Chen	469
Concise BEM for State Heat Conduction of FGMs	
W. Shi and L.L. Ma	473
Research of the Optimal Propulsion System for a Polar Scientific Icebreaker	
Y. Yang, G.C. Zhang, W.Y. Tang, C.D. Che and J. Ma	477
Influence of Convex Hull Density on Friction Contact of Bionic Surface	
L.J. Xiao and L.F. Zhuang	483
The Study on the Full Stress Optimal Design of Shape Steel Truss	
X.Z. Chen, X.J. Zhang and Z.Z. Ren	490
Lightweight Analysis of Torsion Spring Based on Reliability Constraint in Multi-Failure Modes	
M. Wang, G.D. Chen and Y. Xiao	494
An Advanced FEA Based Analytical Strategy for the Milling of Overall Thin-Walled Workpieces	
W. Ji, G.H. Qin and H.C. Ye	499
Effect of Polar Molecule Urea on TiO₂/Urea ER Fluid Properties and Microstructure	
S.K. Tan, X.P. Song, L. Qiao, H.Y. Guo, S. Ji and H. Zhao	503

Dynamics of a Bistable Mechanism with Parallel Beams and Permanent Magnets J. Zhao, Y. Huang, R.J. Gao and H.X. Wang	508
Optimization Design in the Driving Gear Wheel Axle of Triangular Rubber Track Conversion Z.N. Hu	513
Chalcogenide-Tellurite Composite Microstructured Fiber for Low-Threshold Mid-IR Supercontinuum Generation D. Xie and J.G. Wen	517
A Virtual Product Development Platform for Tunnel Drilling Rigs J.M. Zhang, G.Q. Liu, Q.X. Liu and Y.Z. Zhang	521
A Novel Complete Analytic Way to Fixed Machined Joint H.L. Tian	527
The Detection of NC Machine Geometric Accuracy Based on the Principle of Multiple-Time GPS Y.F. Deng, J.J. Guo, J.D. Wang and J.F. Lu	531
A Computer-Aided Conceptual Design System: Model and Applications Y. Chen	538
Effect of Precursors on the Morphology of Hydroxyl Aluminum Prepared by Hydrothermal Treatment J. Wang, S. Jun and B. Xu	542
A Novel Basic Conceptual Design and Analysis of a Morphing Wing Using Re-Entrant Hexagonal Cellular Structure W.J. Dong and Q. Sun	548
Model of Water-Air Two-Phase Flow in Saturated-Unsaturated Soil C.H. Fang and X.Y. Zhang	553
Multidisciplinary Design Optimization of a Hydraulic Poppet Valve Considering Fluid-Solid Coupling J.K. Bo	559
Numerical Simulation and Optimal Design Investigation on Air Duct of Floor Standing Air-Conditioner Z.M. Wan, Z.Y. Zheng, H.X. Chen, J. Liu and T.X. Jin	563
A Method on the Decision of Tolerance Grade Based on Cost and Lifetime W.Q. Li, J. Hong, Y.L. Li, Y. Zhang and Z.B. Li	568
An Attention Target Detection Method Based on Dynamic Saliency Map H.C. Ke, H. Wang and H.Y. Li	574
Simulation of Fuzzy Auto-Tuning PID Control Based on MATLAB J.W. Chen, L. Li, J.C. Song and Z.J. He	579
Effect of Defects on Oscillatory Behaviors of Double-Walled Carbon Nanotube Oscillators J. Li	584
A Force-Based Method for Computing Radial Stiffness of Multi-Spiral Plane Supporting Spring P.C. He, F. Jia, E.L. Zheng and X. Ji	589
One Method of Innovative Design for Planar Mechanisms S.F. Xu, X.Q. Du, L. Zhang, X.W. Yang and L.H. Lao	596
Graft Copolymerization of Acrylamide onto Activated Starch Using Inverse Emulsion Polymerization D.M. Zheng, S.G. Zhu and L.P. Wu	600
Topology Optimization of Electric Vehicle Body in White Based on SIMP Method S. Yang, C. Qi, P. Hu, Z.Y. Wei and Y.L. Wang	606
Research on Damping Characteristics of New Recycling Vibrational Energy Hydraulic Damping System Z.H. Ding, Z.B. Lei and M.X. Lei	610
Optimized Design and Analysis of the Blade Piston in Twin-Rotor Piston Engine H. Chen, C.Y. Pan, H.J. Xu, H. Deng and W.Y. Zhang	614
Study on Design Thinking Ability and Manufacturing Means of CAD / CNC Innovation S.T. Yang, M.W. Peng, W. Shen and H.T. Chen	621
Development of Full Position Portable Coiled Tubing Straightener X.L. Liu and Q. Shang	627

Study on General Total Stiffness Matrix of Plane Multi-Storied Truss C.H. Yang, S.M. Yang and Y.L. Hou	632
A Novel Shredder for Municipal Solid Waste (MSW): Effect of Operation Mode and Feed Composition S.Y. Luo, Y.M. Zhou and C.J. Yi	636
Product Life Cycle Design	
Synthesis and Properties of Novel Asymmetrical Porphyrin with [<i>p</i>-(4-Flourobzoyloxy)-<i>M</i>-Ethylxy]phenyl and its Lanthanide Complexes X.L. Cui, X.M. Shi and S.Y. Li	643
Quantitative Estimation Technique for Wear Amounts by Real Time Measurement of Wear Debris in Lubricating Oil W.B. Sun	647
Numerical Simulation of Effect on Billet Casting Q235 under Inner-Out Cooler L. Li and G.P. Chen	651
Self-Assembly of Flower-Like CeO₂ Microspheres via a Template-Free Synthetic Approach and its Use as Support in Enhanced CO and Benzene Oxidation Activity J.F. Chen and H. Yi	656
Attitude Resolution Algorithm of Gyro-Free Inertial Navigation System H.G. Zhou, X.S. Wang and C.T. Yi	662
Magic Cube Approach Application on Crashworthiness Design of Front Rail for Weight Reduction C. Qi, S. Yang and P. Hu	668
Study on the Mechanical Characteristics of Multilayer Piezoelectric Stack Actuator K. Zheng and Y.Y. Yang	674
Research for Predicting the Underwater Acoustic Performance of Sandwich Structural Composite Based on Support Vector Machine Y.Q. Li, X. Zhu and F. Xu	678
Effect of the Grain Size on Magnetic Properties of Nanocrystalline CoFe₂O₄ Ferrite Y. Liu, F.F. Min, T. Qiu, J.B. Zhu and M.X. Zhang	685
Synthesis of Chiral Amphiphilic Graft Copolymer PBTQMO-g-MPEO Y. Zhou and Z.G. Hu	689
Study on Transverse Cooling Uniformity in Controlled Cooling Process of Copper Plate D.M. Zhu, G.Y. Liu, S.J. Zhang, Q.S. Zhu and J. Yang	692
Effect of Dipolar Side Groups on Conformational Properties of Heteroatom Polymers H.Z. Ma, X. Du and T.T. Sun	696
Mechanical Property and Corrosion Resistant of Cerium-Bearing 2Cr13 Stainless Steel L.P. Zhao, H.M. Zhang, C.Y. Cui and X.S. Sun	701
Relationship Between Porosity Characteristics and Thermal Conductivity of Different Graphite Size Containing Carbon Refractories X.L. Chen, Y.W. Li, G.T. Xu, G.F. Xue and H.S. Chen	706
Prepared and Infrared Extinction Characteristics of Micron Expanded Graphite S.H. Ba, C.H. Jiang, K.B. Sun and Z.X. Sun	710
Preparation and Characterization of Copper Oxide and Copper Nanoparticles J.J. Lv, M.Y. Li and Q.X. Zeng	715
Analysis of the Different Influence on Frame Structure Stiffness between Straight Board Stairs and Fold Board Stairs D.J. Yang and P.F. Song	722
Anodic Synthesis of α-PbO₂-CeO₂-TiO₂ Composite Materials from Colloidal Electrolyte: Morphology, Composition and Structure of PbO₂-Matrix Composites B.M. Chen, Z.C. Guo and H. Huang	728
Optimization on the Bottleneck Process of 63PF2 Conveying Chain Assembly A.Y. Meng	734
Study on the Application of QFD Technology in the Whole Conceptual Design of Special-Shaped Stone Machining Center N. Xiao, Y.H. Wu, Y. Liu and K. Zhang	739

