



TRANSILVANIA UNIVERSITY OF BRAŞOV



10-12 November 2011, BRAŞOV, ROMANIA

# CSE

CONFERENCE ON SUSTAINABLE ENERGY

CONFERENCE PROGRAMME



Burse postdoctorale pentru dezvoltare durabila - POSDRU/89/1.5/S/59323  
„Proiect colihantat din Fondul Social European prin Programul Operatiional  
Sectorial Dezvoltarea Resurselor Umane 2007-2013”  
Investeşte în oameni!

Contributul acestui material nu reprezintă în mod explicit...

### 1. PV Systems

#### Day-Time-Room

10 Nov. 11.30-13.30 - UI6  
10 Nov. 14.30-16.30 - UI6

### 2. Solar-thermal Systems

#### Day-Time-Room

11 Nov. 11.30-13.30 - UI6  
11 Nov. 14.30-16.30 - UI6

### 3. Small Wind Turbines , Micro-Hydro Systems

#### Day-Time-Room

10 Nov. 11.30-13.30 - UI2

### 4. Renewable Energy Systems in the Built Environment, Hybrid Systems

#### Day-Time-Room

10 Nov. 14.30-16.30 - UI2

### 5. Water and Wastewater Treatment , Wastes as Second Raw Materials

#### Day-Time-Room

10 Nov. 11.30-13.30 - UI3  
10 Nov. 14.30-16.30 - UI3

### 6. Biomass and Waste Recycling

#### Day-Time-Room

11 Nov. 11.30-13.30 - UI3

### 7. Policies and Strategies

#### Day-Time-Room

11 Nov. 11.30-13.30 - UI2

## PLENARY PRESENTATIONS

**November 10, 2011, 9.40 - 10.20, Aula**  
Application of Solar Drying Technologies for Biological Products Conservation  
**Istvan FARKAS**  
*Szent István University - HUNGARY*

**November 10, 2011, 10.20 - 11.00, Aula**  
Hydropower Development - Complexity and Risks  
**Bernhard PELIKAN**  
*University of Natural Resources and Life Sciences, Vienna - AUSTRIA*

**November 11, 2011, 9.00 - 9.40, Aula**  
Strategic Research Agenda for Photovoltaic Solar Energy Technology - 2011 Update  
**Dan-Ilie TEODOREANU**  
*ICPE SA - ROMANIA*

**November 11, 2011, 9.40 - 10.20, Aula**  
*ESEIA - The Sustainable Fuel for European Innovation*  
**Brigitte HASEWEND**  
*Technical University of Graz - AUSTRIA*

**November 11, 2011, 10.20 - 11.00, Aula**  
RTD and Training on Sustainable Energy. Concept and Case Study  
**Ion VISA**  
*Transilvania University of Brasov - ROMANIA*

**SECTION 1 PHOTOVOLTAIC SYSTEMS**

10 Nov. 11.30-13.30 - room UI6

**Chairman:**

Istvan FARKAS, *Szent István University - HUNGARY*

1. **Algorithm for Lifetime Estimation of Batteries Based on Voltage Distribution Shape**  
Angeles López AGÜERA, Iago Rodríguez CABO, Daniel Rey REY  
*University of Santiago de Compostela - SPAIN*
  2. **Pseudo-Equatorial Tracking Optimization for Small Photovoltaic Platforms from Toronto/Canada**  
Bogdan BURDUHOS<sup>1</sup>, Cristina TOMA<sup>2</sup>, Mircea NEAGOE<sup>1</sup>, Macedon MOLDOVAN<sup>1</sup>  
<sup>1</sup> *Transilvania University of Braşov - ROMANIA*  
<sup>2</sup> *School of Engineering Technologies and Applied Science Centennial College, Toronto - CANADA*
  3. **Design of the Sustainable Urban Vehicles - New Concepts for Photovoltaic Integrated Solutions in Automotive**  
Mihai COMŞIŢ  
*Transilvania University of Braşov - ROMANIA*
  4. **Wireless System for Monitoring the Solar Radiation**  
Daniel T. COTFAS, Petru A. COTFAS, Paul BORZA, Doru URSUTIU, Cornel SAMOILA  
*Transilvania University of Braşov - ROMANIA*
  5. **4-Bar Geared Linkage Used for Photovoltaic Azimuth Orientation**  
Nora CREANGA, Ioana HERMENEAN, Dorin DIACONESCU  
*Transilvania University of Braşov - ROMANIA*
  6. **Motion Law of a Pseudo-Equatorial Solar Thermal Collector for Special Working Requirements**  
Veronica E. DOMBI, Maria M. VATASESCU  
*Transilvania University of Braşov - ROMANIA*
- 10 Nov. 14.30-16.30 - room UI6
- Chairman:**  
Anca DUTA, *Transilvania University of Braşov - ROMANIA*
7. **Influence of Precursor Composition on Optoelectric and Photocatalytic Properties of TiO<sub>2</sub> and WO<sub>3</sub> Films**  
Alexandru ENESCA

