
Introduction

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Biographical notes: R. Praveen Kumar is a postgraduate in Industrial-Biotechnology and undergraduate in Chemical-Engineering. His research area includes synthesis of value-added products and renewable energy from biomass and municipal-waste, purification-extraction of phytochemical compounds. He has published 37 papers, co-authored two books and a book chapter, and he has done provisional registration for two Indian patents. He was the chair for 1st and 2nd International Conference on Bioenergy, Environment and Sustainable Technologies (BEST2013-BEST2015) and organised various symposiums and conferences. He is a life-member in various professional societies includes BRSI, IICHE, IFIBiop, BigFin, ISTE, EWBIndia. Currently, he is serving as management council member in BRSI.

1 Introduction

Increased concerns over depleting energy resources and its implacable effect on environment are a big threat to human. Several efforts were taken by researchers to overcome this issue which can be a saviour for the future generations. Even though efforts were made, they should be communicated to the co-researchers for knowledge upgradation. In this line Department of Biotechnology of Arunai Engineering College, Tiruvannamalai, Tamilnadu, India has organised a four day conference '2nd International Conference on Bioenergy, Environment and Sustainable Technologies (BEST2013)' during 28–31 January 2015. Several papers were presented orally in the theme of this conference, among which best papers were offered a chance to published in the special issue of *International Journal of Energy Technology and Policy* in the theme 'Advances in renewable energy research'. Totally, 19 papers were finalised after peer review, the special issue is divided into two parts. Part 1 contains nine research papers and part 2 contains ten research papers.

2 A brief introduction to part 1

The first paper discusses about the important challenge faced by solar photovoltaic system, the optimum area utilisation for maximum power output. Sreenath et al. studied this using IV and PV characteristic performance.

In the second paper, Mal et al. studied about the design and performance evaluation of thermoelectric generator stove and compared it with the traditional, natural and forced draft stoves.

After that, Ganesh and Srinivas performed exergy analysis of energy efficient power generation system and concluded to reduce the exergetic losses in the HRVG and turbine as to get more exergetic efficiency.

In the next paper, Hassan et al. done the investigation of energy efficient building for passive heating/cooling. Their result shows that conventional brick wall is more thermally resistant while comparing hollow brick wall for a place like Dindigul in Tamil Nadu.

Priyadharsini et al. studied the performance analysis of photovoltaic based SL-quasi Z source inverter. Their results show that the system allows simultaneously supply of a constant DC load and the charge or the discharge of the storage during the PV power production.

In the next paper, Ravichandran et al. presented a wind – solar hybrid system using solid state transformer (SST) for reactive power compensation to achieve power quality. Their result clearly shows that the proposed scheme effectively suppresses the Voltage fluctuations and reactive power compensation.

Subsequently, Balamurugan and Natarajan done the assessment of multilevel inverter using embedded and digital controller for various loads. The performance of symmetrical cascaded seven level inverter with R, RL load and Induction motor by using non-pulse width modulation technique has been analysed by using MATLAB/Simulink.

In the next paper, Cherian et al. investigated the possibilities of producing cellulase using agro waste which is a renewable source of bioenergy, which can be used in the production of bioethanol.

The last paper of this issue by Kashyap Kumar Dubey et al. is about optimisation of process parameters for enhanced biobutanol production from *Sargassum wightii* hydrolysate. The authors demonstrated the feasibility of biobutanol production by fermentation of algal carbohydrates.