Properties of PE-Coating Steel Pipes Used for Water Supply in Severely Cold and Salty Regions	
D.M. Liao, Y.M. Chen, J. Jiang, P.G. Zou and X. Zhao	747
Performance Analysis and Parametric Optimum Criteria of a Micro Nano Scaled Otto Engine Cycle	
H. Wang, G.X. Wu and J.K. Zhong	752
Quenching Temperature's Impact on the Microstructure and Mechanical Properties of X80 Pipeline Steel	
Y.J. Ma, X.L. Liu and G.L. Zhang	762
The Analysis of Dynamic Performance on Four-Wheel Steering Vehicle Model	
W. Chen	767
The Influence of Pore Structure on Internal Flow Field Shear Stress within Scaffold	
Y. Yao, W.D. Chen and W.Y. Jin	771
A Robust Approach for Concurrent Tolerances Allocation Using Immune Genetic Algorithm	
F.Z. Li, C. Lu and W.R. Jiang	776
Preparation of High Oil-Absorbing Materials by Using Modified Microcrystalline Cellulose	
F.Z. Tan, Y.F. Cao and D.Z. Wang	780
Application of Automobile Lightweight Alloys and the Development of its Die-Casting Technology	
D.F. Liu and J. Tao	785
Study on Clean Production Technologies of Electrolysis Manganese Passivation	
B. Fan, G.W. He, L.H. Liu and J.X. Wang	790
Fabrication of Ti-43Al-5V-4Nb Intermetallic Compounds by Forging Using the Blended Elemental Powders	
Y.Y. Chen, Y.J. Su, F.T. Kong and D.L. Zhang	796
Diffusion Bonding between AZ91 Magnesium Alloy and 7075 Aluminum Alloy	
F. Lin, T.P. Li, Q. Yu, L.L. Sun and Q.S. Meng	800
High-Performance Silica/Epoxy Resin Hybrid Materials Prepared by <i>In Situ</i> Sol-Gel Process	
J. Jiao, L. Zou, P.B. Liu and G.L. Wu	804
The Integration of Unified Knowledge Management with Mold-Design Navigating Process	
W.R. Jong, Y.H. Ting and T.C. Li	808
A Feature-Based Process Planning Approach for Fineblanking-Forming-Stamping Parts	
Y.L. Wang and H.C. Long	816
Preparation and Properties of Nanocomposites Consist of Carbon Black N220 and Epoxy Resin	
J. Jiao, P.B. Liu, L. Zou and G.L. Wu	820
Fitting and Verification Viscosity Parameter of ABS/Aluminum Blends	
H.Y. Zhu, X.T. Xiao and Z.H. Zhang	824

Intelligent Optimization Design

The Recognition of Smart Car Track and Starting Line	
W. Dai, M.G. Cao and X.Y. Ren	833
Research on Techniques of Electro Less Nickel Plating Nano-C60 Crystals on the Surface of Micromechanical Devices by Laser-Induced Way	
L. Zhong, L. Hou, C.H. Liu and Q. Ying	837
A Novel Air Cushion Press Nanoimprint Lithography	
Z.Y. Duan, Q.X. Gong, H.M. Zhang and E.J. Liang	843
Optimization Design of Large-Diameter Non-Rectangular Sectional Ring Blank for Ring Rolling	
L.G. Wang, Y.F. Zhang and H. Ma	847
Study on Solidification Crack Criterion during Laser Welding Pure Aluminum and ZL114A Aluminum Alloy	
A.G. Huang, H. Zhang, J.F. Liu, W. Yu, Z.Y. Li and H. Li	852
Research on a New Frictionless Air Cylinder	
Y.S. Yao, K.R. Zhang, Z. Yu and T. Mei	859

A Calculation Model on Dynamic Response of Opposite-Side Simple-Support-Free Rectangular Plate under Shock Loads F.H. Xie, Y.M. Zhang and Z.Y. Kou	864
Cutting Forces when High-Speed Milling of SiC_p/Al Composites Y.F. Ge, J.H. Xu and Y.C. Fu	871
Alarm Device Design for Small Skidding Tractor M.X. Pan and L.H. Wang	877
Optimization of the Disc Cutter Structure Parameters Based on Genetic Algorithm Y.M. Xia, W.H. Liu, J. Xue, Y. Wu and X.M. Zhang	882
Three-Dimensional Layout Design of Steel-Concrete Composite Structures Using Topology Optimization Y.J. Luo, X.X. Wu and A. Li	886
Reconstruction of the Total Heat Exchange Factor Using the Inverse Heat Conduction Problem M. Cui, X.W. Gao and H.G. Chen	890
Laws of Technological System Evolution Applied in the Conceptual Design of New Stereo Garage M.Q. Zhang, D.S. Cong, H.Y. Qin, Q. He and S.S. Zhang	894
The Optimal Research of Force Increasing Mechanism of Injection Machine T.J. Li, C.S. Zhu, L.Q. Yan, L. Xin and J.R. Ning	899
The Cutting Optimization of the CNC Bothway Panel Saw under the Technology Constraint Y. Ma and C.M. Yang	908
Production Scheduling of Coating Workshop for Cutting Tools K.Z. Tang, J.F. Ni and K.G. Xu	914
Study on Q390 Steel High-Temperature Tensile Fracture Microstructure and Micro-Hardness Y.T. Zhao, J.H. Dong, Y.L. Ma and J.W. Zhou	918
Study on Submerged Jet Problem of Concave Optics Surface in Fluid Jet Polishing C.Y. Shi, J.H. Yuan, F. Wu and Y.J. Wan	923
A Measuring Technology for Retroreflective Materials of Horizontal Coatings W. Li, C.Z. Zhu and Y. Yang	928
Process Quality Controlling and Testing Technology of High-Density Polyethylene Silicore Plastic Duct B.Y. Gong, Y.H. Lu and J.Y. He	933
Analytical Analysis of Three-Roll Bending of Thin-Plate Z.Y. Cai, Y.W. Lan and M.Z. Li	937
Design of a Novel Multifunctional Rehabilitation Aid Based on Ergonomics J.G. Zhang and H.R. Liu	943
Steel-Bonded Cemented Carbide Cladding Prepared by Technological Combination of Powder Explosive Compaction and Liquid Sintering Z.G. Gao, H. Wang, Y.Q. Feng and Y.S. Zhao	947
Research on the Parameter Calibration of the Internal-Combustion Engine Work Process Simulation Model Q.Y. Niu, C. Fan, X.C. Wang, Y.W. Zhao and Y.C. Dong	953
Advanced Manufacturing Method of Engine Turbine Blade of Continuous Fiber Toughening SiC Ceramics Z.L. Lu and D.C. Li	962
Effect of Residual Stress in Ductile Iron Component on its Natural Frequency X.W. Dong, D. Ren, D.Q. Wang and Y.F. Zhai	967
The Design of Elevator Hang System Based on SQP Optimization Algorithm D.B. Tang	973
Application of Vibration Test Methods in Cement-Treated Aggregate J. Liu, R.H. Zhang and C.Q. Mai	980
Research on Techniques of Structural Topology Optimization Using Cellular Automaton Y.X. Du, W. Wang, Q.H. Tian and J.R. Hu	987
Design of the Centralized Power Management Based on the MOST Networks Y.S. Jin, X.R. He, R.K. Liu and Y.P. Huang	994

