



TRANSILVANIA UNIVERSITY OF BRAŞOV

ANCS

ORGANISMUL NAȚIONAL DE AVALANȘARE

10-12 November 2011, BRAŞOV, ROMÂNIA

CSE

CONFERENCE ON SUSTAINABLE ENERGY

CONFERENCE PROGRAMME



PROIECT A EUROPEAN



Ministerul Educației și Cercetării  
PROIECT NAȚIONAL



Ministerul Economiei și Finanțelor  
PROIECT NAȚIONAL



Ministerul Mediului, Urbanismului și Climei  
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Ministerul Energiei  
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## 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*

### 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

**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 Rodriguez 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



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

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

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

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

**Mean 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*

**Performance 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>  
<sup>1</sup> *University of Santiago de Compostela - SPAIN*  
<sup>2</sup> *Physical-Technical Institute, SPA "Physics-Sun" - UZBEKISTAN*

### Solar Systems for Wood Drying

Mihaela 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 Moldova, 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 Moldova, Chisinau - MOLDAVIA

**3. Optimization of the Strength Structure for 10 kW Wind Turbine Blades**

Viorel BOSTAN, Marin GUTU

Technical University of Moldova, 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 Moldova, 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 BOIAN

Transilvania University of Braşov - ROMANIA

**3. Energy Recovery Systems for the Efficient Cooling of Data Centers 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