

The logo for the journal 'Jestr' is written in a stylized, blue, cursive font. It is positioned on the left side of the page, partially overlapping a decorative yellow and white graphic element that resembles a leaf or a stylized 'J'.

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Special Issue on Renewable Energy Systems



Preface

The Renewable Energy Systems, (RES), represented by solar thermal engineering innovations or by solar power units and the related technologies; represented, also, by the wind energy and biomass technologies, either independent or intelligently associated with the above sources, in hybrid or cogeneration designs, have attracted the attention and the interest of the authorities worldwide.

In addition, new technologies are introduced into the contemporary domain of R.E.S. like the nanotechnologies. Similarly, the impact to the environment sustainability, the energy management and savings based on the Rational Uses of Energy and the efficiency increase in any process and production line, are incorporated in the energy sources and their management.

All these, make up the concept of the rationalization of the energy systems and sources towards sustainability.

The innovation week on R.E.S. held in July 1–12, 2012, in the Technological Educational Institute of Patras, sponsored by the E.S.F., under the framework of the Operational Programme on Education and Lifelong Learning, has triggered a competition of high level R.T.D. projects.

Reports and analysis of experimental projects, innovative designs and constructions, followed by theoretical analysis, produced 13 research papers of high quality according to the reviewers and the international expert committee.

This volume includes important scientific papers with reference to the state of the art on PV cell technology, production, performance and materials, like the one by V. Benda “State of Art and Future trends in Photovoltaic Cells and Modules“ the one by E. Stathatos on “Dye sensitized solar cells: A new prospective to the solar to electrical energy conversion. Issues to be solved for efficient energy harvesting” the one by Ch. Girginov, which argues on “Silver doped TiO₂ photocatalyst for methyl orange degradation”, the one by E. Kaplani “Degradation effects in sc-Si PV modules subjected to natural and induced ageing after several years of field operation”, which analyses agents and factors which have impact to PV ageing and performance degradation and the paper on “PV- wind sizing algorithms” by F. Hocaoglou, dealing with hybrid sizing simulation algorithms.

Three more papers included in this part of the Volume and linked to PV systems technology are the one by S. Cinar and E. Akarслан on “On the design of an intelligent battery charge controller for PV panels, the one by D. Cotfas and P. Cotfas on the design and performance of a wireless albedometer, which has advantages over the conventional albedometers and finally this part of the volume finishes with the paper on “Improvements on Photovoltaic Cells Test Bench System” by P. Borza et al.

The second part of this volume hosts papers on Wind technology, Biomass associated to innovative hybrid systems, solar thermal engineering and environmental sustainability, like the paper by P. Kadar on “Comparative Performance Analysis of Small Scale Wind Turbines” drawn from the experience in Hungary, the paper by Sp. Alexopoulos on “Biogas systems: Basics, biogas multifunction, principle of fermentation and hybrid application with a solar tower for the treatment of waste animal manure, followed by a paper with principal author E. Kaplani and S. Kaplanis on “an effective simulation model to predict and optimize the performance of single and double glaze

flat-plate solar collector designs”, where a full description of a simulation model is presented with comparison of results from other researchers.

In this second part of the volume there are two more interesting papers, the one by M. Dassisti on “Sustainable Manufacturing as a Game: A proposal of framework” which provides a deep comparative analysis towards environmental sustainability and finally the paper by S. Cinar “On the investigation of the energy efficiency using PID and fuzzy logic controllers in a marble machine ” which analyses the energy consumption and savings in marble cutting machines using innovative control systems.

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