INTERNATIONAL JOURNAL OF ENERGY AND ENVIRONMENT

Official Journal of the International Energy and Environment Foundation

ISSN 2076-2895 (Print) ISSN 2076-2909 (Online)

Volume 4, Issue 4, 2013

© 2013 International Energy and Environment Foundation. All rights reserved

Aims and Scope

The International Journal of Energy and Environment (IJEE) is the official journal of the International Energy and Environment Foundation providing an international forum for the fields of Energy and Environment. The journal aims to provide the most complete and reliable source of information on current developments in the field. The emphasis will be on publishing quality articles rapidly and making them freely available to researchers worldwide. The journal has a distinguished editorial board with extensive academic qualifications, ensuring that the journal will maintain high academic standards and has a broad international coverage. There are no page charges and all articles are indexed by the major indexing media therefore providing the maximum exposure to the articles. The scope of the journal includes the following:

Energy

- Fuel cells.
- Hydrogen energy.
- Solar energy conversion and photovoltaics.
- Wind energy.
- Hydro energy.
- Micro- and nano-energy systems and technologies.
- Biofuels and alternatives.
- Hybrid / integrated energy systems.
- Energy conversion, conservation and management.
- Energy efficient buildings.
- Energy storage.
- Energy and sustainable development.
- Advanced visualization techniques, virtual environments and prototyping.

Environment

- Energy and environmental impact.
- Assessment of risks from water, soil and air pollution; effective and viable remedies.
- Evaluation and management of environmental risk and safety.
- Environment and sustainable development.
- Environmental education and training.
- Analysis of contaminants.
- Contaminant source characterization, transport and deposition.
- Multi-media sampling / monitoring (air, soil, water, sediment).
- Ouality assurance / control.
- Legislative issues and guidelines.
- Remediation.
- Climate change.

A note to authors

Submission of articles

Articles submitted to the Review should be original contributions and should not be under consideration for any other publication at the same time. The submitting author is responsible for obtaining agreement of all co-authors as well as any sponsors' required consent before submitting a paper. Responsibility for the content of a paper lays on the Authors and not on the Editors or the Publisher.

Formatting instructions can be found on author guidelines and must be strictly followed or else your paper will not be published. The paper template represents the basic guidelines and desired layout final manuscript of International Journal of Energy and Environment (IJEE). It's compulsory to use the template for the preparation of your paper. Full instructions can be found on the journal homepage (http://www.IJEE.IEEFoundation.org).

Your Submitted Article

- Your article will be peer-reviewed and published very fast.
- Your biography will appear at the end of your article.
- Your article will be published free of charge. Free use of colour where this enhances the article.
- Your article can be read by potentially millions of readers, which is incomparable to publishing
 in a traditional subscription journal. All interested readers can read, download, and/or print your
 article at no cost!
- Your article will obtain more citations.
- Moreover, all articles are indexed by the major indexing media therefore providing the maximum exposure to the articles.

INTERNATIONAL JOURNAL OF

ENERGY AND ENVIRONMENT

Official Journal of the International Energy & Environment Foundation

Journal homepage: www.IJEE. IEEFoundation.org



Editor-in-Chief

Maher A.R. Sadiq Al-Baghdadi

President of the International Energy and Environment Foundation (IEEF), Al-Najaf, P.O.Box. 39, Iraq.

Associate Editor

Hashim R. Abdol Hamid

Vice President of the International Energy and Environment Foundation (IEEF), Al-Najaf, P.O.Box. 39, Iraq.

Editorial Advisory Board

Tarek Abdel-Salam

Center of Sustainable Energy, Department of Engineering, East Carolina University, 207 Slay Bldg., Greenville, NC 27858-4353, USA.

Amitava Bandyopadhyay

Department of Chemical Engineering, University of Calcutta, 92, A.P.C.Road, Kolkata 700 009, India.

Angelo Basile

Institute on Membrane Technology of the Italian National Research Council, ITM-CNR, c/o University of Calabria, via P. Bucci, cubo 17/C, 87030 Rende (CS), Italy.

Wojciech Budzianowski

Wrocław University of Technology, ul. Wybrzeze Wyspianskiego 27, 50-370 Wrocław, Poland.

Eloy Velasco Gomez

ETS Ingenieros Industriales, Universidad de Valladolid, Paseo del Cauce, no 59, 47011 Valladolid, Spain.

Arunachala Nadar Kannan

Department of Engineering Technology, TECH 156, Arizona State University, 7001 E Williams Field Rd, Mesa, AZ 85212, U.S.A.

T. Lu

School of Mechanical and Electrical Engineering, Beisanhuan East Road, Chaoyang District, Beijing 100029, P.R.China.

A. Mani

Refrigeration and Air-conditioning Laboratory, Department of Mechanical Engineering, Indian Institute of Technology Madras, Chennai 36, Pincode 600 036, India.

Meng Ni

Department of Building and Real Estate, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong.

