Table of Contents

Preface and Conference Organization

Chapter 1: Development and Utilization of Solar Energy

A Social Publics' Evaluation for Promotion Priority of Solar Energy Policy in Taiwan Based	
on Analytical Hierarchy Process Y.T. Tung, T.Y. Pai, J.J. Yu, M.S. Lin, P.Y. Yang, L.H. Shih and J.W. Su	3
Measuring and Evaluating Solar Radiative Properties of a Shading Plant F. Wang, F.D. Hou and X.Q. Liu	7
Research of Solar Refrigeration Technology Y. Li and S. Lv	11
Research on Modeling and Control Strategy for Two-Stage Photovoltaic Grid-Connected System	
X. Dong, L.N. Zhang, Y.Y. Fu and C.L. Ji	16
The Calculation and Analysis of UAV Solar Array Power Generation Y. Zhang, Z.P. Wang and C.W. Guo	22
A New Technique to Improve the Efficiency of Output Power Solar Panel Using PIC 18F4550 Microcontroller M.I. Yusoff, W. Leow, M. Irwanto, N. Gomesh, M.R. Mamat and I. Safwati	31
Exergy Analysis of Concentrated Solar CHP System for Building Scale Utilization	31
Y.M. Han, Z.W. Li and P. Xu	35
Research of Available Capability of Accommodating PV Power Generation of Tibet Power Grid Based on Capacity of Peak Load Regulation Constraints X.Y. Jiang, C. He and X.F. Liu	40
Research of Off-Grid Household Photovoltaic Power System	40
X.R. Song, L. Wang, X. Ying, Y. Bai and L. Li	44
Study Experiment of Energy Harvesting System Based on Solar and Vibration S.Y. Ren, C. Song, Y.B. Chen and G.C. Yu	49
The Study on the Energy Saving of Wall Mounted Solar Capillary Low-Temperature Hot Water Radiant Heating System X.J. Li, X.Y. Luo, C.Q. Xu, J.S. Wu, S. Pan and Z. Zhang	54
Experimental Study on the Heat Exchanger Performance of Parabolic Trough Solar Water	
Heater B. Yang, W. Wang and D.G. Zuo	58
MPPT Strategy of PV System Based on Adaptive Fuzzy Control J. Yuan, Y.J. Wang, J.H. Cui, H.L. Zheng, L. Bin, Z.P. Shen and F.F. Jiang	63
Stimulation and Optimization of Parabolic Trough Solar Hot Water System	(0
B. Yang, W. Wang and D.G. Zuo Electrical Generation of Dye-Sensitized Solar Cells Using Sensitizer from Rose Flower	68
N. Gomesh, S. Ramli, M. Irwanto, Y.M. Irwan, M.R. Mamat, U. Hashim and N. Mariun	73
Performance Comparison between Dyes on Single Layered TiO ₂ Dye Sensitized Solar Cell N. Gomesh, Z.M. Arief, S. Ramli, M. Irwanto, Y.M. Irwan, M.R. Mamat, U. Hashim and N. Mariun	78
The Comparative Analysis of the Stratospheric Airship Power Supply System C. Zhang, K. Qiao and L. Wu	82
Chapter 2: Development and Utilization of Biomass Energy	
a d	
Analytic Hierarchy Process of Environmental Social Groups for Promoting Biomass Energy in Taiwan	00
Y.T. Tung, T.Y. Pai, Y.C. Kang, Y.P. Chen, T.C. Huang, W.J. Lai and H.Y. Lee Biomass Production of Switchgrass in Saline-Alkali Land	89
J.L. Liu and N. Wu	93

Study on Sugar Production Conditions of Dilute Sulfuric Acid Hydrolysis of Corn Straw Q. Sun, S.H. Huang, B. Wang, X.R. Deng, J.S. Yi, X.S. Zhang and R. Shen	97
The Influence Factors of Biodiesel Preparation from Waste Cooking Oil via Acid Catalyst L.H. Ren	101
The Investigation Based on Heating with Biomass Energy for Biogas Digesters Winter Gas Production Technology in Cold Regions Y. Wang and S.S. Zhang	107
Comparison of Pretreatments for Lignocellulosic Biomass D. Yang, S.J. Wei, Q.M. Wen and X.J. Zhang	111
Crystallization Status of Palm Oil Biodiesel under Low Temperature Environment L.L. Cai, Y.N. Yuan, X. Chen, Y.B. Lai, X. Qiao and L. Chen	116
Mesophilic Anaerobic Digestion of Dairy Manure and Vegetable Waste Using Batch Reactor	101
L.J. Shi, W.L. Liu, H.F. Liu, W.Y. Zhang and L.T. Ban Using a Novel FCE Model to Evaluate the Industry Competitiveness of Biomass Power	121
Generation Z.B. Liu	127
Chapter 3: Development and Utilization of Wind Energy	
Identifying the Attitude of Environmental Practitioners toward Policy for Promoting Wind Energy in Taiwan Using Analytical Hierarchy Process Y.T. Tung, T.Y. Pai, I.T. Li, T.Y. Ou, C.P. Lin, Y.Z. Jiang and J.W. Su	133
Short-Term Forecast and Error Analysis of Wind Power Based on Weight Factors Y.J. Qin, S. Song, B. Shi, Z.J. Xie and L.W. Qiao	137
The Study on Turbulence Intensity Based on CFD in the Wind Farm K. Sheng, D. Wang and L.P. Wang	144
The Topological Structure Analysis of Novel Cascaded Wind Power Generation System J.G. Qian, S.J. Zhou, H.Y. Liu and Y.J. Wang	151
Analysis of Short-Circuit Calculation in Microgrid with Wind/Solar Micro-Sources Based on IEC STANDARD 60909 X.R. Song, L. Wang, L. Ye, Y. Zou, J. Xu and C.L. Dou	155
Modal Analysis and Simulation of SSR for DFIG-Based Wind Farms J.H. Chen and Z.Y. Xu	160
Research the Influencing Factors of the Low Wind Speed Wind Turbine Fatigue Loads F.M. Wu, L. Wang, D. Wang and J.B. Jing	164
The Distributed Intelligent Lubricating System for Wind Turbines X.P. Yang, Y.F. Sun, C.H. Song and S.H. Zhang	169
The Reserve Capacity Model Based on the Idea of Scenario in Power System X.L. Zheng, J.C. Liu, J.Y. Li, Y.X. Wu, F. Zhang, H.H. Chen, X.Y. An and C. He	173
Use of the Savonius Wind Turbine for the Needs of Public Lighting I. Gressová	179
Wind Power Prediction Model Based on ARMA and Improved BP-ANN H.K. Liu, J.X. Feng, S.Q. Yang and T. Jia	183
Energy Efficiency Evaluation of Wind Energy Based on Energy Reports A.M.S. Florescu, G. Bandoc and M. Degeratu	188
Vibration and Damping Analysis of Carbon Fiber Wind Turbine Blade with Viscoelastic Damping Treatment L. Wang, T.H. Cheng, X.D. Tang and J.G. Qian	192
Study on Transient Stability of Circulation Economy Power System with High Penetration of Wind Power	
J.P. Liu, C. Liu, T.R. Lu, H.Y. Tang, X.S. Tian and Z. Wang Research of Fine and Robust State Estimation	197
J. Li, Y.D. Luo, Y.S. Lang, C.L. Dou, Y. Zou, Z.M. Guo, D.S. Wang and X.P. Li Optimized Dispatch for Power Grid Connected with Wind Farm Based on Interval	202
Simulation S.Q. Sheng and S.B. Yang	207

