2012 International Conference on Future Electrical Power and Energy Systems

(ICFEPES 2012)

Energy Procedia Volume 17, Part A

Sanya, China
21-22 February 2012

Editors:

Junqiao Xiong

ISBN: 978-1-62993-565-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

Copyright© by Elsevier B.V.
All rights reserved.

Printed by Curran Associates, Inc. (2014)

For permission requests, please contact Elsevier B.V.
at the address below.

Elsevier B.V.
Radarweg 29
Amsterdam 1043 NX
The Netherlands

Phone: +31 20 485 3911
Fax: +31 20 485 2457

http://www.elsevierpublishingsolutions.com/contact.asp

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

ICFEPES2012 Preface 1

Analysis on Characteristics of Fly Ash from Coal Fired Power Stations 3
Jianglong Yu, Xianchun Li, David Fleming, Zhaoquan Meng, Dongmei Wang, Arash Tahmasebi

The Design of Executing Mechanism for Measured Carbon Content of Flying Ash Using Weightlessness Method 10
Xiangwei Chen, Zhaohui Liu, Zhikui Zhang, Qing Han

Algorithm Analysis on Measuring the Begin-end Time of Voltage Sag Based on Biorthogonal Wavelet 18
Hongtu Zhao, Dongmei Xi

Experimental Study on the Mode of Active Truss 24
Jing Gong, Yu Mao, Yong-Yi Wang

Advances on Distributed Generation Technology 32
Zuo Sun, Xun-You Zhang

Comprehensive Utilization of Oil Shale and Prospect Analysis 39
Lidong Zhang, Xuan Zhang, Shaohua Li, Qing Wang

Experimental Research on Mixing and Motion with Discontinuous Feed for Oil Shale Particle Groups in Rotary Kiln 44
Lidong Zhang, Xuan Zhang, Shaohua Li, Qing Wang

Application of Numerical Simulation on Biomass Gasification 49
Deyong Che, Shaohua Li, Wenguang Yang, Jia Jia, Nan Zheng

Discussion the Traceability of Quantity Value of Digital Watt-hour Meter 55
Xiangfu Meng, Yuchao Liu, Yuhua Wang

Modeling of Power Plant Superheated Steam Temperature Based on Least Squares Support Vector Machines 61
Haijun Tian, Jingru Wang

Design of Automatic Control System for NDT Device 68
Bin Liu, Min Zhou

Experimental Study on Dynamic Simulation for Biofouling Resistance Prediction by Least Squares Support Vector Machine 74
Shengxian Cao, Yanhui Zhang, Jing Zhang, Dayu Yu

Emulated Analysis in the Performance of Linear Introduction Motor 79
Mei-Shan Jin, Da-Chuan Chen, Jing Li, Chang-Li Qiu, Jing Liu

Study on Opposite Experiment between Grid Fabric Filter and Orifice Plate Fabric Filter 84
Jun-Wen Li, Jing-Jing Zhang, Qin-Ru Wang

The Design of Intelligent Lighting System in College Classroom 90
Luansheng Jiang, Chunxia Liu, Xiumei Guo, Chongxiao Ma

The Comprehensive Evaluation of Smart Distribution Grid Based on Cloud Model 96
Lingling Li, Lixin Liu, Chunwen Yang, Zhigang Li

The Existence of Positive Solutions for Sturm-liouville Boundary Value Problem with Strong Singularity 103
Pengsong Li, Jisheng Xie, Shu Ai, Shuji Chen

Optimization Design of Solar Heating System for Public Bathrooms in the Countryside 112
Zenghong Xiao, Zhenhe Ju, Frank Fiedler, Chris Bales, Hong Xu

Study on Load Model of PV Generation Planning 119
Xiaobo Duan, Fenghai Kou

Designs of Fast Decoupled Load Flow for Study Purpose 127
Yubin Yao, Mingwu Li

Simplification of Large Scale Network in Time-Cost Tradeoff Problem 134
Jian-Xun Qi, De-Dong Sun

Research of Simulation on the Effect of Suspension Damping on Vehicle Ride 145
Xuemei Sun, Yaxu Chu, Jiuchen Fan, Qiuxiao Yang

A Density On-line Measurement and Control Technology of Medium Density Fiberboard(MDF) 152
Jiuchen Fan, Yaxu Chu, Xuemei Sun, Kaibao Wang

The Grounding Impedance Calculation of Large Steel Grounding Grid 157
Zhiwei Lu, Zhao Zhang

