INTERNATIONAL JOURNAL OF ENERGY AND ENVIRONMENT

Official Journal of the International Energy and Environment Foundation

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

Volume 1, Issue 5, 2010

© 2010 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 web site (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.

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).

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.

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.

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.

Anke Weidlich

SAP Research, SAP AG, Vincenz-PrieBnitz-Str. 1, D-76139 Karlsruhe, Germany.

International	Iournal	of Energy	and Environmen	+ (HFF)	Volume 1	Icena 5	2010
miemanonai	Journar	of Ellergy	and Environmen	t (IJEE).	. volullie 1.	issue J.	2010

Contents

Contents						
Implications of building energy standard for sustainable energy efficient design in buildings. Joseph Iwaro, Abraham Mwasha	745-756					
Effect of periodic suction on three dimensional flow and heat transfer past a vertical porous plate embedded in a porous medium. S. S. Das, U. K. Tripathy	757-768					
Short term generation scheduling of cascaded hydro electric system using time varying acceleration coefficients PSO. Amita Mahor, Saroj Rangnekar	769-782					
An assessment of the availability of household biogas resources in rural China. Yu Chen, Gaihe Yang, Sandra Sweeney, Yongzhong Feng, Aidi Huod	783-792					
Electronics waste management: Indian practices and guidelines. Amitava Bandyopadhyay	793-804					
Ghana's biofuels policy: challenges and the way forward. Edward Antwi, Edem Cudjoe Bensah, David Ato Quansah, Richard Arthur, Julius Ahiekpor	805-814					
Experimental investigation of exergy destruction in a 8-kW power plant. M. Ghazikhani, M. Ahmadzadehtalatapeh	815-822					
Physicochemical properties of polluted water of river Ganga at Varanasi. Singh Namrata	823-832					
Correlations for the estimation of monthly mean hourly diffuse solar radiation: a time dependent approach. A. K. Katiyar, Akhilesh Kumar, C. K. Pandey, V. K. Katiyar, S. H. Abdi	833-840					
Implementation of a DSP-based hybrid sensor for switched reluctance motor converter. Whei-Min Lin, Chih-Ming Hong, Huang -Chen Chien	841-860					
Efficiency and exhaust gas analysis of variable compression ratio spark ignition engine fuelled with alternative fuels. N. Seshaiah	861-870					
Value-based operational strategy at the planning of CHP-based micro-grid. A. K. Basu, S. Chowdhury, S.P. Chowdhury	871-882					

design requirement.

Stochastic finite-time control for uncertain jump system with energy-storing electrical circuit simulation. Shuping He, Fei Liu	883-896
Performance estimation of artificially roughened solar air heater duct provided with continuous ribs. Mridul Sharma, Varun	897-910
Production of charcoal from woods and bamboo in a small natural draft carbonizer. Nakorn Tippayawong, Nakarin Saengow, Ekarin Chaiya, Narawut Srisang	911-918
Relationships among the physical properties of biodiesel and engine fuel system	919-926

G.Lakshmi Narayana Rao, A.S. Ramadhas, N. Nallusamy, P.Sakthivel