

PROGRAMME

World Renewable Energy Congress X and Exhibition

19–25 July 2008

Glasgow – Scotland



bre



WREC



Warwick
University

Scottish Exhibition & Conference Centre
Glasgow, Scotland, United Kingdom

Organised by
World Renewable Energy Congress Brighton, UK

GENERAL INFORMATION

WREN Council Meeting WREN/Elsevier Dinner	Menzies Hotel Corinthian Restaurant	09.30 Saturday 19 July 19.30 Saturday 19 July
Three-Mile Race Workshop, Gender & Energy	Congress Centre M3 29 James Weir Bldg University of Strathclyde Dept Mech Engineering 75 Montrose Street	08.15 Sunday 20 July 09.00 Sunday 20 July
Civic Reception Registration	Science Museum Congress Centre	19.30 Sunday 20 July 13.00 -1700 Sunday 20 08.30 – 17.30 Mon - Fri

SESSIONS

	Scottish Exhibition & Congress Centre	Monday 21 – Friday 25 July
Plenary A Plenary B	Lomand Auditorium Alsh Room	
Photovoltaic – PV Low Energy Architecture – LEA Solar Thermal – ST Wind Energy –WE Biomass – BM Policy – P Marine – M Energy & Gender – G European Workshop Fuel Cells & Hydrogen – FC Related Topics – RT	Lomand Auditorium Alsh Room Boisdale 1 Boisdale 2 Carron 1 Carron 2 Dochart 1 Ness Dochart 2 Morar Leven	

Useful telephone numbers

Menzies Hotel	0141 222 929
Scottish Exhibition & Congress Centre	0141 248 3000

We are proud to announce that the second award of the
WREC/Ali Sayigh Trophy will take place on
Wednesday 23 July, 2008
at the
Plaza Hotel, Banquet Hall, Glasgow



The next award will take place at WREC XI, May 2010 in Abu Dhabi

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World Renewable Energy Congress – X and Exhibition

FIRST DAY PROGRAMME

Monday 21 July
at
Lomand Auditorium

OPENING CEREMONY

- 09:30 – 09:35 Chairman of the World Renewable Energy Congress
Professor Ali Sayigh
- 09:35 – 09:45 Deputy Principal, University of Strathclyde
Professor Jim McDonald
- 09:45 – 10:00 First Minister, Scottish Government
Rt. Hon. Alex Salmond
- 10:00 - 10:15 Director General of ISESCO
ISESCO Programme for Sustainable Development and Environment
H E Dr Abdulaziz Altwaijri
- 10:15 – 10:30 UNESCO Assistant Director General for Natural Sciences
Programme in Renewable Energy and Environment
Mr Walter Erdelen
- 10:30 – 10:40 Director for Energy, European Commission
Opening remarks on Energy Options in the EU
Mr Raffaele Librali
- 10:40 – 10:50 Chief Executive Officer of BRE
Dr Peter Bonfield
- 10:50- 11:00 Director of the International Centre for Theoretical Physics
Prof K R Sreenivasan
- 11:00 – 11:10 Secretary General, Environment Agency, Abu Dhabi
WREC-2010 Congress
Mr Majid Al Mansouri
- 11:10 – 11:20 Chief Executive Officer, Axa Group
TBC
- 11:20 – 11:40 Coffee Break & Exhibition Opening

MONDAY 21 PROGRAMME

11.40–13.30 PLENARY – A1

- Chair:* Mr Walter Erdelen, UNESCO & Dr Abood Al Sawafi, Oman
- InvP-Renewable Energy Programme and the EU**
Bruno Schmitz, Head of Unit, DG Research, EU, Brussels, Belgium
- InvBM65- Biofuels: Unlocking the Potential**
Jennifer Holmgren: UOP LLC, Des Plaines, 60017, USA
- InvP75- The Economic Case for Climate Action: The role of renewable energy**
Hunter Lovins: President of Natural Capitalism Solutions, Eldorado Spring, CO, USA
- InvM- Status of Wave and Tidal Current Energy Conversion**
Bakr Bahaj: Prof Southampton University, Sustainable Energy Research Group, UK
- 13:30–14:30 LUNCH BREAK

14:30–16:10 PLENARY – A2

Chair:

H E Dr Abdulaziz Altwaijri, ISESCO and Mr Raffaele Liberali, EU

InvP80- Drivers of change: energy

Chris Luebckeman: Director for Global Foresight + Innovation, Arup Foresight Innovation and Incubation, London, UK

InvP78- Innovation for a Sustainable Energy Future: Renewable Energy's Role

Dan E. Arvizu: Director, National Renewable Energy Lab., Golden, Colorado, USA

InvLEA78- Some thoughts on architecture and Recent Works of A. N. Tombazis and Associates

Alexandros N. Tombazis: Architect – Principal, A. N. Tombazis and Associates Architects Ltd., Athens, GREECE

Recent Developments and Perspectives of Renewable Energies in Germany

Rainer Hinrichs-Rahlwes: Board Member of BEE – German Renewable Energy Federation, Berlin, Germany

16:00–16:30

Coffee Break

16:30–18:30 PLENARY – A3

Chair:

Dr Stan Bull, NREL, USA and Mr Majid Al Mansouri, UAE

InvP – Renewable Energy Programme and Policy in the UK

Mr Philip R Wolfe: Chief Officer of UK Renewable Energy Association, Waterloo Place, London, UK

InvPV23- Technology Development in Photovoltaics

Martin A. Green: ARC Photovoltaics Centre of Excellence, University of New South Wales, Sydney, Australia

InvG3- Global Warming, Energy Insecurity & the Energy Poor: The Path Not Taken

Lakshman Guruswamy: Center for Energy and Environmental Security, University of Colorado School of Law

InvP3- The New Dawn of Geothermal Energy Worldwide

Thorsteinn I. Sigfusson: Professor and Director General, University of Iceland and Iceland Innovation Centre, Keldnaholt, 112 Reykjavik, Iceland

PLENARY PAPERS

Wednesday – Thursday – Friday

23, 24, 25 July 2008

WEDNESDAY

09–10:30 Plenary – A4

Chairs: Larry Kazmerski - USA and Donna Munro - UK

InvPV38: Solar Sustainable Development and Photovoltaic Industries

Isao Yukawa

Advisor and Former-President of the Kyocera Solar Group, Kyoto, JAPAN

InvP85- Sustainable energy - sustainable business: the challenge of making low-carbon energy competitive

Katrina Landis, Group Vice-President, BP Alternative Energy, London, UK

InvPV96- Overview and Challenges of Thin Film Solar Cell Technologies

Harin S. Ullal, Ph.D.

National Center for Photovoltaics, National Renewable Energy Laboratory
1617 Cole Boulevard, Golden, Colorado 80401 USA

InvP65- Climate Change: Challenges and Solutions

Govinda R. Timilsina

Sr. Research Economist, The World Bank, Washington, DC, USA

InvST35- Some aspects of development of solar thermal energy technologies

Dorota Chwieduk

President of Polish Solar Energy Society; Vice-President of International Solar Energy Society – Europe; Institute of Fundamental Technological Research Polish Academy of Sciences, Warsaw, Poland

09.00–10:30 Plenary B1

Chairs: **Don Swift Hook – UK and Shyam Nandwani**

Inv WE 83- Wind Energy Development and Progress in Germany

Peter Ahmels

Oldeborg, D 26434 Hooksiel, Germany

InvP15- Geothermal energy - worldwide status and prospects

Prof Ladislaus Rybach¹

¹ President, International Geothermal Association (IGA), Managing Director Geowatt AG, Zurich; Switzerland

InvFC28- EU activities in the field of fuel cell and hydrogen technologies

Wiktor Raldow, DG Research, European Commission

InvP77- Renewable energy for development: the role of institutional and human capacity building

Dr Osman Benchikh, Head Energy programme, UNESCO, Division of Basic and Engineering Sciences

1 rue Miollis 75015 Paris, France

InvPV97- From Vision to Implementation – An Utility’s Photovoltaic Initiative for School Rural Electrification in Brazil

Antonia Sonia Alves Cardoso Diniz^{1,2}

¹ Companhia Energetica de Minas Gerais – CEMIG, CP 992 – Belo Horizonte, Brasil

² Dept. of energy Eng., Catholic University of Minas Gerais, Av. Dom Jose Gaspar, 500/pr.10, CEP: 30535-610, Belo Horizonte, Minas Gerais, Brasil

THURSDAY

09–10:30 Plenary A5

Chair: **Ian Giuliani – UK and Helena Coch – Spain**

InvWE42- Present Status and Future Prospects of Wind Energy in Japan

Izumi USHIYAMA*

*Graduate School of Engineering, Ashikaga Institute of Technology
268-1, Omae-cho, Ashikaga-shi, Tochigi-ken, 326-8558, JAPAN

Inv34- Solar Energy Resource Assessment in Brazil.

Enio B. Pereira¹, Fernando R. Martins¹, Samuel L. Abreu² & Sergio Colle³

¹ Center for Weather Forecast and Climate Studies - Brazilian Institute for Space Research, CPTEC-INPE. P. O. Box 515, São José dos Campos, SP 12245-970, Brazil.

² Federal Center of Technological Education of Santa Catarina - CEFET-SC, Rua José Lino Kretzer 608, São José, SC 88103-310, Brazil

³ Solar Energy Laboratory - University of Santa Catarina - LABSOLAR-UFSC, Florianópolis, SC 88040-900 Brazil

InvP62- Renewable Energy Development Policies in Asia and the Pacific

Hongpeng Liu

Energy Resources Section, Environment and Sustainable Development Division
United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)
Bangkok, Thailand

InvLEA47- Design Strategies for Low-Energy Rural Housing in Cold Regions of China

Hong Jin

School of Architecture, Harbin Institute of Technology, Harbin 150001, China

09–10:30 Plenary B2

Chairs: David Elliott – UK and Mohsen Aboulnaga - UAE

InvP76- Why Is The Deployment Of Solar Power Proceeding So Slowly In The United States?

Irene M. Stillings, Author

Executive Director of California Center for Sustainable Energy, 8690 Balboa Avenue, San Diego, CA, USA

InvPV99- PV System Performance Measurement and Analysis – Maximising the Energy Output

Nicola Pearsall

Northumbria Photovoltaics Applications Centre Northumbria Univ., Newcastle upon Tyne, NE1 8ST, UK

InvP38- U.S. Program in Renewable Energy; Effectiveness and Progress

Stanley R. Bull, Executive Director , National Renewable Energy Laboratory

1617 Cole Boulevard, Golden, CO 80401-3393, USA

InvP81- Major Solar and wind Energy Projects in GCC Countries

W E Alnaser

Physics Department, University of Bahrain, Kingdom of Bahrain

Chairman, Arab Section, International Solar Energy Society, Bahrain

FRIDAY

09.00–10:30 Plenary A6

Chairs: Bahram Moshfegh – UK and Joe Clarke – UK

InvLEA100- Passive & hybrid environmental strategies for public buildings

C. Alan Short^{1,2}

¹ The Professor of Architecture, University of Cambridge. UK.

² Short & Associates, Architects, London UK

Inv50- London's Anthropogenic Heat Emissions – Implications for Building Design

Michael Davies¹, Ian Hamilton^{1,2}, Philip Steadman¹, Andrew Stone³, Ian Ridley and Stephen Evans¹

¹ Bartlett School of Graduate Studies, University College London, London, UK.

² Fulcrum First Consulting, London, UK.

³ BDSP, London, UK.

InvLEA85- Buildings for a Low Carbon Future

Phil Jones

Welsh School of architecture, Cardiff University, Wales, UK

09.00–10:30 Plenary B3

Chairs: Phil Eames– UK and John Boland – Australia

InvP11- Renewable Energy Sources in Cypru

Solon Kassinis

Director of Energy Service, Chairman of Cyprus Institute of Energy, Ministry of Commerce, Industry & Tourism, Republic of Cyprus, Nicosia, Cyprus

InvP22- Geothermal: Clean Base-load Power from the Earth

Thomas R Blakeslee¹

¹ President of Clearlight Foundation, Puerto Vallarta, Jalisco, Mexico

Inv30- Solar Energy in Thailand

Sk Noim Uddin^{1,2} & Thierry Lefevre²

¹ Graduate School of the Environment, Macquarie University, North Ryde, NSW 2109, AUSTRALIA

² Center for Energy Environment Resources Development (CEERD), SLD Building (7B), 13 Soi Saladaeng 1, Rama IV Road, Silom Sub-district, Bangrak, Bangkok 10500, THAILAND

10:30 – 11:00

Coffee Break

11:00–12:30 Plenary A7

Chairs: **Stefano Brandani – UK and Cameron Johnson – UK**

Inv89- Biomass and Biofuels in the UK

Professor Roland Clift

Centre for Environmental Strategy, University of Surrey, GUILDFORD, Surrey, GU12 7XH, UK

Inv3- Passive Cooling for Low-income households in developed and less developed countries Mattheos Santamouris

Associate Professor, National Kapodistrian University of Athens, Physics Department

Group Building Environmental Research, Panepistimioupolis, Building Physics 5

157 84 Athens, Greece

InvST13- Conventional Geothermal Heating - The Icelandic Experience and Potentials for Other Countries

Dr. Gudni A. Jóhannesson Director general of the Icelandic National Energy Authority, Iceland

Dr. Ólafur G Flóvént Director general of Iceland GeoSurvey

11:00–12:30 Plenary B4

Chairs: **Rainer Hinrichs-Rahlwes – Germany and Rebecca Bathelmie**

InvP35- Role of Renewables in Emerging Markets

Jonathan Johns¹ & Nelson Sam²

¹ Head, Renewable Energy and Waste Management, Ernst and Young LLP, Exeter, UK

² Assistant Director, Renewable Energy and Waste Management, Ernst and Young LLP, London, UK

InvLEA105- FROM THE CITY TO THE SPOON

Visions of sustainability-the material and the ephemeral

Professor Gordon Murray

Head of School and Professor in Architecture and Urban Design at University of Strathclyde, Glasgow, Scotland, UK

InvWE15- The impact of climate change on wind energy resources

Prof. S.C. Pryor¹

¹ Atmospheric Science Program, Department of Geography, Indiana University, 701 E Kirkwood Avenue, Bloomington, IN 47405, USA. Tel: 812-855-5155, Fax: 812-855-1661. spryor@indiana.edu

POLICY ISSUES

Prof David Elliott, Chair

Technical Committee Members: Dr Barbara Farhar, Mr Rainer Hinrichs-Rahlwes,
Mr Martin Alder and Prof Thomas Johansson

Tuesday

09.00–10.30 Policy 1

Chair: **Campbell Wilson – UK**

InvP11- Renewable Energy Sources in Cyprus

Solon Kassinis

Director of Energy Service, Chairman of Cyprus Institute of Energy, Ministry of Commerce, Industry & Tourism, Republic of Cyprus, Nicosia, Cyprus

InvP84- Programs for the Use of Renewable Energy

Dr. Jaber Al Jaber, Director

Director, Environment Policies Sector, Acting Director, Environment Management Sector, Environment Agency-Abu Dhabi, UAE

InvP45- NASA Earth Observations Informing Renewable Energy Management and Policy Decision Making

Richard S. Eckman & Paul W. Stackhouse, Jr.

NASA Langley Research Center, Hampton, VA, USA

InvP83- The right mix of fuel sources for a zero fossil-fuel UK

Bill Watts

Senior Partner, Max Fordham LLP, 42-43 Gloucester Crescent, London NW1 7PE, UK

InvP2- Global Warming: A catastrophe of the 3rd class. How could Man avoid the total destruction of His own habit and try to retrieve the damage already done

Paul Brenner: Israel Electric Corporation, IEC, Haifa 31000, Israel.

11:00 – 13:00 Policy II

Chairs: A-Hamid Marafia – Qatar

InvP16- An Investigation into Using Low-Zero Carbon Technologies for Maximum CO₂ Reduction in a Mixed Use Development

Dr. Esam Elsarrag¹ & Bill Grant²

¹ Energy Systems Analyst, Hoare Lea Consulting Engineers, Poole, UK

² Technical Development and Control, Partner, Hoare Lea Consulting Engineers, Poole, UK

InvP63- Opportunities for Wealth Generation in Rural Bangladesh, Through the Introduction of Solar Lime Kiln Technologies

S N Mclean* and D R Moore**

*School of Architecture, Design & the Built Environment, Nottingham Trent University, UK

**Scott Sutherland School of Architecture and the Built Environment, Robert Gordon University, Aberdeen, UK

InvP20- Comparing Renewables Support Mechanisms within Europe and Beyond

Iain Todd

Renewables Champion, Aberdeen Renewable Energy Group

Formerly Director of Renewable Energy, DTI, London

InvP5- Choosing Technologies: wind, wave and tidal power

David Elliott, The Open University, Milton Keynes, UK

Corresponding email: D.A. Elliott @open.ac.uk

P25- ETSU to ETI – An account of the first Government sponsored Energy Technology Unit

Campbell Wilson

Department of Economic and Social History, University of Glasgow, Lilybank House, Bute Gardens, Glasgow, SCOTLAND

P40- Rising Temperature in Kuwait; a Clear Evidence of Climate Change

Ashraf A. Ramadan

Research Scientist, Coastal & Air Pollution Dept, Kuwait Institute for Scientific

Research, PO Box 24885, 13109 Safat, KUWAIT

InvP91- Financing Carbon Capture and Storage

Tony White & Ian Temperton

Climate Change Capital, 3 More London Riverside, London, SE1 2AQ, UK

14:30–16:00 Policy – III

Chairs: Terry Cook – UK

InvP Renewable Energy-Catering the Immediate Needs of Rural People

Dr. Faiq Billal

Director of Science, Islamic Educational, Scientific and Cultural Organization (ISESCO)

Avenue des F.A.R. Hay Ryad, P.O. Box 2275, Postal Code 10104, Rabat, Kingdom of Morocco.

InvP49- Risk due to Global Increase of Temperature: Assessment of the Vulnerability of the Environment and Community.

I. Ferraris¹, C. Labriola¹

¹ Researchers of Engineering Faculty, National University of Comahue, Neuquén, Argentina

InvP29- Open loop geothermal systems: benefits and risks

Dr. Ric Horobin¹ & Mark Gropius²

¹ Director Water&Environment, Zenith International, Bath, UK

² Senior Groundwater Modeller, Zenith International, Bath, UK

P42- Renewable energy and the portfolio cost of electricity generation in the UK

Dr Guillaume Pajot

¹ Researcher, Macaulay Institute, Socio Economic Research Group, Aberdeen UK

P52- UNIVERSITY OF OREGON CARBON REDUCTION MASTER PLAN

James Krumsick

Paradigm Engineering, Tel: 541 285 1680, E-mail: jkrumsick@q.com

16:30 – 18:00 Policy – IV

Chairs: Terry Cook – UK

InvP86- The perspectives of the EU directive on Renewable Energy Sources and its applicability in Hungary

Márta Szabó

Szent István University, Institute of Environmental Systems, Páter K.u.1., H-2100 Gödöllő, Hungary

P44- Siga-Sol 1.0 : GIS Applied for Solar Energy

Chiguera Tiba¹, Ana Lúcia Bezerra Candeias², Naum Fraidtenraich¹, Elielza Moura de Souza Barbosa¹, Pedro Bezerra de Carvalho Neto³ and José Bione de Melo Filho³

¹ Departamento de Energia Nuclear da Universidade Federal de Pernambuco
Av. Prof. Luiz Freire, 1000 – CDU, CEP 50.740-540, Recife, Pernambuco, Brazil

² Departamento de Engenharia Cartográfica da Universidade Federal de Pernambuco
Av. Acadêmico Helio Ramos, s/n - CDU, Recife, Pernambuco, Brazil

³ Companhia Hidro Elétrica do São Francisco –DTG- CHESF
Rua Delmiro Gouveia, 333 – Bongi, CEP 50761-901, Recife, Pernambuco, Brazil

P70- Modelling and Simulation of Energy Consumption in the Madrid Region. 2010–2050.

E. Guervós¹; A. Contreras¹ and F. Posso²

¹ Chemical Engineering Dpt. UNED. Madrid. 28040 Madrid.

² Science Dpt. ULA - Táchira. San Cristóbal. 5001. Venezuela.

P51- Patents: Benefit or Barrier to Rapid Deployment of New Renewable Energy Technologies?

Eugene L. Chang¹ and Adam R. Steinert²

¹ Partner, Willkie Farr & Gallagher LLP, New York, NY, USA

² Associate, Willkie Farr & Gallagher LLP, New York, NY, USA

P7- INVESTING IN ENERGY RESOURCES' RESEARCH:

Microwaves from the Space and the Hum of the Earth in the largest MASER ever built on our planet

Paul Brenner: ISRAEL ELECTRIC CORPORATION. HAIFA 31000, ISRAEL

WEDNESDAY

11:00 – 13:00 Policy – V

Chairs: David Elliott – UK

P37- Reduction of CO₂ emissions in district heating areas

Adj. prof. Heimo Zinko¹, Phil. Dr. Alemayehu Gebremedhin² & Phil. Lic. Johan Klasson³

^{1,2} Dept. of Management and Engineering/Energy Systems, Linköping University, Linköping, Sweden.

³ now at 4sea energy AS, Stavanger, Norway.

P59- The application of demand-side management via Internet-enabled monitoring and control

Jun Hong, Joe Clarke, Cameron Johnstone, Jae-min Kim

Energy System Research Unit, Dept. of Mechanical Engineering, University of Strathclyde, Glasgow, UK, Tel: +44 141 548 3313, Email: jun@esru.strath.ac.uk

P17- Investigation of Economic Problems of Using Hybrid Solar-Wind Systems in View of Inflation Impact

Prof Djura A. Abdullaev¹, Rikhsi I. Isaev²

¹ Scientific Advisor, Scientific Engineering and Marketing Research Center (SEMRC) of Communications and Information Agency of Uzbekistan, Tashkent, Uzbekistan

² First Deputy Director, SEMRC, Tashkent, Uzbekistan

P55- Strategy Development for Renewable Energy sector in Iran

Shahriar Jalaei¹, Naser Bagheri Moghaddam², Ali Taghavi³, Seyyed Moslem Moosavi⁴, Mohammad Sadegh Emamian⁵

¹ Planning Deputy of Iran Renewable Energy Organization, Tehran, Iran

² PHD student of management of technology, Allame Tabatabaei University, Tehran

³ Master of Science, Industrial Engineer, Sharif University of Technology, Tehran,

⁴ Industrial Engineer, Sharif University of Technology, Tehran, Iran

⁵ C.E.O of Rahbaran Strategic Management Company, Tehran, Iran

P21- The Examination of Adoption Procedure and Extension Role in Popularizing of Renewable Energies

Vahid Alimirzaee¹, Dr. A. Kaabi-nejadian², Dr. S. M. Mirdamadi³

¹ MSc in Extension and Education of Natural Resources, Iran,

² Chairman of Solar Energy Association of Iran & Consultant of Renewable Energies Organization of Iran, Ministry of Energy, Iran

³ Professor of Researches & Sciences Unit, Islamic Azad University

P87-Renewable energy sources for sustainable development in Qatar

A-Hamid Marafia*

College of Engineering, University of Qatar, P.O.Box 2713, Doha, Qatar

P89- RENEWABLE ENERGY: KEY TO ENERGY SUSTAINABILITY

M. Asi¹, T. Muneer² and M. T. Khan

¹ School of the Built and Natural Environment, Glasgow Caledonian University, Glasgow

² School of Engineering and Built Environment, Napier University, Edinburgh

³ School of Government and International Affairs, Durham University, Durham

14:30–16:00 Policy – VI

Chair Terry Cook- UK

InvLEA11- Sustainable Urban and Building Design in Portugal

M. Correia Guedes^{1*}, M. Pinheiro² and L. Manual Alves³

¹ H. of the Arch. Res. Centre, Dept. of Civil Eng. and Arch., Higher Tech. Institute (IST), Lisbon, P.

