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
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
# Table of Contents

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

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

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

Design of a Knowledge Base for Applying Lignocellulosic Adsorbents in an Aquatic System Polluted by Hydrocarbon Releases  
23

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

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

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

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

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

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

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

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

Application Model of Bata Management System for the Current Business Environment  
Gabriela Končitíková, Tomáš Culík, Staňková Pavla  
99
Mathematical Methods for Performance Evaluation of Onshore Wind Farms through SCADA Data Mining
Francesco Castellani, Davide Astolfi, Ludovico Terzi

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

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

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

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

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

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

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

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)
Valerio Baiocchi, Fabio Zottele, Donatella Dominici

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

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

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

The Importance of Information and Control Systems for the Performance of Portuguese Hospitals
Raquel Alves, Rui Vieira, Humberto Ribeiro
Do Family Firms Use Less Debt than Other Firms? Empirical Evidence from the Czech Medium and Large Companies
Ondřej Machek, Jiří Hnilica

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

A General View on Municipal Solid Waste Management in Gaziantep
Alperen Tozlu, Emrah Özahi, Aységül Abuoğlu

Development of the Crisis in the Organization
Marie Mikušová

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

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

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

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

Grid Connected Wind Energy Conversion Systems Control Strategies
L. Gidwani

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

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

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

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

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

The Financial Development and Agriculture Growth in Iran: ARDL Approach
Soheila Khoshevis Yazdi, Bahman Khanalizadeh
Nirosha Welgama

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

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

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

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

Authors Index
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 debballasting 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).
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 University Degree cum laude in Electronic Engineering at the University of Bologna. In 1992 he obtained the degree in Musical Composition at the Giovanni Battista Martini Conservatoire 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 Bioengineering. From 1998 to 2000 he has been University Researcher at the University of Bologna in the Technical Physics field. From 2000 to 2004 he has been Associate Professor at the University of Bologna in the Technical Physics field. Since 2004 he is Full Professor at the University of Bologna in the Technical Physics field. From 1992 to 1995 he has been member of the Institute of Technical Physics. From 1995 to 2012 he has been member of the Department of Energy, Nuclear, and Environmental Control Engineering (DINCA). Since 2012 he is member of the Department of Industrial Engineering (DIN).
Authors Index

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