The Research of Imbalanced Data Set of Sample Sampling Method Based on K-Means Cluster and Genetic Algorithm 164
Yang Yong
Evolution of Energy Conservation Policies and Tools: The Case of Japan 171
Jingbo Ren, Jun Du
Distribution Network Reconfiguration Based on Niche Binary Particle Swarm Optimization Algorithm 178
Li Liu, Xuefeng Chen
Analysis of Magnetic Field Distribution in Disc Magnetic Drivers 183
Chunyan Wang, Qingchang Tan
Power System Osciliation Modes Identification Based on Eigen System Realization Algorithm via Empirical Mode Decomposition 189
Yunran Wang, Jianbo Wang, Qingkai Meng, Haifeng Yu
Pyrolysis Characteristics of Oil Shale of Six Density Sections 196
Jie Zhang, Ling-Wen Kong, Jing-Ru Bai, Qing Wang
The Application of Nonlinear PID Controller in Generator Excitation System 202
Hong Zhang, Bo Hu
Measurement of Heating Value of Rice Husk by Using Oxygen Bomb Calorimeter with Benzoic Acid as Combustion Adjuvant 208
Jianfeng Shen, Shuguang Zhu, Xinzhi Liu, Houlei Zhang, Junjie Tan
Decoupling Control Based on Active Disturbance Rejection Controller 214
Lingfang Sun, Xuying Liu
Soft-sensing of Oxygen Content of Flue Gas Based on Mixed Model 221
Lingfang Sun, Yechi Wang
The Energy-saving Benefit Evaluation Methods of the Grid Construction Project Based on Life Cycle Cost Theory 227
Wei Li, Jinzhong Zhu, Zhimin Zhu
Theoretical Analysis on High Frequency Ferroresonant Overvoltage 233
E. S. Jin, X. F. Chen, D. L. Cao, Z. Q. Bo
Implementation of a MPPT Controller Based on AVR Mega16 for Photovoltaic Systems 241
Yongchang Yu, Chuanan Yao
Research on Induction Motor for Mini Electric Vehicles 249
Shukang Cheng, Cuiping Li, Feng Chai, Hailong Gong
The Feasibility Analysis of Energy Conservation by Using Solar Energy to Dehumidify in Transition Season of High Humidity Regions 258
Qifen Li, Lifeng Zhao, Cuicui Pan, Ang Bao, Weiguo Pan
Image Processing in the Monitor of Boiler Drum Water Level on Power Plant 266
Fei Xia, Hao Zhang, Gui Zhang, Daogang Peng, Hui Li
Dynamic Relations between Energy Carbon Footprint and Economic Growth in Ethnic Minority Autonomous Regions, China 273
Honglian Hua, Yujun Pan, Xiaoyan Yang, Shuang Wang, Yu Shi
The Study of the Parameterization of the Drum Brake Design Based on UG 279
Hongpu Liu, Erbao Peng
Design and Application of Communication Gateway of EPA and MODBUS on Electric Power System 286
Hui Li, Hao Zhang, Daogang Peng
To Achive a Campus Interchangeable Card Based on RFID Technology 293
Weijun Zhang, Changqing Cai
Comparative Research on Wireless Network Data Transmission Experiment 299
Yong-Jin Shi, Xiao-Kai Wu, Hong-Bin Liang, Ai-Ping Wu, Qi-Li Zhou
Fabrication of ZrO_2:Er^{3+} Nanocrystals and the Researching of Emitting Mechanism 305
Zhen Yang, Juan Luo, Shan Yang, Qiuhui Wu
Design of Automobile Clutch Plate Test System Based on Kalman Filter 311
Jiling Tang
Application of an Improved Ant Colony Optimization on Generalized Traveling Salesman Problem 319
Jun-Man Kan, Yi Zhang
Temperature Prediction of RCC Based on Partial Least-Squares Regression 326
Yu-Qing Zhao, Liang Yan
The Comparison of Two Kind of Back Analysis Method for Thermal Conductivity of RCC 333
Zhen-Xian Xing, Yu-Qing Zhao
Traffic Circle Administration Based on Circuit Principles and Marginal Benefit Theory 340
Zhuoyun Jin, Yuanbiao Zhang, Minglang Cui, Zhiqiang Guo