² Ph.D. Student, Department of Civil Engineering and Architecture, IST, Portugal

³ Senior Researcher, Department of Mechanical Engineering, IST, Portugal

P26- 35 Low Cost Renewable Energy Technologies for Rural Areas

Prof. Miguel Hadzich¹

¹ Coordinator of GRUPO PUCP, Dept. of Engineering, Pontificia Universidad Católica del Perú, Lima, PERU

P50- Sustainable Social-Technological-Economical Development in Neuquén, Argentina, focused on Matrix Production Conversion from Non Renewable to Renewable and Agricultural Sources

Luis Sapag¹ & Carlos V.M. Labriola¹

¹ Regional Academic Unit, Technological National University, Plaza Huincol, Neuquén, Argentina,

InvP68- RENEWABLE ENERGY APPLICATIONS IN THE CARIBBEAN

Indra Haraksingh

Department of Physics, The University of the West Indies, Trinidad

P12- CDM Potential of Renewable Energy Technologies in India

Pallav Purohit

International Institute for Applied Systems Analysis (IIASA)

Schlossplatz 1, A-2361 Laxenburg (AUSTRIA)

16:30–18:00 Policy – Special Session I

Chairs: David Elliott – UK

P48- Rural Electrification in Africa: Getting Rid of the Grid?

Martin Obermaier¹ & Prof Alexandre Salem Szklo²

¹ Ph.D. candidate, Energy Planning Program – COPPE/UF RJ, Rio de Janeiro, Brazil,

² Energy Planning Program – COPPE/UF RJ, Rio de Janeiro, Brazil

P33- Potential Analysis of Some Renewable Energy Sources for Eskisehir, Turkey
Ummuhan Basaran Filik¹ & Mehmet Kurban¹

¹ Anadolu University, Dept. of Electrical and Electronics Eng., Eskisehir, Turkey

P70- Modelling and Simulation of Energy Consumption in the Transport Sector in the Madrid Region. 2010 – 2050.

E. Guervós¹; A. Contreras¹ and F. Posso²

¹ Chemical Engineering Dpt. UNED. Madrid. 28040 Madrid.

² Science Dpt. ULA - Táchira. San Cristóbal. 5001.Venezuela.

P1- Environmental Aspects of Energy Consumption, Co2 Emission and Energy Substitution in Iran.

F.M.Shahrtash: University of Power & Water Technology, Tehranpars, Hakimieh, Vafadar Sharghi, Abaspour, Tehran, Iran

THURSDAY

11:00 – 13:00 Policy – VII

Chair Terry Cook- UK

InvP86- InvP86- The perspectives of the EU directive on Renewable Energy Sources and its applicability in Hungary

Márta Szabó

Szent István University, Institute of Environmental Systems, Péter K.u.1., H-2100 Gödöllő, Hungary

PC47- Can the CDM Serve the Host Country's Energy Services Needs & Priorities? A Multi-Criteria Decision Making (MCDM) Approach

Charikleia Karakosta¹, Haris Doukas¹ & Prof John Psarras¹

¹ National Technical University of Athens, School of Electrical and Computer Engineering, Management & Decision Support Systems Lab (EPU-NTUA), 9, Iroon Polytechniou str., 15780, Athens, Greece

P8- Strategic Due Diligence: Facilitating Investment in Renewable Energy

Ian Watson¹, Dr. Peter Strachan² & Jonathan Armstrong³

¹ Senior Engineer, Frazer-Nash Consultancy, Dorking, UK,

² Engineering Management Group, University of Bristol, Bristol, UK

³ Technical Manager, Frazer-Nash Consultancy, Glasgow, UK

P82- Energy supply of the Kovács housing park in Hungary - Case study

Prof. Lajos Gööz

Dept. of Geography, Faculty of Natural Sciences, College of Nyíregyháza, Nyíregyháza, Hungary

P32- What are the Major Barriers of RES-E Penetration in the Czech Republic?

Jaroslav Knápek, Jiri Vasíček, Martin Bene

Czech Technical University in Prague, Faculty of Electrical Engineering, Prague, Czech Republic

P54- To Motivate Renewable Energy Education in Turkey

Caglayan ACIKGOZ

Department of Chemical Technician, Vocational High School, Bilecik University, P.O.11030 Bilecik, TURKEY

P74- Assessment of biomass heating potential in the domestic sector:

Comparison of the UK and Poland cases

Sophie Jablonski¹, Anna Barcik², Prof. Adam Gula², Dr. Ausilio Bauen¹ & Prof. Peter Pearson¹

¹ Imperial College London, Centre for Energy Policy and Technology (ICEPT), Mechanical Engineering Building, Exhibition Road, London SW7 2AZ, United Kingdom.

² AGH-University of Science and Technology, Al. Mickiewicza 30, 30-059 Krakow, Poland.

14:30–16:00 Policy – VIII

Chair David Elliot- UK

P56- Prioritizing assessable sustainability performance indicators to manage renewable energy technologies in remote areas of Africa

Alan C Brent^{1, 3} & David EC Rogers²

¹ Sustainable Energy Futures, Natural Resources and the Environment, Council for Scientific and Industrial Research (CSIR), South Africa,

² Energy and Processes, Materials Science and Manufacturing, Council for Scientific and Industrial Research (CSIR), South Africa,

³ Sustainable Life Cycle Management, Graduate School of Technology Management, University of Pretoria, South Africa

P13- Arguments in Swedish Policy Documents for Using Biomass for Production of Bio-based Motor Fuels, Why an Energy Engineer Could Feel Like Being in a Novel Written by Kafka

Erik G. Lindfeldt¹ & Mats O. Westermark

School of Chemical Science and Engineering, Royal Institute of Technology – KTH, Stockholm, Sweden

P41- CAN THE SUN OF NORTH AFRICA LIGHTS GLASGOW?

Dr. Gibril S. Eljrushi¹ & A. Hamoda²

¹ Dept. Mahmod of Mechanical Eng., Faculty of Engineering, University of 7th October, Misurata, Libya, Tel: 218-92-5508920, Fax: 218-512-629-812 Email: gibril_s@yahoo.com

² Dept. of Mechanical Eng., Faculty of Engineering, University of 7th October, Misurata, Libya

P74- Assessment of biomass heating potential in the domestic sector:

Comparison of the UK and Poland cases

Sophie Jablonski¹, Anna Barcik², Prof. Adam Gulaz, Dr. Ausilio Bauen¹ & Prof. Peter Pearson¹

¹ Imperial College London, Centre for Energy Policy and Technology (ICEPT), Mechanical Engineering Building, Exhibition Road, London SW7 2AZ, United Kingdom.

² AGH-University of Science and Technology, Al. Mickiewicza 30, 30-059 Krakow, Poland.

P61-Micro-geration from Policy to Initiatives and Deployment

Dr. Neveen Hamza¹ & Dr. Steven Dudek²

¹ School of Architecture, Planning and Landscape, Newcastle University, UK tel:+44-191-2226033, Fax:+44-191 2226115 Email:n.hamza@ncl.ac.uk

² School of Architecture, Planning and Landscape, Newcastle University, UK tel:+44-191-2226009, Fax:+44-191 2226115 Email:s.j.m.dudek@ncl.ac.uk

P92- “Planetary Crisis and to constraint carbon emission immediately”

RonTan Global

Marketing Director. PRC Global Pte. Ltd. 179, River Valley Rd. 03-05, Singapore, 179033

EUROPEAN WORKSHOP

22 and 23 July 2008

“Success factors for International Cooperation on Research, Technological Development and Demonstration in the Area of Renewable Energy”

Objectives and format

The WREC, a major recognised forum for networking, will allow discussing issues relating EU international co-operation on RTD&D in the field of renewable energies in a global context. This Workshop should provide a better understanding of the factors that are conditioning the success of international co-operation in this area and help shaping relevant future initiatives. The focus will be on co-operation between the European Union and emerging or developing economies.

The Workshop will run over two days and be organised in 6 consecutive sessions of 1,5 to 2 hours each. The Opening session will provide information on the current programmes and initiatives of a few selected institutions active in the area and for a general exchange of views between participants, paving the way for the more technical session which will follow.

There will be four consecutive technical sessions, each one of them being focused on a particular area of renewable energy technology development: wind, biomass, solar, ocean/hydro. Each session will involve presentations by renowned experts with extensive practical experience of international S&T co-operation in the particular field, with the aim to provide a feedback to the audience on their experience and highlight the critical factors for success, and hence kick-off the general discussion to follow.

Participants would be expected to attend all sessions, even if not focused on their particular area of expertise, noting that most of the issues for debate would most likely be of cross-sectorial interest. These include:

- Which are the barriers and facilitators for RES development in those countries?
- What is the potential for development of a particular technology and are there any targets?
- Are there major non-technical barriers for developing co-operation between the EU and those countries (e.g. infrastructure, social, cultural, regulatory) and how could they best be overcome?
- Are there any factors that would favor or disfavor co-operation with the EU in particular?
- Do IPR, foreign investment rules or other factors act against the involvement of industry in the co-operation?

The closing session will bring together all speakers and chairs in a round-table setting. They will be asked to point out the two or three factors which in their own opinion are most relevant to “make it happen” or conversely and which should be kept in mind in shaping future activities in the area. This will provide the basis for the concluding general discussion.

TUESDAY

11:00 – 13:00 Opening session

(Chair: Wiktor Raldow)

Welcome and introduction – Ali Sayigh

Keynote speakers

- Jonathan Coony - World Bank
- J. Kimani – AFREPREN\FWD
- E. Hanekamp – EU Project, “RTD for Emerging and Developing Countries” (tbc)
- G. Lequeux - European Commission
- General discussion

14:30 – 16:00 Wind Energy

(Chair: Martin Alder)

Two speakers

- Mr. Khalid Benhamou, Sahara Wind Inc., Morocco
- Dr Jos Beurskens, ECN Wind Energy, The Netherlands
- General discussion

16:30 – 18:00 Biomass Conversion

(Chair: Eric Fraga)

Two speakers

- Mr. J. Yan, Royal Institute of Technology, Malardalen University, Sweden
- Ms. Thembakazi Mali, Clean Energy Solutions, Saneri, South Africa
- General discussion

WEDNESDAY

11:00 – 13:00 Solar Energy

(Chair: Rolf Öström)

Four speakers

- Mrs. W. Khunchornyakong, Solar Power Co Ltd, Thailand
- Mr. Bernard McNelis, IT Power, UK
- Mr. Michael Geyer, Abengoa Solar, Spain
- Mr. Tewfik Hasni, NEAL, Algeria
- General discussion

14:30 – 16:00 Ocean and Hydro

(Chair: Indra Haraksingh)

Two speakers

- Prof. Miguel Hadzich - Peru
- Mr. B. Pelikan, University of Vienna
- General discussion

16:30 – 18:00 Synthesis and conclusions

(Chair: Bruno Schmitz)

Round-table of speakers and Chairs - discussion

18:00 Closing of the Technical Session

(Mr. Raffaele Liberali)

19:30 – 22:30 Congress Banquet

HYDROGEN, FUEL CELLS AND SOLAR MATERIALS

Dr John A Turner, *Chair*

Members of the Technical Committee: Prof K Sopian, Mr Arno A Evers, Dr Ulrich Schmidtchen, Prof S Gair, Dr S Freni, Mr Andre Gillet and Dr J Dawody

TUESDAY

11:00 – 13:00 Session FC- I

Chairs: Jazaer Dawody-Sweden

InvFC21- Reforming of renewable fuels for mobile fuel cell applications

Lars J. Pettersson¹ & Marita Nilsson

KTH - Royal Institute of Technology, Department of Chemical Engineering and Technology, Stockholm, Sweden.

InvFC5- Indonesia Hydrogen Economy

Andi Yasser Rahman Patiwiri B.Eng

President Director COLANO Energy, Jakarta :Taman Alfa Indah Blok H2 no.23 ,Po.Box 11640. Indonesia

InvFC19- Hydrogen Energy Systems: Development of Modelling Tools and Applications

Arnaud Eté¹, Geoff Hoffheinz², Nick Kelly¹, Øystein Ulleberg³

¹ ESRU, Dept. of Mechanical Engineering, University of Strathclyde, Glasgow, UK,

² Sgurr Energy Ltd., Glasgow

³ Dept. of energy Systems, Institute for Energy Technology, Kjeller, Norway

InvFC29- Progress in Renewable Energy Storage through Hydrogen

Daryl C.F. Wilson P.Eng., MBA¹, Robert McGillivray P.Eng. MBA²

¹ CEO Hydrogenics, Mississauga Ontario, Canada

² Director Renewable Energy, Hydrogenics, Mississauga Ontario, Canada

InvFC2- New use of renewable energies to power urban mobility

Arno A. Evers · Arno A. Evers FAIR-PR Achheimstr. 3 · 82319 Starnberg · Germany

14:30 – 16:00 Session FC- II

Chairs: Andre Gillet-Belgium

FC12- Preparation of YSZ Solid Electrolytes for Solid Oxide Fuel Cells

by e-beam Evaporation

Z. Sompoulos, M Giannouli, P. Yianoulis

Renewable Energy Laboratory, Dept. of Physics, University of Patras, Achaia, GREECE

FC18- Fuel Cells or Renewables for Small-Scale Stationary Power

Inma Andina-Pendas¹, John Simmons¹, James McCormick¹ & Nick Bettacinni¹, Richard Privett²

¹ Halcrow Group Ltd., City Park, 368 Alexandra Parade, Glasgow G31 3AU

² Highways Agency, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6HA, UK

FC15- Development and Testing of Novel Materials for Fuel Cell Applications

S. M. Javaid Zaidi, M. Abdur Rauf

Center of Research Excellence in Renewable Energy, King Fahd University of Petroleum & Minerals, Dhahran-31261, Saudi Arabia

FC25- Potential Of Emerging And Future CO₂-Neutral Hydrogen Sources On The European Scale

Sören Christian Trümper^{1*}, Marcin Blesznowski³, Per Nørgaard², Anne Nygaard Madsen², Hilde Strøm⁴, Robert Steinberger-Wilckens¹

¹ PLANET GbR, Donnerschweer Strasse 89/91, 26123 Oldenburg, Germany49-441-

² Risø National Laboratory for Sustainable Energy, Technical University of Denmark Frederiksborgvej 399, 4000 Roskilde, Denmark

³ Instytut Energetyki, ul.Augustówka 36, 02-981 Warszawa, Poland

⁴ StatoilHydro, Drammensveien 264, Vækerø, 0283 Oslo, Norway

16:30 – 18:00 Session FC- III

Chairs: P. Yianoulis- Greece

FC27- Application of Nanoclay as Performance Tuner for Direct Methanol Fuel Cells

Mohammad M. Hasani-Sadranadi¹, Homayoun Moaddel², Erfan Dashtimoghaddam³, S. Amir Hooshyar⁴

¹ Polymer Engineering and Biomedical Engineering Faculties, Amirkabir University of Technology, Tehran 15875-4413, Young Researcher Club, Tehran 15655-461, IRAN

² Hydrogen & Fuel Cell Inc., Claremont, CA 91711-1241, USA

³ Polymer Engineering Faculty, Amirkabir University of Technology, Tehran 15875-4413, IRAN

⁴ Biomedical Engineering Faculty, Amirkabir University of Technology, Tehran 15875-4413, IRAN

FC13- New Tubular Fuel Cell Architecture and the Effect of Electrokinetic Flows on its Performance

Luis Bambace¹, Fernando Ramos¹, Hércio Villanova¹, Alfredo Castro², Renata Favalliz

¹ National Institute for Space research INPE, São José dos Campos, Brazil

² Nuclear and Energetics Research Institute IPEN, São Paulo, Brazil

FC11- On The Modeling of Polarization Curve of Solid Polymer Membrane Electrolyser for Hydrogen Production

Brahim Laoun¹, Maiouf Belhamel², Wahib Naceur³, Lazhar Serir¹

¹ Applied Research Unit on Renewable Energies, URAER / Zone Industrielle Gaar Taam, P.O. Box 88 – 47000, Ghardaïa, Algeria.

² Research Centre of Renewable Energies Development. CDER /Route de L'observatoire, P.O. Box 62–16340, Bouzareah, Alger – Algeria

³ Department of Chemical Engineering, University of Saad Dahlab, BP 270, Soumaa road, Blida, Algeria

FC16- Increasing Fuel Cell Efficiency by Humidification Control

Using a Perturb-and-Observe Algorithm

Michael A. Danzer, Andreas Wachtel & Eberhard P. Hofer

Institute of Measurement, Control and Microtechnology, Ulm University, Germany

WEDNESDAY

11:00 – 13:00 Session FC- IV

Chairs: Arno A. Evers – Germany

FC16- Increasing Fuel Cell Efficiency by Humidification Control

Using a Perturb-and-Observe Algorithm

Michael A. Danzer, Andreas Wachtel & Eberhard P. Hofer

Institute of Measurement, Control and Microtechnology, Ulm University, Germany,

Tel: +49-731-5026325, Fax: +49-731-5026302, Email: michael.danzer@uni-ulm.de

FC14- Tubular Anodes with Hidden Catalyst Concept and its Hydrogen Transport

Luis Bambace¹, Fernando Ramos¹, Hécio Villanova¹, Alfredo Castro², Renata Favalliz

¹ National Institute for Space research INPE, São José dos Campos, Brazil

² Nuclear and Energetics Research Institute IPEN, São Paulo, Brazil

FC7- SENSITIVITY AND CHARACTERISATIONS OF NH₃BH₃ BASED COMPOSITIONS FOR HYDROGEN GENERATION

Nicolas Salandre¹, Jérôme Hélar¹, Didier Poullain¹, Jérôme Saillard¹, Arnaud Beaucamp¹, Denis Autissier¹

¹ CEA Le Ripault BP 16, 37260 Monts, France

FC17- Production of hydrogen from sucrose via dark anaerobic

fermentation in a pilot scale reactor

A. Scaletta¹@, A. Boulanger¹, B. La Licata¹, F. Sagnelli¹ & P. Zitella¹

¹ BioEnergy Lab, ENVIRONMENT PARK S.p.A., Turin, ITALY

FC22- Theoretical Study of the Effect of the Variation of Compression ratio and Supercharging on the Performance and Emission Characteristics of Hydrogen Engine

Nasser Shaygan

Faculty of Mechanical Engineering, Shahid Rajahi University, Lavizan, Tehran, Iran.

FC26- Potential Benefits of Using Hydrogen as a Secondary Energy Storage Medium for a Standalone Renewable Energy Power System

Oliver El Korashy¹, Craig Clark² & Prof Tughrul Arslan³

¹ Research Engineer, Clyde Space/ISLI, Glasgow/Livingston, UK

² Clyde Space, Glasgow, UK

³ School of Engineering and Electronics, The University of Edinburgh, UK

FC33- Fuel Cells: The International Stage

Fuel Cells 2000, London, UK

14:30 – 16:00 Session FC- V,

Chairs: Shyam Nandwani – Costa Rica

InvSM1- Colored Thickness Insensitive Spectrally Selective (TISS) paint coatings for polymeric solar absorbers

Ivo Jerman, Matjaž Koželj, Helena Spreizer, Boris Orel¹, Marjanca Vodlan, Dusan Merlini²

¹ Head of the Laboratory for Spectroscopy of Materials, National Institute of Chemistry, Hajdrihova 19, 1000 Ljubljana, SLOVENIA

² Paint Factory COLOR, c. Komandanta Staneta 4, 1215 Medvode, SLOVENIA

InvSM2- Advances on Electrochromics and their Importance on Energy Savings

P. Yianoulis, M. Giannouli, G Leftheriotis

Renewable Energy Laboratory, Dept. of Physics, University of Patras, Achaia, GREECE

InvSM3- Fabrication and Optical Properties of ZnO Films

Prepared by Sol-Gel Process

Hong-lie Shen, Xiao-bo Lou, Hui Zhang and Bin-bin Li

College of Materials Science and Technology, Nanjing University of Aeronautics and Astronautics, Nanjing 210016, China

SM4- Study the Effect of Nanostructure ZnO:Al on Structural, Morphology and Optical properties as Anti-Reflecting Coating

Huda Abdullah¹, Silvia Rita¹, Syarif Junaidi¹, Kamaruzzaman Sopian²

¹ Faculty of Engineering, Universiti Kebangsaan Malaysia, 43600 Bangi Selangor, MALAYSIA

² Solar Energy Research Institute (SERI), Universiti Kebangsaan Malaysia, 43600 Bangi Selangor, MALAYSIA

BIOMASS SESSIONS

Technical Committee Members: Prof R E H Sims, Prof E Fraga, Prof S S Yang,
Prof N Weidoiu, Prof P U Foscolo, Prof C L Cavalcante, Prof K Maniatis, Prof J Richardson,
Mr S Schuck and Prof B A Stout

TUESDAY

09:00 – 10:30 Session 1 – Biofuels - I

Chairs: Stefano Brandani – UK

InvBM94- Biofuels Are Going to Stay

Pradeep Chaturvedi

Chairman, Indian Association for the Advancement of Science, Delhi, India

InvBM63- Optimization of Cottonseed Oil Refining Process for Biodiesel Production

Monica C.G. Albuquerque, Breno S. Rocha, Alexandre C.C. Ponte Filho, A. Eurico B. Torres, Diana C.S.