Chapter 4: Nuclear Energy and Other Energy

Power Plant	
H.Q. Chen, Y.M. Qiu, X.W. Wang and Y. Yu	215
Research on the Assessment Standard for the Tidal Current Energy (TCE) Resource Calculation of China	221
H.Y. Shi, P.F. Guo and X.F. Cao Study on Performance of Ground Source Heat Pump Systems Based on Site Tests	221
B. Peng, N. Zhu, P.F. Hu, L. Peng and F. Lei	226
Feed-Water Enthalpy Rise Optimum Distribution Mechanism Model of PWR Nuclear Power Unit Based on Genetic Algorithm Z.L. Yang, Z.G. Dai and T.B. Wang	231
Research on Fabrication Process of ITER Composite Axial Insulation Break	237
Chapter 5: Energy Chemical Engineering and Fuel Cell	
Effect of Dissolved Oxygen Content on Gelling Strength of Chromium Gel in Block Hai 1 P.F. Yuan, G.S. Cao, X. Ma, X.P. Wang and X. Tian	243
Effects of Zn on Pyrolysis Characteristics of Shenhua Lignite W. Sangsanga, C. Na, J.X. Dou and J.L. Yu	247
Effects of Zn on Steam Gasification Characteristics of Shenhua Lignite Char W. Sangsanga, J.X. Dou, Z.L. Tong and J.L. Yu	252
Evaluation and Prediction of Coalbed Gas Fracturing Fluid H.H. Chen, H.F. Fan, J.P. Guo, M. Tang and F. Ni	257
Fuel Cell System Performance Prediction Model and Validation Based on Radial Basis Function M.Y. Du, L. Liu, Y.P. Li and X.S. Guo	264
Study on the Process Analysis and Kinetics during the Co-Pyrolysis of Low Rank Coal and	20.
Enteromorpha C.X. Wang, X.M. He, D.Z. Feng and F.L. Ao	268
Temperature Characteristics of Li-Ion Batteries H.W. Wang, Z.Q. Tao, Y.L. Fu, H. Bai and H.Q. Xiao	274
Thermogravimetric Study on the Combustion Characteristics of Corn Stalk and Low Volatile Coal D. Yang, Z.Q. Lou and M. Zhang	277
Chemical Agents Formula of Deep Profile Controlling for Niuxintuo Fractured Reservoir	211
X.J. Liu, G.S. Cao, B.C. Gao, H. Yin and T. Li	281
Contribution of Sulfate-Reducing Bacteria to the Electricity Generation in Microbial Fuel Cells	
C.Y. Gao, A.J. Wang and Y.G. Zhao	285
Dehydrogenation of Propane to Propene over Mesoporous ZrO ₂ -Supported VCrO Catalysts B. Agula, S.Q. Dalai and Y.C. Wu	290
Effect of Shape and Modification over ZSM-5 Catalyst on Methanol to Gasoline X.F. Gao, C.M. Ding, W.L. Liu, L.F. Fan, G. Song, J.W. Wang and K. Zhang	295
Influence of a Combined Low Dosage Gas Hydrate Inhibitor on Methane Hydrate Surface C.P. Tang, D.L. Li and D.Q. Liang	300
Low-Temperature Co-Pyrolysis Products of Low Rank Coal and Enteromorpha C.X. Wang, X.M. He, X.C. Zeng and D. Zhang	307
Research on Hydrothermal Modification of Heavy Oil K. Xu, Y.H. Ding, W.D. Liu and J. Chang	312
Synthesis of Glycerol Carbonate by Transesterification of Glycerol with Dimethyl Carbonate over Mg-Al Mixed Oxides Supported on MCM-41 G.D. Wu, X.L. Wang, Z.L. Zhai and A.Y. Cao	319
Tribological Property of some Triazine Derivatives in Hydrogenated Oil	
P.N. Wan, J. Yang and Y.O. Zhong	323

