



July 1 - 11, 2012

Patras, Greece

***The T.E.I. of Patras and its partner
Universities***

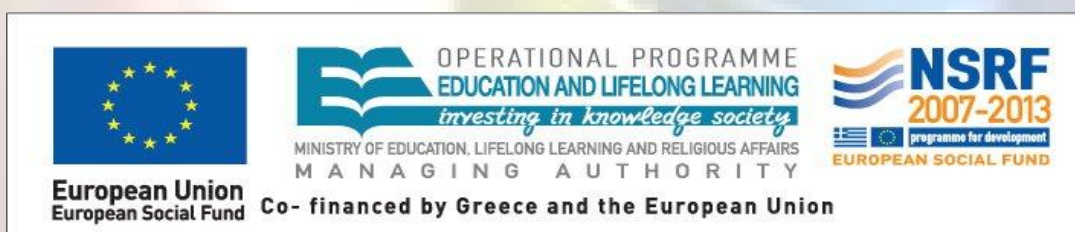
**Organize
an International Event:
The Innovation Week on R.E.S.**

**11 Days Intensive Learning
& Exhibition of Innovation**

on

***PV Systems Engineering
& the other Renewable Energy Systems
and the Entrepreneurship spirit***

***T.E.I. of Patras
Unit of Innovation & Entrepreneurship***



This project is implemented through the Operational Program "Education & Lifelong Learning" and is co-financed by the European Union (European Social Fund) and Greek national funds (National Strategic Reference Framework 2007-2013)

To be published by:

**JOURNAL OF
Engineering Science and
Technology Review**

Arrival Day: Sunday 1 July 2012, Arrival at Patras and Hotel registration

Monday 2 July, 2012

A bus will pick participants from the Hotel(s)

08:30 Registration

09:00 Opening Address

- The Innovation Week on R.E.S. and related events within a Summer School on PV Systems Engineering & the other Renewable Energy Systems

Session I : Fundamentals of Solar Radiation

09:30 An Overview of R.E.S. from a spectrum of innovations and intelligent applications

Prof. S. Kaplanis, Technological Institute of Patras, Greece

10:30 Solar Geometry and Solar Radiation aspects; Polar Charts

Prof. S. Kaplanis, Technological Institute of Patras, Greece

11:00 Break

11:30 Solar Radiation: Direct & Diffuse; Measurements, Determination of Solar Radiation on any Inclined Surface

Prof. S. Kaplanis, Technological Institute of Patras, Greece

-Discussion

Session II : Solar Thermal Engineering Applications

12:00 Solar Cooling & Air-conditioning

Prof. A. Argyriou, University of Patras, Greece

12:30 Bioclimatic Buildings; Principles; Design; Performance; Parameters; Gain: Case Study: Building rehabilitation; from a conventional to a zero-energy building

Prof. A. Argyriou, University of Patras, Greece

13:00 Lunch

14:00 Saving Energy in protected buildings

Dr. D. Roubien, Technological Institute of Patra, Greece

15:00 Discussion: Arrangements for the R.E.S. Exhibition &

-Personal study and preparation: RES Lab & Library

19:00 Dinner

Session III : Solar Technologies in the Domestic sector (I)

- 09:00 Domotics related to Energy and R.E.S. Management:
A Case Study how to innovate on the power consumption & management in buildings
Prof. P. Borza, Transilvania University in Brasov, Romania
- 09:45 Smart Grids and Virtual Power Plant
Dr. Mihai Sanduleac, ECRO Bucuresti, Romania
- 10:30 PV + Thermal Systems:
Case Studies on the integrated design & performance of PV panels
Prof. Y. Tripanagnostopoulos, University of Patras, Greece
- Discussion
- 11:00 Break
- 11:30 Hybrid R.E.S. Systems: Design, Performance
Prof. Y. Tripanagnostopoulos, University of Patras, Greece
- 12:15 Environmental Management & Sustainability: A new field related to RES
with an outline of Case Studies
Prof. M. Dassisti, Politecnico di Bari
- Discussion
- 13:00 Lunch

Session IV : Solar Technologies in the Domestic sector (II)