Study on Topology Design of Wireless Power Transfer for Electric Vehicle Based on Magnetic Resonance Coupling	
H. Qiang, X.L. Huang, L.L. Tan and H. Huang	1000
New Method for Blank Expansion of Rectangular Box	
L.R. Zhou and H.M. Wan	1004
Continuous Ant Colony Algorithm	
W. Gao	1008
Study on Square Conical Box NC Sheet Meta Incremental Forming	
L.R. Zhou	1012
Research on Aircraft LY12CZ Aluminum Alloy Corrosion Damage Prediction Based on ARIMA Model	
Z.G. Liu and Z.T. Mu	1016
Optimization of Powertrain for Large Commercial Vehicle for Passenger Transportation Based on Optimus	
C. Li, X.H. Li, W. Zhou, L. Zhang, C.X. Ren and L. Chen	1023
Regression Analysis of Ship Principal Dimensions Based on Improved PSO-BP Algorithm	
Y.H. Hou, S. Huang, W.Q. Wang and Y.L. Hu	1029
Research of Multi-Objective Optimization Study for Job Shop Scheduling Problem Based on Grey Ant Colony Algorithm	
Y.D. Fang, F. Wang and H. Wang	1033
Novel Design of MOCVD Reactor with Three Radial Inward Flows for Epitaxial Growth of GaN Thin Films	
L.Q. Yang, J.Z. Hu, Z.M. Chen, J.H. Zhang and A.G. Li	1037
Laboratory Comparison of Retroreflection Measurement System	
W. Li, C.Z. Zhu and Y. Yang	1041
A Meshless Level Set Method for Shape and Topology Optimization	
Y. Wang and Z. Luo	1046
Study on Optimal Methodology of RMS Roughness in Super Smooth Surfaces by CCI	
L.Q. Wu and Y. Chao	1050
Optimization of Molding Process Parameters for Steel Ball Billet	
C.A. Fu and J.J. Ye	1054
Research on Mechanism of Steel Ball Grinding	
C.A. Fu and G.P. Peng	1062
The Study of Damping Plate System in Steel Ball Processing	
C.A. Fu and K. Ji	1068
Research on Air-Structure Coupling Characteristics of Sounding Board	
S.B. Pei and R.Z. Liu	1074
Electropolishing of P-Type Silicon Thin Films in Hydrofluoric Acid Solutions	
F. Hu, Y.W. Chen, X.D. Wang and X.H. Li	1080
Study on Improved Multidiscipline Feasible Strategy for Complicated Turbine Component Optimization	
R.Q. Wang, Z.G. Jia, J. Fan, D.Y. Hu, X.L. Shen and Z.Y. Chen	1084
The Design of Adaptive Immune Vaccine Algorithm	
G.L. Yuan, Y.G. Xue and Q.J. Liang	1094
A New Combined Particle Swarm Optimization Algorithm Based Golden Section Strategy	
H. Fan	1099
The Design of Ball Mill Control System Base on Two-Cell Immune Controller	
G.L. Yuan and Y.G. Xue	1106
Study on Tor- Distribution Strategy for Hybrid Electric Bus Based on Optimal Theory	
S.K. Zhong, Z.G. Zhao and Z.C. Sun	1111
Topology and Sizing Optimization of Trusses with Adaptive Ground Finite Elements Using Multiobjective PBIL	
C. Noilublao and S. Bureerat	1116
Optimal Design of a Pin-Fin Heat Sink Using a Surrogate-Assisted Multiobjective Evolutionary Algorithm	
S. Kanyakam and S. Bureerat	1122
Modeling Methodologies and Applications of Thermoelectric Modules	
R.Y. Jou	1129

Prediction of the Surface Roughness in High-Speed Machining Based on Molecular-Mechanical Theory of Friction	
S.Y. Wang, W.C. Wang, T. Yu and B. Jiang	1134
Rear Add-on Device for Drag Reduction of Van Body Truck	
S. Li, J.C. Zhang, L. Ming, X.L. Liu and L.Y. Jiang	1139
The Contrastive Analysis between Dry Earth-Fetching Rectangular Scant Pile and Circular Bite Pile	
C.M. Mu, Q. Zhang, B.C. Liu and Q. Zhang	1143
The Threshold Value Segmentation Approach of Images Based on Ant Colony Optimization	
M. Yang, Z.S. Hu and W.P. Zhao	1148
Frequency Topology Optimization and Lightweight Design of High-Speed Turning Center's Slide Board	
Z.W. Zhang, W. Zhang, J.C. Song and S. Li	1152
Research on Welding Cracks Prevention in the Fuel-Lubricating Oil Heat Exchanger of Aeroengine	
K.Y. Yang, X.J. Xu, H.Y. Qu and R.L. Lai	1156
Test Research of Pipeline Spraying Constant Pressure Controlling in Orchard	
S.R. Song, Y.C. Ruan, Z. Li, T.S. Hong and C. Zhang	1162
An Innovative Design Based on CAD Environment	
Z.H. Zuo, Y.M. Xie and B. Zhao	1166
Research Status and Development Trend of Narrow-Gap TIG Welding	
Q.J. Sun, H.F. Hu, X. Yuan and J.C. Feng	1170
Invsetigation about Residual Stresses of Plasma-Spraying $\text{Sm}_2\text{Zr}_2\text{O}_7/\text{YSZ}$ Thermal Barrier Coatings of Different Substrate Conditions	
H.S. Zhang, G.Y. Cai and S.S. Yang	1177
The Communication Module Design of Intelligent Circuit-Breaker Based on DeviceNet Bus Technology	
X.Y. Zhang, C. Fu and J.G. Zhou	1182
Application of Optimal Technique with Discrete Variables in Furnace Structure	
X.M. Yuan, L.J. Zhang, B. Du, Q.Z. Wang and D.X. Zeng	1187
Multi-Level Fuzzy Comprehensive Evaluation for Rapid Manufacturing System	
L.H. Tao, R.J. Li and J.F. Bai	1193
Aero-Engine Blade Deformation Control of Milling Process	
H.X. Chen, H. Li, H.T. Feng and M.J. Du	1198
Design Method to Energy-Saving Reconstruction for Existing Public Building in Northern Area of China	
Q.B. Liu	1205
Dynamics Analytical Model of Cutting Force in Metal Cutting Processing	
J.Y. Guo, W.B. Li, S.Y. Wang and M. Lv	1211
The Robot Target Recognition Based on Support Vector Machine and D-S Evidence Theory	
M.S. Zhu, X.J. Zou, L.J. Chen, H.X. Zou and K.Y. Chen	1215
Topology and Sizing Optimization of Light-Weight Frame for Energy-Saving Vehicle	
Q. Liu, X.K. Ma, Y.Z. Lin and Z.J. Zong	1220
Simulation of Radiation Damage for the Typical Tritium Permeation Barrier Coating Materials	
B. Zhu, Y.S. Zhang, J.G. Hu, H.G. Yang and Q. Zhan	1226