S-J Park

Department of Chemistry, Inha University, 253 Yonghyun-dong, Nam-gu 402-751, Korea (south).

Andreas Poullikkas

Electricity Authority of Cyprus, 1399 Nicosia, Cyprus.

Md. Mujibur Rahman

Department of Mechanical Engineering, College of Engineering, Universiti Tenaga Nasional, Km 7, Jalan Kajang-Puchong, 43009 Kajang, Selangor, Malaysia.

Julien Ramousse

Polytech'Savoie, Université de Savoie, Campus scientifique, Savoie Technolac, 73376 Le Bourget, du Lac, CEDEX, France.

Teemu Rasanen

Research Group of Environmental Informatics, Department of Environmental Sciences, University of Kuopio, FI-70211 Kuopio, Finland.

Marc A. Rosen

University of Ontario Institute of Technology, Faculty of Engineering and Applied Science, 2000 Simcoe Street North, Oshawa, Ontario, L1H 7K4, Canada.

David Michael Rowe

Cardiff School of Engineering, Queen's Buildings, Newport Road Cardiff CF24 1XF, U.K.

Hisham M. Sabir

Kingston University, Faculty of Engineering, Friars Avenue, London SW15 3DW, U.K.

Suresh Babu Sadineni

Center for Energy Research, Department of Mechanical Engineering, Howard R. Hughes College of Engineering, University of Nevada, Las Vegas (UNLV) 89154-4027, U.S.A.

Bidyut Baran Saha

Department of Mechanical Engineering, National University of Singapore, 9 Engineering Drive 1, 117576, Singapore.

Vicente Salas

Department of Electronic Technology, Universidad Carlos III de Madrid, Avda. de la Universidad, 30, 28911 Leganes, Madrid, Spain.

Amin U. Sarkar

School of Business, Alabama A&M University, Normal (Huntsville), AL 35762, U.S.A.

Moinuddin Sarker

Natural State Research, Inc., 37 Brown House Road (Second Floor), Stamford, CT-06902, USA.

Joop Schoonman

Department DelftChemTech: Materials for Energy Conversion and Storage, Delft University of Technology, Julianalaan 136, 2628 BL Delft, The Netherlands.

Tomonobu Senjyu

University of the Ryukyus, Faculty of Engineering, 1 Senbaru Nishihara-cho Nakagami Okinawa 903-0213, Japan.

Jose Ramon Serrano

Universidad Politécnica de Valencia, CMT-Motores Térmicos, Camino de Vera s/n, 46022 Valencia, Spain.

Haroun A.K. Shahad

Department of Mechanical engineering, University of Babylon, Babylon, Iraq.

Rajnish N. Sharma

Department of Mechanical Engineering, University of Auckland, Private Bag 92019, Auckland 1142, New Zealand.

S.A. Sherif

HVAC Laboratory, Department of Mechanical and Aerospace Engineering, University of Florida, 232 MAE Bldg. B, Gainesville, Florida 32611-6300, U.S.A.

Shailendra Kumar Shukla

Department of Mechanical Engineering, Institute of Technology, B.H.U., Varanasi-221005, India.

Rayan Slim

Center for Energy and Processes, Ecole des Mines de Paris, 104 Bobillot Street, 75013 Paris, France.

Laizhou Song

Department of Environmental and Chemical Engineering, Yanshan University, Qinhuangdao City, Hebei Province, P.R.China.

Adnan Sozen

Department of Mechanical Education, Gazi University, Technical Education Faculty 06500 Teknikokullar, Ankara Turkey.

Roland Span

Lehrstuhl für Thermodynamik, Ruhr-University Bochum, D-44780 Bochum, Germany.

Anurag K. Srivastava

Electrical and Computer Engineering, Mississippi State University, 216 Simrall Hall, Hardy Road, Mississippi State, MS 39762, U.S.A.

Rosetta Steeneveldt

Research Centre Trondheim, StatoilHydro, Arkitekt Ebbells vei 10, N 7005 Trondheim, Norway.

Athina Stegou-Sagia

School of Mechanical Engineering, Department of Thermal Engineering, National Technical University of Athens, 9 Iroon Polytechniou Str. Zografou 157 80, Athens, Greece.

Peter Stigson

School of Sustainable Development of Society and Technology, M?lardalen University, 721 23 V?ster?s, Sweden.

Anna Stoppato

Department of Mechanical Engineering, University of Padova, via Venezia, 1-35131 Padova, Italy.

Michael Stoukides

Department of Chemical Engineering, Aristotle University of Thessaloniki, Thessaloniki 54124, Greece.

Jian-Feng Sun

College of Food Science and Technology, Agricultural University of Hebei, Baoding City, Hebei Province, 071000 P.R.China.

Stanislaw Szwaja

Department of Engineering Mechanics, Michigan Technological University, 1400 Townsend Drive, Houghton, MI, 49931, U.S.A.

David S-K. Ting

Mechanical, Automotive & Materials Engineering, University of Windsor, Windsor, Ontario, N9B 3P4, Canada.