An Intelligent Adaptive Method for Islanding Detection in Grid-tied PV System 349
Guohui Zeng, Minnian Cao, Yuchen Chen
A Multi-functional Utility Interface of BIPV Systems Based on Cascade Multilevel Converter 356
Guohui Zeng, Minnian Cao, Yuchen Chen
Based on OMAP Platform to Build the Distribution System Network of Relay Protection Devices in Coal Power 366
Xiao-Qiang Shao, Xian-Min Ma
Design and Research of On-line Interactive Q & A System on Sports Expertise 373
Bing Zhang, Lin Lei
The Monte Carlo Simulation of the Electronic Local Properties in the Two-Dimensional Disordered System 379
Lifeng Feng, Hongning Sun, Zhongqiu Li, Hong Gao, Xitian Zhang
Study on Soft Switching Technology to Reduce Electromagnetic Interference of PWM Inverter 384
Yinghua Yang, Honglin Gao, Xinhua Wang, Jinfei Tang
The Advantages and Mechanism of Semi-aerobic Landfill 391
Yi He, Lifang Guo, Junmin Gao
Present and Future Development of Flue Gas Control Technology of DeNO_X in the World 397
Lifang Guo, Youju Shu, Junmin Gao
Numerical Simulation on Distribution Characteristics of Particle Distribution Uniformity in a Radial Style Diesel Particulate Filter 404
Jinke Gong, Chan Tian, Gang Wu
Study of Reactive Power Compensation for High Speed Railway Design 414
Jianming Sun, Yao Duan, Yumin Xiong, Buhan Zhang
Effects of Electron Donors on the TiO2 Photocatalytic Reduction of Heavy Metal Ions under Visible Light 422
Xin Zhang, Lin Song, Xiaolong Zeng, Mingyu Li
Quantitative Risk Assessment on Safety and Reliability of Casing Strength for Oil and Gas Wells 429
Hualin Liao, Zhichuan Guan, Gang Long
Coal Logistics Competency Strategies for Ports in the Tianjin and Hebei Regions around the Bohai Bay in China 436
Xi-Chen Dong, Guo-Xian Wang
The Effects of Thermal Regeneration Conditions and Inorganic Compounds on the Characteristics of Activated Carbon Used in Power Plant 444
Yingqing Guo, Erdeng Du
Design and Simulation of Voltage Fluctuation Rate Monitor System Based on Virtual Instrument Technology 450
Xinling Wen, Cheng Zhao
Design of Electronic Power Network Frequency Measurement System Based on LabVIEW Virtual Panel 456
Xinling Wen, Rongxing Guo
The Problems of Wetlands in Our Country and the Researches 462
Yuqian Qin, Shulong Hu
The Study on Mechanical Reliability Design Method and Its Application 467
Yuanfan Yang
The Application of VR in the Training of Power System 473
Fuyi Cao, Bo Li, Xiangfeng Wang
A Novel Solar Energy Photocatalytic Organic Wastewater Disposing System 477
Shenghui Tu, Jinbao Wan, Xiaosong Hong, Hui Wu, Peifan Wu
Overview of Power Controllable Reactor Technology 483
Wenye Liu, Longfu Luo, Shuda Dong, Yunge Lou
Research on Overrunning-clutch Speed Coupling Control Strategy in a Parallel Plug-in Hybrid Electric Vehicle 492
Bingli Zhang, Qingliang Hou, Xin Li, Guosheng Xu, Yi Zhu
The Research of a Multiple Disjoint Paths Routing Protocol for Ad Hoc Sensor Networks 499
Zhongdong Wang, Qiushuang Wang
Hybrid Heuristic Search Based on Petri Net for FMS Scheduling 506
Qiushuang Wang, Zhongdong Wang
Study of Reliability of Substation for Coal Mine Supervision System 513
Jikun Guo, Yongyan Zhang
The Reliability Consideration of Coal Mine Safety Production Monitoring System Network 520
Jikun Guo, Yongyan Zhang

