NORTH ATLANTIC UNIVERSITY UNION

Editors

Fragiskos Batzias

Nikos E. Mastorakis

Claudio Guarnaccia

Recent Advances in Energy, Environment and Financial Planning

Recent Advances in Energy, Environment and Financial Planning

Proceedings of the 5th International Conference on Development, Energy, Environment, Economics (DEEE '14)

Florence, Italy, November 22-24, 2014

Mathematics and Computers in Science and Engineering Series | 35

RECENT ADVANCES in ENERGY, ENVIRONMENT and FINANCIAL PLANNING

Proceedings of the 5th International Conference on Development, Energy, Environment, Economics (DEEE '14)

Florence, Italy
November 22-24, 2014

Series: Mathematics and Computers in Science and Engineering Series | 35

ISSN: 2227-4588
ISBN: 978-960-474-400-8

RECENT ADVANCES in ENERGY, ENVIRONMENT and FINANCIAL PLANNING

Proceedings of the 5th International Conference on Development, Energy, Environment, Economics (DEEE '14)

Florence, Italy
November 22-24, 2014

Published by WSEAS Press
www.wseas.org

Copyright © 2014, by WSEAS Press

All the copyright of the present book belongs to the World Scientific and Engineering Academy and Society Press. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the Editor of World Scientific and Engineering Academy and Society Press.

All papers of the present volume were peer reviewed by no less that two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.

ISSN: 2227-4588
ISBN: 978-960-474-400-8

RECENT ADVANCES in ENERGY, ENVIRONMENT and FINANCIAL PLANNING

Proceedings of the 5th International Conference on Development, Energy, Environment, Economics (DEEE '14)

Florence, Italy
November 22-24, 2014

Editors:
Prof. Fragiskos Batzias, University of Piraeus, Greece
Prof. Nikos E. Mastorakis, Technical University of Sofia, Bulgaria
Dr. Claudio Guarnaccia, University of Salerno, Italy

Committee Members-Reviewers:
N. Afgan
F. Akgun
Y. Baudoin
M. Dasenakis
G. E. Froudakis
R. S. R. Gorla
M. Heiermann
C. Helmis
I. Kazachkov
A. M. A. Kazim
G. Kiriakidis
D. Kotzias
A. Kurbatskiy
S. Linderoth
P. Lunghi
C. Makris
J. Van Mierlo
S. Ozdogan
P. Pardalos
I. Poulios
J. Prousalidis
A. Retalis
F. Rigas
S. Sohrab
A. Stamou
A. I. Zouboulis
Z. A. Vale
Agnieszka Misztal
Alena Oulehlova
Alina Adriana Minea
Alper Ozpinar
Ayca Tokuc
Badea Cătălin
Capusneanu Sorinel
Chunwei Lu Wini
Claudiu Mereuta
Corina Carranca
Daniela Zirra
Dib Karam
Rosli Abu Bakar
Dumitru-Alexandru Bodislav
Evangelos Markopoulos
Farhan Abdul Rauf
Grabara Janusz
Ioana Adrian
Iuliana Oana Mihai
Jose Manuel Mesa Fernández
Kakuro Amasaka
Lucija Foglar
Luigi Maxmilian Caligiuri
Maria Gabriela Sterian
Mihai Tiberiu Lates
Nelson Duarte
Oguz Arslan
Panida Sampranpiboon
Pedro Lorca
Ricardo Bustillo
Rimma Shiptsova
Rusu Teodor
Silvy Huang
Stilianos Tampakis
Stoican Mirela
Suzana Yusup
Thomas Panagopoulos
Usama Awan

Table of Contents

Plenary Lecture 1: On the Tradeoff between Spatiotemporal Criteria in Selecting / Evaluating / Ranking Environmental Protection Methods Applied to Waterbodies 11
Fragiskos Batzias

Plenary Lecture 2: New Concept of Hybrid Thermophotovoltaic Industrial Prototypes 12
Giampietro Fabbri

Time Series Analysis and Forecast of the Electricity Consumption of Local Transportation 13
Carmine Tepedino, Claudio Guarnaccia, Svetoslav Iliev, Silviya Popova, Joseph Quartieri

