

International Association of Science
and Technology for Development

3rd IASTED Asian Conference on Power and Energy Systems

AsiaPES 2007

April 2–4, 2007
Phuket, Thailand

Printed from e-media with permission by:

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

ISBN: 978-1-60423-765-8

International Association of Science
and Technology for Development

3rd IASTED Asian Conference on Power and Energy Systems
AsiaPES 2007

TABLE OF CONTENTS

CONTROL, PROTECTION, POWER FLOW, AND DESIGN

Simulation and Control of Power Conditioning System with SMES for the Utility Application	1
<i>A.-R. Kim, K.-H. Kim, J.-H. Kim, M. Park, I.-K. Yu, H.-J. Kim, S.-H. Kim, K.-C. Seong</i>	
Improvement of Slip Energy Recovery Drives with Voltage Source Inverter for a Speed Control of Wound Rotor Induction Motors	6
<i>S. Tunyasirut, J. Ngamwiwit, V. Kinnaree, T. Furuya, Y. Yamamoto</i>	
Speed Control with Slip Regulation of Induction Motor Drives with Space Vector Pulse Width Modulation Technique	12
<i>S. Tunyasirut, S. Srilad</i>	
Design and Implementation of the Grid-Connected PV Monitoring System.....	17
<i>N. Watjanatepin, C. Boonmee, B. Plangklang</i>	
Protection of Power Transformer using Evolving Neural Nets	23
<i>Z. Morave</i>	
Design of Universal Overcurrent Relay using FPGA.....	29
<i>Y.-Y. Hong, P.-C. Chang-Chian</i>	
Arcing High Impedance Fault Detection using Real Coded Genetic Algorithm	35
<i>N. Zamanan, J. Sykulski, A.K. Al-Othman</i>	
Revised Sequence Components Power System Models for Unbalanced Power System Studies.....	40
<i>M. Abdel-Akher, K.M. Nor, A.H.A. Rashid</i>	
Protecting the High Speed Railway Lines Against the Separation Section Faults	46
<i>E. Cinieri, A. Fumi, G. Nurzia</i>	
DSP Control of Photovoltaic Power Generation System Adding the Function of Shunt Active Power Filter.....	52
<i>H.-R. Seo, K.-H. Kim, Y.-g. Park, M. Park, I.-K. Yu</i>	
EMC Considerations for Protection of Cables Against Switching Effects at Secondary Side of Substations	57
<i>H. Heydari, F. Faghihi, V. Abbas</i>	

PLANNING AND OPERATION

Capacitor Placement for Transmission Systems using Ordinal Optimization Approach.....	62
<i>S.-Y. Lin, C.-H. Lin</i>	
Improvement of Total Transfer Capability by Allocation of SVC using Differential Evolution	68
<i>M.M. Farsangi, H. Nezamabadi-pour, J. Razavi, M. Hesari</i>	