**ep-Tracking Program Synthesis of an Azimuth Tracked Concentrating Photovoltaic (CPV) System**  
 Ana Sinziana HERMENEAN, Ion VISA  
*Transilvania University of Braşov - ROMANIA*

**opper Sulfides Thin Films with Controlled Properties for Photovoltaic Cells**  
 Luminita ISAC, Ionut POPOVICI, Alexandru ENESCA, Anca DUTA  
*Transilvania University of Braşov - ROMANIA*

**anufact Design of a Gear Based Azimuthal Tracked Photovoltaic Platform**  
 George MOLDOVEAN, Bianca BUTUC, Radu VELICU  
*Transilvania University of Braşov - ROMANIA*

**esign and Simulation of a Photovoltaic String with Tracking Mechanism**  
 Nicoleta-Irina TATU, Cătălin ALEXANDRU  
*Transilvania University of Braşov - ROMANIA*

**lean Energy Response of PV Systems with Azimuth and Pseudo-Equatorial Tracking**  
 Maria-Monica VĂTĂŞESCU, Dorin DIACONESCU  
*Transilvania University of Braşov - ROMANIA*

## SESSION 2 SOLAR THERMAL SYSTEMS

11 Nov. 11.30-13.30 - room UI6

### Chairman:

Spiru PARASCHIV, *Dunărea de Jos University of Galaţi - ROMANIA*

**Minimized and Passive Solar Tracking Systems for Reducing Costs of Concentrated Solar Thermal Energy**  
 Noel LEON-ROVIRA  
*ITESM Campus Monterrey - MEXICO*

**erformance Study of Solar Dryer for Agricultural and Marine Products**  
 Angeles LÓPEZ AGÜERA<sup>1</sup>, Jasurjon S. AKHATOV<sup>1,2</sup>, Iago Rodriguez CABO<sup>1</sup>, Daniel Rey REY<sup>1</sup>, E. Virites MONTES<sup>1</sup>, Vicente GÁNDARA<sup>1</sup>  
*University of Santiago de Compostela - SPAIN*  
*Physical-Technical Institute, SPA "Physics-Sun" - UZBEKISTAN*

### Solar Systems for Wood Drying

Aibaela CÂMPEAN, Ion MARINESCU  
*Transilvania University of Braşov - ROMANIA*

**4. Conceptual design of a Solar Thermal System with Dish Solar Collectors**  
 Daniela CIOBANU  
*Transilvania University of Braşov - ROMANIA*

**5. Solar Absorbers Based on Metal Oxides and Sulfides for Flat Plate Collectors**  
 Mihaela DUDITA, Luminita ISAC, Anca DUTA  
*Transilvania University of Braşov - ROMANIA*

11 Nov. 14.30-16.30 - room UI6

### Chairman:

Noel LEON-ROVIRA, *ITESM Campus Monterrey - MEXICO*

**6. Virtual Prototyping of a Spraying Robotic System**  
 Monica ENESCU, Cătălin ALEXANDRU  
*Transilvania University of Braşov - ROMANIA*

**7. Thermodynamic Performance for the Solar Collector of a Micro-Combined Cooling, Heating and Power System**  
 Spiru PARASCHIV, Ion V. ION, Lizica Simona PARASCHIV  
*Dunărea de Jos University of Galaţi - ROMANIA*

**8. Thermodynamic Design and Optimization of a Solar-Dish Powered Stirling Engine**  
 Camelia STANCIU, Stoian PETRESCU, Monica COSTEA, Alexandru DOBROVICESCU, Dorin STANCIU, Georgiana TIRCA-DRAGOMIRESCU  
*Politehnica University of Bucharest - ROMANIA*

**9. Exergy Analysis of a Solar Stirling Engine Assembly**  
 Dorin STANCIU, Camelia STANCIU, Alexandru DOBROVICESCU, Adina GHEORGHIAN  
*Politehnica University of Bucharest - ROMANIA*