Energy Chemical Engineering (Topic Field) Simulation for Influence of High Pressure on Release of Inorganic Species during Combustion of Pakistani Coal G.E.R. Jaffri	328
Research and Application Advances in Supersonic Swirling Separator Y.P. Zhang, S.Z. Wang, M.M. Lv, Z.F. Jing and X.R. Luo	332
Characterization and Application Process Optimization of CuO/γ-Al ₂ O ₃ Catalyst in CWAO Technology	
Y.X. Zhang, C.Z. Wang, Y.L. Zhang and Z.W. Li	338
Property of Mn-Doped Fe ₂ O ₃ and its Effect on CO Adsorption X.Z. Xi, Q. Li, D.T. Long, H.F. Zhang, W.L. Cheng and W. Qin	342
Consequence Analysis of Jet Fire Accidents Occurred in Salt Cavern Natural Gas Storage: Hazard Distance and its Influence Factors Q.L. Feng, H. Cai, Z.L. Chen, D.J. Guo and Y. Ma	346
Research and Application of Technology of Mobile Electric Ignition Technology for Fire Flood in Vertical Hole H.J. Zhang, Z.X. Yang, F.X. Zhang and X.Z. Yang	356
Thermal Decomposition Synthesis of MoO ₃ for Application in Electrochemical	330
Supercapacitors X.P. Zhou, L. Ma, X.Y. Xu and Z.C. Feng	361
Chapter 6: New Energy Vehicles and Electric Vehicles	
The Research on Hybrid Electric Power System for Renewable Energy UAVs S.T. Shi, L. Liu, X.H. Zhang and M.Y. Du	367
A Travel Distance Power Consumption Model for Battery Electric Vehicles C.W. Tseng, Y.T. Yang and L.D. Chou	372
Research on Charge and Discharge Strategy for Centralized EVs Charging Stations H.H. Chen, J.C. Liu, Y. Zhao, J.Y. Liu, H. Tian, X.L. Zheng, X.Y. An and C. He	376
The Research Status and Development Trend of Electric Vehicle Power Supply Technology $H.\ Gao$ and $Y.J.\ Wu$	381
Chapter 7: Power System, Automation and Control	
Effectiveness Assessment of Black Start Schemes Based on Data Envelopment Analysis from the Perspective of Power Grid Crisis	207
S.H. Li Optimization of Reactive Power Compensation Rate in 20kV Cable Distribution Network	387
X.L. Lin, Z.X. Chen, Y.Y. Yang, J.X. Zou, Z.M. Zuo and Y.J. Zhang	391
Single-Phase Grid-Connected PV System Island Effect Detection Based on Active Output Power Change Method	
K. Li and D.A. Zhao	399
Comparison of the Two Decomposition and Coordination Algorithms for Reactive Power Optimization Based on Proximal Center Algorithm J.H. Wang, C.Y. Yang, G.Q. Mu, Z. Li and T. Li	404
Enhance Power System Transient Voltage Stability by Difference Coefficient of Generator Excitation System Optimization	400
W. Con. V.C. Co. I.E. 7hang and V.M. L.	
W. Sun, Y.S. Su, J.F. Zhang and X.M. Li Improved Equivalent Resistance Method for Low-Voltage Distribution Line Loss	409
W. Sun, Y.S. Su, J.F. Zhang and X.M. Li Improved Equivalent Resistance Method for Low-Voltage Distribution Line Loss Calculation X.H. Liu, L. Ma, Y.S. Shi, Y.J. Wang and J.H. Li	409
Improved Equivalent Resistance Method for Low-Voltage Distribution Line Loss Calculation	
Improved Equivalent Resistance Method for Low-Voltage Distribution Line Loss Calculation X.H. Liu, L. Ma, Y.S. Shi, Y.J. Wang and J.H. Li Interval Reactive Power Optimization for Distribution System with DGs	417

Modeling of Traction Power Supply System Based on the User-Defined Model of PSASP Y.W. Zhang, Q.L. Meng, F. Pan and W. Zhao	437
Power System Low Frequency Oscillation of Resonance Mechanism Induced by Disturbance of Turbine Governing System	4.4.1
X.W. Deng, S. Cai, Y.X. Feng, Y.H. Xu and C. Ma Research on Parameter Stability Region of Governor System	441
H.J. Weng, Y.H. Xu and Z.Z. Wang	445
Simulation Study on Anomalous Commutation Failure in Multi-Infeed HVDC Systems H.W. Li and G.R. Peng	450
The Forecasting Track of Power Grid Operation State Based on Risk Assessment Q.R. Chen, D.H. You, C. Long, Y. Zou, J. Hu, W.H. Chen, P. Xu and L.L. Pan	454
The Optimal Configuration of Feeder Switches in DAS Based on Pareto Optimality Solution G.L. Zhu and Y.G. Ma	461
A Chaos Particle Swarm Optimization Algorithm for Optimal Power Flow C.J. Xia, Y. Zhou and H.Y. Huang	466
A Novel System Splitting Scheme Based on the Identification of Weak Connection C.J. Xia, C.Q. Chen, K. Men and J.X. Yan	473
An Investigation of the Negative Resistance in Network Reduction and Electromagnetic Transient Modelling	400
C.J. Xia, G.K. Liang and H.Y. Huang Analysis of Influence Factors and Rules of Transformer Neutral Point DC	480
X.M. Wang, Y.G. Xie, Y. Zhou and C.J. Xia	485
Effect of Prime Mover Governor Parameters on Low Frequency Oscillation S. Cai, X.W. Deng, Y.X. Feng, Y.H. Xu and C. Ma	493
Study on the Analysis Software of Economic Operation of Transformer L.Y. Li and R. Li	497
Research on Control Method and the Structure Design of Asynchronous Modular Contactor	
M. Zong, Z.D. Cao and T.Y. Dong	501
Vector Control of the BDFG for Ship Shaft Standalone Power Generation System F. Long, H.D. Liu, N.J. Shen, J.J. Yin, L.H. Li and H.N. Yu	505
Wireless Temperature Monitoring System Based on ZIGBEE E.X. Chen and Y.J. Zhang	510
Experimental Study of Coal Moisture Content Measurement System Based on Standing-Wave Ratio	
S.Y. Ren, Y.B. Chen, G.C. Yu and C. Song	514
Research on the Workload of the Controller-to-Be Based on the Radar Simulator Z.H. Xia and W.J. Pan	520
Variation Characteristics of Geoelectric Field in Mid-to-Low Latitude Area during Geomagnetic Storms	
P. Liu, C.M. Liu and L.G. Liu	524
Design and Development of Power System for Transmission Line Online Monitor Device Z.J. Cai and Z.H. Feng	530
Electrical Equipment Life Cycle Monitoring A.I. Khalyasmaa, S.A. Dmitriev, D.A. Glushkov, D.A. Baltin and N.A. Babushkina	536
Implementation of Experimental Platform of Shipboard Power System W.F. Shi, W. Zhang, Z.H. Zhou and Y. Bao	540
Research on Intelligent FCL to Realize Seamless Power Supply between the Port and Ship for Energy Conservation and Emissions Reduction L.M. Xiao and Y.Q. Song	545
Analysis and Design on Course Control for Sail-Assisted Ship X. Yang and X.S. Li	556
Research on Heat/Power Load Optimizing Distribution Model of Heating Units Based on	
Gene Sequencing Method W.S. Zhao, X.D. Ding and Z. Wang	562
Analysis and Application of Power Balance in Self-Powered Sensor Y.K. Yu, F.M. Ruan and Y.J. You	567