Real Time Security Assessment in National Load Despatch Centre, Tenaga Nasional Berhad, Malaysia	74
<i>G. Sreedharan, M. Moghavvemi</i>	
Genetic Algorithm for Design Optimization of 3-Phase Semi-Conductor Rectifier Power Transformers	79
<i>K.S. Rama Rao</i>	
New Control Scheme and New Application Area for a Multiphase Matrix Converter	85
<i>J. Szczepanik, T. Sienko</i>	
Application of Pattern Search Method to Power System Economic Load Dispatch.....	90
<i>J.S. Alsumait, J.K. Sykulski, A.K. Al-Othman</i>	
Transmission Restoration using Graph Theory.....	96
<i>A. Akhavein, H. Seifi, M. Shafiee</i>	
Design Guidelines for Recycling of Rotating Machines	105
<i>D. Ismail, K. Anayet, M. Dina, A. Haziah, M. Samila</i>	
A New Approach for the Solution of Economic Load Dispatch using Fuzzy Logic Controller	110
<i>A.B. Beevi, R. Iyer</i>	
Parametric Analysis of an Analytical Model of a Swirling Fluidized Bed.....	116
<i>M. Kamil, M. Fahmi, V.R. Raghavan</i>	
 ALTERNATIVE ENERGY	
Concept of the Solar-Hydel Hybrid µPower Tandem.....	122
<i>N. Khan, Z. Saleem, M.A. Mirza, A. Majeed</i>	
Direct Coupling of Photovoltaic Panels with PEM Electrolyser Solar-Hydrogen Systems.....	128
<i>B. Paul, J. Andrews</i>	
Energy Storage to Balance Wind Power Fluctuations	134
<i>E. Lerch</i>	
Greenhouse Gases Emission Trading and Green Certificates Market - Instruments of the Liberalized Electricity Market in Romania	140
<i>M. Matei, L. Matei, A. Stanca, R. Grigoras, C. Salisteau, I. Udroiu</i>	
Combined Power Generation and Desalination using Renewable Energy	147
<i>Y. Zhao, A. Akbarzadeh, J. Andrew</i>	
High Performance Self-Excited Reluctance Generator for Mini/Micro Hydro Electric Power Generation.....	153
<i>A. Srivastava, S.K. Goe</i>	
Feasibility of a Hybrid Renewable Energy Plant for Bangka Island, Indonesia.....	159
<i>J. Kristanto, Ö. Göl</i>	
Duty-based Control of Maximum Power Point Regulation for Power Converter in Solar Fan System with Battery Storage	163
<i>J.-L. Kuo, P.-J. Hong, K.-L. Chao, T.-Y. Wang</i>	
Electronic Circuit Simulation of Fuel Cell.....	169
<i>W. Shen, A.A. Al-harazi</i>	
Operational Characteristic Analysis of PV Generation System for Grid Connection by using a Senseless MPPT Control	175
<i>S.-J. Lee, K.-H. Kim, H.-Y. Park, H.-R. Seo, M. Park, I.-K. Yu</i>	

Energy Saved Neon Sign Lighting Power Supply for Photovoltaic Systems	181
<i>T. Tanitteerapan, S. Dokpikul, S. Arunrungrasmi</i>	
Computer Designed Solar Concentrator	185
<i>O. Aliman, I. Daut, C.S. Lim, M. Isa, M.R. Adzman</i>	
Harmonics Generated by a Distributed Generation System using Wind/Photovoltaic/Fuel Cell with Battery Storage.....	191
<i>P. Buasri, Z. Salameh</i>	
Solar Absorption Chillers in Hot and Dry Climate	196
<i>A. Abedi, A. Ahmadi Nodooshan, A.R. Bahrami</i>	
From Ethanol to Electricity through Integrated Steam Reformer and Solid Oxide Fuel Cell System.....	202
<i>A. Srisiriwat</i>	
Development of New Electrode for Fuel Cells Closed Cycle Fuel Cell System.....	208
<i>T. Junichirou, Y. Hiroshi, H. Tadahiro, S. Tukioka, S. Ishibashi, T. Sawa, A. Ishikawa, T. Aoki</i>	
Implementation of a PV Lighting System based on DC-DC Converter with Intelligent Controlled Approach	214
<i>C.-C. Hua, C.-W. Chuang, D.-J. Chuang</i>	
Utilization of Agro-based Industrial By-Products for Biogas Production in Vietnam.....	220
<i>U. Nguyen Ngoc, H. Berghold, H. Schnitzer</i>	
Compatibility of Small-Scale Wind and Photovoltaic Systems Used as Distributed Generation.....	226
<i>A. Davis, Z. Salameh</i>	
Influence of Conductive Polymer Deposition on Photovoltaic Properties of Prospective Inorganic Photoabsorber CuInS₂ in Solar Cell.....	232
<i>S. Bereznev, J. Kois, E. Mellikov, A. Öpik, A. Verbitsky, Y. Vertsimakha</i>	
Power Generation using the Solid Wastes in Eskisehir, Turkey.....	236
<i>R. Bakis, M. Kurban</i>	
 STABILITY, RELIABILITY, FORECASTING, AND LOAD SHEDDING	
Load Forecasting of Residential Row Houses Blocks in Taiwan.....	242
<i>R.-J. Wang, H.-T. Lin, J.-F. Chen</i>	
Reliability - Industry Supplied by HV Networks	248
<i>Z. Hradilek, L. Prokop</i>	
Application of Neural Networks to HVAC Load Forecasting	253
<i>W.-H. Chen, C.-H. Chen, C.-Y. Lee, C.-R. Chen, C.-J. Chou, Y.-C. Chang</i>	
Power Systems Stability with Large-Scale Wind Power Penetration	260
<i>A. Suwannarat, B. Bak-Jensen, Z. Chen</i>	
Reactive Power Requirements for Voltage Control of Long Lines	266
<i>M.S. Raviprakasha, H.L Suresh</i>	
Damping of Power System Oscillations with Coordinated Tuning of UPFC and POD.....	270
<i>S.N. Dhurvey, V.K. Chandrakar</i>	
Evolutionary Programming based Combined Artificial Neural Network for Short Term Load Forecasting.....	276
<i>P. Subbaraj, V. Rajasekaran</i>	

