

2nd European Energy Conference 2012

EPJ Web of Conferences Volume 33 (2012)

**Maastricht, The Netherlands
17-20 April 2012**

Editors:

A. McEvoy

ISBN: 978-1-63266-179-1

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.

This work is licensed under a Creative Commons Attribution license:

<http://creativecommons.org/licenses/by/2.0/>

You are free to:

Share – copy and redistribute the material in any medium or format.

Adapt – remix, transform, and build upon the material for any purpose, even commercial.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. The copyright is retained by the corresponding authors.

Printed by Curran Associates, Inc. (2014)

For additional information, please contact EDP Sciences – Web of Conferences at the address below.

EDP Sciences – Web of Conferences
17, Avenue du Hoggar
Parc d'Activité de Courtabœuf
BP 112
F-91944 Les Ulis Cedex A
France

Phone: +33 (0) 1 69 18 75 75
Fax: +33 (0) 1 69 28 84 91

contact@webofconferences.org

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

SYSTEMS ASPECTS

How a Future Energy World Could Look?	1
<i>M. Ewert</i>	
MOSES – A Modelling Tool for the Analysis of Scenarios of the European Electricity Supply System.....	7
<i>S. Weitemeyer, T. Feck, C. Agert</i>	
Estimating Renewable Energy Resources of Russia: Goals and Perspectives	11
<i>S. Kiseleva, J. Rafikova, V. Shakun</i>	
Sociotechnical Scenarios for the Austrian Energy System	17
<i>Michael Ornetzeder, Harald Rohracher, Petra Wächter</i>	
Is Advanced Real-Time Energy Metering Sufficient to Persuade People to Save Energy?.....	26
<i>L. Ting, H. Leite, T. Ponce De Leão</i>	
Analysing the Role of Fusion Power in the Future Global Energy System.....	32
<i>H. Cabal, Y. Lechón, U. Ciorba, F. Gracceva, T. Eder, T. Hamacher, A. Lehtila, M. Biberacher, P. E. Grohnheit, D. Ward, W. Han, C. Eherer, A. Pina</i>	
Evaluation of Solar Thermal Storage for Base Load Electricity Generation	40
<i>R. Adinberg</i>	
Evaluation of the Impact of Wind Generation on the Electricity Market Prices and on the Profitability of New Wind Investments.....	47
<i>A. J. Pereira, J. T. Saraiva</i>	
Global Warming Potential Impact of Bioenergy Systems	67
<i>D. Tonini, L. Hamelin, H. Wenzel, T. Astrup</i>	
The Method of Assessment of Solar Potential for Selected Area with Use Geographical Information Systems	73
<i>M. Pietras, P. Netzel</i>	
A Price Mechanism for Supply Demand Matching in Local Grid of Households with Micro-CHP	81
<i>G. K. H. Larsen, N. D. Van Foreest, J. M. A. Scherpen</i>	
The Governance of Innovation Diffusion – A Socio-technical Analysis of Energy Policy	89
<i>C. Nolden</i>	
RESRO: A Spatio-Temporal Model to Optimise Regional Energy Systems Emphasising Renewable Energies	97
<i>S. Hausl, M. Biberacher, S. Gadocha</i>	

SCIENCES FOR ENERGY

TBCs for Gas Turbines under Thermomechanical Loadings: Failure Behaviour and Life Prediction	105
<i>T. Beck, O. Trunova, R. Herzog, L. Singheiser</i>	
Materials for Organic Photovoltaics: Insights from Detailed Structural Models and Molecular Simulations.....	113
<i>Mosè Casalegno, Alberto Bagnoli, Antonino Famulari, Stefano V. Meille, Tommaso Nicolini, Riccardo Po, Guido Raos</i>	
Luminescent Solar Concentrators – A Low Cost Photovoltaics Alternative	121
<i>W. G. J. H. M. Van Sark</i>	
Electrolytically Deposited Cadmium Selenide Films for Photovoltaic Applications	129
<i>C. T. Dervos, M. D. Palaiologopoulou</i>	
Basic Density and Moisture Content of Coniferous Branches and Wood in Northern Norway	137
<i>J. Dibdiakova, K. Vadla</i>	
Energy and Greenhouse Balance of Photocatalytic CO₂ Conversion to Methanol	143
<i>D. Haumann, G. Goettlicher, W. Muensch</i>	
Electrochemical Preparation of Hematite Nanostructured Films for Solar Hydrogen Production.....	158
<i>N. Kazemi, A. Maghsoudipour, T. Ebazdadeh</i>	
Nanostructured LiMPO₄ (M = Fe, Mn, Co, Ni) – Carbon Composites As Cathode Materials for Li-Ion Battery	165
<i>L. Dimesso, C. Spanheimer, T. T. D. Nguyen, R. Hausbrand, W. Jaegermann</i>	
Determination of Physical Properties of Fibrous Thermal Insulation	172
<i>A. Tilioua, L. Libessart, A. Joulin, S. Lassue, B. Monod, G. Jeandel</i>	

New DRIE-Patterned Electrets for Vibration Energy Harvesting	180
<i>S. Boisseau, A.-B. Duret, J.-J. Chaillout, G. Despesse</i>	
Ion Motion in Salt Water Flowing Under a Transverse Magnetic Field	188
<i>R. De Luca</i>	
Structural Engineering of Vacancy Defected Bismuth Tellurides for Thermo-electric Applications	195
<i>K. Termentzidis, A. Pokropivny, S.-Y. Xiong, Y. Chumakov, P. Cortona, S. Volz</i>	