Application Research of Web Examination System Based on College 528
Lu Chang, Xu Guang Ming
Identification of Road Surface Power Spectrum Density Based on a New Cubic Spline Weight Neural Network 534
Jinshan Lin
Integrated Design Platform for Marine Electric Propulsion System 540
Yutao Chen, Fanming Zeng, Jiaming Wu
Dynamic Response of a Three-Way Catalytic Converter 547
Ling He, Xiu-Min Yu, Guo-Liang Li, Nan Xu
Railway Dry Bulk Container Transport Volume Forecast Method Research 555
Changhong Li, Jing Lua, Jing Liang
An Automatic Moving Stage with Bar Mechanism in Optical Microscope 561
Ze-Jun Li
Study on the Relationships between Corporate Social Responsibility and Corporate International Competitiveness 567
Wenbiao Li
Study on the Development of the International Trade Financing of the Commercial Bank in China 573
Wenbiao Li
Research of Full Digit Single-phase Inversion Power Supply Based on DSP 580
Xuezhi Hu, Guangqun Nan
Adaptive IA-TCNN Multiuser Detector Based on Simulated Annealing of Optimization 588
Yanping Li, Hengshan Zong, Deqian Meng, Xiaoming Chang
Selection of Logistics Outsourcing Service Suppliers Based on AHP 595
Jianliang Peng
Applied Research on Traffic Information Collection Based on Wireless Sensor Networks 602
Xiaoquan Chen, Jihong Zhang, Shao Qian, Peng Xu
Semi-Blind HEBB-PPIC Multiuser Detection Algorithm 607
Yanping Li, Hengshan Zong, Yongbo Zhang
A new Multiuser Detection Algorithm Based on Robust Kalman Filtering 615
Yanping Li, Hengshan Zong, Xiaoming Chang, Xiangnan Chen
The Analysis and Detection of Double JPEG2000 Compression Based on Statistical Characterization of DWT Coefficients 623
Wei Wang, Rang-Ding Wang
Based on Two and Three Dimensional Technology to Quickly Build a Virtual Battlefield 630
Ying Gao, Xiao-Hui Ma, Tao Jiang, Zhi-Guo Xu
Research on Data Preprocessing In Credit Card Consuming Behavior Mining 638
Yan-Li Zhu, Jia Zhang
Security of Analysis Mutual Authentication and Key Exchange for Low Power Wireless Communications 644
Chenglian Liu, Sisheng Chen, Shuliang Sun
Method of Humanity Design for Numerical Control Machine Tool 650
Xiaowei Jiang, Xianchun Cheng
Security of Analysis Liu's Signature Scheme 655
Shaoka Zhao, Chenglian Liu
An Improvement of Kwon-Song Protocol 659
Mingshun Yuan, Chenglian Liu
Integrated Cartography Technique Based on GIS 663
Qiang Zou, Qing Wang, Chengzhong Wang
Change Characteristics of Women Boxers' Na^+,K^+- ATPase, ROS and T-AOC before the Match 671
Hua Ding, Bin Zhao
Differences of Physical Condition between China National Level Social Sports Instructor and the Coeval 678
Bin Zhao, Max J. R. Song, Hua Ding
Research and Analysis on the Physical Condition of 394 Medical Workers in Shenyang City 684
Max J.-R. Song, Hua Ding, Bin Zhao, Yang Cheng
On-line Homework Management System 690
Shuaiwen Xu, Xiaoming Wang, Song Li
Network Test System Design and Implementation 694
Shuaiwen Xu, Xiaoming Wang
An Empirical Study on Innovative Culture from the View of Educational Factors 700
Ying Zhang, Yao Lie Zhou