Study on Acoustic Model of Transformer J.Z. Hu, D.C. Liu, Q.F. Liao, S. Wei and L. Yu	571
Parametric Study of Transmission Line Fitting Vibration Damper Based on Modal Analysis J.G. Qian, T.H. Cheng, L. Wang and Y.D. Shen	576
Chapter 8: High Voltage and Insulation Technology	
Analysis of Heat Transfer Process and the Finite Element Model of the 10kV Three-Core Pipe Cables R.B. Su, P. Wang, G. Liu and P.Y. Wang	583
Research on Dynamic Characteristics of 10kv Three-Core Cable Layers of Material Thermal Resistance W.X. Li, R.B. Su, G. Liu, P. Wang and Z.N. Pan	588
Study on the Steady State Thermal Circuit Model of 10kV Three-Core Cable Based on the Shape Factor Method	
W.X. Li, R.B. Su, G. Liu, P. Wang and Y.X. Chen Electric Field Analysis with Space Charge Effects of ±1000kV DC Wall Bushing S.M. Sun, Y. Cheng and X. Su	593 598
The UHVDC Transmission Line Lightning Disturbance Identification Based on the Morphology R.R. Cao and J.R. Yang	603
A Study on Porcelain Insulator Flashover Voltage Evaluation System on Atmospheric Pollution Condition S. Gao, F.B. Tao, Z.Y. Liu, Z.C. Zhou and L.M. Wang	610
Polymeric Insulation: Advantages and Disadvantages D.A. Glushkov, A.I. Khalyasmaa, S.A. Dmitriev, I.P. Nikonov and K.A. Zinoviev	615
The FTIR Analysis of Field Aged Composite Insulators Z.W. Gao, X.C. Zhu, S.J. Yang and H.Y. Nie Modeling and Simulation of Cascaded STATCOM Based on RTDS	620
C.J. Xia, J.X. Yan and C.Q. Chen Research on the Time and Space Characteristic of Argon Dielectric Barrier Discharge at	624
Atmospheric Pressure Z.N. Liu and H.M. Ge	630
Chapter 9: Power Electronics	
10KW/100KHZ High Frequency Induction Heating Power Supply Design M.L. Zhou, Y.P. Li and J.C. Wang	637
Automobile Engine Fault Diagnosis and Prediction System M.L. Zhou, J.C. Wang and Y.P. Li Research and Development of Multiple Protocol Compatible Device Managing System	641
C. Cao, T.S. Li, F. Wang and Q. Chen Design ADRC for Cutter Suction Dredger Cutter Motor Variable Frequency Drive System	645
M. Bai, J.H. Chen, C.N. Xie and F.H. Li Design of Temperature Control System about Pakistan Antiseptic Machine Based on Fuzzy	650
Theory Z.K. Yao, T.H. Wu and B.Z. Zhang Realization of NAND FLASH Control Glueless Interface Circuit	654
H.K. Liu, S. Wang, X.G. Kang and J.L. Wang Study of Induction Heating Power Supply Based on 74HC4046	659
Y. Cui, X.J. He, Z.P. Lin, Q.B. Chen, W.H. Yang, J. Wang and Y.W. Lin The FPGA Implementation of Single-Precision Floating-Point Adder H.K. Liu, X.G. Kang and S. Wang	663 668
Design Theory and Operating Principle of Temperature Control System about Pakistan Antiseptic Machine Based on Fuzzy Theory	
Z.K. Yao, B.Z. Zhang and T.H. Wu	672

Chapter 10: Smart Grid Technology and Intelligent Technology

Research and Application of Disturbance Environment Simulation for Power Dispatching System Considering Electrical and Non-Electrical Data Y. Wang, Y.G. Zhang, W.J. Zhuang and F. Yu	679
Research on Access Network Communication Technology for Condition Monitoring System of Power Transmission Line	694
D.L. Yang, J. Tong, G. Xu, J.L. Liu and L. Yang Passarah on Tuning Protection with Distributed Power Distribution Crid	684
Research on Tuning Protection with Distributed Power Distribution Grid L. Chai and C. Chen	690
A Closed-Loop Test System for Network Performance of Smart Substation K. Ma, S. Huang and S.Q. Feng	694
A New Kind of Smart Dual DSP2812 Power Quality Monitor Based on Dedicated Users L.F. Cheng and T. Yu	701
An Improved RBF Neural Network for Short Term Load Forecasting C. Li, Z.Q. Liang and M.Y. Chen	709
Analysis on Capacity Evaluation Model and Optimization Algorithm for Meshed Power Collection Grid	
L.Y. Han and L.G. Liu	714
Research on Scheduling Strategy for Distribution Network with the Access of Multi-Microgrids Including PV/WT/ST	-10
Y. Zhao, J.C. Liu, J.Y. Liu, X.Y. An, Z.Y. Gong, C. He, H.H. Chen and X.L. Zheng	718
A Review of Distribution Network Planning with Large-Scale Intermittent Renewable Energy Access to Distribution Network X.D. Song, N.H. Yu, J.J. Liang and C.J. Xia	723
Study on the Operation Electricity Price of Active Distribution Network X.D. Song, N.H. Yu, X.P. Zhang, B. Zhang and X.T. Peng	729
Offline Configuration Resources about Smart Substation Multi-Dimensional and Multi-	, 2,
Objective Customization and Information Merger H.D. Zhang, A.L. Chen, R.H. Dou, H. Ren, Q. Yang and G.Q. Zhao	736
Research on the Substation 3D Real Scene Surveillance H. Chen, Y.P. Hu, J.G. Yan, J.C. Chen and J. Hu	742
Transient Stability Emergency Control Research Based on Critical Machine Unit F. Lu, Y. Li and H.D. Liu	748
The Research of Control Strategy Based on Hierarchical Consistency Algorithm in Active Distribution Network	
X.D. Song, N.H. Yu, Z. Chen and P.P. Zong	756
Chapter 11: Power Systems Management	
A Practical Evaluation Method for Human Security Risk in Single Operation of Power Supplying	
Y.G. Liu, Y. Qiu, X.N. Wei, Y.L. Huang, G.B. Wang, Y.T. Wang and H.X. Jiang	765
AHP Analysis in the Step Tariff of Electricity Program in Decision-Making in Research W. Xiong, Y. Zou and S.W. Su	771
Power Grid Crisis Management under the Natural Disasters in Extreme Weather S.H. Li	775
Research of "Foreign Electricity to Enter Jiangxi" Ensure Electricity Supply H.P. Yang, J. Zhao and S.W. Zuo	779
Chapter 11: Power Systems Management	
Research on Transmission Line Corridors Moving Target Video Detection Device Z.J. Cai and Z.H. Feng	785

