

ISSN: 1949-243X Volume 10, Number 5, May 2018



Energy and Power Engineering



ISSN: 1949-243X



www.scirp.org/journal/epe

Journal Editorial Board

ISSN: 1949-243X (Print) ISSN: 1947-3818 (Online)

<http://www.scirp.org/journal/epe>

Editor-in-Chief

Dr. Fermin Mallor

Public University of Navarre, Spain

Associate Editor-in-Chief

Prof. Giulio Lorenzini

University of Parma, Italy

Editorial Advisory Board

Prof. Ching-Chuen Chan

The University of Hong Kong, China

Prof. Ryuichi Yokoyama

Tokyo Metropolitan University, Japan

Prof. Xiaoxin Zhou

Chinese Society of Electrical Engineering, China

Editorial Board

Dr. Kerim Allakhverdiev

National Aviation Academy of Azerbaijan, Azerbaijan

Dr. Fabio Bisegna

Sapienza University of Rome, Italy

Dr. Jesús M. Blanco

University of the Basque Country, Spain

Prof. Ho Chang

National Taipei University of Technology, Chinese Taipei

Prof. Jiangping Chen

Shanghai Jiao Tong University, China

Prof. Young Nam Chun

Chosun University, South Korea

Prof. Guoliang Ding

Shanghai Jiao Tong University, China

Prof. Zhen Fang

Chinese Academy of Sciences, China

Dr. Herbert H. C. Iu

The University of Western Australia, Australia

Dr. Jianhui Hu

Shanghai Jiao Tong University, China

Prof. V. V. Karthikeyan

Karpagam College of Engineering, India

Dr. Mirosław Kwiatkowski

AGH University of Science and Technology, Poland

Prof. Ruomei Li

Chinese Society of Electrical Engineering (CSEE), China

Prof. Zhengqi Li

Harbin Institute of Technology, China

Dr. Lin Ma

University of Leeds, UK

Prof. Adnan Midilli

Recep Tayyip Erdogan University, Turkey

Dr. Jingchun Min

Tsinghua University, China

Dr. Meng Ni

The Hong Kong Polytechnic University, China

Prof. Ping-Feng Pai

National Chi Nan University, Chinese Taipei

Prof. Pucheng Pei

Tsinghua University, China

Prof. Marc A. Rosen

University of Ontario Institute of Technology, Canada

Dr. Federico Scarpa

University of Genoa, Italy

Dr. Pierluigi Siano

University of Salerno, Italy

Dr. Siu-Chung Wong

The Hong Kong Polytechnic University, China

Prof. Changhui Ye

Chinese Academy of Sciences, China

Prof. Bo Yu

China University of Petroleum, China

Table of Contents

Volume 10 Number 5

May 2018

Effect of Temperature on the Capacitance of a Silicon Solar Cell in Static Regime

G. Sahin.....187

Optimisation of Hybrid Energy System Production Parameters for Electricity Power Generation in Nigeria

C. O. Anyaeche, T. Akappo, A. O. Adeodu.....198

Estimation of Direct Solar Radiation of Chad

M. H. Babikir, D. Njomo, M. Y. Khayal, H. D. Temene, D. T. Joel.....212

Economics of Pooling Small Local Electricity Prosumers—Prosumer vs Business as Usual Approach

P. Kästel, B. Gilroy-Scott.....226

Energy and Power Engineering (EPE)

Journal Information

SUBSCRIPTIONS

The *Energy and Power Engineering* (Online at Scientific Research Publishing, www.SciRP.org) is published monthly by Scientific Research Publishing, Inc., USA.

Subscription rates:

Print: \$89 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: sub@scirp.org

SERVICES

Advertisements

Advertisement Sales Department, E-mail: service@scirp.org

Reprints (minimum quantity 100 copies)

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA.

E-mail: sub@scirp.org

COPYRIGHT

Copyright and reuse rights for the front matter of the journal:

Copyright © 2018 by Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY).

<http://creativecommons.org/licenses/by/4.0/>

Copyright for individual papers of the journal:

Copyright © 2018 by author(s) and Scientific Research Publishing Inc.

Reuse rights for individual papers:

Note: At SCIRP authors can choose between CC BY and CC BY-NC. Please consult each paper for its reuse rights.