Structural Strength and Robustness

Application of Honeycomb Structure in Machine Tool Table	
D.Q. Gao, F. Zhang, Z.Y. Mao, H. Lin and J.M. Yi	1233
Tracking Control of Robot Manipulator Based on Robust Neural Network Control	
S.X. Wang and G.Y. Yang	1238
Research of Subsection Optimal Acceleration Control Law of Aircraft Engines Using Fuzzy Switching Based on a Cloud Model	
X.J. Qiu, J.Q. Huang and F. Lu	1242
A Slicer Control System Based on PLC and Servo	
X. Zhang, G.Q. Liu and Q.B. Lv	1248

Topology Analyses and Position Solution Based on Asymmetric and Fewer DOF Parallel Robots	
P.A. Liu and X.H. Shi	1252
Static & Dynamic Analysis and Optimization of DVG850 High-Speed Vertical Processing Center	
D.Q. Gao, F. Zhang, Z.Y. Mao, J.M. Yi and H. Lin	1258
Study on Fault Diagnosis of Wind Turbine Main Bearing Based on Finite Element Analysis and Wavelet Analysis	
Y. Qu, C.Z. Chen and B. Zhou	1264
Direct Power Controlled Three Phase Boost Type PWM Rectifier Based on Novel Switching Vector Table	
G.Y. Li, J.R. Wan and M.S. Li	1269
Design and Implementation of MDO Integrated System for Valve Products	
Y. Dai, Y.N. Lai, X.B. He, S.L. Ren and D.M. Li	1273
Structure Fatigue Life and Reliability Analysis Based on Fatigue Crack Growth Data	
L.H. Gao, G.N. Xu and P. Yang	1277
Effects on Fatigue Life of Bolt by Scatter of Pre-Tension Stress	
H.K. Du and F.Y. Kong	1283
Cutters Plane Layout Design of the Full-Face Rock Tunnel Boring Machine (TBM) Based on Multi-Spiral Layout Pattern	
J.Z. Huo, H.F. Zhao, X. Zhang, W. Sun and Y. Zhao	1288
Kinematic Reliability Analysis of Five-Axis Machine Tool	
Q. Yang, Z.L. Sun, Y.Y. Shi, D.D. Jia and Y.T. Yan	1292
The Ultimate Strength of Stiffened Panel with Overall Buckling	
B. Zhang and Q. Sun	1297
Analysis of Combustion Characteristics and Influencing Factors of Space Dispersed Double-Wall-Jet Combustion System	
P.J. Guo, X.Y. Gao and Y.B. Tang	1302
Seismic Response Analysis of Partial Curve Long-Span Rigid Frame Bridge with Super High Pier	
Y. Liu, D. Wang and M.H. Chen	1314
Dynamic Fault Tree Based on Weibull Distribution	
W.G. Guo, W. Han and S.Y. Liu	1322
Review of Vision Real-Time Inspection Algorithm for Rolling Steel Surface Defects	
W.B. Li, C.H. Lu and J.C. Zhang	1328
The Analysis and Design of Turbocharger Thrust Bearing	
L.J. Qiu, J. Yang and S.Y. Xu	1333
Numerical Experiment on Bend Strength Computation of Profile-Shifted Involute Gear	
H.J. Shi and X. Zhang	1337
Non-Contact Energy Transfer Based on Ultrasonic	
Y.W. Zou, X.L. Huang and Y. Bai	1341
Efficiency Analysis and Optimization on Magnetic Resonance Coupled Wireless Transfer System	
L.L. Tan, X.L. Huang and H. Qiang	1345
Frequency Splitting and Distance Boundary Condition in Magnetic Resonance Coupled Wireless Power Transfer System	
X.L. Huang, L.L. Tan, H. Li and H. Qiang	1349
Pipe Network Remote Monitoring and Fault Diagnosis System Design	
R.X. Fu and Y. Du	1353
Calculation about the Fundamental Wave Amplitude of the Current in the Distribution Line on Wavelet Analysis	
C.C. Chi, J.W. Chen and Y. Wu	1357
Management Optimization and Control in Manufacturing Process Based on Knowledge-Flow	
G.Q. Li, P. Mitrouchev, S. Lin, L.X. Lu and D. Brissaud	1361
Application Study on Complex Product Based DMU in Product Life Cycle	
Y.B. Yang, F.J. Wang, L.F. Wei and L.L. He	1365
The Design of Encryption System Based on RC5 Arithmetic	
S.F. Liang, Z.R. Dong and H. Qiu	1370

Self-Localization for Robot Based on the White Line K. Lv, J.W. Su and X.P. Chen	1375
Vibration Isolation and Noise Reduction Design of the AH20 Motor's Lifting up Structure L.Q. Li, S.L. Wang and B. Xu	1379
The Element Stiffness Matrix of a Tapered Beam with Effects of Shear Deformation and its Stability Application N.L. Lu and L.X. Meng	1383
Dynamic Stability of Stepped Columns under the Axial Resonant Force N.L. Lu and S.M. Liu	1389
The Dynamic Compensating Research of the Fingertip Force Sensor Y. Chen and D.Z. Xu	1395
Embedded Machine Tool CNC System Based on the ARM and MCX314 X.C. Song and Q.H. Zhou	1401
The Design of High Pressure Wellhead's Spool Base on the Autofrettage M.Q. Li, M.L. Duan, Y. Huang and S.Z. Zhou	1405
Numerical Analysis on Convection Heat Transfer in a Spirally Fluted and Field Synergy Principle Analysis J.Y. Yu, W.H. Yang, Y.Y. Wu, W. Lin, L.J. Liu and Q. Liu	1410
A Unified Reliability Modeling Approach for Mechanical System and Complex Component L.Y. Xie and S.Z. Yan	1416
Performance of Different Projectile Nose Shapes in Normal Penetrating Armor Targets G.Y. Huang, S.S. Feng, G. Wu and S.P. Li	1420
Design and Manufacture of a Miniature UAV Using 3D Rapid Prototyping Z. Taha, V.C. Tai and P.C. See	1426
Transformer Neutral Point Protection Configuration and Tuning Y.X. Cao Peng and Z.Z. Shao	1436
DCS Control on Melamine System L.S. Gao and J.L. He	1440
Research on Thermal Effect and Mode Properties of a Q-Switched Laser by Using Shack-Hartmann Wavefront Sensor X. Zhang	1444
Uncertainty Quantification for a Flapping Airfoil with Chordwise Flexure L.Y. Zhao, C.Y. Xing and X.Q. Zhang	1448
Research on Influencing Factors for Stirring Effect of Blender Truck T.C. Huang, S.Z. Zhou and X.M. Yuan	1454
Designing of Temperature and Thermal Displacement Measurement System in Machine Tools Z.F. Bao, P. Zang and J.P. Wang	1459
Finite Element Simulation of High-Speed Hard Turning G.C. Du, Y. Chen, J.F. Zhang and Z.Z. Wei	1465
A Self-Control Assembly Machine Based on Vision System W.H. Li and H.S. Lian	1471
Modeling and Simulation of Aircraft on Ground Deicing Fluids Deicing Process Based on Thermal Consumption B. Chen, Z.W. Xing and L.W. Wang	1477
The Fault Tolerable Control System Structure of SY-II Remote Operated Vehicle H. Huang, L. Wan, Y.M. Li and Y.J. Pang	1483
The Research of Hydraulic System Anti-Vibration and Noise Reduction Z.Y. He, Q.H. He and S.H. He	1492
Study of Three-Dimensional Wall Effects on Micro Nozzle's Performance J.J. Tong, J.W. Cen and J.L. Xu	1497
Magnetic Floating Continuous Casting Process (MFCC) for Molten Metal Afterheat Billet L.M. Cai and D.P. Liu	1505
Study on Stress and Deformation of an Elevator Safety Gear Brake Block Using Experimental and FEA Methods E. Kayaoglu, O. Salman and A. Candas	1513

