

Table of Contents

Session A : Smart Sustainable Systems

Smart Monitoring of Wind Turbines Using Neural Networks	1
<i>Jianping Xiang, Simon Watson, and Yongqian Liu</i>	
SMART Buildings: Intelligent Software Agents Building Occupants Leading the Energy Systems	9
<i>Wim Zeiler, Rinus van Houten, and Gert Boxem</i>	
Solar Energy Harvesting for ZigBee Electronics	19
<i>Xin Lu and Shuang-Hua Yang</i>	
Multi-agent Systems Technology for Composite Decision Making in Complex Systems	29
<i>Marina V. Sokolova and Antonio Fernández-Caballero</i>	
Network-Enabled Intelligent Photovoltaic Arrays	39
<i>Colin Mallett</i>	
Design Ontology for Comfort Systems and Energy Infrastructures: Flexergy	49
<i>Wim Zeiler, Rinus van Houten, Gert Boxem, Perica Savanovic, Joep van der Velden, Willem Wortel, Jan-Fokko Haan, Rene Kamphuis, and Henk Broekhuizen</i>	

Session B : Solar and Wind Energy

An Innovative Building-Integrated Solar-Air Collector: Presentation and First Results	59
<i>Jean Louis Canaletti, Gilles Notton, and Christian Cristofari</i>	
Development and Strategies of Building Integrated Wind Turbines in China	71
<i>Bin Cai and Hong Jin</i>	
Missing Data Interpolation of Power Generation for Photovoltaic System	79
<i>Kun-Jung Hsu</i>	
Development of Short-Term Prediction System for Wind Power Generation Based on Multiple Observation Points	89
<i>Muhammad Khalid and Andrey V. Savkin</i>	

XVIII Table of Contents

Electricity Supply to a Remote Village Using Grid-Connected Wind Generators	99
<i>Eric Paalman and Roger Morgan</i>	
The Role of Photovoltaics in Reducing Carbon Emissions in Domestic Properties	107
<i>F.J. O'Flaherty, J.A. Pinder, and C. Jackson</i>	
Armature and Field Controlled DC Motor Based Wind Turbine Emulation for Wind Energy Conversion Systems Operating over a Wide Range of Wind Velocity	117
<i>Rahul Patel, Chetan V. Patki, and Vivek Agarwal</i>	
Session C : Technologies for Sustainable Buildings	
Utilization of Fly-Ash Products from Biomass Co-combustion and Zeolite 13X for Building Energy Conservations	127
<i>C.W. Kwong and C.Y.H. Chao</i>	
The Effect of Metal Ions on Calcium Carbonate Precipitation and Scale Formation	137
<i>Jitka MacAdam and Simon A. Parsons</i>	
Lateral Stability of Prefabricated Straw Bale Housing	147
<i>Christopher Gross, Jonathan Fovargue, Peter Homer, Tim Mander, Peter Walker, and Craig White</i>	
Monitoring of the Moisture Content of Straw Bale Walls	155
<i>Mike Lawrence, Andrew Heath, and Pete Walker</i>	
An Evaluation of Environmental and Economic Performance of Sustainable Building Technologies for Apartment Houses in Korea	165
<i>Hae Jin Kang, Jin-Chul Park, and Eon Ku Rhee</i>	
Managing Change in Domestic Renewable Energy Schemes	175
<i>Craig Jackson, Fin O'Flaherty, and James Pinder</i>	
Session D : Clean and Renewable Energy Technology	
Optimum Energy Management of a Photovoltaic Water Pumping System	187
<i>Souhir Sallem, Maher Chaabene, and M.B.A. Kamoun</i>	
Diagnosis by Fault Signature Analysis Applied to Wind Energy	199
<i>Ouadie Bennouna and Houcine Chafouk</i>	
A Novel Self-organizing Neural Technique for Wind Speed Mapping	209
<i>Giansalvo Cirrincione and Antonino Maruglia</i>	