Azevedo and Célio L.Cavalcante Jr.*

Dept. of Chemical Engineering, Grupo de Pesquisa em Separações por Adsorção, Universidade Federal do Ceará, Campus do Pici, 709, Fortaleza, CE, 60.455-900, Brazil

BM2- Second Generation Bioethanol: Challenges in Meeting Future Biofuel Demand

Tan Kok Tat, Lee Keat Teong * & Abdul Rahman Mohamed

School of Chemical Engineering, Engineering Campus, Universiti Sains Malaysia, Seri Ampangan, 14300

Nibong Tebal, SPS, Pulau Pinang, Malaysia.

BM50- Sustainability Assessment of Ethanol Production

Arinola Abiola¹, Eric S Fraga¹ & Paola Lettieri¹

¹ Centre for CO₂ Technology, Department of Chemical Engineering, University College London, Torrington Place, London WC1E 7JE, UK

BM85- Esterification of Free Fatty Acids using Sulfated Zirconia

Rajesh Kumar Balasubramanian¹ & Jeffrey Philip Obbard²

¹ Division of Environmental Science and Engineering, Faculty of Engineering, National University of Singapore, SINGAPORE.

² Division of Environmental Science and Engineering, Faculty of Engineering, National University of Singapore, SINGAPORE.

BM26- Propan-2-ol conversion to diisopropyl ether over substituted phosphomolybdate heteropoly-compounds

F. Chami, L. Dermeche, C. Rabia.

Laboratoire de Chimie du Gaz Naturel, Faculté de Chimie, USTHB, BP32, El-Alia, 16111, Bab-Ezzouar, Alger, Algérie

11:00 – 13:00 Session 2 – Process for Biomass Conversion-I

Chairs: Jennifer Holmgren – USA

InvBM10- Integration and Evolution of Biomass and Biofuel Technologies

Professor Dermot Roddy

Science City Professor of Energy, Newcastle University, UK

BM30- Thermochemical conversion of biomass to produce gas rich in hydrogen

Elena David

Institute of Cryogenics & Isotope Technologies, P.O.Box 10, Rm.Valcea, Code 240050, Romania

BM74- Combustion of Neem Oil Methyl Ester in a Direct Injection Diesel Engine

Jiwak G. Suryawanshi

Department of Mechanical Engineering, Visvesvaraya National Institute of Technology, Nagpur- 440011, Maharashtra, India

BM91- EXPERIMENTAL INVESTIGATION OF PALM OIL METHYL ESTER IN A DI DIESEL ENGINE

Sivakumar.V¹, Sukumar Phuhan², Dr.G.Nagarajan³

¹ Post Graduate Student

² Senior Research Scholar

³ Assistant Professor

Department of Mechanical Engineering, Internal Combustion Engineering Division, College of Engineering, Anna University Chennai, Chennai – 25, India

BM43- An Improved Numerical Model Analysis and Experiment Investigations to an Methane-used Annular-type Micro Gas Turbine Power System

Chun Hsiang Yang, Cheng Chia Lee, Chiun Hsun Chen

Department of Mechanical Engineering, National Chiao Tung University 1001 Ta Hsueh Road, Hsinchu, Taiwan 300

BM79- Fischer Tropsch fuels via synthesis gas from biomass gasification

Gudrun Bauer¹ & Hermann Hofbauer²

¹ Institute of Chemical Engineering, Vienna University of Technology, Vienna, AUT

² Institute of Chemical Engineering, Vienna University of Technology, Vienna, AUT

BM86- Assessment of best option for renewable fuel production from recycled organic streams from MSW

¹Sujing Li, ²Dr. John M Andresen, ³Dr. Gerald Busca,

¹ PHD Student, Environmental engineering, The University of Nottingham, UK

² Course Director of Environmental Engineering, School of Chemical & Environmental Eng, UK,

³ Project manager, Environmental Technology Centre(ETC), School of Chemical and Environmental Engineering, University of Nottingham, Nottingham, UK

BM87- Effect of Co-combustion of Thai lignite and Rice husk in Fixed bed reactor on Combustion Characteristics and Pollutant Emissions

Nattasut Mantananont¹, Savitri Garivait¹, Suthum Patumsawad^{2,*}

¹ The Joint Graduate School of Energy and Environment, King Mongkut University of Technology Thonburi, Bangkok 10140, Thailand.

² Department of Mechanical Engineering, Faculty of Engineering, King Mongkut's University of Technology North Bangkok, Bangkok 10800, Thailand.

BM36- Technical-economical feasibility of a small size biomass fueled Hirn cycle cogeneration plant

Andrea Chesi, Giovanni Ferrara, Lorenzo Ferrari

Dept. of Energy Engineering "Sergio Stecco", University of Florence, Florence, Italy

WE3- Electricity policy and Wind Energy Prospects in Morocco

H. Nfaoui*, H. Essiarab*, A.A.M. Sayich**

* Labo.d'Energie Solaire, Fac. des Sciences, BP1014, Rabat, Maroc

14:30 – 16:00 Session 3 – Biofuels - II

Chairs: Pradeep Chaturvedi – India

InvBM73- Bioethanol Productions with Sweet Potato (*Ipomoea batatas* Lam.)

Hui-Na Chou¹, Wen-Shiang Lee¹, and Shang-Shyng Yang ^{1,2}

¹ Institute of Microbiology and Biochemistry, and

² Department of Biochemical Science and Technology, National Taiwan University, Taipei 10617, Taiwan

BM7- Biofuels and the speeding of environmental destruction

Dr. Claudio Scarpinella¹ and Prof. Sinclair Mallet-Guy Guerra²

¹ Consultant, Instituto de Eletrotécnica e Energia, Universidade de São Paulo, São Paulo, SP, BRASIL.

² Professor, Universidade Federal do ABC, Santo André, SP, BRASIL

BM32- Energy Analysis of Biodiesel from Jatropha

Ajay Varadharajan¹, Venkateswaran W.S1 & Prof. Rangan Banerjee²

¹ Department of Mechanical Engineering, National Institute of Technology Trichy 620015, India.

² Department of Energy Science and Engineering, IIT Bombay, Powai, Mumbai-400076, India

BM27- Combination of Cellulase and Celubiase for Bioethanol Production through Simultaneous Saccharification And Fermentation (SSF)

Misri Gozan¹, Muhammad Samsuri¹, Mohammad Nasikin¹, Bambang Prasetya²

¹ Department of Chemical Engineering, University of Indonesia, Kampus UI, Depok 16424, Indonesia

² Research Center for Biotechnology, Indonesian Institute of Science (LIPI) Cibinong, Indonesia

BM21- Effects of Urea Feeding on Growth and Lipid Accumulation of Nannochlorosis Oculata

Chih-Hung Hsieh, Yu-Han Huang, Chun-Chong Fu and Wen-Teng Wu*

Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan

BM75- 'Hybrid' biofuels made from Municipal Solid Waste and renewable power ... or why renewable energies and rubbish should mix!

Dimitri Mignard & Colin Pritchard

School of Engineering and Electronics, Institute for Energy systems, University of Edinburgh, Edinburgh EH9 3JK, Scotland, UK

16:30 – 18:00 Session 4 – Regional Studies - I

Chairs: Dermot Roddy – UK

InvBM72- Bioethanol Production Progress in Taiwan

Shang-Shyng Yang and Chia-Bei Wei

Department of Biochemical Science and Technology, and Institute of Microbiology and Biochemistry

National Taiwan University, Taipei 10617, Taiwan

BM37- Methodology of analysis of biomass potential using GIS in conditions of the Czech Republic

Kamila Havlíčková, Jiří Suchý & Jan Weger¹

¹ Silva Tarouca Research Institute for Landscape and Ornamental Gardening, Publ. Res. Inst., (VÚKOZ, v.v.i.), Květnové nám. 391, 252 43 Průhonice, Czech Republic

BM48- Potential of Bagasse Based Cogeneration in Pakistan

Dr. Khanji Harijan¹ Dr. Mohammad A. Uqaili², and Dr. Mujeebuddin Memon²

¹ Department of Electrical Engineering, Mehran University of Engineering and Technology, Jamshoro 76062, Sindh, Pakistan

² Department of Mechanical Engineering, Mehran University of Engineering and Technology, Jamshoro 76062, Sindh, Pakistan

BM24- Electricity from Bioethanol? Case Study of Czech Republic

Martin Benes, Oldrich Stary

Czech Technical University in Prague, FEL, Technicka 2, 166 27 Praha 6, Czech Republic

BM34- Modeling of Intentionally Planted Biomass Prices in CR

Kamila Havlíčková¹, Jaroslav Knápek², Jiri Vasíček²

¹ Silva Tarouca Research Institute for Landscape and Ornamental Gardening, p.r.i. (VÚKOZ, v.v.i.), Průhonice, Czech Republic

² Czech Technical University in Prague, Faculty of Electrical Engineering, Prague, Czech Republic

BM19- Sustainable Decentralised Biomass Electricity Generation for Bangladesh

A K Hossain¹ & O Badr²

¹ Sustainable Environment Research Group, School of Engineering and Applied Science, Aston University, Birmingham B4 7ET, UK

² Process Systems Engineering Group, School of Engineering, Cranfield University, Cranfield, Bedfordshire MK43 0AL, UK

BM47- Long-term strategies for the optimal use of biomass in Austria

Gerald Kalt¹, Reinhard Haas, Lukas Kranzl

¹ Energy Economics Group, Vienna University of Technology, Gusshausstrasse 25-29/373-2, 1040 Vienna, Austria

11:00 – 13:00 Session 5 – Process for Biomass Conversion - II

BM23- Biochar for CO₂ bio-sequestration during pyrolysis bioenergy production

Johannes Lehmann

Department of Crop and Soil Sciences, Cornell University, Ithaca, NY 14853, USA

InvBM93- H₂ Production for MCFC by Steam Reforming of Organic Solvents

Francesco Frusteri*, Salvatore Freni, Vitaliano Chiodo, Natale Mondello

Institute of Advanced Technologies for Energy “Nicola Giordano” CNR-ITAE, Via S. Lucia 5, 98126 Messina – Italy

InvBM64- Cleaner Processes to Produce Biodiesel using Heterogeneous Catalysis

Donato Aranda¹, Neyda Tapanes¹, Jussara Gonçalves¹, Layla Rocha¹, Robson Monteiro¹ & José Carneiro²

¹ Greentec Laboratoty, Federal Universtiy of Rio de Janeiro, Brazil

² Chemistry Institute/Federal Fluminense University, Rio de Janeiro, Brazil

BM28- SOFC CHP plant fueled with biomass syngas: modeling the gasification stage

Paolo Baggio¹, Marco Baratieri¹, Maurizio Grigiante¹, Massimo Bertoldi², Sergio Ceschini², Lorenzo Tognana²

¹ Department of Civil and Environmental Engineering, University of Trento, ITALY

² SOFCpower Srl, Pergine, Trento, ITALY

BM20- Operating experience and energy system analysis of the biogas-powered 5 kW SOFC system in GlashusEtt

Maria Saxe¹, Lars Hedström¹, Markku Rissanen², Göran Lindbergh³, Per Alvfors¹, Bengt Ridell⁴

¹ KTH - Energy processes, SE-100 44 Stockholm, Sweden, Tel: 46-8-790 65 51, Fax: 46-8-723 08 58, email: saxe@kth.se

² ABB AB, Corporate Research, SE-721 78 Västerås, Sweden

³ KTH - Applied Electrochemistry, SE-100 44 Stockholm, Sweden

⁴ Grontmij AB, Energy Systems, SE-212 09 - Malmö, Sweden

BM31- Parametric study of PSA process for the capture of CO₂ from flue gas

E. David, I. Stefanescu, A. Armeanu.

Institute of Cryogenics & Isotope Technologies, P.O.Box 10, Rm. Valcea, Code 240050, Romania

BM12- Techno-economic analysis of palm oil waste power generation for grid-connected utilization

J.H. Yong, T.M.I. Mahlia, H.H. Masjuki

Department of Mechanical Engineering, University of Malaya, 50603 Kuala Lumpur, Malaysia

BM77- The energy potential from livestock waste recovery: a technical and economic analysis

Fausto Cavallaro¹ - Bruno Mignogna²

¹ Department SEGeS – University of Molise, Via De Sanctis 86100 Campobasso (ITALY), tel. +390874404328, fax +39087431124 cavallaro@unimol.it

² ECOLOC Project - INTERREG IIIA - University of Molise via De Sanctis, 86100 Campobasso (ITALY)

14:30 – 16:00 Session 6 – Biomass Policy and Processes

Chairs: Eric S Fraga - UK

InvBM22- Modelling, optimization and life cycle analysis of biofuels supply chain

Christiana Papapostolou¹, Emilia Kondili¹, John K. Kaldellis²

¹ Optimisation of Production Systems Lab., Dept. of Mechanical. Eng., TEI of Piraeus,

² Soft Energy Applications & Environmental Protection Lab, TEI of Piraeus, P.O. Box 41046, Athens 12201, Greece

BM39- Strategy for Converting a Conventional Kraft Pulp Mill into a Sustainable “Green” Mill

Enrique Mateos Espejel¹, Mariya Marinova², Dimitris Diamantis¹, Louis Fradette¹ & Jean Paris¹

¹ Department of Chemical Engineering, École Polytechnique, Montréal (Québec), CANADA,

² FPIInnovations, Paprican Division, Pointe-Claire (Québec), CANADA

BM25- Use of biomass in Croatia: options for CO₂ mitigation

Robert Pasicko¹, Andreas Tuerk², Prof Zeljko Tomšić³

¹ Faculty of Electrical Engineering and Computing, University of Zagreb, CROATIA

² Joanneum Research Institute, Graz, AUSTRIA

³ Faculty of Electrical Engineering and Computing, University of Zagreb, CROATIA

BM76- Biofuel options for modern energy services in rural villages: a case study from Tanzania

Hassan M. Rajabu¹, Colin Pritchard², Rwaichi J.A.Minja³, Abraham K. Temu³, Jamidu HY Katima³, Karoli N. Njau³

¹ Dept. of Energy Engineering, University of Dar es Salaam, Box 35131 Dar es Salaam, Tanzania.

² Institute for Energy Systems, University of Edinburgh, Edinburgh EH9 3JK, Scotland, UK.

³ University of Dar es Salaam, Chemical and Process Eng Dept., Box 35131, Dar es Salaam, Tanzania.

BM100- Demonstration Study on Direct Use of Waste Vegetable Oil as Car Fuel

Yasuyuki Nemoto¹ and Izumi Ushiyama²

¹ Dept. of Mechanical Eng., Ashikaga Institute of Technology, Ashikaga, Japan.

² Graduate School, Ashikaga Institute of Technology, Ashikaga, Japan.

THURSDAY

11:00 – 13:00 Session 7 – Regional Studies – II

Chairs: Shang Shyng Yang – Taiwan

BM51- Energy Recovery with Biogas Production from Brewery Waste – a Step Towards Self-sufficiency

Gregor D. Zupančič¹, Milenko Ros¹, Matej Stražišičar² and Miran Klemenčič³

¹ National Institute of Chemistry, Hajdrihova 19, PO Box 660, SI-1001 Ljubljana,

² Brewery Union, Pivovarnaška 2, SI-1000 Ljubljana, Slovenia, ³ Brewery Laško, Trubarjeva 28, SI-3270 Laško, Slovenia

InvBM46- Electricity from Landfill Biogas: A Study Case in Sao Paulo, Brazil

Vanessa Pecora¹, Natalie J. V. de Figueiredo¹, Suani Teixeira Coelho¹, Sílvia M. S. G. Velázquez^{1,2}

¹ USP – Sao Paulo University, IEE/CENBIO – Electrotechnical and Energy Institute / Brazilian National Biomass Reference Center. Av. Prof. Luciano Gualberto, 1289 CEP 05508-010 – São Paulo – SP – Brasil

² Dept. of Mechanical Eng., Presbyterian University Mackenzie. Rua da Consolação, 930 CEP 01302-907 - São Paulo - SP – Brasil

BM33- The Effective Use of Bio Energy and Its Future in Ireland

Mark Anderson, Neil J Hewitt

Centre for Sustainable Technologies, School of the Built Environment, University of Ulster, Newtownabbey, BT37 0QB, Northern Ireland

BM61- Mapping Optimal Growing Areas for Switchgrass Production in North Dakota

Soizik Laguette

Dept of Earth System Science & Policy, University of North Dakota, Grand Forks, ND, USA

BM41- Development of a rural biomass cluster on the Isle of Arran: the necessity of co-operation between stakeholders when utilising a limited resource

George Wallis¹ and Angus Smith²

¹ Deasil Energy, East Kilbride, Glasgow, Scotland, UK

² Arran Butterfly Farm and Arran Woodfuels, Machrie, Isle of Arran, Scotland, UK

BM58- Biomass Residues and Energy Crops Availability and Use in Latvia

Prof., Dr.habil.sc.ing. Peteris Shipkovs¹, Dr.sc.ing. Galina Kashkarova², PhD student, M.sc.ing. Kristina Lebedeva², M.sc. Martinsh Jirgens³

¹ Riga Technical University, Riga, LV-1048, Latvia

² Institute of Physical Energetics, Riga, LV-1006, Latvia

³ Ministry of the Environment, Riga, LV-1494, Latvia

BM15- Sustainable Production and Utilization of Woodfuel in Ghana: A Needed Response to Climate Risk.

Stephen Lartey Tekpetey¹, Prof. Nana Frimpong-Mensah² & Dr. Monica Idinoba³.

^{1,2} Department of Wood Science and Technology, Faculty of Renewable Natural Resources, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

³ Project Scientist, Centre for International Forestry Research (CIFOR) TroFCCA-West Africa Project; Cifor o6 BP 9478 Ouagadougou o6, Burkina Faso

BM3- The Use and Status of Biogas Plants of Pabna District in Bangladesh

M.A.K Chowdhuri¹, R.A Hossain², M. Ali³, M.A.R Sarkar¹

¹ Department of Mechanical Engineering, Bangladesh University of Engineering & Technology

² Department of Mechanical Engineering, Primeasia University, Bangladesh

³ International Institute of Management, University of Flensburg, Germany

BM8- The Potential of Electricity Generation from Poultry Droppings in Bangladesh.

Engr. Sheikh Ashraf Uz Zaman¹ & Prof. M. A. Rashid Sarkar²

¹ Assistant Engineer, Titas Gas T&D Co. Ltd., Bangladesh

² Department of Mechanical Engineering, BUET, Bangladesh

BM29- Assessment of Wood Fuel Production Potential in Pakistan

Dr. Mujeebuddin Memon¹, Dr. Khanji Harijan¹, and Dr. Mohammad A. Uqaili²

¹ Department of Mechanical Engineering, Mehran University of Engineering and Technology, Jamshoro 76062, Sindh, Pakistan

² Department of Electrical Engineering, Mehran University of Engineering and Technology, Jamshoro 76062, Sindh, Pakistan

ENGAGING WOMEN IN ENERGY ENTERPRISES

A workshop on energy and gender-equitable development

Organized by the Technical Committee on Energy and Gender-Equitable Development, World Renewable Energy Congress-X

Sunday 20 July 2008, 09.00–5.00pm

Chair: Dr Barbara Farhar, Ph.D (USA)

ME 29 James Weir Building, University of Strathclyde, Department of Mechanical Engineering, 75 Montrose Street, Glasgow, Scotland G1 1XJ

The workshop will focus on understanding current issues and impacts of sustainable energy on poverty in the developing world and using that knowledge to accelerate our transition to a future with greater energy justice. Dominique Lallement (France-USA) will give the keynote presentation. Workshop panelists include Liz Bates (U.K.), Priyadarshini Karve (India), Jyotirmay Mathur (India), Wendy Annecke (So. Africa), Gail Karlsson (USA), Sabina Anokye Mensah (Ghana), May Sengendo (Uganda), Gomathi Nair (India), David Renne (USA), Hunter Lovins (USA), and Lakshman Guruswamy (USA). In addition to networking opportunities, Workshop participants will gain understanding of important issues in (a) gender, energy and poverty reduction, (b) equitable distribution initiatives in various parts of the world, and (c) the role of sustainable energy in reaching the Millennium Development Goals. Recommendations will be developed for the UN Commission on Sustainable Development (CSD-17 session in May 2009). Lunch and refreshments will be provided.