Turbulence Model Influence on Numerical Investigation of Transonic Axial Compressor Rotor	
F. Xie, C.J. Liu and Y.J. Wang	1519

Reverse Engineering

Information Fusion Technology and its Application to Intelligent Control System of Ceramic Kiln	
Y.H. Zhu and X.H. Zhang	1525
On Design and Simulation of Turtle-Shape Shunt Taps	
L.K. Zhou	1531
Dry Sliding Wear of Oil Palm Empty Fruit Bunch (<i>OPEFB</i>) Epoxy Composite	
S. Kasolang, A. Kalam and M.A. Ahmad	1535
A Knowledge-Based Conceptual Design Support System	
W.D. Engida, F.M. Hashim and S. Debnath	1540
Detection of Fractional Data Based on Hilbert-Huang Transformation	
C.J. Li and J.P. Wan	1546
Computer Simulation and Test for the Profilograph	
L. Bao and J.F. Wang	1551
Individualized Modeling of the Femoral Head Based on Reverse Approach	
B. Liu, Z.H. Huang and Y.N. Zhu	1556
Deposition of Nanocrystalline TiO₂ Films on Flexible Titanium Mesh for Dye-Sensitized Solar Cell	
K.S. Kao, P.H. Kuo, C.C. Cheng, D.L. Cheng, C.M. Wang and P.S. Hung	1561
Influence of Helix Angle in Low Immersion Milling Forces and Stability Analysis: down-Milling, up-Milling and Slotting	
M. Masud Akhtar, X. Huang, W.L. Chen and Z.X. Lin	1565
Contact Model of Sealing Surfaces for Flange and Metallic Gasket Based on Fractal Theory	
X. Feng, F. Lu and G.L. Shen	1571
Wear Behavior of Al-Al₂O₃ Reinforced Composites	
Y. Şahin	1577
Modeling and Designing of Urban Traffic Control Systems by Statecharts	
Y.S. Huang and T.H. Liao	1582
Experimental Research on Deep-Bed Drying Characteristics of Maize	
X.Z. Ma, C.Y. Li, L.L. Zhang and W.H. Shen	1586
Establishing Key Integration Factors for Integrating Engineering and Sustainability	
K.P. Lee and A.S. Chang	1590

Web Adds

Reverse on the Spiral Bevel Gear's Teeth Profile Line	
C.X. Wang, J.Q. Zhang and Z.J. Liu	1596
The Method for the Accuracy Improvement of STL Offset Model Based on Vertex Offset	
H. Zhu, N. Li and Z.J. Liu	1600
Physiological and Biochemical Characteristics and Desilication Ability of <i>Bacillus Mucilaginosus</i> Screened from Poyang Lake Area of Jiangxi Province	
L.M. Zhang, D.S. Sun and Y. Bo	1604
Experimental Study on a New Suction Inlet Realizable for Uniform Thickness Collection	
S.L. Chen, X.D. Yang, S. Qiu, C.L. Ma, T. Chen, D. Yang and H. Yang	1609
Parameter Inversion of Thin-Walled Structure Using Numerical Optimization Approach	
Z. Meng, Q. Sun and J.F. Jiang	1614
A Method to Obtain the Position of Space Object Based on Monocular Vision and Laser Ring	
N. Yin, X.L. Zhu, X. Zhao and S. Gao	1619
Optimization of Technology for Virgin Coconut Oil Microencapsulation by Response Surface Methodology	
Y.L. Huang, S.M. Deng, W.J. Chen, Q.Y. Xia, R. Li and S.L. Zhao	1627

Dynamics Analysis and Cam Profile Optimal Design of the Valve Train in the Diesel Engine with High Specific Power	
L.W. Sun, T.X. Su, J.F. Xu, Q. Wang, C.L. Xu and G.D. You	1636
Predictive Design for Intake Port of HPD Diesel Engine	
G.D. You, T.X. Su, J.F. Xu and K. Li	1641
Composite Soil: Fiber Inclusion and Strength	
A. Chegenizadeh and H. Nikraz	1646
Geotechnical Parameters of Composite Soil	
A. Chegenizadeh and H. Nikraz	1651
Defect Contour Matching Based on Similarity Measure for 3D Reconstruction	
L.Y. Fang, H. Li and J.P. Bai	1656
Chemical Constituents of <i>Plumbago Zeylanica</i> L.	
Y. Ming, J. Wang, J. Yang and W. Liu	1662
The Optimization of Edge-Shape Parameter for Curve-Edge Milling Insert Based on Thermal-Mechanic Coupling Physical Field	
B.J. Sun and X.W. Fang	1665
Bitmap-Base Association Rule Optimization Algorithm and Application in Equipment Fault Diagnosis	
Q.X. Zhu, L. Zhang, J. Liu, P.S. Jiao and H.H. Hao	1669
Vehicle Active Suspension with Four-Degrees of Freedom of Optimizing the Value of K Based on Genetic Algorithm	
Y.Y. Zuo, C.B. Yan and N. Yang	1673
Design of Temperature Monitoring Network Based on CC1110 Wireless Microcontroller	
F. Wang, G. Tang and J. Zhu	1679
Prediction and Discuss of Strap Mining Subsidence by Numerical Simulation Analysis and its Engineering Apply	
F.H. Xie, Z.Y. Kou and Y.M. Zhang	1683
Projective Synchronizing a Novel Fractional Hyperchaotic System Based on a Approach Configuring a Special Matrix	
J.B. Hu, J. Xiao, L.D. Zhao and Q. Jiang	1688

Green Design and Manufacturing

Clothing Design Based on Comfortability	
Z. Li	1697
Research on Ultrasonic Compression of Cellulosic Biomass	
J.W. He, C.C. Fok, Z.N. Guo and Y.J. Zhang	1701
Research on Behavior and Connotation of Product Design	
X.G. Ma and B.C. Wen	1706
Performance Study of Photovoltaic Semiconductor Cooling Box	
Y.D. Dai, X.Y. Liang and H.C. Du	1710
Design Analysis of a New Transmission Device for High-Speed Precision Micro-Shafting	
W. Li, Z.X. Zhou, T.J. Song and H. Xiao	1714
The Study on the Philosophy of Green Design in Modern Design	
R.S. Yan	1720
The Parameters Sensitivity Analysis of Battery Electric Vehicle Energy Consumption Economy	
M. Chen and L.X. Guo	1724
Constructing Power-Aware Multicast Virtual Networks	
N. Qi, B.Q. Wang, B. Yuan and B. Zhang	1728
An Application of Estimate Expert System Technology for Burrless Rubber Mould Manufacturing Process	
S.B. Park	1732
Trust Model Based on Feedback Evaluation in Cloud Manufacturing Environment	
X.L. Xie, L. Liu and Y.Z. Cao	1740
Material Removal Mechanisms of Electric Discharge Milling Conductive Ceramic	
W.J. Chang, J.H. Zhang, T. Zhu and T. Wang	1746