Searching Method of Core Backbone Grid Based on Biogeography-Based Optimization Algorithm	
H.B. Zou, F. Wang, L. Ke and T.T. Yin	790
The Effect of Meteorology Factors on Power Load in High-Temperature Seasons W. Zhang	796
Economic Evaluation Model of Grid Construction Project Based on Real Option Theory L. Chen, Z.Y. Liu, K.R. Huang and M. Du	800
The Analysis and Evaluation of Tendering and Bidding Procurement of Electric Power Equipment Based on Value Engineering Z.Z. Pan, X.Y. Li and C.G. Hu	804
The Research on Production Operation Risk Management of the Power Supply Enterprises B. Cheng, Z. Wang, X. Zhang, X. Xiong and S.J. Chai	809
Application of Distributed Generation in the Emergency Control of Power Supply Systems D. Chechushkov and Y. Novikov	815
Estimation of Reduction Depreciation Charges in Power Network when DG Source is Connecting	010
D. Chechushkov and E. Bunkova Determination of the Minimal Error of Power Consumption Forecast by Regression	819
Analysis	
A. Tavlintsev and M. Shorikova	823
The Staged Decision Model of Key Grid Project: Based on the Real Option Theory W. Hu, K.R. Huang, Z.Y. Liu and M. Du	827
Chapter 12: Engineering Thermodynamics and Thermal Engineering	
Discussions of Traditional Ignition Temperature Methods with DTA Principle and a New DTG-DTA Method Establishment	
C.G. Fu, S.B. Ma, Y.S. Tian, D.Q. Xue, L.H. Zhang and S.L. Hou	833
Full-Spectrum k-Distribution Model for Radiation in Gas Based on Multi-Group Methods Y. Zhou, Q. Wang and H.Y. Hu	839
Narrow Band k-Distribution Model for Radiative Calculations of Non-Gray Gas Y. Zhou, Q. Wang and H.Y. Hu	846
Calculation and Design Method Study of the Coil-Wound Heat Exchanger Z.W. Zhang, J.X. Xue and Y.H. Wang	850
Molecular Dynamics Study of Thermal Conduction in Carbon Dioxide Hydrates L.H. Wan, D.Q. Liang and J.A. Guan	861
Research on Cryogenic Characteristics in Spatial Cold-Shield System Z.W. Zhang, Y.H. Wang and J.X. Xue	873
The Experimental Study and Simplified Model of Water Mist Absorbing Heat Radiation C.Y. Lu and Y.G. Yu	886
Energy Efficiency Analysis on Drying Viscose Fiber in Superheated Steam and Hot Air W.G. Geng, L. Gao, X.L. Ma and X.Y. Li	892
Optimization of a Sintering Waste Heat Power Unit X.M. Gong, J.L. Yang and C. Wang	897
Analyses on Effect of Helix Angle on the Continuous Helical Baffles Heat Exchanger J.Z. Zou, F.W. Yuan and L.B. Hu	901
Numerical Simulation of Three Dimensional Unsteady Flow of the Ruston Turbine in Stirred Tank X.B. Wang	906
Effect of the Flow Models on the Numerical Simulation of Shell and Tube Heat Exchanger M. Jin, L. Zhan, G.X. Yu, J.Q. Zhang and H.J. Liu	910
Simulation Research on Air-Liquid Hydraulic Resonance for Enhancing Surge Pressure Q.W. Yong, R. Zhou and D.A. He	914
Study on Flow Patterns and Separation Performance of Liquid-Gas Separator Units X.Q. Chen and L. Tong	919
Characteristic Analysis of the Influence of Flow Rate Distribution in Each Flat Tube of Parallel Flow Heat Exchanger to Heat Transfer H.J. Yang, M. Li, X.Y. Xue, Y. Liu and K. Huang	927

