

Editors

Nikos E. Mastorakis Ottavia Corbi Azami Zaharim



Recent Advances in Energy, Environment and Development

Proceedings of the 9th International Conference on Energy & Environment (EE '14)

Geneva, Switzerland, December 29-31, 2014

Energy, Environmental and Structural Engineering Series | 31

Recent Advances in Energy, Environment and Development



RECENT ADVANCES in ENERGY, ENVIRONMENT and DEVELOPMENT

Proceedings of the 9th International Conference on Energy & Environment (EE '14)

> Geneva, Switzerland December 29-31, 2014

Energy, Environmental and Structural Engineering Series | 31

ISSN: 2227-4359 ISBN: 978-1-61804-265-1

RECENT ADVANCES in ENERGY, ENVIRONMENT and DEVELOPMENT

Proceedings of the 9th International Conference on Energy & Environment (EE '14)

Geneva, Switzerland December 29-31, 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: 2227-4359 ISBN: 978-1-61804-265-1

RECENT ADVANCES in ENERGY, ENVIRONMENT and DEVELOPMENT

Proceedings of the 9th International Conference on Energy & Environment (EE '14)

> Geneva, Switzerland December 29-31, 2014

Editors:

Prof. Nikos E. Mastorakis, Technical University of Sofia, Bulgaria Prof. Ottavia Corbi, University of Naples Federico II, Italy Prof. Azami Zaharim, Universiti Kebangsaan, Malaysia

Committee Members-Reviewers:

Azami Zaharim Hamed Ziaeipoor Guoxiang Liu Yang Zhang Konstantinos Vogiatzis Cornelia Aida Bulucea Thomas Panagopoulos Adrian Turek Rahoveanu Catarina Luísa 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 Fátima Nunes De Carvalho Tejinder Saggu Ramin Khodafarin Giri Kattel Ayca Tokuc Carlos E. Formigoni Chellali Benachaiba Cledson Akio Sakurai Corina Carranca Denizar Cruz Martins Denizar Martins Dimitris Myronidis Dr. Rosli Abu Bakar Dragos Ilie Dumitru-Alexandru Bodislav **Evangelos Markopoulos** Farhan Abdul Rauf Georgios Tsantopoulos Grabara Janusz Jeni Alina Popescu José A. Orosa Jose Alberto Duarte Moller Jose Manuel Mesa Fernández Luigi Maxmilian Caligiuri Nikos Loukeris Panida Sampranpiboon

Paula Bajdor Rusu Teodor Sara Sadrzadehrafiei Sorin Ioan Deaconu Suzana Yusup

Preface

This year the 9th International Conference on Energy & Environment (EE '14) was held in Geneva, Switzerland, December 29-31, 2014. The conference provided a platform to discuss renewable energy sources and technology, solar power, photovoltaic energy, fuel cells, hybrid systems and vehicles, alternative energy systems, environmental issues, power quality standards, climate change, renewable energy systems, wind energy and wind resources, 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

Plenary Lecture 1: Malaysia: A Review Study of Wind Speed & Wind Direction Azami Zaharim			
Leaf Development and Intactness of the Photosynthetic Electron Transport in Grassland Plants Exposed to an Extended Drought Period Regula M. Blösch, Olivier Riesen, Urs Feller	13		
Measurement and Assess of Gradient to Evaluate the Effect on Real Driving Behaviour <i>Livia Della Ragione, Giovanni Meccariello</i>	21		
Reduction of Fuel Consumption and Pollutants Emissions in a Steam Boiler Using Cerium Nitrate Additive Aurel Gaba, Diana Enescu, Otilia Nedelcu, Corneliu Ioan Salisteanu	27		
Manufacturing and Assembly Processes of High Speed Axial Flux Permanent Magnet Rotor Prototype Tareq El-Hasan	38		
An Innovative Solar-Thermal Device to Support Demand-Side Management of the Energy Supply Chain Stavros T. Ponis, Nikolaos-Kyriakos Arapkoules, Panagiotis Papadiamantis	46		
Assessment of Runoff and Soil Loss in the Hindu Kush-Himalayan Region Sadia Iqbal, Nikos Mastorakis	51		
Distance Laboratory to Explore Electrical Drive <i>Zoja Raud, Valery Vodovozov</i>	58		
Efficiency Assessment through Thermal Studies of Various Envelope Solutions Suitable for Energy Efficient Buildings Lorena Cardos, Valeriu Stoian, Sorin-Codrut Florut, Daniel Dan	64		
Assessment of Soil Erosion the Hindu Kush-Himalayan Region Sadia Iqbal, Nikos Mastorakis	71		
Power Production Uncertainty Using Common-cause Failure Method <i>R. Meziane, M. Amara, H. Amar, S. Boufala</i>	76		
Process Study of Biogas Produced from Cow Dung and Water Hyacinth in a Single Phase Digester Reactor A. S. Hassan, J. D. Udonne, A. S. Afolabi	83		
Assessment of Runoff in the Himalayan Region Sadia Iqbal, Nikos Mastorakis	87		
Emissions of Diesel Engine Using Exhaust Gas Recirculation by Molecular Diffusion Adel A. Abdel-Rahman, Mohamed N. Saeed, Amr F. Sharafeldin	91		