The Research of Polarization Feedback Control System Based on Double Mach-Zehnder Interferometer	
Y.T. Wang, R.R. Yuan, S.T. Wang, X. Gao and X. Li	1751
Research on the Building Technology of Raw Soil Composite Wall Structure	
S.H. Yang, Y. Zhang, J.L. Lu and J.Y. Zhu	1755
A Study of RTE Structural Packaging Design	
O. Panyarjun and T. Olarikabutr	1759
The Concept of Green Design Reflected in Design and Use: A Case Study on Japanese Design	
S.Y. Zhang and E.L. Wang	1766

Design for Sustainability

Load Distribution of Straight Beveloid Gears with Parallel Axes	
Q. Liu, J.X. Wang, B.L. Yu and K. Xiao	1773
Study on Consolidation Coefficient by Different Test Methods	
Y.C. Tang, G.T. Meng and J.C. Gong	1778
Application of Neural-Fuzzy System in Data Processing of Hydraulic Torque Converter's Performance Test	
G.F. Tian, S.J. Wang, S.H. Sun and Z.W. Ren	1782
Impact of ECFA on Trend of Exchange Rate between NTD and RMB Based on Grey Prediction Model	
C.C. Tu and A.P. Chen	1788
The Stress Analysis about Rolling-Sliding Blend Bearing under Heavy Load	
L.M. Lu	1792
Study on Effects of Rack-Cutter Fillet on Meshing Strength of Involute Conjugated Internal Gear Couple	
H. Zhou and W. Song	1796
Study on Ride Comfort of ATV with Three Wheels Based on Rigid-Flexible Coupling System	
Z.H. Huang, X.S. Lu, W.Q. Xu and Z.D. Sun	1802
Digital Collaborative Design of Diesel Engine	
S.D. Ji, B. Gao, W. Pei, W. Wang and H. Zhang	1806
Discussion on Application of Pressure Drop Computation Model in Gas-Liquid Cyclone Separator	
C. Ye, F. Wang, T. Yuan and H. Wu	1810
Vibration Research on Fork-Lift Truck by Harmonic Analysis	
M.L. Yang, Z.Y. Chang and G.N. Xu	1815
Research for Virtual Prototype Modeling and Simulation of Bridge Crane Based on Pro/E and ADAMS	
D.C. Qin, Z.L. Liu, Q. Zhu, J.Y. Chen and Y.J. Wang	1822
A Novel Design of a Suspension System for Omni-Directional Electric Vehicles	
H. Qiu, Z.B. Lei, T.Z.M. Qi and Z.R. Dong	1826
Reason Analysis of Marine Auxiliary Engine Exhaust Pipe Burned Red	
G.Y. Zhang, W. Ren, S. Wu and P. Wang	1832
Study on the Controllability of Complex Flexible Hydraulic Vehicle Robot System and its Dynamic Simulation	
Z.S. Ma, J.B. Hao and H.G. Sun	1836

Machinery Dynamics

Dynamic Design of High-Speed Planar Cam with Oscillating Follower	
Z. Wei, G.G. Jin, B.Y. Chang and D. Liang	1845
Modal Analysis of a Drilling Machine for Blades of Wind Turbines	
Y.S. Jiao, Y.L. Zhang and M.H. Fan	1850
Forward Kinematics Simulation Analysis of Slider-Crank Mechanism	
Y. Qian, Y. Cao, Y.W. Liu and H. Zhou	1855

Dynamics Simulation of Diesel Engine Piston pin Based on ADAMS and its Application in Fault Diagnosis	
H.B. Xiao and X.P. Xie	1860
Modeling and Vibration Analysis of Hub-Flexible Beam System Carrying a Payload with Rotary Inertia	
S.J. Chen and D.G. Zhang	1865
Principle and Dynamics Simulation Analysis of Varying Strategy of a Novel Variable Diameter Walking Wheel	
X.B. Chen, F. Gao, S.Z. Yao and Z. Wang	1875
Research on Fidelity of Driving Simulators	
P.X. Li, Y.D. Wei, X.J. Zhou, C.Y. Wei, M.X. Xie and F. Tang	1880
Simulation and Study of Random Loads on Continuous Miner Cutting Drum	
X.H. Li, X.W. Yu, X.H. Ma and Y.B. Zhao	1885
Stiffness and Nature Vibration Analyses of Linear Guideway Type	
W. Li, G.C. Tsai, W.Z. Li and T.L. Horng	1889
The Efficiency and Experimental Investigation of Differential Gear Train	
C.G. Zhou, H.W. Wang, C.F. Ma and Y. Guo	1893
Simulating Sliding Efficiency of Belt Driving Acted on by Bi-Directional Alternating Load	
S.M. Dong and M.M. Xing	1900
Dynamics Analysis of Gear Mesh of Transmission Based on Virtual Prototype	
J.F. Wang, X.C. Wu and J.T. Han	1910
Dynamic Research on Vibration-Impact Crushing System of a Bilateral Single-Mass	
S.H. Ni and Q.G. Chen	1914
Nonlinear Modeling of Linkage Mechanism with Clearances and Precise Control	
W.M. Zhou, S.W. Xue and X.J. Wang	1918
Comprehensive Dynamic Model and Vibration Characteristics of Step-Type Compound Planetary Gear Sets	
F.C. Yang, X.J. Zhou and M.X. Xie	1923
Research on Dual-Cones CVT Based on EHL	
H.L. Dong, S.H. Yuan and C. Wei	1929
Integrated Performance Optimization of Truck Suspension Parameters Based on Gradient Optimization	
J.W. Yang, J.Z. Dong and G.Y. Zhang	1935
Dynamic Characteristics Analysis of Abnormal Vibration for Power Assembly of Diesel Engine of SUV	
H.D. Meng, S.M. Li and Y. Bai	1941
Research on Vehicle Dynamics Simulation for Driving Simulator	
F. Tang, Y.D. Wei, X.J. Zhou, Z.H. Luo, M.X. Xie and P.X. Li	1946
Vibration Analysis and Simulation of Siemens-Schottel Podded Propulsion	
G.C. Zhang and J.Q. He	1951
Simulation Analysis on Passing Curve of Urban Track Vehicle	
Y.Y. Zuo and Q.B. Chang	1956
Finite Element Analysis of Elastic Membrane Coupling Based on MSC.patran	
G.K. Shan, H.L. Zhang, Y.B. Wang and C.Z. Zeng	1961

New Mechanisms and Robotics

Kinematic Analysis of a Novel Manual Medical Instrument for Minimally Invasive Surgery	
X.F. Wang, J.M. Li and G.K. Zhang	1969
Space Robot Self-Assembling Parameter Analysis	
T.X. Liu, L. Liang, W. Cheng and Y. Zhao	1975
Influences of Cylinder Speed-Change Mechanism Parameter for Processing Property on High-Speed Comber	
J.Z. Ren, G.X. Jia and L.B. Zhang	1981
The Research of the Four-Bar Bionic Active Knee	
K.J. Kim, C.D. Wu, F. Wang and S.G. Wen	1988
Study on Characteristics of Cylindrical Air Spring	
C. Chen, R.R. Hu and L. Huang	1992