G. N. Tiwari

Centre for Energy Studies, Indian Institute of Technology Delhi, Hauz Khas, New Delhi - 110 016, India.

Bor-Jang Tsai

Department of Mechanical Engineering, Chung Hua University, No. 707, Sec. 2, Wu Fu Rd., Hsinchu 300, Taiwan.

Athanasios Tsolakis

School of Mechanical Engineering, University of Birmingham, Edgbaston, Birmingham, B15 2TT, U.K.

Per Tunestal

Department of Energy Sciences, Lund University, SE-221 00 Lund, Sweden.

Aynur Ucar

Department of Mechanical Engineering, Firat University, Elazig, Turkey.

Despina Vamvuka

Department of Mineral Resources Engineering, Technical University of Crete, University Campus, Hania 73100, Crete, Greece.

Virendra Kumar Vijay

Centre for Rural Development and Technology, Indian Institute of Technology Delhi, Hauz Khas, New Delhi 110016, India.

Shengwei Wang

Department of Building Services Engineering, The Hong Kong Polytechnic University, Hong Kong.

Yi-Ming Wei

Center for Energy and Environmental Policy Research (CEEP), Beijing Institute of Technology, No.5 South Zhongguancun Street, Haidian District, Beijing 100081, P.R.China.

Gwomei Wu

Chang Gung University, 259 Wen Hua 1st Road, Kweisan, Taoyuan 333, Taiwan.

International	Journal o	of Energy	and Environmer	ot (HFF)	Volume 4	Issue 4	2013
micmanonai	Journal C	n Luciey	and Livitoinne	IL (IJLLI),	v Olullic +,	133uc +,	2013

Contents

Contents						
Numerical simulation of draft tube flow of a bulb turbine. Coelho J. G., Brasil Junior A. C. P.	539-548					
Optimization of power generation from shrouded wind turbines. Tudor Foote, Ramesh Agarwal	549-560					
Economics of wastewater treatment in GTL plant using spray technique. G.C. Enyi, G.G. Nasr, M. Burby	561-572					
Estimation of apparent soil resistivity for two-layer soil structure. M. Nassereddine, J. Rizk, M. Nagrial, A. Hellany	573-580					
Comparative evaluation of kinetic, equilibrium and semi-equilibrium models for biomass gasification. Buljit Buragohain, Sankar Chakma, Peeush Kumar, Pinakeswar Mahanta, Vijayanand S. Moholkar	581-614					
Determination trends and abnormal seasonal wind speed in Iraq. Ahmed F. Hassoon	615-628					
New solar desalination system using humidification/ dehumidification process. Adel M. Abdel Dayem	629-640					
Estimation and diminution of CO_2 emissions by clean development mechanism option at power sector in Oman. Parmal Singh Solanki, Venkateswara Sarma Mallela, Chengke Zhou	641-652					
Biodegradation of hexavalent chromium (Cr^{+6}) in wastewater using Pseudomonas sp. and Bacillus sp. bacterial strains. Muhammad Qasim	653-662					
Modelling the drying kinetics of green peas in a solar dryer and under open sun. Sunil, Varun, Naveen Sharma	663-676					
Effect of dissolved organic matter derived from waste amendments on the mobility of inorganic arsenic (III) in the Egyptian alluvial soil. Mohamed Rashad, Faiz F. Assaad, Elsayed A. Shalaby	677-686					
Investigations on the performance of a double pass, hybrid - type (PV/T) solar air heater. M. Srinivas, S. Jayaraj	687-698					

A two-equation k-omega turbulence model simulation to narrow trench on flat

699-712

plate.

Antar M.M. Abdala, Qun Zheng, Fifi N.M. Elwekeel

An experimental investigation of exhaust emission from agricultural tractors.

713-720

Rashid Gholami, Hekmat Rabbani, Ali Nejat Lorestani, Payam Javadikia, Farzad Jaliliantabar

Announcements - IEEF Release

BOOK: CFD Applications in Energy and Environment Sectors: Volume 1.

Editors: Maher A.R. Sadiq Al-Baghdadi and Hashim R. Abdol Hamid (ISBN 13: 978-1-46623-065-1)

BOOK: Engineering Applications of Computational Fluid Dynamics: Volume 1.

Editor: Maher A.R. Sadiq Al-Baghdadi (ISBN 13: 978-1-46623-106-1)

BOOK: CFD Modeling in Development of Renewable Energy Applications.

Editor: Maher A.R. Sadiq Al-Baghdadi (ISBN 13: 978-1-46623-131-3)

BOOK: Engineering Applications of Computational Fluid Dynamics: Volume 2.

Editor: Maher A.R. Sadiq Al-Baghdadi (ISBN 13: 978-1-47832-935-0)

BOOK: PEM Fuel Cells - Fundamentals, Modeling, and Applications.

Author: Maher A.R. Sadiq Al-Baghdadi (ISBN 13: 978-1-48197-823-1)