Design of a Knowledge Base for Applying Lignocellulosic Adsorbents in an Aquatic System Polluted by Hydrocarbon Releases 23
F. A. Batzias, D. K. Sidiras, C. G. Siontorou, D. F. Batzias, M. Tsapatsis, I. Safarik

From Wired to In-Moving Charging of the Electric Vehicles 33
Kishore Naik Mude, Hemant Kumar Dashora, Manuele Bertoluzzo, Giuseppe Buja

An Improved Generalized Load Model with Small Hydropower Generator 43
Ning Zhong, Bin Tan, Wei Xie, Danzhen Gu, Zhixiang Mao, Xiu Yang

On the Safe-Zone Design and Characterization of Grounding Systems 49
Rodolfo Araneo, Salvatore Celozzi

Optimizing Environmental Cost Sharing between River Water Users within a Sustainable Development Framework 58
Fragiskos A. Batzias

Double Distribution Activation Energy Model for Microalgae Pyrolysis 68
P. De Filippis, B. De Caprariis, M. Scarsella, N. Verdone

Laboratory Scale Experimental Design of Oil Spills, Salts and Dyes Adsorption Tests on Modified Wheat Straw 74
Maria Bidikoudi, Chrysoula Chandrinou, Konstantinos Giannakopoulos, Athanasios Kontos, George Romanos, Nikos Boukos, Polycarpos Falaras, Michael Fardis, George Apostolopoulos, Fragiskos Batzias, Dimitrios Sidiras

Penning Ionization of Simple Molecules and their Possible Role in Planetary Atmospheres 84
Stefano Falcinelli

Energy and Economic Analyses of Models Developed for Sustainable Hydrogen Production from Biogas-Based Electricity and Sewage Sludge 93
Ayşegül Abuşoğlu, Sinan Demir, Alperen Tozlu

Application Model of Bata Management System for the Current Business Environment 99
Gabriela Končitíková, Tomáš Culík, Staňková Pavla

ISBN: 978-960-474-400-8

Mathematical Methods for Performance Evaluation of Onshore Wind Farms through SCADA Data Mining 105
Francesco Castellani, Davide Astolfi, Ludovico Terzi

Brazilian's Energy Sector: Empirical Results from Panel Data and Fixed Effects' Models 115
Hugo Ferreira Braga Tadeu, Jersone Tasso Moreira Silva

The Threat of Eco-Terrorism in the Pardubice Region 127
Jan Fuka, Robert Baťa, Jana Školudová

Development of Offshore Grid: State of the Art of Technology and Solutions 134
Umberto Grasselli, Marco Quacquarelli, Simone Gentili

Management and Performance Measurement Systems in Healthcare: The Case of a Portuguese Private Hospital 142
Raquel Alves, Rui Vieira, Humberto Ribeiro

Entrepreneurial Leadership Styles and Academic Commercialization: Investigating the Mediating Role of Entrepreneurial Orientation 153
Kamariah Ismail, Wirya Najm Rashid

Environmental and Economic Assessment of Energy Production in Small Plants by Using Forest Residues: A Case Study 160
Emanuela Melis, Francesco Valentino Caredda, Cristina Pilo, Pier Francesco Orru

Development of Human Capital by Playing Management Game 170
Lucie Jelinkova, Jan Fuka, Radka Knezackova

Energy Consumption of Computers and Peripheral Equipment and Measures to Increase Energy Efficiency on the Example of a Business Organization 177
Milana Perić, Milovan Medojević, Jovan Petrović

Thermal Remote Sensing of the Urban Microclimate Change in a Post Earthquake Depopulation: The Case Study of L'Aquila (Italy) 187
Valerio Baiocchi, Fabio Zottele, Donatella Dominici

An Application of Balanced Scorecard in Healthcare Organizations 197
Gabriela Končitíková, Tomáš Culík, Staňková Pavla

From Public Rental to Home Ownership - Is it a Success Story? 203
Tiina Nuuter, Irene Lill

Processing and Applications of Geopolymers as Sustainable Alternative to Traditional Cement 213
Paola Palmero, Alessandra Formia, Jean-Marc Tulliani