Trajectory Performances Test for Arc Welding Robot Based on the Non-Contact Laser Tracing Measurement Technology X.J. Zhang, J. Li, S.J. Zhu and Y. Zhang	1997
Kinematic Analysis of Clamping and Rotating Mechanism F.J. Chai and J.Y. Xu	2003
Research of a Robot Upper Limb and it's Pneumatic Balance Design C.J. Wang, B.H. Fan, X.J. Sun, H. Jiang and Z.X. Zhang	2008
Interference Determination for Parallel Cable-Driven Robots Y. Su, J.W. Mi and Y.Y. Qiu	2013
Contact Characteristics of Spherical Gear and Ring-Rack Q. Li, C.Y. Pan and H.J. Xu	2019
Synthesis of 2T1R Decoupled Parallel Manipulators W.J. Lu, L.J. Zhang, D.X. Zeng and R.S. Wang	2025
Development and Experiment of Wall-Climbing Caterpillar Robot K. Wang, W. Wang and H.X. Zhang	2031
Configuration Design and Displacement Analysis of a Novel Decoupled 3T2R Parallel Robot Z.X. Shi and M.Y. Ye	2037
Design Closed-Loop Measurement and Control System of Drilling Rig Y. Jiao, L. Gao and S.M. He	2042
Upper Limb Kinematical Model and Motion Analysis Method Study X.T. Wang, J.X. Zhang and L.P. Yin	2047
Research on Sand Collecting Mechanism's Flanks of a New Railway Sand Removal Vehicle Based on CAE Method Z.X. Cui, S.J. Guo, J.G. Qin, T. Yang and S.Q. Hou	2052
A Matrix Representation and Motion Space Exchange Metamorphic Operation S.J. Li and J.S. Dai	2058
A Method on Obtaining Depth Information and Parallel Adjusting Mechanism Design Based on Lens Imaging Principle X. Zhao, X.L. Zhu, N. Yin and S. Gao	2062
Trajectory Planning Research of Spherical 2-DOF Parallel Manipulator with Actuation Redundancy Y.Q. Li, L.J. Zhang and Y. Liu	2068
Research on Kinematics Simulation and Analysis of 6 Revolute Joint Serial Industrial Robot K. Li, D.N. Li and L.L. Kong	2074
Research and Development of an Adjustable Elliptical Exerciser J.H. Shyu, C.K. Chen, C.C. Yu and Y.J. Luo	2078
The Integrated Design of an Interactive Service Robot for Shanghai World Expo 2010 R. Xiong, X.F. Du, W.F. Wang, Y.H. Wu, J. Chu and H.B. Zheng	2084
The Design and Comparison Study on the Large-Scale End-Effector of Large Space Manipulator F. Feng, Y.W. Liu, H. Liu and H.G. Cai	2095
Dynamic Analysis and Simulation for a Bionic Intervention Robot C.X. Liu, J.H. Zhang and D.X. Zhao	2104
Dimension Optimization Design of the Stewart Platform in FAST R. Yao, W.B. Zhu and Q.G. Yang	2110
Workspace Analysis of New Type Parallel Mechanism with Serial Input P.L. Jing and Z.Y. Feng	2114
The Kinematic Influence Coefficient Analysis of a Parallel Stabilized Platform Testing System F. Jiang, H.S. Ding, T. Fu and Z.H. Dong	2120
Design of Optimal Controller for Dynamic Positioning System P.W. Yu and H. Chen	2127
Design and Analysis of a Piezoelectric Actuator Y.M. Yu	2131
Type Synthesis of Symmetrical Non-Overconstrained 3-DOF Translational Parallel Manipulators Based on Screw Theory Y.G. Huang, L. Du, Y.H. Chen and J. Feng	2135

Motion Modeling for Humanoid Robot Walking on Slopes J. Yang, J. Wu and R. Xiong	2139
Characteristics Analysis of Noncontact Spinning Mechanism with Numerical Simulation F. Sun, J.J. Jin and K. Oka	2146
Stability Analysis of Biped Robot with an Efficient Approach M.Q. Liu, Q.D. Tang and Y.L. Zhang	2152

Driven Train Mechanisms

Study the Movement Characteristic of a Closed DISCO CVT K.C. Liu, G.R. Xie and Y.J. Wu	2161
The Anti-Vibration Ability Research of the Straw as Shock Isolation Layer C. Zhang, R.J. Chen and W.F. Fang	2168
Preparation and Biocompatibility of Nanoscaled La/Ag/HAP Powder H. Yang, G. Yang, C. Wang and K.W. Xu	2173
Effects of Aging and Temperature on the Oriental Growth of Hydroxyapatite H. Yang, F.F. Huang and K.W. Xu	2180
The Design and Realization of Digital Controlled Frequency-Variable Speed-Adjustable System Based on DSP and SVPWM Y. She and C.P. Qu	2187
The Series Combination of Cycloid Tooth Profile Planetary Mechanism and Screw Mechanism for Linear Drivers S.Y. Li and Y.P. Yang	2191
Parametric Design of Wet Shifting Clutch Based on Secondary Development of Pro/E H.W. Cui, Q.D. Yan and S.W. Yao	2195
Self-Development Design of Automotive Transmission Based on MASTA Platform Y.L. Tian, J.L. He and H.L. Niu	2201
Simulation and Analysis of Dynamical Transmission Precision of 2K-V Cycloid pin Gear Reducer Based on Multi-Body System Dynamics B. Zhu, W. Qin, J. Liu and Y.L. Fu	2205
Mechanism Innovative Design for Manufacturing Internal Cylindrical Cavity Die J. Wu and Z.Q. Zong	2211
Study on Parametric Drawing of Planetary Gear Transmission X.Z. Li, X. Zhou, L.J. Wang and C.S. Liu	2215
Finite Element Analysis for Pin-Hole-Output Mechanism of FA Cycloid Drive Based on ANSYS L. Lei, Y. Tao and T.M. Guan	2220
The Comparative Study on Less Tooth Differenced Teeth Profile of High Precision FA Pin-Cycloid Gear Transmission T.M. Guan, L. Xuan and L. Lei	2224
Analysis of the Drive of AT Based on the Lever Method M.F. You, Z.W. Li and J.J. Li	2230
Outer Mesh and "Two Teeth Difference" Planetary Gear Transmission Parameter Optimization Design Y.D. Ye and W.X. Zhang	2237

Complex Electro-Mechanical System Design

Open CNC System for Winding Machines J.H. Tao, H. Liu and X.C. Liu	2243
Research on Fuzzy Control Rule of Anti-Vehicle Rear-End Collision by Matlab and Simulink N.T. Gan and L.S. Chen	2247
The Application of PLC in Hydraulic Metal Band-Sawing Machine Improves Control Circuit Y.J. Xie	2250

An Electrical Parking Brake System Design and Analysis X.C. Huang and J. Yang	2254
The Study of Holonic Control Strategy in Modern Automobile Q.H. Lei	2258
Teaching and Playback of Motion Trajectory Based on Parallel Manipulator W. Li, Y.T. Wang, J.F. Du and X.Y. Cao	2262
Development of Active Suspension System for a Pot Hole Using PID Controller M. Senthilkumar	2266
Application and Research of Modern Design Method on the Detective Vehicle for Straddle Type Monorail H. Wang and G.S. Ren	2271