ENERGY AND GENDER-EQUITABLE DEVELOPMENT

Dr. Barbara C. Farhar, *Chair*

Technical Committee Members: Dr. Wendy Annecke, Gail Karlsson, J.D.,

Dr. Priyadarshini Karve, Ms Dominique Lallement, Dr. May Sengendo

Tuesday

11:00 -12:30 Energy and Gender-Equitable Development- 1

Chairs: Dr. Barbara Farhar and Gail Karlsson

INVG14- Increasing Access through Gender-Responsive Energy Financing and Business Mechanisms

Dr. May Sengendo, Ph.D., Professor, Department of Women and Gender Studies, Makerere University, Kampala, Uganda, sengendo@infocom.co.ug

INVG8 - Gender and Biofuel Production: Criteria Women Farmers Would Use for Designing, Implementing and Evaluating a Sustainable Project

Dr. Wendy Annecke, Ph.D., Principal Analyst, Gender and Energy Research and Training, Capetown, South Africa, wendya@sustainable.org.za

INVG23 - Women, Jatropha Oil and Multi-functional Platforms in Ghana

Sabina Anokye Mensah, Gender and Development Coordinator, Gratis Foundation, Tema, Ghana, sabina-mensah@hotmail.com

INVG7 - Energy and Women's Economic Empowerment: Opportunities for Accelerated Sustainable Development

Dominique Lallement, International Energy Consultant to the World Bank, to ESMP, the EU/EI, and other public and private organizations. Member of RIAED, France-USA, dominique.lallement@gmail.com

14:30 - 16:00 Energy and Gender-Equitable Development- 2

Chairs: Dr. Wendy Annecke and Dr. May Sengendo

INVG2 - Energy as Women's Business: Building Sustainable Enterprises in Developing Countries

Gail Karlsson, J.D., Advisor to ENERGIA—International Network on Gender and Sustainable Energy, USA, gkarlsson@worldnet.att.net

INVG11 - Empowering Women by Integrating Microcredit with Water, Sanitation, and Renewable Energy

Mrs. Kalpakam Yechury, Member-in-charge, Rural Sanitation Water and Waste Management All India Women's Conference, New Delhi, India, aiwcctc@nda.vsnl.net.in

INVG13 - Key Issues in Developing Sustainable Energy to Improve Energy Access

Dr. Barbara Farhar, Ph.D., Adjunct Research Fellow, University of Colorado Law School, Boulder, Colorado USA, barbara.farhar@colorado.edu

G22- Micro Finance and Enterprise Development: Two Windows for Channeling Energy for Gender Equitable Development

Prof. Anoja Wickramasinghe, Coordinator of National Network on Gender and Energy, Dept. of Geography, University of Peradeniya, Sri Lanka

WEDNESDAY

11:00 - 12:30 Energy and Gender-Equitable Development- 5

Chairs: Mrs. Gomathi Nair and Dr. Barbara Farhar

InvG6- Welfare Approach Vs Commercial Approach for Improved Stove Dissemination Programmes: Lessons from ARTI's Experience

Dr. Priyadarshini Karve

Project Co-coordinator, Appropriate Rural Technology Institute (ARTI), 2nd Floor, Maninee Apartments, S.No.13, Dhayarigaon, Pune 411 041, INDIA

InvG9- Thirty Years of Experience with Solar Cookers and Cooking to Reduce Global Warming

Shyam S. Nandwani

Laboratorio de Energía Solar, Departamento de Física, Universidad Nacional, Heredia, Costa Rica

InvG1- Improving Indoor Air Quality in Rural Areas Using Solar and Wind Energy

Jyotirmay Mathur, Anish Modi, Sarvan Subramaniam

Mechanical Engineering Department, Maaviya National Institute of Technology, Jaipur (India)

G12- Can Sustainable Energy Help to Reach the MDGs like Poverty Reduction and Gender Equality? Successful Examples of Different Regions and Technologies

Carmen Dienst¹, Maike Bunse² & Dr. Manfred Fischechick³

¹ Project leader, Wuppertal Institute for Climate, Environment and Energy, Wuppertal, Germany;

² Research Fellow, Wuppertal Institute for Climate, Environment and Energy, Wuppertal, Germany;

³ Vice President and Director, Wuppertal Institute for Climate, Environment and Energy, Wuppertal, Germany

14:30 – 16:00 Energy and Gender-Equitable Development- 6

Chair: Dr. Priyadarshini Karve

InvG10- Renewable Energy Resource Data Provide the Foundation for Effective Clean Energy Programs Around the World

David S. Renné, Principal Project Leader

National Renewable Energy Laboratory, 1617 Cole Boulevard, Golden, Colorado 80304 USA

InvG11- EMPOWERING WOMEN BY INTEGRATING MICROCREDIT WITH WATER, SANITATION & RENEWABLE ENERGY

MRS. KALPAKAM YECHURY

Member-in-Charge, Rural Sanitation Water & Waste Management
All India Women's Conference, New Delhi, India.

THURSDAY

11:00 - 12:30 Energy and Gender-Equitable Development- 7

Chairs: Dr. Priyadarshini Karve

InvG24- A Study on the Social Economic Results of the Rural Electrification Programme in the Brazilian Hinterland

Prof. Dr. Yolanda Vieira de Abreu¹

Bachelor Elton Bispo Rodrigues¹

Prof. Dr. Sinclair Mallet Guy Guerra²

¹ Economics Dept – Federal University of Tocantins, Brazil, Phone: 55-63-32154190, Universidade Federal de Tocantins – UFT e-mail: yolanda@uft.edu.br,

² CECS Dept Universidade Federal do ABC – UFABC, Brazil

G4- Reality and Potential of Household Energy for Rural Women in Pakistan

Syed Ilyas

Group of Renewable Energy and Environment, Department of Physics, University of Balochistan, Quetta, Pakistan

G15- Gender Perspectives of Biogas Technology in Nepal

Dr Indira Shakya

¹ Technical Research Person, Energia Asia Regional Secretariate, Centre for Rural Technology. Kathmandu, Nepal

G21- Autonomous pre-Free Emissionless Life via Sustainable Home Engineering

Pat.ff.Howden¹ (DSc, PhD, BSc, Fellow-BIS, Hon F-IAA, Member-IEEE, M-MSSANZ, M-ANZSES), Director BackYard Tech, Cone St, Macleay Island, Q4184, Australia. Ph/Fax +61-7-34095100. No net or e-mail on this remote island

MARINE AND OCEAN ENERGY TECHNOLOGY

Prof A S Bahaj, *Chair*

Technical Committee Members: Prof Antonio Sarmento, Dr Chris Retzler, Dr Cameron Johnston, Dr William Batten and Dr Andrew Grant

TUESDAY

09.00 – 10.30 Session 1: International developments

Chair: AbuBakr Bahaj, Co-Chair: Cameron Johnston

M1- Recent Development of Ocean Energy in Korea

Professor Chul H Jo: Inha University, South Korea

(M14)-A Distinctive Energy Policy for Scotland?

Grant Allan, Peter McGregor, Kim Swales & Karen Turner

Fraser of Allander Institute, Department of Economics, University of Strathclyde, Glasgow UK

(M46)- Key Activities for the Development of Marine Energy in Spain

José Luis Villate, Pierpaolo Ricci, Pablo Ruiz-Minguela Pedro Ibañez & Maider Santos

Unidad de Energía de Tecnalia, Sede de Robotiker-Tecnalia, Parque Tecnológico, Zamudio (Bizkaia), Spain

(M35)The Lysekil Wave Power Project: Status Update

Simon Tyrberg, Rafael Waters, Magnus Stålberg, Cecilia Boström, Olle Svensson, Erlan Strömstedt, Andrej Savin, Jens Engström, Oliva Langhamer, Halvar Gravråkmö, Jan Sundberg & Mats Leijon

Division for Electricity, Uppsala University, Uppsala, Sweden

11.00 – 13.00 Session 2: Wave Energy 1: Assessment, dynamics & resource

Chair: Tony Lewis, *Co-Chair:* William Batten

(M47)- Assessment of Wave Energy Devices. Best Practice as used in Denmark

Peter Frigaard¹, Jens Peter Kofoed & Kim Nielsen²

¹ Department of Civil Engineering, Aalborg University, Denmark

² Rambøll, Teknikerbyen, Denmark

(M7)- Neutrally Buoyant Cylinders Moving Under Waves: A Comparison of Theory and Experiment

Dr K S Varyani¹, Tom Barraclough², Andrew Johnstone² & Cameron Sutherland²

¹ Department of Naval Architecture and Marine Engineering, Universities of Glasgow and Strathclyde, Scotland, UK

² Green Cat Renewables Ltd, Scotland, UK

(M5)- A non-linear potential model to predict large-amplitudes-motions: application to a multi-body wave energy converter.

Jean-Christophe Gilloteaux, Giorgio Bacelli & John Ringwood

National University of Ireland Maynooth, Department of Electronic Engineering, Ireland

(M9)- Some Aspects of Tuning Wave Energy Converters in Irregular Waves

Andrew McCabe, George Aggidis, & Martin Widdén

Renewable Energy Research Group, Engineering Department, Lancaster University, UK

(M25)- Linear models for short term wave forecasting Francesco Fusco & John Ringwood

¹ Universita Politecnica delle Marche, Ancona, Italy

² National University of Ireland Maynooth, Department of Electrical Engineering, Ireland

(M38)- Better Understanding of Wave Generation near Water Surface

Mamoun Janajrah, Arne Holdo, Omar Badran, Andrew Lewis & Raj Calay

Department Aerospace, Automotive and Design Engineering, University of Hertfordshire, UK

14.30 – 16.00 Session 3: Tidal Energy 1: New rotor developments

Chair: José Luis Villate, *Co-Chair:* Luke Myers

(M31)- Unsteady Hydrodynamic Modelling of Rotor Systems Used in Marine Current Turbines

Tom McCombes, Andrew Grant & Cameron Johnston

Energy Systems Research Unit, Dept. of Mechanical Engineering, University of Strathclyde, Glasgow, UK

(M32)- Contra-rotating Marine Current Turbines: Performance in Field Trials and Power Train Developments

Joe Clarke, Gary Connor, Andrew Grant, Cameron Johnstone & Stephanie Ordonez-Sanchez

Energy Systems Research Unit, Dept. of Mechanical Engineering, University of Strathclyde, Glasgow, UK

(M6)- Characterisation of a HATT using CFD and ADCP site data

Allan Mason-Jones, Paul S Evans, Tim O'Doherty & Daphne M O'Doherty

¹ School of Engineering, Cardiff University, Cardiff, UK

² School of Earth, Ocean and Planetary Sciences, Cardiff University, Cardiff, UK

(M2)- A Three-Dimensional Tidal Stream Turbine Hydrodynamic Performance Model

Ian Masters¹, John Chapman² & James Orme¹

¹ Swanturbines Ltd, Digital Technium, Swansea, UK

² Civil and Computational Engineering Centre, Talbot Building, Swansea University, Swansea, UK

(M33)- Numerical Simulation of the Wake of Marine Current Turbines with a Particle Method

Maganga Fabrice¹, Pinon Gregory², Rivoalen Elie² & Gernaibn Gregory¹

¹ Hydrodynamic & Metocean, IFREMER, IFRM, Brest, France

² LOMC, University du Havre, France

16.30 – 17.30 Session 4: Bringing marine renewables to the market 1

Chair: Andrew Grant, *Co-Chair:* Jonathan Flinn

(M48)- White paper for IPCC

Presented by Alla Weinstein: EU- OEA

(M26)- Wave Energy Technology Review: Application of the Learning Curve Concept 1970 – 1999

Audrey Mukora, Markus Mueller, Mark Winskel & Henry Jeffrey

School of Engineering and Electronics, University of Edinburgh, UK

(M21)- Structured Development Programmes Mitigate Engineering & Financial Risk

Brian Holmes & Sean Barrett

Hydraulics & Maritime Research Centre, University College Cork, Cork, Ireland

(M10)- A Wave Energy Future for the Western Isles

Emily Rudkin, Inma Andina-Pendas, Francis Akwensivie & Calum Iain MacIver

¹ Halcrow Group Ltd., City Park, Glasgow, UK

² Comhairle nan Eilean Siar, Stornoway, Isle of Lewis, Scotland, UK

(M17)- Wave Energy Planning and Marketing (WAVEPLAM)

Cristina Huertas-Olivares¹, Jose Ramón López², J.Luis Villate³, David Langstom⁴, António J.A. Sarmiento^{1,7}, Michael Panagiotopoulos⁵, Brian Holmes⁶, Nathalie Rousseau⁷, Hans C. Soerensen⁸

¹ Wave Energy Centre, Lisbon, Portugal

² Ente Vasco de la Energía, Bilbao, Spain

³ Fundación ROBOTIKER, Bilbao, Spain

⁴ Wavegen, UK

⁵ Centre for Renewable Energy Sources, Greece

⁶ HMRC, University Collage Cork, Ireland

⁷ European Ocean Energy Association, Belgium

⁸ Wave Dragon APs, Denmark

WEDNESDAY

11.00 – 13.00 Session 5: Wave Energy 2: New converters

Chair: Peter McGregor, Co-Chair: Brian Holmes

(M46)- Test on a Novel Pitching-Surge Wave Energy Converter

M T Rahmati, R V Chaplin, G A Aggidis and A P McCabe

Lancaster University Engineering, Department, Renewable Energy Group, Faculty of Science and Technology, Bailrigg, Lancaster LA1 4YR, UK

(M20)- A Novel Compact Wave Energy Converter

Ned Minns, Simon Watson, Robert Haken & Les Duckers

Centre for Renewable Energy, Loughborough University, UK

(M42)- Development of a Stand-Alone Wave Energy Device and Applications for Micro-Energy Generation and Related Applications

Davide Magagna &, Gerald Muller

Sustainable Energy Research Group, School of Civil Engineering and the Environment, University of Southampton, UK

(M40)Preliminary Findings from a Laboratory Scale Model of a Ducted Wave Energy Converter

M. Leybourne¹, W.M.J. Batten¹, A.S. Bahaj¹, J O'Nians² & H. T aylor²

¹ Sustainable Energy Research Group, School of Civil Engineering and the Environment, University of Southampton, UK

² IT Power Ltd. Bristol, UK

(M29)- Design of an Oscillating-Arm of Double-Stroke Mechanism to Harvest Ocean Wave Energy

Professor Pedro Viggiani

Department of Mechanics, UNEXPO, Caracas, Venezuela

(M45)- Reliability Estimation Method for Wave and Tidal Energy Converters

Jonathan Flinn & Claudio Bittencourt

DNV Energy, London, UK

(M11)- Predicting Annual Outputs for Tidal Turbine Technology

Emma Robinson¹, Kevin Harnett¹ & Prof Gerald Byrne¹

¹ School of Electrical, Electronic and Mechanical Engineering, University College Dublin, Ireland

14.30 – 16.00 Session 6: Tidal Energy 2: Resource & site

Chair: Joe Clarke, *Co-Chair:* Ian Masters

(M37)- Flow Boundary Interaction Effects for Marine Current Energy Conversion Devices

Luke Myers¹, A. S. Bahaj¹, Gregory Germain² & Jack Giles¹

¹ Sustainable Energy Research Group, School of Civil Engineering and the Environment, University of Southampton, UK

² Hydrodynamic & Metocean, IFREMER. Boulogne-sur-Mer, France

(M27)- Tidal Stream Turbine Site Selection Procedures and Development for a Demonstration Site within the Bristol Channel

MR Willis*, I Masters, R Falconer, M Cross, I Horsfall, C Wooldridge, N Syred, I Fryett, A Williams, N Croft, T O'Doherty, D O'Doherty, B Lin, B Bockelmann-Evans, N Cross, P Evans, R Gallie, Fidler R, S Thomas, A Mason Jones

Marine Energy Research Group; Civil and Computational School of Engineering, Swansea; School of Environment and Society, Swansea; Ocean and Planetary Sciences, Cardiff; Institute of Sustainability, Energy and Environmental Management, Cardiff; Centre for Research in Energy, Waste and the Environment, Cardiff, Wales, UK

*Marine Energy Research Group; Civil and Computational School of Engineering, Swansea

(M8)- Resource Assessment of Tidal Power in a Strait

Joel Atwater & Gregory Lawrence

Department of Civil Engineering, University of British Columbia, Vancouver, Canada

Predicting Annual Outputs for Tidal Turbine Technology (M11)

Emma Robinson, Kevin Harnett & Prof Gerald Byrne

School of Electrical, Electronic and Mechanical Engineering, University College Dublin, Ireland

(M23)- GIS Mapping of Currents and Constraining Factors for a Major Tidal Stream Resource; The Pentland Firth, Scotland

Lora Jane Dillon & David K Woolf: Environmental Research Institute, Thurso, UK

16.30 – 18.00 Session S1: Bringing marine renewables to the market 2

Chair: António J.A. Sarmento, *Co-Chair:* Cristina Huertas-Olivares

(M19)- Certification of Wave and Tidal Energy Converters

Jonathan Flinn & Claudio Bittencourt

DNV Energy, London, UK

(M13)- Incorporating Wave and Tidal Energy Technologies in a Mean-Variance Portfolio Theory Application to Electricity Generation in the UK

Grant Allan, Peter McGregor, Kim Swales & Karen Turner

Fraser of Allander Institute, Department of Economics, University of Strathclyde, Glasgow, UK

(M15)- Importance of Revenue Sharing for Local Economic Impacts from a Renewable Energy Project

Grant Allan, Peter McGregor, Kim Swales and Karen Turner

Fraser of Allander Institute, Department of Economics, University of Strathclyde, Glasgow, UK

(M12)- Development of Wave Energy Project: Lessons Learnt

Inma Andina-Pendas¹, Peter Croll¹, & Rod Hacker¹, Nick Harrington²

¹ Halcrow Group Ltd., Sowton, Exeter, UK

² South West Regional Development Agency, Sutton Harbour, Plymouth, UK

THURSDAY

11.00 – 13.00 Session 7: Wave Energy 3: Power takeoff

Chair: Peter Frigaard, *Co-Chair:* Alan H. Clement

(M28)- Coupled Motion of an Inertial Wave Energy Converter with a Nonlinear Power Take Off

Helen Bailey & Ian Bryden

Institute of Energy Systems, University of Edinburgh, UK

(M16)- State Space Model Of An Hydraulic Power Take Off Unit For Wave Energy Conversion Employing Bondgraphs

Giorgio Bacelli, Jean Christophe Gilloteaux & John Ringwood

National University of Ireland Maynooth, Department of Electronic Engineering, Ireland

(M44)- Electrical Machine Options in Offshore Floating Wave Energy Converter Turbo-Generators

Dara L. O'Sullivan & Tony Lewis

Hydraulics & Maritime Research Centre, University College, Cork, Ireland

(M18)- Simulation of the SEAREV Wave Energy Converter with a Controlled Hydraulic Power Take Off

Aurelien Babarit, Hakim Mouslim & Alan H Clement

Fluid Mechanics Laboratory, Ecole Centrale de Nantes, France

(M4)- Dynamic Model of Oscillatory Drive for Floating Wave Energy Converter Alexander Temeev, Oleg Sladkov & Sergey Temeev

Applied Technologies Company Ltd, (ATC) 16/10-301, Profsoyuznaya ul., Moscow, Russia

14.30-16.00 Session 8: Tidal Energy 3: Impacts of Arrays

Chair: Ian Bryden, *Co-Chair:* William Batten

(M24)- An Initial Evaluation of Potential Tidal Stream Development Sites in Pentland Firth, Scotland

Lora Jane Dillon & David Woolf

Environmental Research Institute, Thurso, UK

(M41)- Flow through Large Arrays of Tidal Energy Converters: Is There an Analogy with Depth Limited Flow Through Vegetation?

L. S. Blunden & A. S. Bahaj

Sustainable Energy Research Group, School of Civil Engineering and the Environment, University of Southampton, UK

(M36)- Scale Reproduction of the Flow Field for Tidal Energy Converters

Luke Myers & A. S. Bahaj

Sustainable Energy Research Group, School of Civil Engineering and the Environment, University of Southampton, UK

(M22)- Ecological Considerations for Tidal Energy Development in Scotland

Mark A Shields, Alex T Ford & David K Woolf

Environmental Research Institute, North Highland College, UHI Millennium Institute, Thurso, Scotland, UK

16.30 – 18.00 Session S2 Workshops

Chair: AbuBakr. S. Bahaj, *Co-Chair:* Cameron Johnston

To be arranged

SOLAR THERMAL APPLICATIONS

Prof Phil Eames and Prof Robert Critop – *Chairs*

Technical Committee Members: Prof M Y Othman, Dr D Chwieduk, Dr Y Tripanagnostopoulos, Dr I Haraksingh, Prof H P Garg, Dr A Hourri, Prof R Z Wang, Prof Kpdama, Prof S A Kalogirou and Dr S Shire

TUESDAY

09:00 – 10:30 Session 1 – Agriculture Drying / Cooking

Chair: M Y Othman – Malaysia

ST42- A Mixed Mode Solar PV Dryer

P.C. Pande¹, A.K.Singh² M. M. Purohit³, B.K.Dave⁴

1 Principal Scientist, 2 Senior Scientist, 3-4 Technical Central Arid Zone Research Institute, Jodhpur, 342003, India

ST70- Performance Characteristics of a Salt Recovery Solar Energy Desalination Plant

Michael Chendo¹, Wilfred Okonkwo² and O Uke³

¹ Department of Physics, Faculty of Science, University of Lagos, Akoka, Lagos, Nigeria.

² National center for Energy Research and Development, University of Nigeria, Nsukka, Nigeria

³ Department of Agricultural and Bioresources Engineering, University of Nigeria, Nsukka, Nigeria

ST99- Dimensioning of the mass of the fluid circulating in a selective solar collectors for the heating of an agricultural greenhouse

R. TADILI & M. N. BARGACH

Laboratory of Solar energy and environment, Faculty of the Sciences of Rabat, B.P 1014 Rabat, Morocco

ST22- Heat Pump Dryer using Multifunctional Solar Thermal Collector

MYH Othman*, MH Ruslan, K Sopian and MAA Zafri

Solar Energy Research Institute, Universiti Kebangsaan Malaysia

43600 Bangi, Malaysia

ST92- Capacities and Limits of Using Cooling System with Greenhouse under Littoral Climatic Region

Lazhar Serir¹, Hocine Benmoussa², Brahim Laoun¹

¹ Applied Research Unit on Renewable Energies, URAER / Zone Industrielle Gaar Taam , P.O. Box 88 – 47000, Ghardaïa, Algeria

² Department of Engineering, University of Batna, Algeria

ST49- Aquifer Thermal Energy Storage Application in Greenhouse Climatization

Bekir Turgut¹, Halime Paksoy², Saziye Bozdog³, Hunay Evliya⁴, Kazım Abak⁵, H. Yildiz Dasgan⁶

^{1,2,3,4,5,6} Çukurova University, Adana, Turkey Tel/Fax: 90-322 3386361,

11:00 – 13:00 Session I1 – Collector Technology

Chairs: S Kalogirou – Cyprus

ST59- Solar Air Collectors: A Review

Charalambos Tsioutis and Soteris Kalogirou

Department of Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology, P. O. Box 50329, 3603 Limassol, Cyprus

ST38- Power and angle analyses on a solar parabolic trough

G. Bacci¹, G. Chiani¹, P. Sansoni², D. Fontani², F. Francini², M. De Lucia¹

¹ Dip. Energetica, Fac. Ingegneria, Univ. di Firenze, Via Santa Marta, 3 - 50139 Firenze - Italy-

² CNR-INOA Istituto Nazionale di Ottica Applicata, Largo E. Fermi 6 – 50125 Firenze - Italy

ST29- CPC reflectors for enhanced solar radiation collection of the Thermomax evacuated tube solar water heater

Aggelos Zacharopoulos¹, Jayanta Deb Mondol, Trevor J Hyde and Mervyn Smyth

¹ Centre for Sustainable Technologies, School of the Built Environment, Univ. of Ulster, BT37 0QB, N. Ireland, UK

ST40- New Solar Thermal System Based on the Application of a Textile Composite Treated with Phase Change Material

Barbara Pause

President, Textile Testing & Innovation, LLC, Longmont, Colorado, USA

ST18- A modified Evacuated Solar Tube: heat transfer and fluid dynamic study, modelling and experimental results

Luigi Crema¹, Guido Cicolini¹ & Alessandro Bozzoli¹

¹ Renewable Energies and Environmental Technologies (REET), Fondazione Bruno Kessler (FBK), Povo (TN), ITALY

ST41- Design and Manufacturing of Parabolic Trough Solar Collector System for a Developing Country Pakistan.