LS_SVM Parameters Selection Based on Hybrid Complex Particle Swarm Optimization 706
Yongqi Chen
Least Squares Support Vector Fuzzy Regression 711
Yongqi Chen
The Generation of New Words Prevailing on the Internet and Its Revelation to the Innovation Environment Cultivation 717
Zhiwei Yu
On the Application of the Web-based Instructional Research in Teaching 723
Chunli Liu
Research on the Mode of Teachers Training under Informationalization Environment in Primary and Secondary Schools of Cangzhou City 728
Chunli Liu, Linna Huang
Continuous Education and Training Based on Virtual Learning Communities 733
Xinghong Liu
Foreign Language Learning through Virtual Communities 737
Xinghong Liu, Junxiang Zhang
Experimental Investigation of Heat Transfer and Flowing Resistance for Air Flow Cross over Spiral Finned Tube Heat Exchanger 741
Fajiang He, Weiwu Cao, Ping Yan
Experimental Research on a New Vaporization of LNG using Flue Gas to Impact Underwater Umbrella Rotor to Enhance Heat Transfer 750
Fajiang He, Weiwu Cao, Ping Yan
Application of the Purification of Materials Based on GA-BP 762
Hui Li, Cai-Xia Hu, Ying Li
Optimization of Process Parameters for Molecular Distillation Based on NN and GA 770
Hui Li, Cai-Xia Hu, Wen You
A Survey on Problems in Smart Grid with Large Capacity Wind Farm Interconnected 776
Peihong Yang, Wenying Liu, Yili Wei
Real-time Maximum Power Point Tracking with Single Current Monitoring 783
Changying Chen, Yue Hong, Hongtu Luo, Huishan Zhao, Chenxiao Mo, Qian Fu, Wei Deng, Jinghua Ge, Xi Chen
Fluid Flow and Heat Transfer Characteristics in Helical Tubes Cooperating with Spiral Corrugation 791
Ya-Xia Li, Jian-Hua Wu, Hang Wang, Li-Ping Kou, Xiao-Hang Tian
Optimization and Numerical Simulation of the Flow Characteristics in SCR System 801
Hanqiang Liu, Tingting Guo, Yongping Yang, Guangjie Lu
Improving Power Quality by Smart Load 813
Bao-Shu Li, Yu-Min Ge
Release System of Real-Time-Price Oriented to Smart Meters 818
Bao-Shu Li, Wan-Kun Chen, Yu-Min Ge
Design of Intelligent Accumulator Charger for Wind Power Generation System 825
Ye-Zi Li, Xiao-Jin Yan, Gang Chen
Study on Iced and Wire Breaking-induced Vibrations of Long Distance Electricity Tower-line System 834
Chun-Cheng Liu, Zheng-Yu Chu, Wei Zhang, Xian-He Sun
Study on Section Stiffness, Poisson Ratio and Mechanism Characteristics of Large Cross-sectional Aluminum-steel Stranded Conductor 843
Yongping Li, Yi Zheng, Pan Su, Zhiyi Huang, Yang Ni
Numerical Simulation Research on Gas-Solid Two Phase Flow in Oil Shale Circulating Fluidized Bed 851
Qing Wang, Jun-Tao Feng, Bai-Zhong Sun, Yong-Qing Qi, Deng-Feng Chen, Jin-Long Luo
Co-combustion Performance of Oil Shale Semi-coke with Corn Stalk 861
Qing Wang, Hao Xu, Hongpeng Liu, Chunxia Jia, Weizhen Zhao
Reactivity and Kinetic Analysis of Biomass during Combustion 869
Qing Wang, Weizhen Zhao, Hongpeng Liu, Chunxia Jia, Hao Xu
The Pyrolysis Characteristics and Pore Structure of Oil Shale of Different Densities 876
Qing Wang, Ling-Wen Kong, Jing-Ru Bai, Zeng-Ying Gu
Comparative Study of the Characteristics of Oil Shale with Hot Air Drying and Microwave Drying 884
Qing Wang, Zeng-Yi Gu, Jing-Ru Bai, Juan Liu, Hong-Peng Liu
Numerical Simulation of the Gas–Particle Flow Behavior in Oil Shale Semi-Coke Spouted Bed 892
Qing Wang, Jinlong Luo, Chaohui Xu, Dengfeng Chen, Baizhong Sun, Juntao Feng
Analysis of the Method for Furnace Thermal Calculation with Radiation Intensity Attenuation 901
Jinfeng Ma, Youning Xu, Shuqun Wang, Junrui Shi, Hongtao Li, Zhijia Xue, Jitang Liu
Study on The Effect of Regenerative System on Power Type Relative Internal Efficiency of Nuclear Steam Turbine 906
Yong Li, Chao Wang

Study on the Portable and Integrated Type Pore Plate Flow Measureing Device for Condensate Water of 300MW Steam Turbine 913
Yong Li, Jia-Yong Wang
Influence of Plant Steam System on Thermal Economy of Thermal Power Plant and Energy Strategy 920
Yong Li, Ying-Ying Wen
Exergy Analysis of 300MW Coal-Fired Power Plant 926
Yong Li, Lei Liu
The Analysis of Gas-liquid Two-phase Flow Patterns Based on Variation Coefficient of Image Connected Regions and Line-Correlation Algorithm 933
Yun-Long Zhou, Hong-Wei Li
Vibration Fault Diagnosis Method of Centrifugal Pump Based on EMD Complexity Feature and Least Square Support Vector Machine 939
Yunlong Zhou, Peng Zhao
Effect Analysis of Load Characteristic on Operation Stability of Hydropower Stations 946
Jianxu Zhou, Gang Chen
Evaluation of Numerical Simulation for the Separation of Fluidized Bed Coarse Slime 954
Yibo Lv, Yuanxin Zhu
Experimental Study on Indoor Air Temperature Distribution of Gravity Air-Conditioning for Cooling 961
Cuimin Li, Jianing Zhao
Numerical Analysis on Residual-Stress in Direct Welded Joint of Long Span Transmission Steel Tower 968
Yuzhuo Jia, Zhaohua Ruan
Form-Finding System for Overhead Transmission Line Based on ANSYS 975
Yu-Zhuo Jia, Rui-Peng Liu
The Design of Embedded MCU Network Measure and Control System 983
Guanwang Gao, Yanpeng Wang, Zhanyou Sha
Author Index