



*Editor*

Aida Bulucea



## **Recent Advances on Energy and Environment**

**Recent Advances on Energy and Environment**

**Proceedings of the 10<sup>th</sup> International Conference on  
Energy & Environment (EE '15)**

**Budapest, Hungary, December 12-14, 2015**



# **RECENT ADVANCES on ENERGY and ENVIRONMENT**

**Proceedings of the 10th International Conference on Energy & Environment  
(EE '15)**

**Budapest, Hungary  
December 12-14, 2015**

Energy, Environmental and Structural Engineering Series | 44

ISSN: 2227-4359  
ISBN: 978-1-61804-356-6

# **RECENT ADVANCES on ENERGY and ENVIRONMENT**

**Proceedings of the 10th International Conference on Energy & Environment (EE '15)**

**Budapest, Hungary  
December 12-14, 2015**

Published by WSEAS Press  
[www.wseas.org](http://www.wseas.org)

**Copyright © 2015, 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 than two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.

ISSN: 2227-4359  
ISBN: 978-1-61804-356-6

# **RECENT ADVANCES on ENERGY and ENVIRONMENT**

**Proceedings of the 10th International Conference on Energy & Environment  
(EE '15)**

**Budapest, Hungary  
December 12-14, 2015**



**Editor:**

Prof. Aida Bulucea, University of Craiova, Romania

**Committee Members-Reviewers:**

Azami Zaharim  
Hamed Ziaeiipoor  
Guoxiang Liu  
Yang Zhang  
Konstantinos Vogiatzis  
Cornelia Aida Bulucea  
Thomas Panagopoulos  
Adrian Turek Rahoveanu  
Catarina Luisa Camarinhas  
Nabil Mohareb  
Oguz Arslan  
Calbureanu Popescu Madalina Xenia  
Al Emran Ismail  
Alina Adriana Minea  
Andrei Madalina-Teodora  
Mioara Chirita  
Diana-Elena Alexandru  
Mihaela Dudita  
Harry Coomar Shumsher Rughooputh  
Monica Dumitrascu  
José Nunes  
Petr Mastny  
Krisztina Uzuneanu  
Rodica Badescu  
Khaled Galal Ahmed  
Heimo Walter  
Denizar Cruz Martins  
Maria De Fatima Nunes De Carvalho  
Tejinder Saggu  
Ramin Khodafarin  
Giri Kattel



**Preface**

This year the 10th International Conference on Energy & Environment (EE '15) was held in Budapest, Hungary, December 12-14, 2015. The conference provided a platform to discuss renewable energy sources and technology, hybrid systems and vehicles, alternative energy systems, environmental issues and impacts, quality of water, sustainable marine ecosystems, climate and global change, renewable energy systems, environmental management, biodiversity, nuclear energy and environmental protection etc. with participants from all over the world, both from academia and from industry.

Its success is reflected in the papers received, with participants coming from several countries, allowing a real multinational multicultural exchange of experiences and ideas.

The accepted papers of this conference are published in this Book that will be sent to international indexes. They will be also available in the E-Library of the WSEAS. Extended versions of the best papers will be promoted to many Journals for further evaluation.

Conferences such as this can only succeed as a team effort, so the Editors want to thank the International Scientific Committee and the Reviewers for their excellent work in reviewing the papers as well as their invaluable input and advice.