Nusrat Kamal Raja* & Dr. M. Shahid Khalil**

* Ph D Scholar or UET, Taxtile, Pakistan

** Professor Mechanical Department, UET Taxila, Pakistan

InvST37- Advanced solar collectors for building integration

Tomas Matuska¹

¹ Dept. of Environmental Eng., Faculty of Mechanical Eng., Czech Technical University, Prague, CZECH Republic

InvST98- Novel Materials for Solar Concentration

Dr Sarah McCormack, Manus Kennedy, Dr John Doran, & Prof Brian Norton

¹ Dublin Energy Lab, Focas Institute, Dublin Institute of Technology, Kevin St, Dublin 8, Ireland

14:30 – 16:00 Session III – Hybrid System Technology

Chairs: S Shire – UK

ST79- Experimental Study of a Thermosiphonic Hybrid PV/T Solar System

1*Manolis Souliotis, 1Yiannis Tripanagnostopoulos, 2*Sotiris A. Kalogirou, 2George Florides, 3*Monir Ekhrawat, 3Dimitris Tsipas

1 Department of Physics, University of Patras, Patras 26504, GREECE

2 Department of Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology, P. O. Box 50329, Limassol 3603, CYPRUS

3 Department of Mechanical Engineering, University of Thessaloniki, Thessaloniki 54224, GREECE

ST8- Performance analysis of Single Pass, Double Duct Photovoltaic/Thermal (PV/T) Solar Air Heater

Ebrahim M. Ali Alfegi¹ & Kamaruzzaman Sopian² & Mohd Yusof Hj. Othman³ & Baharudin Yatim⁴

^{1,2,3,4} Solar Energy Research Institute, Universiti Kebangsaan Malaysia, Bangi, Selangor, MALAYSIA

InvST21- Advances in Hybrid Photovoltaic-Thermal (PVT) Solar Air Heaters

Mohd. Yusof Othman^{1*}, Baharudin Yatim¹, Kamaruzzaman Sopian² and Mohd. Nazari Abu Bakar³

1 Center for Applied Physics Studies

2 Solar Energy Research Institute, Universiti Kebangsaan Malaysia, 43600, Bangi, Selangor, Malaysia.

3 Faculty of Applied Science, Universiti Teknologi MARA, Kampus Arau, 02600 Arau, Perlis, Malaysia

ST71- Development of Photovoltaic-Thermal (PV/T) Water Based System

Mohd Hafidz Ruslan¹, Mohd Yusof Hj Othman², Kamaruzzaman Sopian³, Zafri Azran Abdul Majid⁴ & Wirat Ai Him⁵

^{1,2,3} Solar Energy Research Institute, Universiti Kebangsaan Malaysia, 43600, Bangi, Selangor, MALAYSIA

^{4,5} School of Applied Physics, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600, Bangi, Selangor, MALAYSIA

InvST94- Predictions of fin effectiveness for enhancing heat transfer in phase change thermal Energy Storage Systems

Professor Philip C Eames

Warwick Institute for Sustainable Energy and Resources, (WISER) School of Engineering, University of Warwick, Coventry, UK

InvST31- Thermal Performance Predictions of a Low Concentrating Line-Axis and a High Concentrating Point Focus Photovoltaic System

Tapas K Mallick¹ and Philip C Eames²

¹ Mechanical Engineering; EPS; Heriot-Watt University; Riccarton; EH144AS; UK;

² School of Engineering; University of Warwick; Coventry; CV47AL; UK

16:30 – 18:00 Session IV- Collectors and Systems

Chairs: M Smyth – UK

ST90- Investigation of the adjustment ranges of the slope of an absorber plate for different “latitude-days” zones

N. Nijegorodov, J. G. King, D. Khare and T. A. Thomas*

Department of Physics, University of Botswana, P/Bag 00704, Gaborone, Botswana

ST78- EFFECT OF GAP POSITION OF INCLINED DISCRETE RIBS ON HEAT TRANSFER AND FRICTION FACTOR CHARACTERISTICS OF ARTIFICIALLY ROUGHENED SOLAR AIR HEATER DUCTS

K.R. Aharwal*, B. K. Gandhi** and J.S. Saini**

* Department of Mechanical Engineering S.G.S.I.T.S. Indore (M.P.); INDIA

**Department of Mechanical and Industrial Engineering I.I.T. Roorkee (U.A.); INDIA

ST64- Energy consumption reduction of leading systems in sun trackers

Aleksandar Georgiev¹ & Rumen Popov²

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2 Dept. of Optoelectronics and Laser Technique, TU of Sofia, Branch Plovdiv, 4000 Plovdiv, +359 32 659537, Bulgaria

ST75- Optimization of the Solar Collectors Absorbers Parameters

Prof., Dr.habil.sc.ing. Peteris Shipkovs¹, PhD student, M.sc.ing. Martinsh Vanags¹, Dr.sc.ing. Galina Kashkarova¹, PhD student, M.sc.ing. Kristina Lebedeva¹, Dr.habil.sc.ing. Voldemars Barkans², M.sc. Martinsh Jirgens³

¹ Institute of Physical Energetics, Riga, LV-1006, Latvia

² Latvian Maritime Academy, Riga, LV-1206, Latvia

³ Ministry of the Environment, Riga, LV-1494, Latvia

ST97- Design, Manufacture and Test of Novel Type Flat Plate

Solar Water Collectors

Fuat Lule¹ & Turhan Koyuncu²

¹ University of Ondokuz Mayıs, Faculty of Agriculture, Department of Agricultural Machinery, 55139, Samsun, TURKEY

² University of Ondokuz Mayıs, Faculty of Agriculture, Department of Agricultural Machinery, 55139, Samsun, TURKEY

ST73- Use of the Solar Energy for Textile Industry in Turkey

R. Tuğrul Oğulata

Department of Textile Engineering, Faculty of Engineering and Architecture, Cukurova University, Adana 01330, Turkey

ST68- Reasonable Range of cycling water parameter variations when independently regulating the heating system for each individual building

Hua Zhao & Liwang Liu

School of Municipal & Environmental Engineering, Harbin Institute of Technology, Harbin, Heilongjiang, China

ST54- Integration of Solar Heat Pump and Instantaneous Gas Water Heater

J.P. Chyng¹

¹ Dept. of Commercial Automatic Management, Chihlee Institute Taipei, TAIWAN

WEDNESDAY

11:00 – 13:00 Session V- Cooling

Chairs: Phil Eames – UK

ST6- An Evaluation of Modern Solar Ejctor

Refrigeration and Distillation system

Prof Mahdy Badawy

Dept. of Mechanical Eng., National Research Centre, Dokki, Cairo, EGYPT

ST28- Effect of radiative loss on an irreversible solar-driven absorption refrigerator

Lanmei Wu, Guoxing Lin

Department of Physics and Institute of Theoretical Physics and Astrophysics, Xiamen University, Xiamen 361005, P. R. of China

ST16- Performance of a Liquid Desiccant Solar Air Conditioner - An Experimental and Theoretical Approach

S. Alizadeh and K. Abaspoursani

Department of Energy, Materials & Energy Research Centre, P.O. Box 14155 - 4777 Tehran, Iran

E-mail: shahab_alizadeh@hotmail.com, Facsimile : 0261 6201888

ST88- Solar ejector cooling system using R365mfc

Jin-Hua Wang², B.J. Huang¹, S.S.Hu², J.M.Chang³

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² Graduate student, New Energy Center Department of Mechanical Engineering, National Taiwan University, Taipei, Taiwan

³ Associate Professor, Department of Energy and Air-conditioning Engineering, Chin-Yi University of Technology

ST9- PERFORMANCE IMPROVEMENT OF DIFFUSION SOLAR-ABSORPTION REFRIGERATION SYSTEM

Adnan SÖZEN¹, Engin ÖZBAŞ

¹ Mechanical Education Department, Technical Education Faculty, Gazi University, Teknikokullar, 06503 Ankara, Turkey

² Mechanical Education Department, Technical Education Faculty, Karaelmas University, Karabük, Turkey

ST24- Design of a testing machine for the characterization of jet compression refrigeration systems driven by low grade energy sources.

Humberto Eduardo González Bravo¹, Dorantes Rodríguez Rubén José¹, Jorge Isaac Hernández Gutierrez², Roy Nephtali Solano Palos², Roberto Best y Brown².

¹ Energy Department, Universidad Autónoma Metropolitana, Azcapotzalco, Av. San Pablo No. 180, Col. Reynosa Tamaulipas, CP. 02200 México, D.F.

² Refrigeration and Heat Pumps Department, Centro de Investigación en Energía, Universidad Nacional Autónoma de México. Privada Xochicalco s/n, Col. Centro, CP. 62580 Temixco, Morelos, México.

ST57- Properties of Malaysian Activated Charcoal for Dual Purpose Solar Adsorption System

M.A. Alghoul, M.Y. Sulaiman, K. Sopian, and B.Z. Azmi*

Solar Energy Research Institute, Universiti Kebangsaan Malaysia, Bangi, Selangor Malaysia,

* Physics Department, University Putra Malaysia, Serdang, Selangor, Malaysia.

InvST85- 5m3 Solar Thermal Refrigerator

Author for correspondence: R.E. Critoph, University of Warwick, Coventry, CV4 7AL, UK

14:30 – 16:00 Session VI – Thermodynamics and Engines

Chairs: Y Tripanaenostopoulos – Greece

ST15- Importance of Utilizing Concentrating Solar Thermal Power

Plants Technology for IRAN

Meryem Daryabegy, Shirin Bahar, Solmaz Bakhshi Sarabi

Renewable Energy Organization of Iran (SUNA)

ST39- A small scale Combined Cooling, Heating and Power System

K. Backes¹, C. Faber¹, F. Ille², S. Schramm², M. Adam²

¹ Fachhochschule Aachen, (Solar-Institut Jülich) Heinrich-Mußmann-Straße 5, 52428 Jülich, Germany

² Fachhochschule Düsseldorf E2-Erneuerbare Energie und Energieeffizienz, Universitätsstr., Gebäude 23.31/32, 40225 Düsseldorf, Germany

ST51- Apparatus for Testing Thermal Storage Materials

Roman Adinberg

Solar Energy Research Facilities, Weizmann Institute of Science, Rehovot, Israel

InvST69- Misconceptions Regarding Design of Ground-source Heat Pump Systems

Prof. Jeffrey Spitler¹ & James Cullin¹

¹ School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater, Oklahoma, USA

ST66- Techno-Economic Analysis Of Thermal Power Generation In A System With High Penetration Levels Of Variable, Non-Dispatchable Renewable Energy

Patrick Keatley¹, Niamh Troy², Neil Hewitt¹, Sina Rezvani¹

¹ Centre for Sustainable Technologies, University of Ulster, Shore Road, Newtownabbey, BT37 0QB, NORTHERN IRELAND

² Electricity Research Centre, Engineering Building, University College Dublin, Dublin 4, REPUBLIC OF IRELAND

ST93- Implementation of First Solar Thermal Power Plant in Iran

Badry – Varasteh

Project Manager of Yazd Solar Thermal Power Plant, Moshanir Power Engineering Consultant- Ministry of Energy Tehran- Iran

ST47- Low Temperature Latent Heat Storage for a Solar Heating and Cooling System - Operational Experience

Stefan Hiebler¹, Harald Mehling¹, Christian Schweigler¹, Martin Helm¹

¹ Bavarian Center for Applied Energy Research, Garching, GERMANY

ST100- Numerical and experimental development of a medium temperature thermal energy storage (Erythritol) system for the hot side storage in a of LiBr/H₂O air conditioning system.

Francis Agyenim¹, Neil Hewitt¹, Philip Eames² and Mervyn Smyth¹

¹ School of The Built Environment, University of Ulster, Newtownabbey, Co. Antrim, BT37 0QB, UK

² School of Engineering, University of Warwick, Coventry, CV4 7AL, UK

16:30 – 18:00 Special Session I – Thermo & Engines (sp)

Chairs: Y Tripanaenostopoulos – Greece

ST20- Performance Analysis of a Solar Chimney Power Plant in south of Algeria

Toufik Chergui¹, Salah Larbi², Amor Bouhjar³ and Mourad Gagah¹

¹ Applied Research Center in Renewable Energy, Adrar, Algeria

² Lab of Mech Eng and Dev, Dept of Mech Eng., National Polytechnic School of Algeria, 10 Avenue Hassen Badi, El-Harrach, Alger, ALGERIA

³ Development Center of Renewable Energy, Bouzeriah, Algiers, Algeria

ST82- Evaluation of concentrating solar power technologies in Jordan using fuzzy logic

Dr. Omar Badran¹, Emad Abdulhadi² & Prof Rustum Mamlook³

¹ Mechanical Engineering Department, Faculty of Engineering Technology, Al-Balqa Applied University P.O.Box 331006, Amman 11134 – Jordan, o_badran@yahoo.com

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³ College of Information Systems & Technology, The Arabic Academy for Banking and Financial Science, Amman-Jordan

ST50- Use of Underground Earth Air Tunnel and Cavity Wall as Passive Cooling For a Garment Factory of Bangladesh

Saiful Huque¹, Sajedul Hossain Sarker² and Shahadat Musharraf Khan³

^{1,2} Renewable Energy Research Center, University of Dhaka, Dhaka-1000,

³ Section-7 Ltd. Chittagong Export Processing Zone, Halishahar, Chittagong, Bangladesh

ST62- Absorption Cooling in CHP systems- old technique with new opportunities

Dr Louise Trygg, PhD-student Kristina Difs, Prof Bahram Moshfegh

Department of Management and Engineering, Division of Energy Systems, Linköping Institute of Technology, S-581 83 Linköping, Sweden

ST72- Phase Change Materials in the Irish Residential Built Environment

Shane Colclough¹, Prof Neil Hewitt², Dr. Philip Griffiths³

Centre for Sustainable Technologies, University of Ulster, Newtownabbey, BT37 0QB, UK

THURSDAY

11:00 – 13:00 Session VII- Systems and DHW

Chairs: D Chwieduk - Poland

InvST10- Economic and Environmental Benefits of Thermosiphon Solar Water Heaters

Soteris A. Kalogirou

Department of Mechanical Engineering and Materials Sciences and Engineering

Cyprus University of Technology, P. O. Box 50329, Limassol 3603, Cyprus

InvST14- Development of the Integrated Collector Storage Solar Water Heater for Northern Maritime Climates

Dr Mervyn Smyth¹

¹ CST: Centre for Sustainable Technologies, School of the Built Environment, University of Ulster, Newtownabbey, Northern Ireland

ST12- Domestic solar water heater with a parabolic dish collector

Mohsen Chahoud

Dept. of Renewable Energy, Atomic Energy Commission of Syria, P. O. Box 6091, Damascus, Syria

ST19- Performance Testing of a Novel Heat Exchanger for a Solar Hot Water Storage System

Jayanta Deb Mondol¹, Mervyn Smyth, Aggelos Zacharopoulos & Trevor Hyde

¹ School of the Built Environment, Centre for Sustainable Technologies, University of Ulster, Northern Ireland, UK

InvST67- The development of medium temperature thermal energy storage (Erythritol) system for the hot side of LiBr/H₂O air conditioning applications

Francis Agyenim¹, Neil Hewitt¹, Philip Eames² and Mervyn Smyth¹

¹ School of The Built Environment, University of Ulster, Newtownabbey, Co. Antrim, BT37 0QB, UK

² School of Engineering, University of Warwick, Coventry, CV4 7AL, UK

ST61- Side by side comparison of two identical solar thermosiphons, with different mantle entry positions.

Yannis Caouris¹, Nikolaos Syrimbeis², Konstantinos Konstantinidis³

¹ Dept. of Mechanical Engineering & Aeronautics, University of Patras, 265 00 Patras, GREECE

² Dept. of Mechanical Engineering & Aeronautics, University of Patras, 265 00 Patras, GREECE

³ Calpak-Cicero Hellas S.A., 9 Sygrou Ave., 117 43 Athens GREECE

ST60- Optimization of embedded Heat Exchanger in a flat plate Integrated Collector Storage Solar Water Heater (ICSSWH), with indirect heat withdrawal.

Kostas Gertzos¹, Yannis Caouris², Thrasivoulos Panidis³

Dept. of Mechanical Engineering. & Aeronautics, University of Patras, 265 00 Patras, GREECE

ST45- Novel Integrated Collector Storage Solar Water Heaters Utilising Phase Change Materials

Patrick Quinlan, Dr Mervyn Smyth, Dr Steve Lo, Dr Philip Griffiths, Sean Conway, Alessandro Filippi.

CST: Centre for Sustainable Technologies School of the Built Environment, University of Ulster, Newtownabbey BT37 0QB, N. Ireland

14:30 – 16:00 Session VIII- Cooling (sp)

Chairs: R Critoph – UK

ST36- Role of solar absorption chiller in the optimization of energy consumption in official buildings, Case study: Telecom H.Q. official building in NISOC

Mehran Khodaparast¹, Dr Abdolrazagh Kaabinejadian², Ali asghar Hajseghati³

¹ Student of environmental management (m.sc) science & research azad university and senior analyst of legal & contracts of National Iranian South Oil Fields Company,

² Consultant of director general of renewable energy organization of Iran

³ Assistant prof. of mechanical engineering department, University of science & technology- Iran

ST89- An Improved Modular Modeling for Absorption Cooling Systems

K. abbaspourrsani¹, H. R. Haghgou¹, and S. A.. Alizadeh¹

¹ Solar Energy Research Group, Department of Energy, Materials and Energy Research Center (MERC), Karaj, Iran, P.O. Box : 31787/316, Fax: (98)261 6201888, Email: k-abaspour@merc.ac.ir

InvST91- Thermal Design Studies and Thermodynamic Modeling of a Double-Absorption Open Cycle Hybrid Solar Space-conditioning System

Prof. (Dr.) Y. K. Yadav

Department of Agricultural Processing & Energy, College of Agricultural Engineering & Technology, CCS Haryana Agricultural University, Hisar-125 004, India

ST48- Numerical study of Ground-Coupled Heat Exchangers for Heat Rejection in Solar Cooling Absorption Machines

José Luis Río¹, Eduardo Blanco¹, Marcos González¹

¹ Universidad de Oviedo, EDZE (Energía), Campus de Viesques, 33271 Gijón (Asturias) SPAIN

ST25- Design and numerical simulation of the intercooler for an improved jet compression refrigeration system driven by low grade energy sources

Humberto Eduardo González Bravo¹, Dorantes Rodríguez Rubén José¹, Jorge Isaac Hernández Gutierrez², García Valladares Octavio², Roberto Best y Brown².

¹ Energy Department, Universidad Autónoma Metropolitana, Azcapotzalco Av. San Pablo No. 180, Col. Reynosa Tamaulipas, CP. 02200 México, D.F.

² Refrigeration and Heat Pumps Department, Centro de Investigación en Energía, Universidad Nacional Autónoma de México. Privada Xochicalco s/n, Col. Centro, CP. 62580 Temixco, Morelos, México

ST34- An exergy analysis of a solar-driven ejector cooling system in the Athens area

G.K Alexis¹ & J.K.Kaldellis²

¹ Cooling, Heating and Air-Conditioning Lab, Department of Mechanical Eng., Technical Education Institute of Piraeus, Greece

² Soft Energy Applications & Environmental Protection Lab, TEI of Piraeus, P.O. Box 41046, Athens 12201, Greece

16:30 – 18:00 Special Session SII

Chairs: S Shire – UK

ST11- Second law analysis of the a Water Loop Heat Pump system for office buildings

Radu Zmeureanu¹ & Xin Zheng²

¹ Professor, Department of Building, Civil and Environmental Engineering, Concordia University, Montreal, Quebec, Canada H3G 1M8

² M.A.Sc., Department of Building, Civil and Environmental Engineering, Concordia University, Montreal, Quebec, Canada H3G 1M8

ST23- Exergy Analysis of a Household Refrigerator

Yunus Cerci

Department of Mechanical Engineering, Celal Bayar University, Muradiye, Manisa, 45012- Turkey

ST83- Preliminary results from the testing of an advanced passive solar still with a shielded condenser

Amos Madhlopa and Cameron Johnstone

Energy Systems Research Unit, Department of Mechanical Engineering, University of Strathclyde, 75 Montrose Street, Glasgow G1 1XJ, United Kingdom

ST81- Design and Construction of a Sun tracker for Use in Low Cost Small Scale Multipurpose Thermal Solar Energy Concentrating Systems

B. C. Cuamba, M. L. Chenene, J. Lovseth, A. R. Domingos

Renewable Energies Research and Training Programme, Department of Physics, Faculty of Sciences, Eduardo Mondlane University, The Main University Campus, P. O. Box 257, Maputo, Mozambique

ST32- Design and Experimental Characterization of a Line-Axis Concentrating Solar Thermal System

Iris Gaigg¹ and Tapas Kumar Mallick²

Mechanical Engineering School of Engineering & Physical Sciences Heriot-Watt University; Riccarton; EH144AS; UK

WIND ENERGY APPLICATIONS

Prof Donald Swift-Hook, *Chair*

Technical Committee Members: Mr Martin Alder, Dr David Milborrow, Dr David Lindley, Prof J K Kaldellis, Prof Izumi Ushiyama, Prof Rebecca Barthelmie and Mr Jason Ormiston

TUESDAY

09:00 – 10:30 Session – 1

Chairs: Don Swift-Hook – UK

InvWE14- The development of the Aberdeen offshore wind farm

Iain Todd

Renewables Champion, Aberdeen Renewable Energy Group, Aberdeen, Scotland

InvWE17- Power losses due to wakes in large offshore wind farms

Prof Rebecca Barthelmie^{1,2}

¹ Atmospheric Science Program, Department of Geography, Indiana University, IN 47405, USA rbarthel@indiana.edu

² Institute for Energy Systems, School of Engineering and Electronics, University of Edinburgh, EH9 3JL, Scotland, UK

WE4- Comparing the effects of wind turbines hub height on power and capacity factor of wind farms in flat and mountain regions

Mohammad Satkin¹, Arastou Sadeghian², Salar Mostofizadeh³, Abdolrazagh Kaabinejadian⁴: Ministry of Energy, Renewable Energy Organization of Iran

WE32- Making the most of SCADA data: wind farm performance monitoring

Dave McLaughlin¹, Dr Peter J.M. Clive² Dr Joanna H. McKenzie³

¹ Senior Noise & Vibration Consultant, SgurrEnergy, Glasgow, UK

² Technical Development Officer, SgurrEnergy, Glasgow, UK

³ Renewable Energy Consultant, SgurrEnergy, Glasgow, UK

WE101- Historical Reevaluation of the Yamada-Type Wind Turbine

Yasuyuki Nemoto¹, Yoshifumi Nishizawa², and Izumi Ushiyama³

¹ Dept. of Mechanical Eng., Ashikaga Institute of Technology, Ashikaga, Japan

² Collaborative Research Center, Ashikaga Institute of Technology, Ashikaga, Japan