The Importance of Information and Control Systems for the Performance of Portuguese Hospitals 222
Raquel Alves, Rui Vieira, Humberto Ribeiro

ISBN: 978-960-474-400-8

Do Family Firms Use Less Debt than Other Firms? Empirical Evidence from the Czech Medium and Large Companies 232
Ondřej Machek, Jiří Hnilica

A Multi-Criteria Methodology Oriented to the Preservation of the Coastal Areas Landscape 237
Donatella Cialdea, Luigi Mastronardi

A General View on Municipal Solid Waste Management in Gaziantep 244
Alperen Tozlu, Emrah Özahi, Ayşegül Abuşoğlu

Development of the Crisis in the Organization 249
Marie Mikušová

Development of Sustainable Manufacturing Indicators Focusing on Human Work and Environment 259
Giovanni Loglisci, Paolo C. Priarone, Luca Settineri

Exploration of Interface Layer Aptness on Efficiency Aspect of InGaN/Si Double Junction Tandem Solar Cell 267
Bablu K. Ghosh, Saiful Sapri Mohd Zainal, Ismail Saad

Modeling and Estimating Long-Term Volatility of R.P.G.U Stock Markets 272
Ramona Birău, Marian Siminică, Jatin Trivedi

Flexible Refrigeration Systems for the Food Industry with Natural Fluids, with Particular Reference to CO2 281
Biagio Bianchi, Giuseppe Cavone, Gianpaolo Cice, Angelo Innone, Gianluca Tanucci, Pasquale Catalano

Grid Connected Wind Energy Conversion Systems Control Strategies 290
L. Gidwani

Provide Knowledge to Assist Stakeholders in Smart Energy Grid Management: Decision Making using Analytic Hierarchy Process 295
Fairouz Iberraken, Rabah Medjoudj, Djamil Aissani

Inland Waterway Gas-Fuelled Vessels: the Basis of an Innovative Concept Design for European Rivers 305
Vittorio Bucci, Alberto Marino

Overconsumption in Ethic Economics and Sustainable Development 314
Bijan Bidabad, Nikos Mastorakis

Empirical Model of the Regional Economic Resilience 323
Ondrej Svoboda, Tereza Klementova

Wind Energy Conversion System using Back to Back Power Electronic Interface with DFIG 330
B. D. Gidwani

The Financial Development and Agriculture Growth in Iran: ARDL Approach 335
Soheila Khoshnevis Yazdi, Bahman Khanalizadeh

ISBN: 978-960-474-400-8

Input Recycling Home Garden Agricultural Systems in Sri Lanka: Observations in a General Context 343
Nirosha Welgama

Limitations of Accounting Conservatism Research in Europe: Ante and After IFRS Adoption 349
Ema Masca

Investing in Photovoltaics in a Smart Grid Context: The Prosumer's Perspective 356
Chiara D'Alpaos, Marina Bertolini, Michele Moretto

Big Challenge of the Use of Renewables Energy-Case Study for Romania 365
Dan Victor Cavaropol

Effect of Biasing on Electron Temperature in IR-T1 Tokamak 370
Sakineh Meshkani, Mahmood Ghoranneviss, Mansoureh Lafouti

Authors Index 377

ISBN: 978-960-474-400-8

Plenary Lecture 1

On the Tradeoff between Spatiotemporal Criteria in Selecting / Evaluating / Ranking Environmental Protection Methods Applied to Waterbodies

Professor Fragiskos Batzias
Laboratory of Simulation of Industrial Processes
Department of Industrial Management and Technology
University of Piraeus
Greece
E-mail: fbatzi@unipi.gr