Integral Fuzzy Control for Photovoltaic Power Systems	219
<i>A. El Hajjaji, M. BenAmmar, J. Bosche, M. Chaabene, and A. Rabhi</i>	
MACSyME: Modelling, Analysis and Control for Systems with Multiple Energy Sources	229
<i>A. Naamane and N.K. M'Sirdi</i>	
Structural Analysis for Fault Detection and Isolation in Fuel Cell Stack System	239
<i>Quan Yang, Abdel Aitouche, and Belkacem Ould Bouamama</i>	
Session E : Engineering Intelligence and Energy Technologies	
Efficiency Analysis of Cross-Flow Plate Heat Exchanger for Indirect Evaporative Cooling	255
<i>Xuelai Liu, Yong'an Li, Jizhi Li, Hongxing Yang, and Hengliang Chen</i>	
Thermal Work Condition Analysis of Teaching Building Heating Network in Winter Vacation with User Regulation	265
<i>Shuang Li, Hua Zhao, and Jianing Zhao</i>	
Integrated Building Management Systems for Sustainable Technologies: Design Aspiration and Operational Shortcoming	275
<i>Abbas Elmualim</i>	
Smart Use of Knowledge: A Case Study of Constructing Decisional DNA on Renewable Energy	281
<i>Cesar Sanin, Edward Szczerbicki, and Paul Cayfordhowell</i>	
A Study of Photo physical Properties of End Polymeric Material	291
<i>Jahangir Payamara</i>	
Renewable Energy Source Emulator	297
<i>Chu Chin Choon, Colin Coates, and Aparna Viswanath</i>	
Session F : Building Energy Efficiency and Performance	
Geothermal Active Building Concept	305
<i>Wim Zeiler and Gert Boxem</i>	
Heating Supply in Kazakhstan: Concept - Simulation - Comparison	315
<i>G. Tleukanova, L. Kühl, M. Heuer, N. Fisch, and R. Leithner</i>	
Towards a More Holistic and Complementary Approach to Modelling Energy Consumption in Buildings	325
<i>Stephen Pullen</i>	

Energy Consumption in the Greek Hotel Sector: The Influence of Various Factors on Hotels' Carbon Footprints under the Implementation of the EU and Greek Legislative Framework	339
<i>Maleviti Eva, Mulugetta Yacob, and Wehrmeyer Walter</i>	
Investigating the Applicability of Different Thermal Comfort Models in Kuwait Classrooms Operated in Hybrid Air-Conditioning Mode.....	347
<i>Khaled E. Al-Rashidi, Dennis L. Loveday, and Nawaf K. Al-Mutawa</i>	
Water and Energy Efficient Showers	357
<i>David Phipps, Rafid Alkhaddar, Roger Morgan, Robert McClelland, and Robert Doherty</i>	
Session G : Novel Techniques for Energy Efficiency	
Research of Solar-Kang Heating Systems Design for Rural House in Cold Areas of China.....	369
<i>Chunyan Zhou and Hong Jin</i>	
Research on Energy-Efficient Exterior Walls of Rural Housing in Northern China.....	379
<i>Hong Jin and Hua Zhao</i>	
Family Thermal Performance Analysis Based on Household Metering ...	387
<i>Hua Zhao and Hongxiang Shu</i>	
The Investigation and Analysis of Indoor Temperature Desire of Building Users in Harbin.....	395
<i>Hua Zhao and Hongxiang Shu</i>	
Simulated Performance of Earthtube for Cooling of Office Buildings in the Southeast of UK	403
<i>Abdullahi Ahmed, Kenneth IP, Andrew Miller, and Kassim Gidado</i>	
Study on a Novel Hybrid Desiccant Dehumidification and Air Conditioning System	413
<i>K. Sumathy, Li Yong, Y.J. Dai, and R.Z. Wang</i>	
Author Index	423