Comparison and Selection of Different Types of Boiler Soot-Blowers X.Y. Wang and Y.X. Chen	934
The Parameters Analysis of Lead Bismuth-Heat Transfer Device in the Water Side T. Zhou, Y.B. Li and M.Y. Liu	938
Numerical Simulation of the Liquid Flowing and Evaporation outside the Tube of the Evaporative Air Cooler	
H.J. Liu, L.C. Chen and M. Min	944
Chapter 13: Power Machinery and Engineering	
Effect of Turbocharged Diesel Engine Operating Conditions on Intake Premixed Methanol Quantity and Performance	
D.P. Zhang, J.Y. Du, Y.N. Yuan and S.L. Wei	951
Research on Simulation of LNG Vaporization System on LNG Powered Ships T.L. Du, G.T. Wu and P.A. Wang	956
Simulation Model of Gas-Cooler of Flue Gas Compressor in a 300 MW Oxy-Fuel Pulverized Coal Fired Boiler	0.60
R.G. Wei, S.D. Sun and J.Q. Gao The Static Strength Analysis on Two Coutoin Tunes of Calindar Blocks of the Dissel Engine	960
The Static Strength Analysis on Two Certain Types of Cylinder Blocks of the Diesel Engine L. Yin, M.H. Li, L. Ni and X.J. Li	965
The Static Strength and Fatigue Strength Analysis of a Certain Type of Cooling Fan X.J. Li, L. Yin, L. Ni and M.H. Li	972
Two-Phase Stirring Flow Analysis of the Ruston Turbine in Stirred Tank X.B. Wang	979
Vibration Fault Diagnosis for Wind Turbine Based on Enhanced Supervised Locally Linear Embedding X. Wang and Y. Zheng	983
Dynamic Characteristics and Mathematical Models of Filled Level for Ball Mills with	703
Double Inlets and Outlets W.J. Wan, Z.Y. Fan, W.J. Huang and S.H. Chen	988
Emissions Characteristics of a Diesel Engine with GTL and Biodiesel Fuels P.Q. Tan, S. Wang, Y.H. Zhi and D.M. Lou	995
Experimental Study on Spray Characteristics of N-Butanol/Acidic Oil/Diesel Blends J. Wu, Y. Hua, Z.C. Wang, L.L. Zhu and W.W. Shang	1001
Injector Nozzle Multiphase Flow Numerical Simulation of High Pressure Common Rail System	
Y. Hu and G.X. Li	1006
Prediction of Ice Shape for Three-Dimensional Engine Inlet Based on the Proper Orthogonal Decomposition Method X.B. Shen, Z.D. Mu, G.P. Lin and Y. Zhou	1011
Research Progress on Control Technology of Diesel Engine NO _X and PM Emissions	1011
X. Qiao, Y.N. Yuan, X. Chen, Y.B. Lai, L.L. Cai and L. Chen	1016
Study on Rotational Speed Intelligent Regulation of Diesel Generator Based on Fuzzy PID Algorithm L.Y. Zhang, Z. Jin, X.B. Pan and J. Yan	1022
Research of Diesel Engine Waste Heat Organic Rankine System J.Q. Dong, X.H. Zhang, J.Z. Wang and B. Wang	1027
A High Effcient Brushless DC Motor Drive Technology for Solar Array C.P. Zeng, L.M. Yu, X. Gao and H.X. Wu	1033
Lissajous Curve of an Auxiliary Winding Voltage Park Components for Diagnosing Induction Motor Inverter Defects	
L. El Menzhi and A. Saad	1039
Chapter 14: HVACR and Heat Pumps	
Economic Analysis of Central Heating on Typical Climate Areas of China	4055
L. Kong, H.S. Hu and G. Song	1055

Experimental Study on Discharge Coefficients of Windward Window in Buildings with Wind-Driven Cross Ventilation Q.N. Wang, Y.L. Guan and Q.H. Liao	106
Numerical Analysis of Elevator Piston Effect on Building Airflow for an Air-Conditioned High-Rise Building in Winter Y. Wang, Y.L. Guan and Y.S. Yin	106
Applying Virtualwind Software to Analyze Indoor Natural Ventilation of Traditional Dwelling Architecture - Experiences from the Panxi Village, Jingdezhen City, Jiangxi Province, China Z.Y. Nie and Q.Q. Chen	107:
Fuzzy Comprehensive Evaluation of System Performance for Vuilleumier Cycle Heat Pump Driven by Solar, Geo-Thermal and Biomass Energy Y.B. Xie, X.D. Deng and J.H. Zhao	108
Research on the Region Division for Supercritical CO ₂ Cooling Heat Transfer in Gas Cooler Y.B. Xie, Y. Chen and T.J. Wang	108
Thermal Comfort Study of Wall Hanging Air-Conditioning Office in Summer L.X. Guo, X.Y. Peng, J.X. Liu, X.S. Chai, J.J. Liang and Z.Q. Fu	108
Discussion on the Application of the Plug Fan Parallel Y.Z. Yu and Q.X. Liu	1092
Analysis of Temperature Field and Stress Field around Vertical U-Tube Exchange Used in Ground Source Heat Pump P.S. Xi and X. Wang	109
The Ecological Optimal Performances of an Irreversible Four-Heat-Source Refrigerator L.Y. Xu	110
Frequency Control of Fan and Pump in Flue Gas Desulfurization for Energy Saving and Environment Protection Z.F. Dong, Y.D. Han, L. Shao and X.W. Cheng	110
Investigation of the Technical Proposals for Cogeneration Plant in China Y. Li, Y.B. Li and W.G. Li	111
Chapter 15: Equipment Design, Manufacturing and Automation	
Research on Cryogenic Property Inspection Technology of Cryogenic Vessels with Valve Q. Li, W.P. Xu, W.F. Chen and Y. Li	111
Research on High Voltage Switch Mechanical Properties Calibration Technology Z.L. Xu, H. Wang, M. Lei, J. Zhang, C. Qi and W. Song	112
Scanning Measurement of Coated Glass Color-Difference and Design of Anti-Interference B.J. Zhang, W.H. Bi, Y. Zhang, Q. Liu and J.W. Xing	112
Stochastic Simulation of Crack Growth in Hydrogenating and Cycling High-Strength Steels via Cloud Computing P. Sokolnikov, Y.V. Berchun, G.V. Shashurin, P.V. Tarakanov, L.A. Rezchikova and A.	
Romanov Buckle Propagation Analysis of Deep-Water Petroleum Transmission Pipelines with Axial Tension	113
S.T. Yan, Y.F. Zhu, Z.J. Jin and H. Ye Improvement of Edge Etcher System	113
W.K. Chen, W.Y. Chen and L.H. Jin Design and Simulation of Supersonic Swirling Separator	114
Y.P. Zhang, S.Z. Wang, Z.F. Jing, M.M. Lv and X.R. Luo Design of Simulating Control System on Fresh Water Generator	114
J.G. Jin and Z.T. Wang The Common Failures and Solutions of High TOC Analyzer	115
Y.N. Xiao, F. Niu and S.F. Fu 220/110 kV 250 MVA Autotransformer Kit	115
A. Tavlintsev, S. Eroshenko, P. Kuzin, A. Kazantsev, A. Trembach, O. Vozisova, E. Koksharova, N. Zhavrid, V. Kunshin, P. Bannih and D. Baltin	116