³ Graduate School, Ashikaga Institute of Technology, Ashikaga, Japan

11:00 – 13:00 Session – 2

Chairs: Peter Ahmels – Germany

InvWE86- “The UK Offshore Wind Programme, Present & Future”

Maria McCaffery MBE, Chief Executive, BWEA, London, UK

InvWE25- Wind Resources Assessment in Syria and the Impact of Wind Generation on the Grid in view of the German Experience

¹Prof. Dr.-Ing. Ali Hamzeh, ² Dr.-Ing. Christian Weindl,³ Prof. Dr.- Ing. Gerhard Herold³, Eng. Maan Kaadan⁴

¹ Damascus University, Department of Electrical Power Engineering, P.O.Box 5115, Damascus, SYRIA

^{2,3} University of Erlangen-Nuermberg

³ Chairman, Institute of Electrical Power Systems, Cauerstrasse 4 - Haus 1, D-91058 Erlangen, GERMANY

⁴ Director of Wind Department, Hadaya Group, SYRIA

WE6- Iran Wind Power Situation, Strategy and Opportunities

¹Dr. Ahmad Kahrobaian & ²Dr. Soheil Porkhial & ³Mehdi Sharifi

¹ Chairman

² Veep

³ Expert of Research and New Technologies Office, Renewable Energy Organization of Iran, Ministry of Energy, Iran

InvWE26- Analyzing the Public Opinion towards Wind Energy Applications in Greece

John K. Kaldellis¹, Emilia M. Kondili² & Kosmas A. Kavadias¹

¹ Soft Energy Applications & Environmental Protection Lab, TEI of Piraeus, P.O. Box 41046, Athens 12201, Greece

² Optimisation of Production Systems Lab., Dept. of Mechanical. Eng., TEI of Piraeus

InvWE84- The Dual Sustainability of Wind Energy

Professor Jonathan B. Welch* and Anand Venkateswaran**

* 413 Hayden Hall, College of Business, Northeastern University, 360 Huntington Avenue, Boston, MA 02115, USA

** Assistant Professor, 413 Hayden Hall, College of Business, Northeastern University, 360 Huntington Avenue, Boston, MA 02115, USA

WE24- ACCELERATING THE IMPLEMENTATION OF WIND ENERGY CONVERSION SYSTEM (WECS) TO PROVIDE ELECTRICITY IN INDONESIA

Herliyani Suharta*, Sahat Pakpahan**,A.M. Sayigh# and J.R. Buckley+

* Balai Besar Teknologi Energi (B2TE) - BPPT, PUSPIPTEK, Serpong, Tangerang 15314, Indonesia

** Kedeputian Teknologi Dirgantara, LAPAN. Email: sahatp@plasa.com

World Renewable Energy Networks, Brighton, UK

+ Renewable Energy Trade Promotion Service of UK

InvWE41- Representing energy extraction and wake generation from wind or marine turbines

Angus C.W. Creech & Wolf-Gerrit Früh¹

¹ School of Engineering and Physical Science, Heriot Watt University, Riccarton, Edinburgh, UK

WE3- ELECTRICITY POLICY AND WIND ENERGY PROSPECTS IN MOROCCO

H. Nfaoui*, H. Essiarab*,A.M.M. Sayigh**

* Labo.d'Énergie Solaire, Fac. des Sciences, BP1014, Rabat, Marocco

** PO Box 362, Brighton BN2 1YH, United Kingdom

InvWE100- The future of wind energy technology in the United States

Robert Thresher¹, Michael Robinson² & Paul Veers³

¹ Wind Energy Research Fellow, National Renewable Energy Laboratory,(NREL) Golden Colorado, USA

² Deputy Director of the National Wind Technology Center, NREL, USA

³ Distinguished Member Technical Staff, Sandia National Laboratories, USA

14:30 – 16:00 Session – 3

Chairs: – John K. Kaldellis – Greece

WE22- Complementarity of solar and wind sources: Application in Bulgaria and Corsica

Gilles Notton¹, Vladimir Lazarov², Ludmil Stoyanov^{1,2}

¹ University of Corsica, UMR CNRS 6134, Ajaccio, FRANCE, Tel: 33-495524152,

² Technical University of Sofia, Department of Electrical Machines, 8 Blvd Kl. Ohridski, 1156 Sofia, BULGARIA

WE5- Contribution to the theoretical study of the behavior of a hybrid system (wind - photovoltaic - diesel) of continuous electricity production

D Saheb-Koussa, M Belhamel and K Benferhat

Centre of development of renewable energies, Route de l'observatoire, BP.62 Bouzareah, Algiers, Algeria

WE47- Analysis of a wind-hydrogen system connected to the electrical grid

José Luis Bernal-Agustín¹, Rodolfo Dufo-López¹, Luis Correas-Usón², Ismael Aso-Aguarta²
Spain

WE38- Wind-Solar Hybrid Systems in Eastern Jamaica

Dharmaratne Amarakoon

Department of Physics, University of the West Indies, Mona, Kingston 7, Jamaica W.I.

16:30 – 18:00 Session 4

Chairs: Rebecca Barthelmie - UK

WE40- A Case, Perhaps, of Hybrid Vigor? Siting Wind Farms at Geothermal Facilities

William Harvey¹ and Marshall Ralph²

¹ Dept. of Mechanical Engineering, Reykjavik University, Reykjavik, Iceland

² POWER Engineers, Inc., Hailey, Idaho, U.S.A.

WE62- Wind-Tidal Combined Generation System for Patagonia, Argentina

Maximiliano Bianucci¹ & Carlos V.M. Labriola²

¹ Superior School of Health and Environment, National University of Comahue, Neuquén, Argentina, Tel: +54 0299 4330728, Email: m.bianucci@yahoo.com.ar

² Faculty of Engineering, National University of Comahue, Neuquén Capital, Argentina

WE48- Hydro-Wind Power Complementarity: A Way to Implementing Wind Power in Brazil

Ricardo M. Dutra¹ & Alexandre S. Szklo²

¹ ELEC Power Research Center – CEPEL - P.O. Box: 68007 – 21944-970, Rio de Janeiro, RJ, Brazil

² Energy Planning Program, Graduate School of Engineering, Federal University of Rio de Janeiro, Centro de Tecnologia, Bloco C, Sala 211, Cidade Universitária 21941-972 Ilha do Fundão, Rio de Janeiro, RJ, Brazil

InvWE29- Energy Based Sizing of a Wind-Hydro Solution for Maximum Wind Energy Penetration in Lesbos Island

Marina Kapsali, Kosmas Kavadias & John K. Kaldellis

Soft Energy Applications & Environmental Protection Lab, TEI of Piraeus, P.O. Box 41046, Athens 12201, Greece

InvWE20- Wind Energy Based Desalination Processes and Plants

Emilia M. Kondili¹, John K. Kaldellis²

¹ Optimisation of Production Systems Lab., Dept. of Mechanical. Eng., TEI of Piraeus, Greece

WEDNESDAY

11:00 – 13:00 Session 5

Chairs: Carlos Labriola – Argentina

WE50- Feasibility Study for DG Wind Systems: Manufacturing Company

Investment Scenarios for California and Italy

Anna Rosa¹, Luca Zanchi¹, Prof. Lucio Zavanella¹, Henry J. Shiu²

¹ Mechanical and Industrial Engineering Department, University of Brescia, Italy

² California Wind Energy Collaborative, Mechanical and Aeronautical Engineering Department, University of California, Davis, USA

WE77- A Theoretical Evaluation of an Electricity Storage System's Capacity in Micro-grid
Takuya Oda¹, Masakazu Ito² & Takao Kashiwagi³ ¹ Associate Prof. of IRI, Tokyo Technology of Institute, Tokyo, Japan, Email: oda@iti.titech.ac.jp ² Assistant Prof. of IRI, Tokyo Technology of Institute, Tokyo, Japan, Email: ito@iti.titech.ac.jp ³ Professor of IRI, Tokyo Technology of Institute, Tokyo, Japan

WE39- Mathematical model of the system on the basis of wind-driven air compressors for heat and electric power generation

Vladislav Kukhartsev¹, Vladislav Motulevich¹, Alexander Spiridonov¹

¹ Moscow Power Engineering Institute (Technical University) Krasnokazarmennaya 14, 111250, Moscow, Russia

WE7- Optimal Frequency Design of a Variable Pitch Wind Turbine Blade

Karam Y. Maalawi and Mervat A. Badr

Department of Mechanical Engineering, National Research Centre, Dokki, Cairo, Egypt

WE28- Solar and Wind Energy Application for the Woods and Forest Soil' S Protection

Dr Ulviyya Samadova

Institute of Radiation Problems, Azerbaijan National Academy of Sciences, F. Agayev 9 Baki, AZ1143, Azerbaijan

WE73- Wind Energy Potential in Manjil of Iran

K. abbaspourrsani¹, M. Jamil¹, and M. Golshahifar²

¹Department of Energy, Materials and Energy Research Center, Karaj, Iran

² Mechanical Engineering Faculty, Islamic Azad Univ., Branch of Takestan, Takestan, Iran

14:30 – 16:00 Session 6

Chairs: Martin Alder – UK

InvWE13- The aesthetic integration of wind parks in the environment; Application in a Greek insular wind park

Theocharis Tsoutsos

Department of Environmental Engineering - Technical University of Crete

Kounoupidiana Campus, GR 73100 Chania, Greece

WE60- Measurements and utilization of wind energy on the Baltic Sea coast

Prof. Dr.habil.sc.ing. Peteris Shipkovs¹, Dr.sc.ing. Valery Bezrukov², Dr.habil.sc.ing. Vladislav Pugachev³, PhD student Vladislav Bezrukov⁴, M.sc.ing. Svetlana Orlova⁵

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⁴ Ventspils College University, Ventspils, LV-3601, LATVIA

⁵ Institute of Physical Energetics, Riga, LV-1006, LATVIA

WE55- Wind assessment network at North of Yucatan Peninsula

Rolando Soler-Bientz, Lifter Ricalde-Cab & Mario Díaz-Ocheita

Energy Laboratory, Faculty of Engineering, Autonomous University of Yucatan, Mérida, Yucatán, México

InvWE43- An Experimental Study of the Shapes of Rotor for Horizontal-Axis Small Wind Turbines

Yoshifumi NISHIZAWA¹, Masahiko SUZUKI², Hideto TANIGUCHI² and Izumi USHIYAMA¹

¹ Ashikaga Inst. of Tech., Collaborative Research Center, 268-1Omae-cho, Ashikaga-city, Tochigi, Japan

² Global Energy Co. Ltd., 23Shizuwa, Iwafune-cho, Shimotsuga-gun, Tochigi, Japan

WE61- "Estimation of CO₂ avoided per MW by Wind Energy Installation on Patagonia Argentina, using LCC Analysis and Energy Balance"

Carlos Aguilera¹ & Carlos V.M. Labriola²

¹ Superior School of Health and Environment, National University of Comahue, Neuquén, Argentina

² Faculty of Engineering, National University of Comahue, Neuquén Capital, Argentina

16:30 – 18:00 Special Technical Session – I

Chairs: Don Swift-Hook – UK

WE23- Study of Small Scale Wind Turbine Productivity according to Wind Speed Distributions and Power Curves

Gilles Notton¹, Vladimir Lazarov², Ludmil Stoyanov^{1,2}

¹ University of Corsica, UMR CNRS 6134, Ajaccio, FRANCE, Tel: 33-495524152,

² Technical University of Sofia, Department of Electrical Machines, 8 Blvd Kl., Ohridski, 1156 Sofia, BULGARIA

WE56- Model, design, analysis and state-of-the-art control from the blowing wind to the sinusoidal voltages and currents

J. Pou¹, R. Pindado¹, C. Jaen¹, A. Arias¹, J. Zaragoza¹, C. Hervada², P. Buenestado³, C. Ortega¹, E. Jarauta³

¹ Dept. of Electronic Eng.

² Dept. of Physics and Nuclear Eng.

³ Dept. of Applied Mathematics III, Universitat Politècnica de Catalunya, Terrassa, Catalonia, Q-o818oo3-F, Spain.

WE46- Optimization of a Hybrid Renewable System to supply the electrical demand of a small town in the Pyrenees in Spain

Rodolfo Dufo-López, José L. Bernal-Agustín, José A. Domínguez-Navarro, José M. Yusta-Loyo Electrical Engineering Department, University of Zaragoza (Spain)

WE76- Contribution to the development of the solar and wind pumping for the small irrigation in Tunisia

M.N.Mansouri¹ Salah Fadhil² Tarek Abda M.F.Mimouni³ & M.Annabi³

^(1,2,3,4) Department of Electrical Engineering, National School of Engineering (ENIM), Avenue Ibn El Jazzar Monastir, 5019, Tunisia

WE58- COMPARATIVE STUDY OF A TWO-BLADED AIRFOIL SHAPED H-DARRIEUS ROTOR WITH A TWO STRAIGHT BLADED H-DARRIEUS ROTOR

Agnimitra Biswas¹, Biplob Das² & Rajat Gupta³

¹ Ph.D Scholar, Deptt. of Mechanical Engg., NIT Silchar, Assam (India)

² M.Tech student, Deptt. of Mechanical Engg., NIT Silchar, Assam (India)

³ Professor in Mechanical Engg & Dean (SRC), Department of Mechanical Engineering, NIT Silchar, Assam (INDIA)

WE79- Micro-Siting of Wind Energy along the Gulf of Thailand

Jompob Waewsak, Marina Mani & Noppanun Nankongnab

Solar and Wind Energy Research Laboratory (SWERL)

Renewable Energy System Research and Demonstration Center (RERD)

Department of Physics, Faculty of Science, Thaksin University, Phatthalung, Thailand, 93110

THURSDAY

11:00 – 13:00 Session 7

Chairs: Don Swift-Hook – UK

WE65- TECHNICAL FEASIBILITY OF ERECTING A WIND TURBINE ON A HIGH RISE BUILDING

R. A MENON, T.R SHARPE

MACKINTOSH ENVIRONMENTAL ARCHITECTURE RESEARCH UNIT, GLASGOW SCHOOL OF ART, GLASGOW G3 6RQ SCOTLAND, UK

WE27- Development of a Very Thin Airfoil Blade for a 3 kW Small Wind Turbine

Baku M. NAGAI¹, Kazumasa AMEKU¹ and Jitendro Nath ROY²

¹ Faculty of Mechanical Engineering, University of the Ryukyus, 1 Senbaru, Nishihara-cho, Okinawa 903-0213, Japan

² Graduate Student, Faculty of Mechanical Engineering, University of the Ryukyus, 1 Senbaru, Nishihara-cho, Okinawa 903-0213, Japan

InvWE45- An Experimental Study on the Savonius Type Magnus Wind Turbine

Akira ITO¹, Yoshifumi NISHIZAWA² and Izumi USHIYAMA²

¹ Ashikaga Inst. of Tech., 268-1Omae-cho, Ashikaga-city, Tochigi, Japan,

² Ashikaga Inst. of Tech. Collaborative Research Center, 268-1Omae-cho, Ashikaga-city, Tochigi, Japan,

WE36- First steps in the design and optimization of Darrieus VAWTs for microeolic applications

Alessandro Bianchini, Lorenzo Ferrari, Andrea Schneider

Department of Energy Engineering "Sergio Stecco", University of Florence, Florence, IT, Tel:

+39-055-4796570, Fax: +39-055-4796342, Email: ferrari@vega.de.unifi.it, <http://vega.de.unifi.it>

WE87- Assessment Of Wind Energy Potential For Five Coastal Locations

Of The Libyan Arab Jamahiriya

Mohamed Ali Alhadad,^a M. A. Muntasser,^b

^a Mechanical Engineering Department, Faculty Of Engineering And Technology , Sebha University, Sebha- Libya.

^b Mechanical Engineering Department, Faculty Of Engineering, Fattah University, Tripoli- Libya.

WE8- Modelling and control of flexible wind turbines

Carlos Vivas¹, Fernando Castaño¹, Ayyat Brahim^{1,2}

Abdellatif Khamlichi², Larbi Elbakkali² & Mohammed Bezzazi³

¹ High Engineering School at Seville, Team Eng. Systems and Automatics, Spain

² Faculty of Sciences at Tetouan, UAE/E28, Morocco

³ Faculty of Sciences and Techniques at Tangier, UAE/E21, Morocco

WE19- Aerodynamic Design and Performance Analysis of A Horizontal-axis Wind turbine

Asmail Abdulkadr Mohamed¹, Ali Mohamed Elmabrouk²

¹, Nasser University, Faculty of Engineering, Mechanical Department, Tarhuna-Libya

², Al-Fateh University, Faculty of Engineering, Aeronautical Department, Tripoli-Libya

Inv16- Effect of rotation and unsteady perturbations on stall for wind turbine blades

Wolf-Gerrit Früh¹

¹ School of Engineering and Physical Science, Heriot Watt University, Edinburgh, UK

WE33- Techno-Economic Feasibility Study of Wind-Powered Desalination for Community Scale Distributed Generation Application

Prof Jon G. McGowan and Prof James F. Manwel

Dept of Mechanical and Industrial Engineering, University of Massachusetts, Amherst, MA 01003 USA

14:30 – 16:00 Session 8

Jason Ormiston – UK

WE35- A comparative study for three different parameter estimation methods in wind power applications

Mehmet Kurban¹, Fatih Onur Hocaoglu¹ & Yeliz Mert Kantar²

¹ Anadolu University, Dept. of Electrical and Electronics Eng., Eskisehir, Turkey,

² Anadolu University, Dept. of Statistics, Eskisehir, Turkey

WE31- Considering the Correlation in Measure-Correlate-Predict techniques

Dr Joanna McKenzie¹, Dr Peter Clive², Ivan Chindurza³ & Hélène Bulté⁴

¹ Renewable Energy Consultant, SgurrEnergy, Glasgow

² Technical Development Officer, SgurrEnergy, Glasgow

³ Renewable Energy Consultant, SgurrEnergy, Glasgow

⁴ Renewable Energy Consultant, SgurrEnergy, Glasgow

WE37- Seasonal ARIMA Models for Wind Speed Time Series

Saverio Bivona, Giovanni Bonanno, Riccardo Burlon, Davide Gurrera & Claudio Leone

Dipartimento di Fisica e Tecnologie Relative, Università degli Studi di Palermo, Italy,

WE49- Compensation of bias in Lidar wind resource assessment

Dr Peter Clive¹

¹ Technical Development Officer, SgurrEnergy Ltd, Glasgow G42 7JG, UK,

WE59- Analysis Approach and Current Status of the UK Micro-Wind Trial

Sissons M.F.¹, James P.A.B.¹, Myers L.M.¹, Bahaj A.S.¹, Anwar A.¹, Double K.² & Russell J.²

¹ Sustainable Energy Research Group, Dept. of Civil Engineering and the Environment, University of Southampton, Southampton, UK.

² Energy Saving Trust, 21 Dartmouth Street, London, SW1H 9BP, UK

16:30 – 18:00 Special Technical Session –II

Chairs: Don Swift-Hook – UK

WE10- Determination of Site Selection Criteria for Wind Turbine Test Station in IRAN

Dr. Soheil Porkhial ¹ & Dr. Ahmad Kahrobaian ² & Eng. Mahdi Rezaei ³

¹ Iran Renewable Energy Organization, Tehran, Iran

² Iran Renewable Energy Organization, Tehran, Iran

³ Niroo Research Institute, Tehran, Iran

WE28- Solar and Wind Energy Application for the Woods and Forest Soil' S Protection

Dr Ulviyya Samadova

Institute of Radiation Problems, Azerbaijan National Academy of Sciences, F. Agayev 9 Baki, AZ1143, Azerbaijan

WE73- Wind Energy Potential in Manjil of Iran

K. abbaspourrsani¹, M. Jamil¹, and M. Golshahifar²

¹Department of Energy, Materials and Energy Research Center, Karaj, Iran

² Mechanical Engineering Faculty, Islamic Azad Univ, Branch of Takestan, Takestan, Iran

WE74- Statistical Analysis of Wind Data at Engineering Staff College, Meghnaghat

Arafat A. Bhuiyan¹, A K M Sadrul Islam¹ and M Murtaza Aliz

¹ Department of Mechanical & Chemical Engineering, Islamic University of Technology(IUT), Board Bazar,

Gazipur-1704, Bangladesh, Tel: +880 2 9291250, Email: sadrul@iut-dhaka.edu

² Local Government Engineering Department, Agargaon, Dhaka, Bangladesh

WE54- Estimation of the available wind power in several regions in Algeria

Zine Labidine Mahri, Mohamed Salah Rouabah, Said Zid

Département de Génie Climatologique University of Mentouri, Constantine (Algeria)

WE52- Water Pumping and Wind Energy Conversion in the Southern Algeria: the Case of Tindouf

Prof Fatiha Youcef Ettoumi & Prof Abd El Hamid Adane

University of Science and Technology of Algiers (USTHB), Faculty of Electronics and Computer Science,

Telecommunication Department, Laboratory of Image Processing and Radiation (LTIR), Po Box 32 El

Alia, Bab Ezzouar, 16111, Algiers

PHOTOVOLTAIC TECHNOLOGY

Dr L.L. Kazmerski – Chair

Members of the Technical Committee: Dr Mowafak Al- Jassim, Dr Antonia Sonia A C Diniz, Prof Nicola M Pearsall, Prof Martin Green, Dr. Ali Al-Karaghuli, Prof K Kurokawa Dr. Falah Hasoon, and Dr Fuad Abulfotuh

TUESDAY

09:00 – 10:30 Session 1- Photovoltaic Applications and Potential

Chairs: L Kazmerski – USA

InvPV98- Lessons Learnt From Photovoltaic Developments in Urban Areas

Donna Munro¹ and Emily Rudkin², Halcrow; Bruno Gaidon³, HESPUL; Sigrid Linder⁴, Ecofys; Marcel Elswijk⁵, ECN; Emil ter Horst⁶, Horisun; Ingo Hagemann⁷, Architekturbüro Hagemann; Demet Suna⁸, Technical University of Vienna.

¹ Photovoltaic consultant, Southview House, Soutergate, Kirkby-in-Furness, Cumbria, LA17 7TN, UK.

² Energy Engineer, Halcrow Group Ltd, Glasgow, G3 1 3AU, UK.

³ European Programmes & PV Unit Manager, HESPUL, Villeurbanne, France.

⁴ Ecofys Germany, Energy in the Built Environment, Germany

⁵ ECN Renewable Energy in the Built Environment, The Netherlands.

⁶ Consultant on Renewable Energy Strategies, The Netherlands.