The Editors



## Table of Contents

<b>Monhegan Island Winds: A Feasibility and Design Study</b>	11
<i>Luke J. Humphrey</i>	
<b>Habitability and Urban Project: Methodological Approach to Integrate Ecology in Urban Development Projects</b>	20
<i>Muriel Delabarre</i>	
<b>Lightning Performance of a HV/MV Substation</b>	28
<i>Mahmud Trainba, Lambros Ekonomou</i>	
<b>A Comparison of Five Different Photocatalysts in the Degradation of Methylene Blue Dye</b>	33
<i>Arini Nuran Zulkifili, Fujiki Akira</i>	
<b>Optimization Analysis for the Determination of Photosensor Position for Energy Saving and Visual Comfort</b>	37
<i>Panagiotis A. Kontaxis, Evangelos D. Madias, Phaedra F. Topali, Lambros T. Doulos, Constantinos A. Bouroussis, Frangiskos V. Topalis</i>	
<b>Assessment of Human Health Risk from Crude Oil Contaminated Soils: Pollution with PAHs</b>	44
<i>Diana Mariana Cocarta, Mihaela Stoian, Adrian Badea</i>	
<b>Environmental Tracer Approach to Discharge Evaluation of Pertuso Spring (Italy)</b>	54
<i>G. Sappa, F. Ferranti, F. M. De Filippi</i>	
<b>An Intelligent Lighting Control System Using Photosensors Placed on Task Area, Controlling Luminaires via LAN</b>	63
<i>Evangelos D. Madias, Lambros T. Doulos, Panagiotis A. Kontaxis, Frangiskos V. Topalis</i>	
<b>Robotic Autonomous Field Gamma Radiation Measurement for Environmental Protection</b>	69
<i>Ludek Zalud, Tomas Jilek, Petra Kocmanova</i>	
<b>Multivariate Parsimony Model for Electricity Load Management</b>	77
<i>Godwin Norene Osarumwense Asemota</i>	
<b>Estimation of Local Wind Climate Using the Mesoscale Wind Simulations and Station Wind Measurements</b>	87
<i>Z. O. Olaofe, C. Lennard, B. Hewitson</i>	
<b>The Effect of Moisture in Wooden House from Natural Materials</b>	94
<i>Lucie Kucerova, Sarka Korbelova</i>	
<b>Near-Zero Emission from Oxy-PC Combustion for Carbon Capture and Storage Using Combination of Dry and Wet ESPs</b>	98
<i>Hak-Joon Kim, Bangwoo Han, Changgyu Woo, Yong-Jin Kim</i>	
<b>Environmental Impact Assessment of Hydroelectric Project “Santuario 20” Located in Sumapaz River Basin</b>	101
<i>Ary M. Burbano, Mauricio Castellanos</i>	

<b>Applying Thermal-Swing Sorption-Enhanced Reaction Process on Water-Gas Shift Reaction to Separate Hydrogen and Carbon Dioxide</b>	110
<i>Cheng-Tung Chou, Yu-Jie Huang, Chun-Min Chen, Yu-Jen Chen, Hong-Sung Yang</i>	
<b>Effects of Ice Accretion on Wind Turbine Performance</b>	118
<i>Muhammad Ali, Lakshmi N. Sankar, Jechiel I. Jagoda</i>	
<b>A Comparative Study for Drying Apple and Carrot in an Indirect Solar Crop Dryer</b>	126
<i>Mahmoud Mohamed El-Ghobashy El-Hagar</i>	
<b>Authors Index</b>	135

## Authors Index

Ali, M.	118	Jagoda, J. I.	118
Asemota, G. N. O.	77	Jilek, T.	69
Badea, A.	44	Kim, H.-J.	98
Bouroussis, C. A.	37	Kim, Y.-J.	98
Burbano, A. M.	101	Kocmanova, P.	69
Castellanos, M.	101	Kontaxis, P. A.	37, 63
Chen, C.-M.	110	Korbelova, S.	94
Chen, Y.-J.	110	Kucerova, L.	94
Chou, C.-T.	110	Lennard, C.	87
Cocarta, D. M.	44	Madias, E. D.	37, 63
De Filippi, F. M.	54	Olaofe, Z. O.	87
Delabarre, M.	20	Sankar, L. N.	118
Doulos, L. T.	37, 63	Sappa, G.	54
Ekonomou, L.	28	Stoian, M.	44
El-Hagar, M. M. El-G.	126	Topali, Ph. F.	37
Ferranti, F.	54	Topalis, F. V.	37, 63
Fujiki, A.	33	Trainba, M.	28
Han, B.	98	Woo, C.	98
Hewitson, B.	87	Yang, H.-S.	110
Huang, Y.-J.	110	Zalud, L.	69
Humphrey, L. J.	11	Zulkifili, A. N.	33