Abstract: The criteria used in selecting / evaluating / ranking environmental protection methods applied to waterbodies may form a tradeoff, in which case the equilibrium point determines the optimal value of the control / independent / explanatory variable each time under consideration. An example of such an independent variable is the concentration of biocide in ballast water, while the dependent variables represent the partial benefit referring to (i) the degree of elimination of invasive species in ballast water stored onboard, and (ii) the avoidance of environmental damage due to toxic substances remaining in discharged seawater when deballasting takes place near the destination port. Another example of such an independent variable is the amount of dispersant applied in seawater after an oil spill has been setup, due to either accidental or systematic pollution with liquid hydrocarbon mixture (usually crude oil or diesel or majout): the higher this amount the higher the indirect partial cost due to seawater ecosystem damage but the lesser the direct cost due to oil spill surface layer hindering air diffusion and sunlight penetration leading to oxygen deficit and photosynthesis limitation, respectively.
To deal with this problem, we have designed/developed/implemented a methodological framework under the form of an algorithmic procedure, making use of decomposition techniques and Case/Rules / Model Based Reasoning (CBR/RBR/MBR) within a dynamic ontological network. This methodology has been applied to two simulation events, river pollution and shoreline environmental management, in northern Greece and the Aegean Sea, respectively. Advanced environmental indices are synthesized to represent complex situations and the results are discusses in comparison with (i) the methodology introduced herein (meta-analysis), and (ii) similar studies selected from relevant technical literature, where simpler techniques have been used.

Brief Biography of the Speaker: Prof. Fragiskos Batzias holds a 5years Diploma and a PhD degree in Chemical Engineering, and a BSc in Economics. He has also studied Mathematics and Philosophy. He is Director of the Laboratory of Simulation of Industrial Processes and Head of the Research Group on Systems Analysis at the Department of Industrial Management and Technology of the University of Piraeus, Greece. He is teaching at the interdepartmental postgraduate courses (i) Systems of Energy Management and Protection of the Environment, running by the University of Piraeus in cooperation with the Chem. Eng. Dept. of the Nat. Tech. Univ. of Athens, and (ii) Techno-Economic Systems, running by the Electr. & Comp. Eng. Dept. of the Nat. Tech. Univ. of Athens in cooperation with the University of Athens and the University of Piraeus. His research interests are in chemical engineering systems analysis and knowledge based decision making. He has >100 publications in highly ranked journals and conference proceedings, including 29 research monographs in collective volumes, with 171 citations and an h-index of 8 (for the period 2004-2012, source: ISI Web of Science, Thompson Scientific; self-citations have been excluded).
He has participated (and chaired after invitation from the organizers) in prestigious international conferences, such as those organized periodically by the IEEE, the European Federation of Chemical Engineering (EFCE), the DECHEMA, CHISA, WSEAS Organizations. He organizes the annual Symposium on Industrial and Environmental Case Studies running successfully since 2004 within the International Conference of Computational Methods in Sciences and Engineering (ICCMSE).

ISBN: 978-960-474-400-8

Plenary Lecture 2

New Concept of Hybrid Thermophotovoltaic Industrial Prototypes

Professor Giampietro Fabbri
co-author: Matteo Greppi
D.I.N.
Università degli Studi di Bologna
Italy
E-mail: giampietro.fabbri@unibo.it

Abstract: Hybrid PVT (thermophotovoltaic) panels allow the direct transformation of solar radiation into electricity and the production of solar thermal energy on the same surface. Based on the results obtained in previous research literature , PV/T collectors produce more energy per unit surface area than one PV panel and one thermal collector next to each other. A lot of parameters affects PV/T performance (both electrical and thermal) such as covered versus uncovered PV/T collectors, optimum mass flow rate, absorber plate parameters (i.e. tube spacing, tube diameter, fin thickness), absorber to fluid thermal conductance and configuration design types. Based on an exergy and cost analysis,water PVT glazed flat plate collector system results the most promising to develop [Zondag-1999].
Our research work, starting from the numerical analysis using genetic algorithms in order to identify the geometry of the heat sink that allows the best thermal and consequently electrical performance, is finalized to the construction and experimental characterization of new hybrid prototypes for a wide range of industrial and other sectors applications (boats, vehicles, houses, etc.).