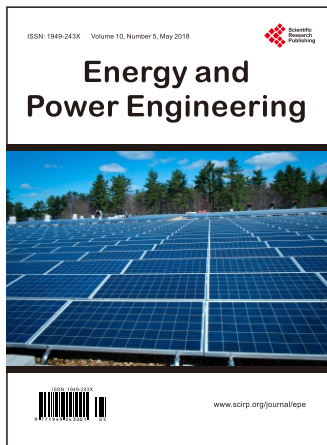
Disclaimer of liability

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

PRODUCTION INFORMATION

For manuscripts that have been accepted for publication, please contact:

E-mail: epe@scirp.org



Energy and Power Engineering

ISSN 1949-243X (Print) ISSN 1947-3818 (Online)

<http://www.scirp.org/journal/epe>

Energy and Power Engineering (EPE), a monthly journal, publishes research and review articles in all important aspects of electric power engineering and other professionals involved in the electric power industry. Both experimental and theoretical papers are acceptable provided they report important findings, novel insights, or useful techniques in these areas.

Editor-in-Chief

Dr. Fermin Mallor

Public University of Navarre, Spain

Associate Editor-in-Chief

Prof. Giulio Lorenzini

University of Parma, Italy

Editorial Advisory Board

Prof. Ching-Chuen Chan

The University of Hong Kong, China

Prof. Ryuichi Yokoyama

Tokyo Metropolitan University, Japan

Prof. Xiaoxin Zhou

Chinese Society of Electrical Engineering, China

Subject Coverage

EPE aims to strengthen relations between the energy sector, research laboratories, and universities. Additionally, accepted ones will immediately appear online followed by printed in hard copy. The topics to be covered by Energy and Power Engineering include, but are not limited to:

- ◆ Analysis of Hybrid Generation Systems
- ◆ Artificial Intelligence in Complex Power and Energy Systems
- ◆ Bio-Energy
- ◆ Building Energy Use and Energy Conservation
- ◆ CO₂ and Emission Issues
- ◆ CO₂ Capture and Storage
- ◆ Conventional Energy Power Generation
- ◆ Design and Dimensioning of Power Systems
- ◆ Distributed Generation
- ◆ Energy and Exergy Analyses
- ◆ Energy Policies and Strategies
- ◆ Energy Resources
- ◆ Energy Resources Assessment
- ◆ Energy Storage
- ◆ Energy Sustainability
- ◆ Gasification Processes and Technologies
- ◆ Heat Exchanger
- ◆ Hydrogen Energy and Fuel Cells
- ◆ Impact of Climate Changes on Energy Systems
- ◆ Integrating Renewable Energy to the Power Grid
- ◆ International Experiences with Energy Infrastructures
- ◆ Investment Planning for Energy Infrastructures
- ◆ Organic and Inorganic Photovoltaics
- ◆ Petroleum Engineering
- ◆ Planning and Operations of Power Systems
- ◆ Power Demand Forecasting and Management, Power Market
- ◆ Power Electronic Engineering
- ◆ Power Forecasting from Wind, Solar and Other Renewal Sources of Energy
- ◆ Power System Protection
- ◆ Power Transmission and Distribution
- ◆ Reliability Evaluation and Risk Analysis of Power Systems
- ◆ Renewable Energy Power Generation
- ◆ Smart Grid
- ◆ Socio-Economic and Power System Management
- ◆ Solar Energy Engineering
- ◆ Transmission and Capacity Planning
- ◆ Waste Energy Management
- ◆ Wind Energy Engineering

We are also interested in short papers (letters) that clearly address a specific problem, and short survey or position papers that sketch the results or problems on a specific topic. Authors of selected short papers would be invited to write a regular paper on the same topic for future issues of the EPE.

Notes for Intending Authors

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. Paper submission will be handled electronically through the website. All papers are refereed through a peer review process. For more details about the submissions, please access the website.

Website and E-Mail

<http://www.scirp.org/journal/epe>

Email: epe@scirp.org

What is SCIRP?

Scientific Research Publishing (SCIRP) is one of the largest Open Access journal publishers. It is currently publishing more than 200 open access, online, peer-reviewed journals covering a wide range of academic disciplines. SCIRP serves the worldwide academic communities and contributes to the progress and application of science with its publication.

What is Open Access?

All original research papers published by SCIRP are made freely and permanently accessible online immediately upon publication. To be able to provide open access journals, SCIRP defrays operation costs from authors and subscription charges only for its printed version. Open access publishing allows an immediate, worldwide, barrier-free, open access to the full text of research papers, which is in the best interests of the scientific community.

- High visibility for maximum global exposure with open access publishing model
- Rigorous peer review of research papers
- Prompt faster publication with less cost
- Guaranteed targeted, multidisciplinary audience



Website: <http://www.scirp.org>

Subscription: sub@scirp.org

Advertisement: service@scirp.org