⁷ ARCHITEKTURBÜRO HAGEMANN, Germany

⁸ Energy Economics Group, Vienna University of Technology, Austria

InvPV72- Limitations of the Contribution of Photovoltaics to the World Energy Supply: Analysis and Mitigation

Denholm, Paul¹ & Robert M. Margolis²

¹ National Renewable Energy Laboratory, Golden, CO, USA, Tel: 303-384-7488, FAX: 303-384-7448, Email: paul_denholm@nrel.gov

² National Renewable Energy Laboratory, Washington, D.C., USA, Tel: 202-488-2222, Email: robert_margolis@nrel.gov

InvPV56- An Environmental Potential of PV systems and Greening by Utilizing the Ecological Footprint

Naoko Yamashita¹, Masakazu Ito², Keiichi Komoto³, Yuzuru Ueda⁴, Ken Nagasaka⁵, Kosuke Kurokawa⁶

¹ Tokyo University of Agriculture and Technology, 2-24-16 Kurokawa lab., Nakacho, Koganei city, Tokyo, 184-8588, Japan, Email: 50007645130@st.tuat.ac.jp

² Tokyo Institute of Technology, 2-12-1, Ookayama, Meguro-ku, Tokyo, 152-8550, Japan

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⁴ Tokyo University of Agriculture and Technology, 2-24-16, Nakacho, koganei city, Tokyo, 184-8588, Japan

⁵ Tokyo University of Agriculture and Technology, 2-24-16 Nagasaka lab., Nakacho, Koganei city, Tokyo, 184-8588, Japan

⁶ Tokyo University of Agriculture and Technology, 2-24-16 Kurokawa lab., Nakacho, Koganei city, Tokyo, 184-8588, Japan

InvPV100 – Photovoltaic Manufacturing Industries in Germany

Mr Gerhard Stryi-Hipp, Managing Director of BSW, Germany

InvPV35- Experimental Analysis of the Air Pollution Impact on Photovoltaic Panels' Energy Yield

Panagiotis Fragos¹, Athanassios Paliatsos², John K. Kaldellis¹

¹ Soft Energy Applications & Environmental Protection Lab, TEI of Piraeus, P.O. Box 41046, Athens, 12201, Greece

² General Department of Mathematics, TEI of Piraeus

11:00 – 13:00 Session II – Thin Film and Crystalline Cells and Modules

Chairs: N Pearsall – UK

InvPV44- Comparison of CdTe thin film photovoltaic technologies

Alessandro Romeo

Faculty of Science, University of Verona, Ca' Vignal 1, Strada Le Grazie 15, 37134 Verona, Italy

InvPV61- Modeling of a New n+n-p AlAs/AlGaAs/GaAs Solar Cell, In Excess of 21% Collection Efficiency

Argyrios C. Varonides^(1*), Robert A. Spalletta⁽¹⁾ & Andrew W. Berger⁽¹⁾

¹ Physics and Electrical Engineering Dept, University of Scranton, Scranton, PA 18510, USA

PV1- Investigations on Metal Oxide Semiconductor (MOS) Systems For Solar Cells Uses

Arezki Benfdila : Microelectronics and Device Physics Lab.(LMPDS), Faculty of Electrical Engineering, University M. MAMMERI BP 17 RP 15000 Tizi-Ouzou, Algeria

PV8- The High Energy Region of the Absorption Edge of A-Si:H II , Derivative Methods Analysis

A.Ibrahim, S.K.J.Al-Ani and S.S.Al-Rawi

Baghdad University, Women Science College, Department of Physics, Jadiriya, Baghdad, Iraq

PV84- Testing Consistency in the Energy Production of Mono-silicon Photovoltaic Modules using General Linear Modeling

Michael Case¹ and Yaw Owusu²

¹ School of Engineering, University of Technology, Jamaica

² FAMU-FSU College of Engineering; Director RECCET Laboratory

PV91- Process yield in drive-step for different boat dispositions of sheet resistance n+p emitters on multicrystalline silicon wafers

A. Moussi¹, D. Bouhafis¹, L. Mahiou¹, M.S. Belkaid²

¹ Laboratoire des Cellules Photovoltaïques, Unité de développement de la Technologie du Silicium,

² Bd, Frantz Fanon, B.P.140, 7 Merveilles Alger, Algeria

² Dept Electronique, Faculté de Génie Electrique et Informatique, UMMTO

PV82- Measurement of solar cell junction temperature

B.J. Huang¹, Yu-Pin Lin², B.Y. Lin², P.E. Yang²

¹ Director, Tel: +886-2-23621916 Fax: +886-2-23640549 Email: bjhuang@seed.net.tw

² Graduate student

New Energy Center, Department of Mechanical Engineering, National Taiwan University, Taipei, Taiwan

PV84- Testing Consistency in the Energy Production of Mono-silicon

Photovoltaic Modules using General Linear Modeling

Michael Case¹ and Yaw Owusu²

¹ School of Engineering, University of Technology, Jamaica

² FAMU-FSU College of Engineering; Director RECCET Laboratory

PV11- Analytical expressions for the determination of the maximum power point under different insolation levels for a PV cell

BEN GHANEM Belgacem , MANSOURI M.Nejib & MIMOUNI M.Faouzi

Department of Electrical Engineering, National School of Engineering (ENIM), Avenue Ibn El Jazzar Monastir, 5019. Tunisia

14:30 – 16:00 Session III – Dye Sensitized, Next-Generation, and Concentrator Technologies

Chairs: S Diniz- Brazil

PV78- Extraction of Power from Dye-Sensitised Solar Cell Arrays

Extraction of Power from Dye-Sensitised Solar Cell Arrays

John Bell¹, Tony Maine², Stewart Martin³, Troy Farrell⁴

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³ Division of ITEE, University of South Australia, Mawson Lakes, SA 5095.

⁴ Faculty of Science, Queensland University of Technology, GPO Box 2434, Brisbane, Qld, 4001, AUSTRALIA

PV25- Sensitization of TiO₂ films with small molecules

G. Syrokostas, M. Giannouli, P. Yianoulis

Renewable Energy Laboratory, Dept. of Physics, University of Patras, Achaia, GREECE

PV18- The Growth of InAs–Based Diode Heterostructures with Quantum Dots as a New Material for Thermophotovoltaic Application

Karen Gambaryan¹, Vladimir Aroutiounian¹, Torsten Boeck², Marlen Schulze²

¹ Department of Physics of Semiconductors and Microelectronics, Yerevan State University, 1, A.Manoukian str., Yerevan, 375025, ARMENIA

² Institute for Crystal Growth (IKZ), Max Born str., 2, Berlin, 12489, GERMANY

PV47- The rare earth ions-doped transparent conductive electrodes as luminescent solar concentrators

Chu-Chi Ting¹, Chun-Hsien KO, Cheng-Che Lin, Chien-Te Yu

¹ Graduate Institute of Opto-Mechatronics Engineering, National Chung Cheng University, 168 University Rd., Min-Hsiung, Chia-Yi, Taiwan

PV98- Biomimetics and Plasmonics: capturing all of the light

Darren Bagnall, Stuart Boden and Tristan Temple

Electronics and Computer Science, University of Southampton, SO17 1BJ, UK

PV39- Solar collectors for Concentrating Photo Voltaics

P. Sansoni, D. Fontani, F. Francini, L. Mercatelli, D. Jafrancesco

CNR-INOA Istituto Nazionale di Ottica Applicata, Largo E. Fermi 6 – Firenze - 50125 - Italy

PV28- Examination of the Output Fluctuation of a Grid-Connected Concentrator PV System

Yoshishige Kemmoku¹, Kenji Araki², Yoshinori Miyazaki³ & Masao Hiramatsu³

¹ Dept. of Management and Information Science, Toyohashi Sozo University, Toyohashi, Aichi, Japan

² Daido Steel Co. Ltd., Nagoya, Aichi, Japan

³ Daido Metal Co. Ltd., Inuyama, Aichi, Japan

16:30 – 18:00 Session IV- PV Characterization and Components

Chairs: M Green – Australia

PV54- Evaluation of Outdoor Performance of Photovoltaic Modules using Solar Spectrum Index of Average Photon Energy

Takashi Minemoto¹, Hiroaki Takahashi¹ and Hideyuki Takakura¹

¹ Dept. of Photonics, Ritsumeikan University, Kusatsu, Shiga, JAPAN

PV52- Effect of White Reflective Back Sheets on the Performance of Photovoltaic Modules

Pedro J. Sánchez-Illescas¹, Pedro Carpena¹, Pedro Bernaola-Galván¹, Michel Piliouguine¹, Mariano Sidrach-de-Cardona¹ & Paula Sánchez-Frieraz

¹ Department of Applied Physics II, University of Málaga, Spain

² Department of I+D+i, ISOFOTÓN

PV53- Development of a cheap test rig for photovoltaic panel characterization

Francesco Aiuzzi, Lorenzo Ferrari, Jacopo Fiaschi, Simone Paganelli, Federico Trippi

Department of Energy Engineering “Sergio Stecco”, University of Florence, Florence, Italy

PV73- Selecting a proper model for outdoor PV module characteristics accurateness (Ghardaïa site/ Algeria)

Idriss Hadj Mohammed¹, A. Hadj Arab² & F. Youcef Ettoumi³

¹ Applied Research Unit for Renewable Energies (URAER)

PO Box 34A El-Atteuf, Ghardaïa, Algeria .

² Center on Renewable Energies Development PO Box 62 Observatory street, Bouzareah, Algiers, Algeria

³ Atmospheric Ray and Image Processing Lab/ Faculty of Electronics and Computer Science, (USTHB), Algiers, Algeria.

PV27- Developing the Virtual Prototype of the Tracking System used for a PV Array in Mechatronic Concept

Cătălin Alexandru¹ & Claudiu Pozna²

¹ Dept. of Product Design and Robotics, Transilvania University of Brasov, Romania, ² Dept. of Product Design and Robotics, Transilvania University of Brasov, Romania

PV45- On the effect of the PV array inclination to its performance & efficiency

S. Kaplanis¹ E. Kaplani¹, P. Wolf²

¹ Mech. Engineering dep., TEI Patra, Greece

² Technical University of Prague, Czech Republic

PV37- Implementation of a Grid-connected Photovoltaic-Active Filter System using DSP-based Control of Voltage Source Inverter

Hyo-Ryong Seo¹, Gyeong-Hun Kim¹, Minwon Park¹ & In-Keun Yu¹

¹ Dept. of Electrical Eng., Changwon National University, Changwon, KOREA

WEDNESDAY

11:00 – 13:00 Session V- Electric Vehicle, Batteries and Appliances

Chairs: H Nfaoui – Morocco

InvPV5- Power for Mobility, e-motion against emission

Roland S. Reichel : Honorary Chairman, German Solar Mobility Association

Reifenberg 85, 91365 Weilersbach, Germany

PV76- Study on the Capacity Optimization of a Combined Solar Cell and Diesel Engine System with an Operation Plan Based on Solar Power Prediction

Shin'ya OBARA¹ & Itaru TANNO¹

¹ Department of Mechanical Engineering, Tomakomai National Cpllege of Technology, Hokkaido, Japan

PV49- Energy planning of a domestic photovoltaic panel

Mohsen Ben Ammar^{1,2}, Maher Chaabene^{1,2}, Abdelhamid Rabhi³

¹ The high institute of technological studies (ISET), Sfax, Tunisia,

² Unité de commande de machines et réseaux de puissance CMERP -ENIS-Tunisie.

³ Laboratoire MIS (Modélisation, Information et Systèmes) Université de Picardie Jules Verne (UPJV) Amiens, Paris, France

PV41- Backward Energy Management Algorithm for a Solar Car

Chiao-Ting Li¹ and Prof. Jung-Ho Cheng²

¹ Graduate student, University of Michigan, Ann Arbor, Michigan, USA,

² Dept. of Mechanical Eng., National Taiwan University, 1 Roosevelt Rd. Sec.4, Taipei, TAIWAN

PV29- Performance of Solar Powered Electric Bicycle in Malaysia

¹ Dr Balbir Singh Mahinder Singh and ² Prashanthini Sunderan

¹ Head of Foundation Studies Department, Universiti Teknologi PETRONAS, Bandar Seri Iskandar, Perak, MALAYSIA

PV63- Fuzzy rules based energy management of a PVP/battery/load system

Souhir Sallem¹, Mohsen Ben Ammar¹, Maher Chaabene¹ & M.B.A Kamoun¹

¹ Unité de Commande de Machines et Réseaux de Puissance CMERP-ENIS, Tunisie

PV14- Charge Equalizing Device Implementation for Satellite EPS NiCd Battery

M. Zahran^{1,2}, A. Mansour², A. Saber², H. Ghoda², A. Oshiba² & A. Zaki²

¹ National Authority for Remote Sensing and Space Science (NARSS), 23 Josef Tito St., Nozha, Cairo Egypt.

² Electronics Research Institute (ERI), NRC Bldg., El-Tahrir St., Dokki, 12311-Giza, Egypt

PV87A- Development of a Solar-powered Mobile Refrigerator

H.H.Huang², B.J. Huang¹, Jin-Hua Wang², Bo-Jheng Lin², Shih-Ming Yen²

¹ Director, Tel: +886-2-23621916 Fax: +886-2-23640549 Email: bjhuang@seed.net.tw

² Graduate student

New Energy Center, Department of Mechanical Engineering, National Taiwan University, Taipei, Taiwan

14:30 – 16:00 Session VI- Solar Water and Other Systems

Chairs: S Kalogirou – Cyprus

InvPV101- Integration of Photovoltaic and Water Production Technologies for Sustainable Living
F Abou-Elfotuh, MCEET, Alexandria, Egypt

InvPV102- Solar and Wind Opportunities for Water Desalination in the Arab regions

A Al-Karaghoul, D Renne and L L Kazmerski, NREL, USA

PV17- Performance Evaluation of Solar Distillation Using Vacuum Tube Coupled with Photovoltaic System

Salah Abdallah⁽¹⁾ Mazen M. Abu-Khader⁽²⁾ and Omar Badran⁽³⁾

⁽¹⁾ Applied Science University, Mechanical & Industrial Engineering Department, Amman 11931, Jordan

⁽²⁾ Department of Chemical Engineering, FET, Al-Balqa Applied University, P.O.Box: 15008, Marka, (11134) Amman, Jordan

⁽³⁾ Department of Mechanical Engineering, FET, Al-Balqa Applied University, P.O.Box: 15008 Marka, (11134) Amman, Jordan

PV80- Experimental Investigation of Two Axes Sun Tracking Photovoltaic System for Refrigeration and Water Pumping under Jordanian Climates

Omar Badran¹ Salah Abdallah² Yousif El-Tous³

¹ Dept. of Mechanical Eng., FET, Al-Balqa` Applied University, Amman-Jordan

² , Dept. of Mechanical and Industrial Eng, Applied Science University, Shafa-Badran, Amman-Jordan Email: salahabdallah_1964@yahoo.com

³ Dept. of Electrical Eng., FET, Al-Balqa` Applied University, Amman-Jordan

16:30 – 18:00 Session SI – Special Technical Session

Chairs: A Bashir – UAE

PV69- Procedure to Carry Out Quality Check in Photovoltaic Grid-Connected Systems

J.V. Muñoz*, M. Fuentes*, G. Nofuentes*, J. Aguilera*, G. Almonacid*, P. Perez*, P. Gomez*

* Grupo de Investigación IDEA. Escuela Politécnica Superior. Universidad de Jaén. Campus de Las Lagunillas, s/n. 23071- Jaén, Spain

PV40- Sensors for sun pointing

D. Fontani, P. Sansoni, F. Francini, D. Jafrancesco, L. Mercatelli

CNR-INOVA Istituto Nazionale di Ottica Applicata, Largo E. Fermi 6 – Firenze - 50125 - Italy

THURSDAY

11:00 – 13:00 Session VII – Building Integrated and Urban PV

Chairs: F Abou-Elfotuh – Egypt

PV33- Models for estimating the performance of building integrated photovoltaic systems in urban environments

Prof Tariq Muneer¹, & Peter Clarke²

¹ Professor of Energy Engineering, Director Research, Napier University, UK

² Research Fellow. School of Engineering and Built Environment. Napier University, Edinburgh, UK.

PV46- On three methodological approaches for a cost-effective PV sizing, towards an Intelligent Building

E. Kaplani , S. Kaplanis*, E. A. Daviskas

*Mech. Engineering dep., T.E.I. of Patra, Greece

PV48- The Effect of Phase Change Material Crystalline Segregation on the Building Integrated Photovoltaic System Thermal Performance

M.J. Huang¹, S.McCormack², P.C. Eames³ and B. Norton²

¹ Camborn School of Mines, University of Exeter, Cornwall, TR10 9EZ, UK

m.j.huang@exeter.ac.uk

² Dublin Energy Lab, Focas Institute, School of Physics, Dublin Institute of Technology, Kevin St, Dublin 8, Ireland.

³ Civil and Mechanical Engineering, University of Warwick, Coventry

CV4 7AL, UK

PV81- A questionnaire survey about an interest and a price for a residential PV system

Masakazu Ito¹, Takuya Oda² & Kosuke Kurokawa³

¹ Integrated Research Institute, Tokyo Institute of Technology, Tokyo, JAPAN

² Integrated Research Institute, Tokyo Institute of Technology, Tokyo, JAPAN

³ Dept. of Engineering, Tokyo University of Agriculture and Technology, Tokyo, JAPAN

PV65- Simulation of Building Integrated Photovoltaic Thermal (BIPVT) for Commercial Application

Adnan Ibrahim, Kamaruzzaman Sopian & Mohd Yusof Othman

Solar Energy Research Institute (SERI), Universiti Kebangsaan Malaysia, Bangi, Selangor, 43600,

MALAYSIA

PV22- Techno-economic investigation for the design and installation of a PV system in Athienou Town Hall

Georgios Florides and Soteris Kalogirou

Department of Mechanical Engineering and Materials Science and Engineering, Cyprus University of

Technology, P. O. Box 50329, 3603 Limassol, Cyprus

PV58- Grid-connected system of the Lamião Restaurant – NE/Brazil

Eliezer Barbosa^{1,2}, Eduardo Vilaça², Chiguero Tiba¹ e Fernando Lima¹

¹ Universidade Federal de Pernambuco-Brasil, Av. Prof. Luiz Freire, 1000 CDU, PE-Brasil 50.740.540

² Instituto de Desenvolvimento Científico e Tecnológico de Xingo

PV 20- A 20 X Concentrating PV System with Thermal Energy Recovery for residential applications

Prof Alberto Reatti ¹ & Mattia Beltrami ²

¹ Dept. of Electronics and Telecommunications, University of Florence, Firenze, ITALY

² Dept. of Energetics, University of Florence, Firenze, ITALY

14:30 – 16:00 Session VIII- PV Systems and Components

Chairs: A Karaghoulis – USA

PV12- Loading capacity of standard oil transformers on photovoltaic load profiles

Georg Kerber¹ & Prof. Dr.-Ing Rolf Witzmann²

¹ Dipl.-Ing. Georg Kerber; Associated Institute of Power Transmission Systems; Technical University of Munich Arcisstraße 21; D-80290 Munich;

² Prof. Dr.-Ing Rolf Witzmann; Associated Institute of Power Transmission Systems; Technical University of Munich Arcisstraße 21; D-80290 Munich; Germany

PV43- Control Strategy for Single –Phase Grid Connected Photovoltaic systems

L. Hassaine^{1,2}, E.Olías¹

¹ Grupo de Sistemas Electrónicos de Potencia (GSEP).Departamento de Tecnología Electrónica, Universidad Carlos III de Madrid.Avda. de la Universidad 30, 28911 – Leganés Madrid – Spain

² PV Laboratory, Centre de Développement des Energies Renouvelables, BP 62, Route de l'Observatoire, Bouzaréah, Algiers, Algeria

PV68- Utilization of Cathodic Protection for Transmission Towers Through Photovoltaic Generation

¹ Eudes Martins de Oliveira, ¹Chiguero Tiba, ²Jose Felipe André Gomes Wavrik and ³José Maurílio da Silva

¹ Departamento de Energia Nuclear da Universidade Federal de Pernambuco

Av. Prof. Luiz Freire, 1000 – CDU, CEP 50.740-540, Recife, PE, Brazil

² Companhia Hidro Elétrica do São Francisco –DML- CHESF

Rua Delmiro Gouveia, 333 – Bongi, CEP 50761-901, Recife, Pernambuco, Brazil

³ LACTEC – Instituto de Tecnologia para o Desenvolvimento

Centro Politécnico da UFPR, Rod. BR 116 Km98 s/n - caixa postal: 19067, CEP: 81531-990, Jardim das Américas - Curitiba – PR

PV92- LIFE-CYCLE-COST ANALYSIS FOR STAND-ALONE PHOTOVOLTAIC SYSTEM – APPLICATION TO IKEJA-NIGERIA

Ese Erusiafe¹ and Michael Chendo²

^{1,2} Department of Physics, Faculty of Science, University of Lagos, Akoka, Lagos, Nigeria.

InvPV36- Energy Balance Analysis of a Hybrid Photovoltaic Based Solution for Remote Telecommunication Stations

Ioanna Ninou & John K. Kaldellis

Soft Energy Applications & Environmental Protection Lab, TEI of Piraeus, P.O. Box 41046, Athens, 12201 Greece

PV24- The Current Energy Scenario and Prospects of Renewable Energy Resources with Place of PV in Malaysia

Nowshad Amin¹, Shahrul Anizan² and Kamaruzzaman Sopian²

¹ Dept. of Electrical Electronic and System Engineering, Faculty of Engineering, UKM, Malaysia

² Solar Energy Research Institute, Universiti Kebangsaan Malaysia, (UKM) Bangi 43600, Selangor, Malaysia.