- 14:00 Experience from PV system performance including comparison of on roof and
facade systems:
Case Study on BIPV systems. A straight application which requires the attention
of authorities & professionals for a proper design
Prof. V. Benda, Technical University of Prague, Czech Republic
- 15:30 Discussion
- Assignment of project work to participants
 - Personal study & preparation in RES Lab & Library
- 19:00 Dinner

Session V : PV cell technology & Applications

09:00 PV cells: Physics of PV cells, fabrication; operation characteristics:
New technological developments in the PV cell technology. Need for improvement.
Prof. V. Benda, Technical University Prague, Czech Republic

09:45 Batteries, inverter and charger as parts of a stand – alone PV system
Prof. S. Kaplanis, Technological Institute of Patras, Greece

11:00 Break

11:30 Organic Semiconductor-based Plastic Solar Cells OPVs.
Prof. E. Stathatos, Technological Institute of Patras, Greece

-Discussion

13:00 Lunch

Session VI : Biomass Energy & Innovations

14:00 Biomass: Basics, Bio-conversion, crop and sewage treatment (Part I)
Dr. Sp. Alexopoulos, University of Applied Sciences, Aachen, Germany

14:30 Biomass: Basics, Bio-conversion, crop and sewage treatment (Part II):
Innovative & pilot projects on co-generators
Dr. Sp. Alexopoulos, University of Applied Sciences, Aachen, Germany

-Discussion

15:00 a. Student oral presentation on R.E.S. Innovation & Intelligent Application
b. Exhibition Room: Poster Presentation (Student Initiative)

16:00 Personal study & project preparation in the RES Lab & Library

19:00 Dinner

Thursday 5 July, 2012

Session VII : Advancements & new materials in the RES domain

- 09:00 Selected issues related to PV applications.
Prof. S. Kaplanis, Technological Institute of Patras, Greece
- 09:45 Stand – alone PV systems for outdoor living:
An application & practical experience from Bulgaria
Prof. M. Stoev, South – West University ‘Neophit Rilski’, Bulgaria
- 10:15 -Discussion
- 11:00 Break
- 11:30 High efficient Dye sensitized and Organic solar cells: A new perspective to the solar energy conversion.
A challenge for new market on PV cells
Prof. E. Stathatos, Technological Institute of Patras, Greece.

Session VIII : Simulation Techniques in Solar Thermal & PV Systems

- 13:00 Lunch
- 14:00 PV cell performance under high irradiation:
Study on innovative design towards high power delivery over a PV cell
Prof. S. Kaplanis, Technological Institute of Patras, Greece
Dr. E. Kaplani, Technological Institute of Patras, Greece
- 14:30 a. Discussions with PV market representatives: Entrepreneurship challenges & perspectives for development & employment
Dipl. Ing. P. Fragkos, MSc, Aleo Solar Hellas
b. Student oral presentations on R.E.S. Innovation & Intelligent Applications
c. Exhibition Room: Innovation Design & Products related to R.E.S. (Student Initiative)
- 19:00 Dinner

Session IX : Wind Energy & Applications

- 09:00 Solar Converters & Devices to Gain Thermal Energy and Power:
Case Studies which show the importance of new designs and applications
Prof. S. Kalogirou, Cyprus University of Technology, Cyprus
- 09:45 Renewable Energy Systems: A challenge to energy savings and clean environment: Applications
Prof. S. Kalogirou, Cyprus University of Technology, Cyprus
- 10:30 R.E.S. Technologies in Buildings, Agro-economy, Industry:
Case Studies with innovative designs to improve energy performance and savings
Prof. S. Kalogirou, Cyprus University of Technology, Cyprus
- Discussion on Wind Technologies as a major RES technology for Sustainability

Session X : Applications of RES technologies (PV & Bio-tech) to energy savings

- 11:00 Break
- 11:30 PV Sizing procedures; Simulation studies and L.C.A.:
Case Study to a cost-effective PV SA installation
Prof. S. Kaplanis, Technological Institute of Patras, Greece
- 12:15 Sizing of Hybrid (PV & Wind)
Prof. F. Hocaoglu, Afyon Kocatepe University, Turkey
- 13:00 Lunch
- 14:00 Energy consumptions of traditional office buildings;
Case Study on Energy Audits
Prof. P. Kadar, Ábuda University, Budapest, Hungary
- 14:30 Wind Technologies; Estimation of Wind- Potential; software; Wind Turbine Technologies
Prof. P. Kadar, Ábuda University, Budapest, Hungary
- 15:00 Parts of a Wind turbine; construction; design data;
Prof. P. Kadar, Ábuda University, Budapest, Hungary
- 15:30 -Discussion with experts from the PV technologies market:
Potentialities and Future markets
Mr. G. Koustas, Solar Cells Hellas Group
- Discussion on the application of new technologies to the Building sector
- Student oral presentation on R.E.S. Innovation & Intelligent Application
Exhibition Room: Innovation Design & Products related to R.E.S. (Student Initiative)
- 19:00 Dinner