Advanced CAE Technique

Computer-Aided Analysis and Measurement of an Interconnection System W.C. Lee and H. Wu	2279
The Research of Virtual Prototype Technology of Axial Piston Pump with Load-Sensing Control Y.D. Chen and S.M. Chen	2286
Study on the Permeability of Reinforced Soil with Herb Fiber under Different Salt Solution Concentration G.S. Yan, H.Y. Zhang, X.D. Wang, M. Li and T.Y. Zhao	2291
Flexible Module Optimization of Hydraulic Press Based on LSRM Q.X. Chang	2297
Application of CAD/CAE Technology in Hydraulic Excavator Working Equipment Analysis L.R. Wan and Z.C. Wang	2302
CFD Analysis of Engine Water Jacket and it's Optimization C.B. Liu and C. Zhang	2308
Finite Element Microcosmic Contact Analysis of True Rough Surfaces Based on ANSYS W. Wang, Q.M. Xiao, P.L. Li and H. Zhang	2313
Research and Implementation of Parameter Mapping in Computational Method Combined Execution W.Q. Ling and J. Wang	2319
Space Optical Remote Sensor of the CAE Thermal Control Index Calculation Method L.F. Li	2328
Kinematical Simulation and Analysis of the Combining Vibrating Screen N.Q. Guo, W.P. Huang and J.Y. Lin	2334
Numerical Modeling of the Effects of Wears on Cutting Loads X.Y. Wang, Z.X. Cai, P.C. Su, H.F. Zhao and Y.L. Kang	2340
GPU Based Boundary Element Analysis for 3D Elastostatics with GMRES-DC Algorithm Solving System Equations G. Wang, Q.F. Wang and Y.J. Wang	2345
Based on the ANSYS Software to Research Lasers Coating Applied with the Ho-Type Cutting Pick N.N. Xu, P.H. Mao and B. Zhai	2349
Preferentialness Design of a Composite Impeller with Ultra-Low Unit Speed Centrifugal Pump Y.B. Tian, X.Y. Qi and J.X. Hu	2353
Modal Analysis of Prestressed Spindle Component Based on Workbench H.W. Li and J.B. Zhang	2358
Equivalent Static Loads Method for Flexible Structural Shape Optimization W. Zhang, C.Q. Sun and H. Wang	2364
Simulation Study of the Whole Process of Collapse and Collision of a Large-Span Steel Single-Layer Lattice Structure D.Y. An and C.M. Li	2368
Static Modal Stiffness Sensitivity of the Frame under Full Vehicle Environment S.H. Pan and Y.D. Chen	2374

Study of the Injury Analysis and Safety Design Improvement of the Bus in the Typical Position	
C. He and X.Y. Zhang	2379
Research on CAE System Software of the High-Pressure Reciprocating Pump	
N. Li, Y.R. Li, S.Z. Zhou and Q. Yang	2384
Design and Analysis of the Table Tennis Wheelchair Based on the Human Engineering	
L. Lei, T.M. Guan and Y. Tao	2388
Development Platform for Automotive System Base on VC++ and ADAMS/Car	
B. Yang and H. Sun	2393
Natural Characteristics Analysis on Structure of Disc Vibration Dryer	
X.P. Wang and Z.W. Zhang	2398
Distortion Analysis on Reflector Antenna Surface Using Non-Probabilistic Interval Method	
H.B. Ma and X.F. Xu	2404
Derivative-Free Hybrid Optimization Method for Top Design of Satellite System	
Y.G. Chen, S. Lu, X.L. Liu and Y.W. Chen	2413
Rigid-Flexible Coupled Modeling and Simulation Analysis of Printing Cylinder Based on ANSYS	
J.Z. Guo, J.P. Yang and T.T. Cai	2418
Application of Micro-Tube Water-Cooling Device for the Improvement of Heat Management in Mixed White Light Emitting Diode Modules	
M.T. Sheen, M.D. Jean and Y.T. Lai	2422

Other Related Topics

Niche Differential Evolution Algorithm and its Application in Multimodal Function Optimization	
N. Li, Y.X. Li, Z.G. Huang and Y. Wang	2431
The Digital Engine Simulation Management Platform Based on MSC.SimManager	
D.M. Lou, Q. Qiang, Y.J. Zhu and Y.B. Du	2436
Forming Limit Diagram of Magnesium Alloy ZK60 at Elevated Temperature	
H.W. Liu, S.J. Yao, W.L. Liu and Z.D. Zhang	2442
Influence of the Measurement on Superfine Powder by Different Laser Particle Analyzer	
X.M. Zhou and Y.X. Li	2446
Research of Simulation and Design of Microperforated Panel Construction	
L.F. Yang, W.L. Chen and F.Y. Meng	2450
Model Predictive Control of Filament Tension in Textile Winding Process	
F.L. Li, M. Xu and H. Liu	2454
Effect of Additives on Structure and Corrosion Resistance of Molybdate Conversion Coatings Deposited on AZ31B Mg Alloy	
L.H. Yang, M.L. Zhang, C.G. Lin and J.H. Wu	2458
Initial Imperfection Simulation and Effect on Shear Buckling of Corrugated Steel Webs	
J.Y. Song, Y.M. Yu and S. Zhang	2463
A Topology Optimization Approach and its Application in the Design of a Key Connecting Component of a Harvester	
X. Chen and X.J. Liu	2471
An Improved Design Based on Smart Film for Monitoring Crack Width of Concrete Bridges	
X.X. Li, B.N. Zhang, Z.X. Zhou and L. Tang	2478
Development of Glass-Fabric Composite Wind Turbine Blade	
T.Y. Kam, B.W. Wang and H.M. Su	2482
Optimization Design of Self-Balancing Torsion Bar Diameter	
Z.Q. Huang	2486
An Approach to Identifying Litchi Fruits under Nature Scenes	
T.H. Liu	2490
CNC Lathe Circular Interpolation Principle and Technological Parameters Research and Positive and Negative Arc Running Direction Analysis	
T.B. Huang	2495

A New Process of Hot-Pressing Mica Composite Insulation Material Y.P. Qian, X.W. Zhang and Y.B. Zhu	2506
Optimizing to Memory Application in Embedded Multimedia Device X.S. Wang and Q. Yu	2511
Tensor Factorization and Clustering for the Feature Extraction Based on Tucker3 with Updating Core H.J. Wang, F.Y. Xu and F. Wang	2517
Study on Application of the New-Typed Metal Ceramic Composite Coating in the CFBB at High Temperature H.F. Sun, G. Wang, C.M. Wang and Q.F. Tian	2523
GTWZ-6012 Type Aerial Work Platform Hydraulic Legs of Stress Analysis and Calculation K. Zhang, X.Z. Huang, J.P. Chen and J.F. Wang	2527
Thermal Study on High-Power White LED down Light K. Bai, L.G. Wu, Q.H. Nie, S.X. Dai, B.Y. Zhou, X.J. Ma and Z.Y. Zheng	2531
Research on Whirling Vibration of CPP Propulsion Shafting G. Liu, B.Y. Huang and Z.G. Hua	2537
The Monitoring System of Waste Heat Recovery Based on S7-300 PLC and WinCC X.D. Tan, K.D. Zheng and C.B. Liu	2543
Structure and Properties of Ti55Al45 Alloys Prepared by Mechanical Alloying and Spark Plasma Sintering Y.D. Liu, J. Xing, D. Ai and S.Z. Jin	2547
Analysis to Dynamic Characteristics Influence on Bearing-Load Sensor to the Rotor System X.Y. Pang and Z.J. Yang	2551
Study on the Freezing Resistance of HFCC H.M. Ai, P.G. Lu, J.Y. Bai and J.J. Wei	2555
Polynomial Moving Fitting Method for Edge Identification X.R. Yuan	2560
Microstructural Observation of SiC Surface Alloyed Carbon Steel C.Q. Guo	2565