Load Forecasting of G.B. Pant University of Agriculture & Technology, Pantnagar Using Artificial Neural Network Vikram Veer Singh, Ajay Srivastava	99
Characterization of Process Parameters of Adhesive Glue Produced from Leguminous Seeds O. O. Sadare, T. O. Okelana, A. S. Afolabi	105
An Education on Ecology Rabia Köse Doğan	111
Techno-Economic Analysis of Renewable Power System for a Remote Mosque in Libya Alshrif Mustafa, M. A. Alghoul, M. N. Mohammed, Kh. Abulqasem, Kh. Glaisa, Nowshad Amin, K. Sopian	
Authors Index	126

Plenary Lecture 1

Malaysia: A Review Study of Wind Speed & Wind Direction



Professor Azami Zaharim Head for Renewable Energy Resources and Social Impact Research Group Solar Energy Research Institute (SERI) Universiti Kebangsaan Malaysia MALAYSIA E-mail: azami.zaharim@gmail.com

Abstract: The existing renewable energy sources such as solar, wind and biomass should be explored and fully utilized at the heart of sustainable development. Wind is the one of the most common sources that being studied with it wind speed as the preferences parameter. The aim of this study is to review on wind speed and wind direction studies in Malaysia. The revision was included previous methodology, data, analysis and finding. The results found that the best distribution that representing wind speed regime in Malaysia is Weibull. Moreover several areas are spotted as promising wind energy generator. As summary, this study could increases awareness on importance of wind as a substance to non-renewable energy sources. More studies need to be done in the future with broader coverage and details analysis.

Brief Biography of the Speaker: Azami Zaharim worked first 13 years as a lecturer in the Universiti Teknologi MARA (University of MARA Technology - UiTM) before joining the Universiti Kebangsaan Malaysia (National University of Malaysia - UKM) in the year 2003. He obtained his BSc(Statistics and Computing) with Honours from North London University, UK in 1988 and PhD (Statistics) in 1996 from University of Newcastle Upon Tyne, UK. He specialize in statistics, public opinion, engineering education and renewable energy resources. Currently, he is Professor in Solar Energy Research Institute, a center of excellence for the research and development in solar energy technology. He has been involved in the field of solar energy such as solar radiation and wind modeling. He is currently a head of Renewable Energy Resources and Social Impact Research Group under the Solar Energy Research Institute (SERI). He also has done many researches in Mathematics and Statistics field, especially on outlier detection. He has published over 200 research papers in journals and conferences, conducted more than 15 public opinion consultancies and delivered more than 5 keynotes/invited speeches at national and international meetings.

Abdel-Rahman, A. A.	91	Meccariello, G.	21
Abulqasem, K.	117	Meziane, R.	76
Afolabi, A. S.	83, 105	Mohammed, M. N.	117
Alghoul, M. A.	117	Mustafa, A.	117
Amar, H.	76	Nedelcu, O.	27
Amara, M.	76	Okelana, T. O.	105
Amin, N.	117	Papadiamantis, P.	46
Arapkoules, NK.	46	Ponis, S. T.	46
Blösch, R. M.	13	Ragione, L. D.	21
Boufala, S.	76	Raud, Z.	58
Cardos, L.	64	Riesen, O.	13
Dan, D.	64	Sadare, O. O.	105
Doğan, R. K.	111	Saeed, M. N.	91
El-Hasan, T.	38	Salisteanu, C. I.	27
Enescu, D.	27	Sharafeldin, A. F.	91
Feller, U.	13	Singh, V. V.	99
Florut, SC.	64	Sopian, K.	117
Gaba, A.	27	Srivastava, A.	99
Glaisa, K.	117	Stoian, V.	64
Hassan, A. S.	83	Udonne, J. D.	83
lqbal, S.	51, 71, 87	Vodovozov, V.	58
Mastorakis, N.	51, 71, 87		

Authors Index