Monday 9 July, 2012

Session XII- 1 : Application of PV & Solar Thermal & Biomass systems in the Domestic, Agricultural & Industrial sector

- 09:00 PV module performance at S.T.C. and field conditions
Dr. E. Kaplani, Technological Institute of Patras, Greece
- 09:30 Ageing effects in PV cells and modules
Dr. E. Kaplani Technological Institute of Patras, Greece
- 10:00 Integration of RES in AC Grid - Power Quality in Micro Grids:
Practical examples
Prof. R. Magureanu, University Politehnica, Bucharest, Romania
- Discussion
- 10:45 Break
- 11:00 PV Systems: Data collection and processing, quality and project management, ICT support
Prof. Martin Molhanec, Technical University of Prague, Czech Republic
- 12:00 Experimental demonstration on PV i-V curves
Dr. E. Kaplani, Technological Institute of Patras, Greece
- Discussion
- 13:00 Lunch

Session XII- 2 : Application of PV Solar Thermal systems

- 14:30 a. Student oral presentation on R.E.S. Innovation & Intelligent Application
b. Exhibition Room: R.E.S. Innovations & Intelligent Application
- 16:00 Personal study & preparation for project defense: RES Lab & Library
- 19:00 Dinner

Tuesday 10 July, 2012

Session XIII : Fuels & Environment

- 09:00 Alternative Fuels in the 21st century
Prof. Georgi Cholakov, University of Chemical Technology and Metallurgy Sofia, Bulgaria
- 09:45 Fossil Fuels in the 21st century
Prof. Georgi Cholakov, University of Chemical Technology and Metallurgy Sofia, Bulgaria
- 10:30 Sustainable Development. Integrated Renewable Energy Systems – Holistic Modelling & Control.
Prof. D. Cotfas, Transylvania University, Brasov, Romania
- Discussion
- 11:00 Break

Session XIV : Measurements of PV cell Performance

- 11:30 Measurements of Solar Radiation; Calibration of PV cells: An innovative competitive Design & construction
Prof. D. Cotfas, Transylvania University, Brasov, Romania
- Determining the Parameters of the Solar Cells
Prof. D. Cotfas, Transylvania University, Brasov, Romania
- Data acquisition and Noise in Solar Cells
Prof. D. Cotfas, Transylvania University, Brasov, Romania
- Discussion
- 13:00 Lunch

Session XV : Biomass & H₂ technology: Applications

- 14:00 a. Student oral presentation on R.E.S. Innovation & Intelligent Application: Project Defence
b. Exhibition Room: R.E.S. Innovations & Intelligent Application (Student Initiative)
- Discussion on Innovative Product Design: Requirements & Needs
- 19:00 Dinner

Wednesday 11 July, 2012

Session XVI : Fuel cell technology

- 09:00 Ceramic materials for SOFC: Current status.
Prof. Vl. Kozhukharov, University of Chemical Technology and Metallurgy Sofia, Bulgaria
- 09:45 Solid Oxide Fuel Cells (SOFCs) : Physical-chemical Characterization Methods
Prof. Vl. Kozhukharov, University of Chemical Technology and Metallurgy Sofia, Bulgaria
- 10:15 Break
- 10:45 State-of-the-art in SOFCs Science and Technology
Prof. Vl. Kozhukharov, University of Chemical Technology and Metallurgy Sofia, Bulgaria
- 11:30 Student Presentations of Innovation Design, Products and Structures on R.E.S.:
Students present and defend the projects assigned to them
- 13:00 Lunch
- 14:00 Award ceremony: Certificates & Innovations Awards

-FAREWELL

SPONSORS



www.jestr.org

**JOURNAL OF
Engineering Science and
Technology Review**