**10. Calculation Scheme of a Thermodynamical Time Dependent Model of the Heat Regeneration Process in a Solar Stirling Engine**  
 Georgiana TIRCA-DRAGOMIRESCU<sup>1</sup>, Michel FEIDT<sup>2</sup>, Monica COSTEA<sup>1</sup>, Alexandru DOBROVICESCU<sup>1</sup>, Catalina DOBRE<sup>1</sup>, Andreea MARIN<sup>1</sup>  
<sup>1</sup>*Politehnica University of Bucharest - ROMANIA*  
<sup>2</sup>*University Henri Poincare of Nancy - FRANCE*

**SECTION 3 SMALL WIND TURBINES**

10 Nov. 11.30-12.30 - room UI2

**Chairman:****Ion VISA, Transilvania University of Braşov - ROMANIA****1. Development, Manufacturing and Testing Vertical Axis Wind Turbines with Helical Blades**Ion BOSTAN<sup>1</sup>, Ion VIŞA<sup>2</sup>, Valeriu DULGHERU<sup>1</sup>, Rodion CIUPERCĂ<sup>1</sup><sup>1</sup> *Technical University of Moldavia, Chisinau - MOLDAVIA*<sup>2</sup> *Transilvania University of Braşov - ROMANIA***2. Horizontal Axis Wind Microturbines with Power of 10 KW**

Ion BOSTAN, Valeriu DULGHERU, Ion SOBOR, Viorel BOSTAN, Anatol SOCHIREANU, Nicolae TRIFAN, Rodion CIUPERCĂ, Ion DICUSARĂ, Oleg CIOBANU, Radu CIOBANU, Ion BODNARIUC, Iulian MALCOCI, Radu CRUDU, Marin GUTU, Vitalie GLADIŞ

*Technical University of Moldavia, Chisinau - MOLDAVIA***3. Optimization of the Strength Structure for 10 kW Wind Turbine Blades**

Viorel BOSTAN, Marin GUTU

*Technical University of Moldavia, Chisinau - MOLDAVIA***SECTION 4 MICRO-HYDRO SYSTEMS**

10 Nov. 12.30-13.30 - room UI2

**Chairman:****Ion VISA, Transilvania University of Braşov - ROMANIA****1. A Micro-Hydropower Station for the Conversion of Flowing Water Kinetic Energy**

Ion BOSTAN, Valeriu DULGHERU, Viorel BOSTAN, Anatol SOCHIREANU, Nicolae TRIFAN, Ion DICUSARĂ, Oleg CIOBANU, Radu CIOBANU

*Technical University of Moldavia, Chisinau - MOLDAVIA***2. Specific Features of a Counter-Rotating Transmission for Renewable Energy Systems**

Oliver CLIMESCU, Radu SAULESCU, Codruta JALIU

*Transilvania University of Braşov - ROMANIA***3. Rapid Manufacturing by Polyjet Technology of Customized Turbine Renewable Energy Generation**Razvan UDROIU, Anisor NEDELICU, Bogdan DEAKY  
*Transilvania University of Braşov - ROMANIA***SECTION 5 RES IN THE BUILT ENVIRONMENT, HYBRID S**

10 Nov. 14.30-16.30 - room UI2

**Chairman:****Ferenc KALMÁR, University of Debrecen - HUNGARY****1. Hydraulic Aspects of Scaling in Geothermal Energy Systems**

Imre CSAKI, Ferenc KALMÁR

*University of Debrecen - HUNGARY***2. The Role of Natural Refrigerants in Future Refrigeration and Heat Systems**Florea CHIRIAC, Alexandru SERBAN, Gabriel Nastase, Ioan BOJAN  
*Transilvania University of Braşov - ROMANIA***3. Energy Recovery Systems for the Efficient Cooling of Data Centers and Absorption Chillers and Renewable Energy Resources**

Florea CHIRIAC, Victor CHIRIAC, Alexandru SERBAN

*Transilvania University of Braşov - ROMANIA***4. Energetic Autonomy for a Solar House**

Macedon MOLDOVAN, Ion VIŞA, Bogdan BURDUHOS

*Transilvania University of Braşov - ROMANIA***5. Analysis of Floor and Ceiling Heating with Intermittent Operation**Ferenc KALMÁR, Tünde KALMÁR  
*University of Debrecen - HUNGARY***6. Human Components of Low Energy Buildings**

Tünde KALMÁR, András ZÖLD

*University of Debrecen - HUNGARY*