Electric Power Systems Kit A. Egorov, P. Bannih, D. Baltin, A. Kazantsev, A. Trembach, E. Koksharova, V. Kunshin, N.	
Zhavrid and O. Vozisova Research on the Design of the Interactive Display Function and the Functional Matrix	1166
Z.C. Xu, K.K. Hu, T. Xin and Y.Q. Zhang	1171
Application of Fuzzy Petri Nets in Hydraulic Pump Fault Diagnosis H. Dong and H.B. Xin	1176
Research on the Performance of Point Absorber X.B. Zheng, Y.N. Yang and P. Xie	1180
Design of Medium Pressure Water Asphalt Heating Equipment K.L. Mao	1186
The Design of Intelligent Arm Using in Traffic Conductor P. Chen and L. Long	1190
The Application of Frequency Converter Energy-Saving Technology for Air Compressor in	
Intelligent Industrial Park Q. Sun, N.X. Song, Q. Wang, S.J. Chen and D.P. Wang	1195
Chapter 16: Building Materials and Constructions, Green and Energy- Efficient Buildings, Applied Mechanics	
Finite Element Analysis of Chinese Traditional Hall-Style Timber Structure J. Wan, Q.F. Niu, G.F. Qiao and T.Y. Li	1201
Finite Element Analysis of Typical Beam-Column Joints in Yingxian Wood Pagoda J.L. Han, G.F. Qiao, Q.F. Niu and T.Y. Li	1205
Loading Height on Reinforced Brick Masonry Wall's Failure Mode and Seismic Performance with Finite Element Analysis Method	
W.Q. Niu and W.F. Zhang	1209
Mechanical Properties of Structural Chuan-Dou Style Wooden Structure J.W. Wang, G.F. Qiao, Q.F. Niu and T.Y. Li	1213
Static and Dynamic Elastic-Plastic Analysis of a Storey-Adding Structure Y. Zhang	1218
Structural Analysis of a North China Large-Span Aqueduct with Pretensioned Steel Truss P.P. Wang	1222
The Effect of Friction at the Strip Footings' Underside on the Expansion of Plastic Zones in Subgrade	
N.C. Xu, W.J. Xia and T.Q. Wu	1227
The Influence Law of Thermal Properties on Building Thermal Stability in Hot-Humid and Cold-Humid Area	
S. Liang, S.J. Wang and K. Huang The Seismic Performance Analysis of Brick Masonry Wall between Windows	1234
F. Wen and W.F. Zhang	1242
The Seismic Performance Analysis of the Adding Storey Frame Structure with Isolation Device	1046
L.H. Zhang and F. Ma Typical Brackets Dimensional Numerical Simulation of the Wooden Structure	1246
W.C. Ao, Q.F. Niu, G.F. Qiao and T.Y. Li	1250
Analysis of the Impact of Fine Aggregate Content on the Performance of Asphalt Mixture Y.L. Li and Z.Q. Qiao	1254
Architectural Performalism Based on Energy Issues L.X. Li and S.J. Ma	1259
Based on the ANSYS Analysis of the Open Hole in the Floor Cracks S. Yao and F. Ma	1265
Comparative Study of New Construction and Renovation Project Based on Carbon Emission	
X.J. Qi, L.X. Peng and J. Lou	1269
Design of Building Energy Consumption Monitoring System C.C. Pan and Z.Q. Feng	1274

Development of and Defect Prevention in Novel Monocomponent Polyurethane Waterproof Coating	
G.Z. Lu, D.W. Dai, X.J. Ding, H.W. Wang, L.J. Zhou, Y.Y. Zhang and Q.Y. Si	1278
Numerical Calculation of Photovoltaic Sunshade Component's Shading Coefficient X. Zhang, L.Y. Xie, B.N. Feng, Z. Li and R.J. Hong	1285
Physical Simulation Study on Transverse Effect of Bolted Discontinuous Rock Mass Y.X. Jia, H.W. Song, G. Zhang and X. Kuang	1292
Research on Carrying Capacity Evaluation of some Reinforced Concrete Bridge under the Special Type Load	
Z.G. Xia, C.L. Lu and M. Yan	1297
The Calculation of Truss Deformation Using ANASYS H. Ding, D.S. Gu, H.T. Hua and T.Q. Zhou	1302
The Energy-Saving and Land-Saving Utilization on Solar Radiation of Mountain Traditional Dwellings in East Shanxi — Take Hedi Town and Sandu Village as Examples X.Y. Wang and Q.F. Shi	1306
The Engineering Examples of Sustainable Architecture G. Li, Q.Q. Qiao and X.M. Zhou	1310
The Innovation and Development about Spatial Form of Traditional Cave Dwellings in the Northwest	
G.R. Wang	1316
The Life-Cycle Energy Consumption Distribution of Buildings in China Z.D. Li, Y.R. Yao, G. Dai and Y.C. Ding	1320
The Seismic Performance Analysis of the Abnormal Joints Core Area of the Reinforced	
Concrete Frame Variable Beam Shaped S.D. Yao and F. Ma	1326
Analysis of a New Flexible Hinged Frame Anchoring System B. Wang, H.J. Wang and W. Xu	1330
Field Tests of 4 Types of Cool Roof System to Reduce Cooling Load Y.L. Li, J.I.G. Tsutsumi and R. Nakamatsu	1336
The Analysis of Annual Dynamic Effective Daylighting on High-Rise Office Building in	
Jinan Z.C. Zhao	1343
Optimization of Pass Design of Bidirectional Thermal-Insulation Bricks S.S. Dong and X.P. Feng	1348
Effects of Old Aggregate on Concrete Strength H. Lv and C.T. Wang	1352
Literature Review: Mechanical Properties of Hardened Silica Fume Concrete X.X. He and Q. Wang	1357
Analysis of Thord Stress Concentration Factors of KKK Shape Square Steel Tube Node S.J. Tian and J.F. Jiao	1363
Damage Simulation of Masonry Wall Based on the Finite Element Software Abaqus F.X. Chen and W.F. Zhang	1367
Evaluation of Cement Slurry Performance in HaiTa District Subject D.C. Ma, X.H. Zhang, J.G. Wang and Y.L. Xin	1371
Study on Energy Consumption and Energy Saving Measures in Shanghai Q.Y. Gu, C.Y. Wu, H.Y. Chen and Q.R. Liu	1375
Research on Air Filters' Low-Order Mode Characteristics Based on Hyper Works Y.T. Wang, H.X. Zhang, J.C. Li and W. Lei	1380
Research and Application of Special Shaped Muffler Structure C. Zhang, N. Xu, Z. Zhang and S.S. Zhang	1387
	- 7
Chapter 17: Development and Management of the Energy and Resources Industry	
Complexity of Nonlinear Dynamic Outputs Model in the Electricity Triopoly W.Z. Ji	1395