Energy Labeling and Standard for Electric Lamp Ballast in Iran	282
<i>R. Effatnejad, S. Shahidi</i>	

Optimal Allocation of Slow and Fast VAR Resources Considering Multi Load Level States	288
<i>M. Eghbal, E.E. El-Araby, Y. Zoka, N. Yorino</i>	

Forecasting the Market Penetration of Evolving Electric Power Production Technologies	294
<i>S. Valkealahti, T. Nevaranta</i>	

Multi-Layer Magnetically Shielded Room for High Current Injection System	300
<i>H. Heydari, F. Faghihi, M. Farhadi kashi</i>	

Simulation Model of Finite Differences Concerning Copolymer Hybrid PV/T Collector	306
<i>C. Cristofari, G. Notton, P. Poggi</i>	

QUALITY

A Boost Converter Design to Improve ASD Ride-through to Voltage DIP	312
<i>N.X. Melo, R.P.T. Bascopé, R.P.S. Leão, F.L.M. Antunes</i>	

A Lyapunov-based Current Control for Active Power Filters	318
<i>C.-C. Hua, C.-H. Li, C.-S. Lee</i>	

A New FIS-ADALINE Structure for Fast and Accurate Harmonic Components Tracking.....	324
<i>M. Joorabian, M. Mohseni, I. Sadinejad</i>	

Electromagnetic Susceptibility Test Procedure for the Digital Protecting Relay.....	330
<i>J.-L. Kuo, T.-Y. Wang, J.-D. Lee</i>	

DISTRIBUTION, ANALYSIS, TECHNOLOGY, AND POLICY

Generator Circuit-Breaker Versus Station Transformer Technical and Economical Comparison.....	336
<i>A. Akhavein, M.S. Kianfar, D. Braun, Th. Leimgruber</i>	

Development of a Portable Low-Cost and Low-Noise DC/DC High Voltage Switching Power Supply for Optics Application	343
<i>K.-Y. Hung, Y.-C. Chen</i>	

Non-Smooth Fuel Cost Function Parameters Estimation of Thermal Power Plants using Genetic Algorithms.....	348
<i>K.M. EL-Naggar, A.M. AL-Kandari</i>	

Study and Analysis of Technical Losses in Sohar 33 kV Distribution Network	354
<i>M. Bouzguenda, J.A.K. Bani-Younes, A. Ferrah, A. Tami, S. Al-Hosni</i>	

Arrester Installations for Improving the Lightning Performance of Double Circuits Distribution Lines	360
<i>T. Thanasaksir</i>	

Energy Policy in the Combined Heat and Power (CHP) Sector of Latvia	365
<i>S. Vostrikovs, D. Turlajs, A. Kundzina, U. Sarma</i>	

Two-Norm Approach for Optimal Multi-objective Harmonic Filter Planning	369
<i>Y.-L. Chen, S.-C. Wang</i>	

The Ground Potential Rise Effect Reduction on Sensitive Electronic Equipment.....	373
<i>A. Puttarach, N. Chakpitak, T. Kasirawat, C. Pongsriwat</i>	