PRIMARY ENERGY

Interdisciplinary Design Study of a High-Rise Integrated Roof Wind Energy System	200
<i>R. W. A. Dekker, R. M. Ferraro, A. B. Suma, S. P. G. Moonen</i>	
Integrated Roof Wind Energy System	208
<i>A. B. Suma, R. M. Ferraro, B. Dano, S. P. G. Moonen</i>	
Application of Liquid Metals for Solar Energy Systems	216
<i>W. Hering, R. Stieglitz, Th. Wetzel</i>	
Concentrating Solar Power in Europe, the Middle East and North Africa: Achieving Its Potential	223
<i>R. Pitz-Paal, A. Amin, M. Bettzüge, P. Eames, F. Fabrizi, G. Flamant, F. Garcia Novo, J. Holmes, A. Kribus, H. Van Der Laan, C. Lopez, P. Papagiannakopoulos, E. Pihl, P. Smith, H.-J. Wagner</i>	
Microemulsions As Model Fluids for Enhanced Oil Recovery: Dynamics Adjacent to Planar Hydrophilic Walls	231
<i>H. Frielinghaus, O. Holderer, F. Lipfert, M. Kerscher, S. Mattauch, D. Richter</i>	
Shale Gas in Europe: Pragmatic Perspectives and Actions	238
<i>A. Hübner, B. Horsfield, I. Kapp</i>	
Increasing Nuclear Power at Liberalised Energy Markets - Case Finland	243
<i>S. Syri, T. Kurki-Suonio, V. Satka</i>	
Comparison of Radiation Hazard of HLW in Several Spent Nuclear Fuel Reprocessing Scenarios	249
<i>A. Ochkin, D. Gladilov, S. Stefanovsky</i>	
Adapting Computational Optimization Concepts from Aeronautics to Nuclear Fusion Reactor Design	253
<i>W. Dekeyser, D. Reiter, M. Baelmans</i>	
Polarization: A Must for Fusion	261
<i>J. P. Didelez, C. Deutsch, M. Guidal</i>	

NETWORKS

Fundamental Properties of and Transition to a Fully Renewable Pan-European Power System	266
<i>G. B. Andresen, M. G. Rasmussen, R. A. Rodriguez, S. Becker, M. Greiner</i>	
Smart Thermal Networks for Smart Cities – Introduction of Concepts and Measures	273
<i>R. R. Schmidt, O. Pol, D. Basciotti, J. Page</i>	
Transmission Expansion Planning – A Multiyear Dynamic Approach Using a Discrete Evolutionary Particle Swarm Optimization Algorithm	281
<i>M. C. Rocha, J. T. Saraiva</i>	
Environmental Effects of Electrically-Stressed Sulfur Hexafluoride	295
<i>Constantine T. Dervos, John A. Mergos, Maria D. Palaiologopoulou</i>	
Travelling Wave Based Fault Location Analysis for Transmission Lines	303
<i>L. De Andrade, T. Ponce De Leão</i>	
Cryogenic Thermal Storage System for Discontinuous Industrial Vacuum Processes	312
<i>M. Bruzzi, A. Chesi, A. Baldi, F. Tarani, R. Mori, M. Scaringella, E. Carnevale</i>	
Efficiency Evaluation of a Photovoltaic System Simultaneously Generating Solar Electricity and Hydrogen for Energy Storage	321
<i>S. Abermann</i>	
Plug-in Hybrid Electric Vehicles in the Smart Grid Environment: An Economic Model of Load Management by Demand Response	326
<i>R. Poudineh</i>	
Application of Hybrid-Electric Power Supply System in Fishing Vessels	335
<i>C. Gutiérrez, D. Meana</i>	
Flat-Land Large-Scale Electricity Storage (FLES)	343
<i>J. Huynen, R. Schalij, T. Arts</i>	

END USE OF ENERGY

Dynamic Simulation As a Tool to Improve the Efficiency of Energy Sytems. Applications in the Steel Industry	351
<i>T. Henrion, A. Werber, R. Kitzber, M. Haider</i>	
A Low Carbon City Action Plan for One of China's Low Carbon Pilot Cities	360
<i>D. Jakutyte-Walangitang, J. Page</i>	
Life Cycle Analysis of a Geothermal Heatpump Installation and Comparison with a Conventional Fuel Boiler System in a Nursery School in Galicia (Spain)	367
<i>J. Rodriguez, I. Bangueses, M. Castro</i>	
Monitoring of Building Heating and Cooling Systems Based on Geothermal Heat Pump in Galicia (Spain).....	375
<i>M. Iglesias, J. Rodriguez, D. Franco</i>	
Integrated Management of Residential Energy Resources	382
<i>A. Soares, A. Gomes, C. H. Antunes</i>	
Passive Method to Reduce Solar Energy Effect on the Cooling Load in Buildings.....	390
<i>A. A. Mohamad, H. Alansary, J. Orfi</i>	
Detailed Dynamic Heat Transfer in Thick Brick Walls Typical of Lille Metropolis	399
<i>E. Sassine, Z. Younsi, A. B. Chérif, E. Antczak</i>	
Upgrade Opportunities for Buildings in City Centres.....	408
<i>N. Brito, M. Silva</i>	
Building Lighting Energy Consumption Modelling with Hybrid Neural-Statistic Approaches	416
<i>F. Lauro, C. Meloni, S. Pizzuti</i>	
Technical and Economic Analysis of a Smart Public Lighting Model	424
<i>F. Bucci, M. Annunziato, F. Moretti</i>	
Analytical Method for Estimating Energy Output of Small Wind Turbines Integrated in Urban Areas.....	432
<i>M. Popovac</i>	
Author Index	