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).
- Quality 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Formatting instructions can be found on author guidelines and must be strictly followed or else your paper will not be published.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. Abdul 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
Wroclaw University of Technology, ul. Wybrzeze Wyspianskiego 27, 50-370 Wroclaw, 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).

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

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

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.
Contents

Water and energy sustainable management in irrigation systems network.  
Kaloyan N. Kenov, Helena M. Ramos  
833-860

Optimization of post combustion carbon capture process-solvent selection.  
Udara S. P. R. Arachchige, Muhammad Mohsin, Morten C. Melaaen  
861-870

Polystyrene (PS) waste plastic conversion into aviation /kerosene category of fuel by using fractional column distillation process.  
Moinuddin Sarker, Mohammad Mamunor Rashid, Muhammad Sadikur Rahman, Mohammed Molla  
871-880

Performance evaluation of roughened solar air heater having M-shaped as roughness geometry on the absorber plate.  
Manish Kumar Chauhan, Varun, Sachin Chaudhary  
881-894

Performance analysis of wind turbine systems under different parameters effect.  
Salih Mohammed Salih, Mohammed Qasim Taha, Mohammed K. Alawsaj  
895-904

Economic viability of a residential building integrated photovoltaic generator in South Africa.  
Sosten Ziuku, Edson L. Meyer  
905-914

An experimental investigation of performance and exhaust emission of a diesel engine fuelled with Jatropha biodiesel and its blends.  
Nitin Shrivastava, S.N. Varma, Mukesh Pandey  
915-926

Optimal placement of horizontal - and vertical - axis wind turbines in a wind farm for maximum power generation using a genetic algorithm.  
Xiaomin Chen, Ramesh Agarwal  
927-938

Performance evaluation of a diesel engine fueled with methyl ester of pongamia oil.  
A. Haiter Lenin, K. Thyagarajan  
939-948

Comparative study on sulphur reduction from heavy petroleum - Solvent extraction and microwave irradiation approach.  
Abdullahi Dyadya Mohammed, Abubakar Garba Isah, Musa Umaru, Shehu Ahmed, Yababa Nma Abdullahi  
949-960

Application of ANN technique for rainfall forecasting over Iraq.  
Bashair Abdul Rahman Mohammed  
961-966
Heat transfer and friction factor characteristics of rectangular channel solar air heater duct having protrusions as roughness element.

Maneesh Kaushal, Varun

The latest continuous monitoring instrumentation for ground-gas monitoring and risk prediction.

A. N. Nwachukwu, A. W. Diya

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

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

NEW BOOK: CFD Modeling in Development of Renewable Energy Applications.

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