Metering System and Concept to Measure Public Magnetic Field Exposure in Indoor MV/LV Substations.....	377
<i>T. Keikko, R. Seesvuori, S. Valkealahti</i>	
Analysis of VSC based Facts Stabilizers in Damping Power System Oscillations.....	383
<i>W. Du, Z. Chen, H.F. Wang</i>	
Modelisation, Optimisation and 4 Years Performance Study of a Photovoltaic System Connected to an Islander Electrical Grid	389
<i>P. Poggi, M. Muselli, C. Cristofari, G. Notton</i>	
Simulation of Faults of Switched Reluctance Motor by using FEM.....	394
<i>B.R. Singla, S. Marwaha, A. Marwaha</i>	
 ENERGY EFFICIENCY, STORAGE, AND PRICING	
Assessment of OPEC's Oil Pricing Policy from 1970 to 2000	399
<i>A. Kazim</i>	
Performance Analysis of Reverse Recovery Minimization Effects in DC/DC Converter using PSpice.....	404
<i>N.Z. Yahaya, D.K.H. Yew, L.H. Wen, A. Ng</i>	
Minimizing Energy Conversion Loop in Switched Reluctance Motor Drives	411
<i>S.-C. Wang, Y.-L. Chen, Y.-H. Liu, Y.-C. Chen, S.-Z. Lin</i>	
New Technological Parameters in Buildings Project to Optimize Total Costs and Energy Efficiency	417
<i>V. Cecconi, G. Leon</i>	
Reducing Heating and Cooling Energy Consumption in the Building using Ceiling Fans	422
<i>A.A. Nadoushan, A. Abedi, A. Bahrami</i>	
Characterization of Ceramic Candle Filters Utilized for Emission Control during Coal Gasification	429
<i>Z. Huque, R. Khan, S. Sarkar</i>	
A Supercapacitor Application using Sliding Mode Control Technique.....	435
<i>K.D. Joshi, S.G. Tarnekar, D.M. Holey</i>	
Temperature and Coning Analysis of a Ventilated Disc Brake using Axisymmetric Model	441
<i>P. Hwang, S.W. Joo, X. Wu, S.W. Cho, E.H. Kim, J.U. Kim, Y.B. Jeon, J.H. Shin, J.W. Jeon, Y.Y. Oh, Y.I. Choi</i>	
Electricity Pricing Model in Thermal Generating Stations under Deregulation.....	446
<i>P. Reji, S. Ashok, K.M. Moideenkutty</i>	
Determination of Electricity Consumers' Load Profiles via Weighted Evidence Accumulation Clustering using Subsampling	452
<i>Jorge Duarte, A. Fred, F. Rodrigues, João Duarte, S. Ramos, Z. Vale</i>	
A Novel Method of Analysing the Damping Function of VSC based Facts Control.....	461
<i>W. Du, Z. Chen, H.F. Wang</i>	
 SPECIAL SESSION:	
APPLICATION OF PHASOR MEASUREMENT UNITS TO MONITORING WIDE AREA POWER DYNAMICS	
PMU based Campus WAMS in Japanese Wide-Area Power Systems.....	467
<i>Y. Ota, K. Tsuboi, T. Hashiguchi, H. Ukai</i>	

A Method for Detecting Power System Disturbances based on Multiple Synchronized Phasor Measurements	472
<i>S. Yamada, O. Saeki, K. Tsuji</i>	
Studies on Relations between Frequency and Phase Difference in Power System based on Phasor Measurements	478
<i>M. Hojo, T. Ohnishi</i>	
Test Results of Evaluating Eigen-Characteristics of Interarea Power Swing Mode Derived from PMU Data in Thailand System	483
<i>K. Higuma, S. Dechanupaprittha, H. Morimoto, M. Watanabe, Y. Mitani, I. Ngamroo</i>	
Analysis of Power System Event using Synchronized PMUs in Thailand Power Network	489
<i>I. Ngamroo, A. Kunakorn, M. Leelajindakrirerk, Y. Mitani, S. Dechanupaprittha, M. Watanabe, P. Jintakosonwit, T. Hashiguchi, Y. Ota, H. Ukai, J. Sakulrat, A. Sode-Yome, T. Tanasaksiri</i>	
Application of Wide Area Monitoring System in Thailand Transmission System.....	495
<i>N. Voraphonpiput, C. Chaonirattisai</i>	
Practical Design of SMES Controller for Improving Power System Stability based on Wide Area Synchronized Phasor Measurement	500
<i>S. Dechanupaprittha, K. Hongesombut, M. Watanabe, Y. Mitani, I. Ngamroo</i>	

AUTHOR INDEX