Brief Biography of the Speaker: Giampietro Fabbri was Born in Bologna on the 17th March 1964.
In 1983 he obtained the Classical High School Degree at the Lyceon Gymnasium Luigi Galvani in Bologna.
In 1988 he obtained the Unversity Degree cum laude in Electonic Engineeing at the University of Bologna.
In 1992 he obtained the degree in Musical Composition at the Giovanni Battista Martini Conservatoir in Bologna.
From 1992 to 1998 he has been University Researcher at the University of Bologna in the Nuclear Plants field.
In 1993 he obtained the Research Doctorate degree in Bioingeneering.
From 1998 to 2000 he has been University Researcher at the University of Bologna in the Technical Physic field.
From 2000 to 2004 he has been Associate Professor at the University of Bologna in the Technical Physic field.
Since 2004 he is Full Professor at the University of Bologna in the Technical Physic field.
From 1992 to 1995 he has been member of the Institute of Technical Physic.
From 1995 to 2012 he has been member of the Department of Energy, Nuclear, and Environmental Control Engineering (DIENCA).
Since 2012 he is member of the Department of Inudstrial Engineering (DIN).

ISBN: 978-960-474-400-8

Authors Index

Abuşoğlu, A. 93, 244
Aissani, D. 295
Alves, R. 142, 222
Apostolopoulos, G. 74
Araneo, R. 49
Astolfi, D. 105
Baiocchi, V. 187
Baťa, R. 127
Batzias, D. F. 23, 74
Batzias, F. A. 23, 58, 74
Bertolini, M. 356
Bertoluzzo, M. 33
Bianchi, B. 281
Bidabad, B. 314
Bidikoudi, M. 74
Birău, R. 272
Boukos, N. 74
Bucci, V. 305
Buja, G. 33
Caredda, F. V. 160
Castellani, F. 105
Catalano, P. 281
Cavaropol, D. V. 365
Cavone, G. 281
Celozzi, S. 49
Chandrinou, C. 74
Cialdea, D. 237
Cice, G. 281
Culík, T. 99, 197
D'Alpaos, C. 356
Dashora, H. K. 33
De Caprariis, B. 68
De Filippis, P. 68
Demir, S. 93
Dominici, D. 187
Falaras, P. 74
Falcinelli, S. 84
Fardis, M. 74
Formia, A. 213
Fuka, J. 127, 170
Gentili, S. 134
Ghoranneviss, M. 370
Ghosh, B. K. 267
Giannakopoulos, K. 74
Gidwani, B. D. 330
Gidwani, L. 290
Grasselli, U. 134
Gu, D. 43
Guarnaccia, C. 13
Hnilica, J. 232
Iberraken, F. 295
Iliev, S. 13
Innone, A. 281
Ismail, K. 153
Jelinkova, L. 170
Khanalizadeh, B. 335
Klementova, T. 323
Knezackova, R. 170
Končitíková, G. 99, 197
Kontos, A. 74
Lafouti, M. 370
Lill, I. 203
Loglisci, G. 259
Machek, O. 232
Mao, Z. 43
Marino, A. 305
Masca, E. 349
Mastorakis, N. 314
Mastronardi, L. 237
Medjoudj, R. 295
Medojević, M. 177
Melis, E. 160
Meshkani, S. 370
Mikušová, M. 249
Moretto, M. 356
Mude, K. N. 33
Nuuter, T. 203
Orru, P. F. 160
Özahi, E. 244
Palmero, P. 213
Perić, M. 177
Petrović, J. 177
Pilo, C. 160
Popova, S. 13
Priarone, P. C. 259
Quacquarelli, M. 134
Quartieri, J. 13
Rashid, W. N. 153
Ribeiro, H. 142, 222
Romanos, G. 74
Saad, I. 267
Safarik, I. 23
Scarsella, M. 68
Settineri, L. 259
Sidiras, D. K. 23
Silva, J. T. M. 115
Siminică, M. 272
Siontorou, C. G. 23
Školudová, J. 127
Staňková, P. 99, 197
Svoboda, O. 323
Tadeu, H. F. B. 115
Tan, B. 43
Tanucci, G. 281
Tepedino, C. 13
Terzi, L. 105
Tozlu, A. 93, 244
Trivedi, J. 272
Tsapatsis, M. 23
Tulliani, J.-M. 213
Verdone, N. 68
Vieira, R. 142, 222
Welgama, N. 343
Xie, W. 43
Yang, X. 43
Yazdi, S. K. 335
Zainal, S. S. M. 267
Zhong, N. 43
Zottele, F. 187

ISBN: 978-960-474-400-8