Research on the Distribution of Patented Technologies of the Energy-Saving Industry in China	
Y.Z. Qiao and Q. Liang	1399
The Mutual Development of the New Energy Industry and the Traditional Energy Industry in China T.X. Zhu	1405
A Review of the Research of New Energy Industry Development E.C. Zhao, Y.L. Wang and B.T. Yan	1409
Comprehensive Evaluation and Analysis of China's Energy Security P. Zhang and H. Wang	1415
On how to Improve China's New Energy Industry Development: From the Science and Technology Policy Perspective J.Y. Gu and D.P. Zhang	1421
Performance Evaluation of Coal-Fired Power Plant Energy Conservation and Emission Reduction Based on Set Pair Analysis W. Yan	1425
Research on Beijing Safety Guarantee System for Natural Gas Supply N.N. Gao	1429
Research on China's Photovoltaic Industry Policy Based on Domestic Demand in Post Financial Crisis Era	1433
C.H. Shang, J.P. Wang and Z.H. Xu Research on Renewable Energy Technology Selection Model Based on Fuzzy	1433
Comprehensive Evaluation in Beijing M.Y. Wang, B.J. Bai, Y.Y. Wang and X.L. Shen	1437
Some Thoughts on Coastal Nuclear Power Construction's Safety Z. Chen	1443
Study on the Informatization of Renewable Resources Industry X.X. Bu	1448
The Application Mode of Energy Big Data and its Enlightenment for Power Grid Enterprises Y.X. Sun and Q.Y. Yan	1452
Study on Layout Planning System of Renewable Energy Utilization on Heating Based on GIS	1132
Q. Fang, B. Gao, H. Wang and B.Y. Zhuang	1456
Application and Analysis of Multi-Source Hybrid Distributed Energy System Y.Y. Ban, H.B. Ren, Q. Wu and J. Yang	1462
Research on the Flywheel Energy Storage System Applied in Green Architecture G.X. Wang, Z.H. Zhou, S. Zheng, Q. Xie, C.P. Rao and B.S. Xu	1466
Analysis of Polycrystalline Silicon-Photovoltaic Industry's Key Technologies Development and Influences on its Cost and Energy-Consumption	
C.A. Ye and X.F. Zhang	1470
Chapter 18: Computer and Information Technologies Applications, Mathematical Modeling for Industry Development	
Design of Intelligent Agricultural Management System Based on Internet of Things Technology S. Gao, D.H. Fan and K. Jiang	1479
Research on Bus Stop Based on Cellular Automaton Model J. Qian and Y.J. Hu	1479
The Design of the Central Kitchen Logistics Distribution System Y. Wang and S.S. Zhang	1489
A Class of Nonlinear Weakly Singularity Wendroff Type Integral Inequality with Two Variables and Application W.S. Wang and Y.B. Lai	1493
Design and Implementation of an OFDM System with Interleaving and De-Interleaving Based on FPGA	1473
C. Liang, G.H. Cai, P. Li and S.W. Zheng	1497

Empirical Likelihood Testing for Linear Instrumental Variable Regression Models P.X. Zhao	1501
Estimation of the Unknown Function of Integral Inequality with Power Function and its	
Application W.S. Wang and T. Su	1505
Feature Extraction by Decryption to Target Q.E. Wu, H. Wang and L.F. Ding	1509
Multidimensional Resource Scheduling in Cloud Data Centers H.N. Song, X.Q. Zhang and Z.T. He	1513
Upper and Lower Bounds of Unknown Functions in Several Nonlinear Integral Inequalities in Engineering	1517
L.M. Zhao, J.T. Huang and W.S. Wang	1517
An Prevent Drunk Driving System Based on Embedded System Y.X. Chen	1521
Numerical Simulation Method of Track Irregularities Based on Secondary Filtering B.S. Xiang, X. Han and X.W. Wang	1525
The Application of Data Mining in the Community Characteristics Analysis of University Students	
X.F. Zhang, Z.M. Wu, Q.C. Deng and L.Q. Song	1530
The Management Information System Design of Coal Enterprise Z.M. Wu, X.P. Wang, X.F. Zhang and L.Q. Song	1536
The Influence of Service Quality on Customer Satisfaction in Theme Parks Design of Taiwan	
H.P. Kuo and K.L. Wu	1543
Noise Effect on Multifractal Detrended Fluctuation Analysis Based on Element Enrichment Model	
D.Y. Xie, L. Wan, Y.Q. Zhu and X.J. Deng	1548
Chapter 19: Engineering and Engineering Management Education	
A Knowledge Transformation Model in Software Development Process N.N. Jing, S.H. Han and X.M. Liao	1555
Construction and Practice of the College Course System of Self-Management X.Q. Zhao	1560
Influence from International Organizations on Higher Professional Education-Case Study of Higher Maritime Education Y.B. Jin	1564
Research on Application of Micro-Blog in Mobile Learning Y. Luo and X.Q. Zhang	1568