PV94- Estimation of equivalent circuit parameters of PV module by using a new half analytical five point method

Sami Kolsi^{1,*}, Mohamed Ben Amar², Hekmet Samet³ & Abderrazak Ouali¹

¹ ACEM Research Unit, Department of Electrical Engineering, National School Engineering of Sfax, Tunisia

² Department of Physics, Science Faculty of Sfax, BP. 802, 3038, Sfax, Tunisia

³ Electronic Laboratory and Information Technology, Department of Electrical Engineering, National School Engineering of Sfax, Tunisia

16:30 – 18:00 Session SII – Special PV Applications

Chairs: D Renne – USA

PV16- Economic evaluation of PV/Diesel/Battery hybrid power systems for remote electrification applications in Far North Cameroon

Eustace Mbaka Nfah¹, Godpromesse Kenne² & Médard Fogue³

¹ LAIA, IUT FOTSO Victor, P.O. Box 134 Bandjoun, University of Dschang, CAMEROON,

² LAIA, IUT FOTSO Victor, P.O. Box 134 Bandjoun, University of Dschang, CAMEROON,

³ LISIE, IUT FOTSO Victor, P.O. Box 134 Bandjoun, University of Dschang, CAMEROON

PV67- Siting large PV plants focusing the effects of local climatic variables in the production of electric energy – Case study for Araripina and Recife

Ricardo E A Beltrão and Chigueru Tiba

Departamento de Energia Nuclear da Universidade Federal de Pernambuco
Av. Prof. Luiz Freire, 1000 – CDU, CEP 50.740-540, Recife, PE, Brazil

PV62- Stand-alone Photovoltaic Power Systems in Two Turkish Islands

Metin Colak, Prof. Dr.1 & Mete Cubukcu, MSC2

¹ Dept. of Electrical Eng., Ege University, Bornova-Izmir, TURKEY,

² Solar Energy Institute, Ege University, Bornova-Izmir, TURKEY

PV42- Assessment of Solar PV Power Generation Cost in Pakistan

Dr. Mohammad A. Uqaili¹, Dr. Khanji Harijan² and Dr. Mujeebuddin Memon²

¹ Department of Electrical Engineering, Mehran University of Engineering and Technology, Jamshoro 76062, Sindh,

Pakistan² Department of Mechanical Engineering, Mehran University of Engineering and Technology, Jamshoro 76062, Sindh, Pakistan

PV55- Development of Reliable Low-cost Computerized Data Acquisition System for PV Performance Monitoring

Dr Balbir Singh Mahinder Singh¹, Nguyen Thi Thuy Chi & Sayed Ali Kasaei Zadeh Mahabadi

¹ Head of Foundation Studies Department, Universiti Teknologi PETRONAS, Tronoh, Perak, Malaysia

PV3- Physical properties of tin oxide thin films doped with fluorine for renewable energy applications

Kamil M Yousif: Dept of Physics, Duhok University, Duhok, Iraq.

PV95- Photovoltaic Properties and Surface Structure of Anatase Titanium Dioxide Nanomaterials by Sol-Gel Method for Solar Cells

Aljufairi, N.

University of Qatar, Materials Sciences P.O. Box: 317 Doha – Qatar

PV30- Synthesis of New Protonic Compounds With Layered structure through Ion-exchange Reaction of The Photocatalyst Niobate KNb₃O₈

Nadia Belmokhtar, Ratiba Nedjar, Houria Rebbah

Laboratory Science of the Materials, chemistry Faculty, USTHB, BP 32 El Alia, 16111, Bab Ezzouar, Algiers, ALGERIA

PV31- Partial Exchange of Silver Cations In The Lamellar Photocatalyst Oxide

Warda Ouagagui, Ratiba Nedjar, Houria Rebbah

Laboratoire Science des matériaux, Faculté de Chimie, USTHB, BP 32 El Alia, 16111 Bab Ezzouar, Algiers, ALGERIA

SOLAR RADIATION AND RELATED TOPICS

Prof John Boland, *Chair*

TUESDAY

09:00 – 10:30 Related Topics – I

Chairs: S Kaplanis – Greece

InvRT11- Advances in Modelling Solar Radiation

A/Prof John Boland

School of Mathematics and Statistics, University of South Australia

InvRT19- Quality of Meteornorm Version 6.0

Jan Remund

Meteotest, Fabrikstrasse 14, 3012 Bern, Schweiz

InvRT50 – Renewable Energy Investment in Germany – Invest in Germany

Nikolai Dobrott: Friedrichstrasse 60, 10117 Berlin, Germany

RT33- A Call for Low Latitude Solar Reference Spectra

Michael Case¹ and Yaw Owusu²

¹ School of Engineering, University of Technology, Jamaica

² FAMU-FSU College of Engineering; Director RECCET Laboratory, Jamaica

11:00 – 13:00 Related Topics – II

Chairs: J Boland – Australia

RT20- Use of weather data and neural network for the Vertical extrapolation of wind speed

Nawal Cheggaga¹, & Prof. Fatiha Youcef Ettoumi ²

¹ Laboratory of Image Processing and Radiation (LTIR), Po Box 32 El Alia, Bab Ezzouar, 16111, Algiers, ALGERIA,

² University of Science and Technology of Algiers (USTHB), Faculty of Electronics and Computer Science, Telecommunication Department, Laboratory of Image Processing and Radiation (LTIR), Po Box 32 El Alia, Bab Ezzouar, 16111, Algiers, ALGERIA

RT16- A Novel Solar Radiation Model Using Extraterrestrial Radiations

Fatih Onur Hocaoglu¹, Ömer Nezih Gerek¹ & Mehmet Kurban¹

¹ Anadolu University Electrical and Electronics Eng. Dep. Eskisehir, Turkey

RT25- Compares between Clear Skies Downward Longwave Radiation through Equations and through Artificial Neural Networks

Nsikan Obot¹, Michael Chendo², Ese Erusafe³ & Olutayo Onanuga⁴

¹ Dept. of Science Lab. Tech. Federal Polytechnic Ilaro, Ogun State, Nigeria, Email obot4ever@yahoo.com.

^{2,3} Dept. of Physics, University of Lagos, Akoka, Lagos, Nigeria.

⁴ School of Fisheries and Oceanographic, Victoria Island, Lagos, Nigeria

RT43- Classification of Global Solar Irradiance Decomposition Models and Development of a New Empirical Model: Implementation for the region of Athens, Greece

E.D. Mehleri, P. L. Zervas, H. Sarimveis, J.A. Palyvos, N. C. Markatos

National Technical University of Athens, School of Chemical Engineering, 9 Heroon Polytechniou Str., GR-157 80 Athens, Greece

RT6- Estimation of solar radiation by ANN in Turkey

Assoc.Prof.Dr. Iskender Akkurt¹, Asist. Prof.Dr. N.Ç. Bezir¹, Dr. E. U. Küçüksille², Prof.Dr. Nuri Özek¹

¹ Dept. of Physics, Science Faculty Suleyman Demirel University Isparta-TURKEY

² Dept. of constructional education, technical education Faculty Suleyman Demirel University Isparta-TURKEY

RT23- Preparation of an Integrated Energy Map Data Base applying GIS for Iranian Rural Areas

Prof. M.Abbaspour¹, S.Ghazi²

¹ Department of Mechanical Engineering, Sharif University of Technology , Tehran, Iran

² Department of Environmental Management, Graduate College of Environment and Energy, Science and Research Campus, IA University, Tehran, Iran

14:30 – 16:00 Related Topics – III

Chairs: J Remund – Switzerland

RT41- GEOTHERMAL POTENTIAL ASSESSMENT OF THE GAS FIELDS IN CENTRAL DRAVA BASIN IN REPUBLIC OF CROATIA DUE TO EXERGY ANALYSIS

M.Sc. Tomislav Kurevija¹, M.Sc. Nenad Kukulj¹, M.Sc. Domagoj Vulin¹

¹ University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering, Department of Petroleum Engineering, Pierottijeva 6, Zagreb, Croatia

RT12- Evaluation of Thermal Performance of Ground - Source Energy Systems.

A Geophysics Supported Approach

Georgios Fragoiannis¹, Nikolaos Papatheodorou¹ and Prof. Sofia Stamataki¹

¹ National Technical University of Athens, School of Mining Engineering and Metallurgy, GREECE

RT47- Thermodynamic Evaluation of the separation Pressure to increase the Thermal and Exergy Efficiency in Single and Double Flash Geothermal Power Plants

Shahin Amiri, Prof Ahmed Kahrobaian, Shayan Amiri

Dept of Mechanical Engineering, Tehran University, Tehran , Iran

RT40- The Usage of Scarce Data in Preliminary Calculations of the Capacity for CO₂ Storage into Mature Gas and Oil fields, and Deep Saline Aquifers in Sava Depression.

Domagoj Vulin, M.Sc. ¹, Bruno Saftic, Ph.D. ², Tomislav Kurevija, M.Sc. ¹

¹ University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering, Petroleum Engineering Department,

16:40 – 18:00 Related Topics- IV

Chairs: J Boland- Australia

InvRT18- Modelling of Diffuse Solar Radiation with Multiple Predictors

Barbara Ridley¹ & John Boland²

School of Mathematics & Statistics, University of South Australia, Mawson Lakes, Australia

RT7- The monthly variation of tilted solar radiation in the Isparta Region of Turkey

Asist. Prof.Dr. N.Ç. Bezir, Assoc.Prof.Dr. Iskender Akkurt, Murat Oztürk, Prof.Dr. Nuri Özek

Dept. of Physics, Science Faculty Suleyman Demirel University Isparta-TURKEY

RT48- Analysis of sunshine duration data for some Burundian stations using Weibull distributions.

M. Bashahu

University of Burundi, Institute for Applied Pedagogy, Department of Physics and Technology, P.O. Box 5223, Bujumbura, Burundi.

RT13- Determination of CIE Standard General Sky from horizontal and vertical illuminance/ irradiance

Khalid Alshaibani

Dept. of Architecture, King Faisal University, Dammam, Saudi Arabia

11:00 – 13:00 Related Topics – V

Chairs: P Brenner – Israel

RT26- A new albedometer based on solar cells

Daniel Cotfas¹, Socrates Kaplanis², Petru Cotfas¹ & Doru Ursutiu¹

¹ Dept. of Physics, Transilvania University of Brasov, Romania

² Head of the Laboratory of Renewable Energy Sources, T.E.I. of Patras, Greece

RT10- Solar Energy Application for Purification and Treatment of Oily Waste in Oil Fields

Dr Fuad Mammadov

Institute of Radiation Problems, Azerbaijan National Academy of Sciences,

F. Agayev 9, Baki, AZ1143, Azerbaijan

RT35- The Development of a Long Range Battery Electric Vehicle

Dr Mike Duke¹, Timothy Anderson²

¹ Dept. of Eng., The University of Waikato, Hamilton, Private Bag. 3105, NEW ZEALAND

² Dept. of Eng., The University of Waikato, Hamilton, Private Bag. 3105, NEW ZEALAND

RT39- Renewable Energy Supply of Mountainous Villages in Georgia

Konstantine Kobakhidze¹, Nana Chkhenkeli², Levan Kobakhidze³, Guram Bokuchava⁴

¹ Project Manager, Engineer-Physicist, Ilia Vekua Sokhumi Institute of Physics and Technology (SIPT), Tbilisi, Georgia

² Data processing group leader, Engineer-Physicist, SIPT

³ Field research group leader, SIPT

⁴ Data processing group member, Director, SIPT

RT8- The use of Renewable Energy in Water Desalination in Arid Areas

Prof. Ahmed Hossam-Eldin, and Ahmed Ismaiel

Department of Electrical Engineering University of Alexandria, Alex. 21544. Egypt

RT32- Renewable Energy System in Remote Area and Suggestions for Effective Implementation

Mohd Nizam Ab Rahman, Kamaruzzaman Sopian, Ruhizan Mohd Yasin & Juhari Ab Razak.

Solar Energy Research Institute, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, MALAYSIA.

14:30 – 16:00 Related Topics – VI

Chairs: J Boland

RT9- Saving Energy with Educational and Cultural Management

Dr Azim Sahatimehr

Research deputy of Bonab Islamic Azad University Iran

RT36- Demonstrations on utilization of solar energy bed in rural and urban houses for control of pulse beetle, *Callosobruchus maculatus* (F.) infesting chickpea, *Cicer arietinum* (L.): Low cost storage technology

Shiv K. Singal¹, Subhash Chander², Savita Singal³ and M.K. Garg⁴

¹ Department of Entomology, CCS Haryana Agricultural University, Hisar-125 004(India)

² Department of Entomology, CCS Haryana Agricultural University, Hisar-125 004(India)

³ Department of FRM, CCS Haryana Agricultural University, Hisar-125 004 Haryana- India

⁴ Agricultural Processing & Energy, CCS Haryana Agricultural University, Hisar125 004(India)

RT45- Study and modelling of solar and wind power potential

Comparative Study of three sites in the West Coast of Africa

B. Ould Bilal, V. Sambou, C. M. F. Kébé, M. Ndongo*, P. A. Ndiaye

Centre International de Formation et de Recherche en Energie Solaire (C.I.F.R.E.S)

ESP BP : 5085 Dakar Fann-Sénégal

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BP : 5026 Nouakchott-Mauritanie

LOW ENERGY ARCHITECTURE

Mr Ian Giuliani

Mr Bill Watts, Mr Hugh Lockhart Ball, Dr M Imbabi, Prof Andrew Miller, Mr N Sayigh, Dr R Yao, Dr M Correia Guedes and Prof B Moshfegh

TUESDAY

09:00 – 10:30 Session1- External Environment-I

Chairs: I Giuliani, UK

InvLEA 28- Enforcement of the Energy Rating System for Building Structures in Korea

Dr. Hyo-soon Park¹, Ji-Yeon Kim², Dr. Jae-min Kim³

¹ Principle Researcher,

² Researcher, Korea Institute of Energy Research, Daejeon, Rep. of Korea

³ Senior Research Fellow, ESRU, Mechanical Engineering University of Strathclyde, 75 Montrose St. Glasgow, G1 1XJ, United Kingdom

LEA8- Creating a Policy Architecture to Overcome Barriers to Renewable Electricity in Southeast Asia

Dr. Benjamin K. Sovacool¹

¹ Research Fellow, Energy Governance Program, Centre on Asia and Globalisation, Lee Kuan Yew School of Public Policy, National University of Singapore, SINGAPORE

LEA94- From Solar Homes to Solar Living:

Transition Scenarios for Combined Heat, Power, and Mobility

Christian Blome, FernUniversität Hagen / Deutz Power Systems, Mannheim, Germany

LEA73- Solar Mapping Helps Municipalities Illuminate Savings and Environmental Benefits to Residents and Building Operators

¹ Nigel Nugent; Information Solutions, CH2M HILL, Inc.; Office: (213) 228-8241; Cell: (650) 888-1747; Nigel.Nugent@CH2M.com; www.ch2m.com/ess; http://www.ch2m.com/corporate/markets/enterprise_management_solutions/solar_mapping_capabilities/default.asp, USA

LEA36- Street level microgrid concepts for Southampton, UK: Estimating climate change impact on energy flows and emissions.

Anastasios Papafragkou¹, Patrick B. James¹, Mark Jentsch¹, Bakr Bahaj¹

¹ Sustainable Energy Research Group, School of Civil Engineering and the Environment, University of Southampton, Highfield, SO17 1BJ, UK

11:00 – 13:00 Session II – External Environment II

Chairs: R Yao – UK

InvLEA82- Promises of Sustainable Architecture in Argentina

Prof. MSc.-Arch. Irene Blasco Lucas

Instituto Regional de Planeamiento y Hábitat (IRPha), Facultad de Arquitectura, Urbanismo y Diseño (FAUD), Universidad Nacional de San Juan (UNSJ), San Juan, ARGENTINA.

InvLEA71- Strategies for the Development of Energy Efficient Building in China

Baizhan Li

Key Laboratory of the Three Gorges Reservoir Region's Eco-Environment, Ministry of Education, Faculty of Urban Construction and Environmental Engineering, Chongqing University, Chongqing 400045, China

LEA60- The building sustainable regulations for social housing in Mexico

David Avila¹

Professor of Environmental Research Center; University of Guadalajara, Guadalajara, MEXICO

InvLEA 106- Towards integrated decision support for sustainable urban planning

Darren Robinson

Solar Energy and Building Physics Laboratory, Ecole Polytechnic Fédérale de Lausanne, Station 18, CH-1015 Lausanne, Switzerland.

LEA9- An energy study for an office building in Greece in accordance to the 2002/91/EC directive
Dimoulias Charis¹, Christoforides Anastasios² and Vaitis Crisoula³

¹ Department of Electrical and Computer Engineering, Aristotle University of Thessaloniki, GR.

² Alteren SA, Energy and environmental Planning, Thessaloniki, Greece. Tel:

³ Civil Engineering Department, Aristotelis University of Thessaloniki, GR

LEA84- ELaR, Ecodynamic Land Register.

A proposal to assess the “strong sustainability” of design alternatives according to the local context conditions.

Matteo Clementi¹

¹ Phd Student, Building Environment Science & Technology Dept, Politecnico di Milano, ITALY

LEA63- The effect of albedo on urban street microclimate for semi arid climate Constantine)

Pr. F. Bourbia ¹ and O. Mansouri ¹

¹ Laboratoire Architecture Bioclimatique et Environnement (A.B.E)

Universite Mentouri de Constantine, Departement d'Architecture et d'Urbanisme, Constantine, 25000, Algeria.

LEA23- A Preliminary Study of Courtyard as a Passive Cooling Strategy in Malaysian Linked Houses

Mohd. Riza Ismail¹, Azni Zain-Ahmed² Sabarinah Sh.Ahmad³, and Abdul Razak Sopian⁴

¹ Dept. of Interior Architecture, Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA 40450 Shah Alam, Selangor, Malaysia

² Inst. of Research, Development & Commercialisation, Universiti Teknologi MARA,

LEA42- Factors of Urban Forms that Impact Building Energy Consumption

Yuan Huang^{1,2}, Marjorie Musy¹, Gérard Hégron¹, Hong Chen² & Baofeng Li²

¹ CERMA Laboratory, UMR CNRS 1563, Architecture School of Nantes, France

² Green Architecture Research Center, School of Architecture and Urban Planning, Huazhong University of Sci. and Tech., China

LEA66- Microclimatic characterisation of urban forms in hot dry regions. Case of M'zab Valley

Moussadek Djenane¹ & Abdallah Farhi²

¹ Assistant professor, Department of architecture. University Mohamed Kheider. Biskra.

ENS Architecture de Nantes. Laboratoire CERMA. France

² Associate Professor, Department of architecture. University Mohamed Kheider. Biskra.

14:30 – 16:00 Session III – External Environment III

Chairs: B Moshfegh – Sweden

InvLEA50- London's Anthropogenic Heat Emissions – Implications for Building Design

Michael Davies¹, Ian Hamilton^{1,2}, Philip Steadman¹, Andrew Stone³, Ian Ridley and Stephen Evans¹

¹ Bartlett School of Graduate Studies, University College London, London, UK.

² Fulcrum First Consulting, London, UK.

³ BDSP, London, UK

InvLEA83- “New sustainable and productive cities for South America”.

Prof. Oscar D. Corbella., Brazil

InvLEA104- The Balerno Project

Alexander Rainy Brown¹, Mohammed Imbabi² & Andrew Peacock³

¹ School of Engineering, University of Aberdeen, Aberdeen, UK

² School of Engineering, University of Aberdeen, Aberdeen, UK

³ Ltd, Westpoint, 4 Redheughs Rigg, Edinburgh, UK

InvLEA89- Low Carbon and Sustainable Buildings in Dubai to Combat Global Warming and Counterbalance Climate Change and a Better Future

Mohsen M. Aboulnaga¹ & Najeed Mohammed Al-Ali²

¹ Advisor, The Executive Council, Government of Dubai, PO Box 72233, Dubai, UAE

² Head of Project Development, The Executive Council, Government of Dubai, PO Box 72233, Dubai, UAE

InvLEA103- Regulations for Solar Rights for Buildings, Sidewalks and Open Spaces

A. Yezioro, I. G. Capeluto, T. Bleiberg, E. Shaviv

Faculty of Architecture and Town Planning, Technion - Israel Institute of Technology, Haifa 32000, Israel

InvLEA99- LAND USE AND INDOOR ENVIRONMENT AS CONTRADICTIONARY VARIABLES OF URBAN HOUSING SUSTAINABILITY

Prof. Arq. Dania González Couret, Dr Sc

Faculty of Architecture, ISPJAE, 114 y 124 Street, CUJAE, Mariano 19390, Havana

16:30 – 18:00 Session IV – Whole Building I

Chairs: B Watts – UK

LEA19- Optimisation of Energy Use in the Built Environment: A Holistic Approach to Ground Source Heat Pumps

Yianni Spanos¹ & Les Duckers²

¹ Energy & Environmental Engineering, White Young Green, London, UK

² Faculty of Business, Environment and Society, Coventry University, Coventry, UK

LEA56- Research and Post-Graduate Studies building for Argentinean National Technological University. National Competition.

Carolina Ganem Karlen¹ & Helena Coch Roura²

¹ INCIHUSA – CONICET and CA1 – ETSAB – UPC. Mendoza, Argentina, Tel: 54-261-524-4309, Fax: 54-261-524-4001,

Email: cganem@lab.cricyt.edu.ar

² CA1 – ETSAB – UPC. Barcelona, Spain

LEA46- Climatic Data and its Significance for Building Design in Malta

Mario Fsadni¹ & Prof Ali Sayigh²

¹ Institute for Energy Technology, University of Malta, Triq il-Barrakki, Marsaxlokk MXK1533, Malta

² Chairman of WREC, Director General of WREN, Brighton, UK

InvLEA16- Experimental Study of using Thermoelectric Power Generation for Energy Saving Lighting in Dwellings

Dr. Esam Elsarrag

Energy Systems Analyst, Hoare Lea Consulting Engineers, Poole, UK

InvLEA104- The Balerno Project

Alexander Rainy Brown¹, Mohammed Imbabi² & Andrew Peacock³

¹ School of Engineering, University of Aberdeen, Aberdeen, UK

² School of Engineering, University of Aberdeen, Aberdeen, UK

³ Ltd, Westpoint, 4 Redheughs Rigg, Edinburgh, UK

LEA33-The transport of natural light in a box using a lightpipe

Prof Massimo Paroncini¹, Francesco Corvaro², Giorgia Nardini³ & Sara Pistolesi⁴

¹ Director of Dept. of Energy Engineering, Università Politecnica delle Marche, Ancona, ITALY

² Dept. of Energy Engineering, Università Politecnica delle Marche, Ancona, ITALY,

³ Dept. of Energy Engineering, Università Politecnica delle Marche, Ancona, ITALY,

⁴ Dept. of Energy Engineering, Università Politecnica delle Marche, Ancona, ITALY,

WEDNESDAY

11:00 – 13:00 Session V- Whole Building II

Chairs: N Sayigh – UK

InvLEA107- Building Integrated Ethernet Networks using Renewable Power Generation (BIEN-RPG)

Professor John Counsell, BRE Centre, University of Strathclyde, Department of Mechanical Engineering, James Weir Building, 75 Montrose Street, Glasgow G1 1XJ, UK.

InvLEA74- Computational Tools for Low Energy Building Design:

Capabilities and Requirements

Professor Joe Clarke, Director, Energy Systems Research Unit, University of Strathclyde, UK

LEA72- Controllability of Modern Commercial Buildings

John Counsell, Yousaf Khalid

BRE Centre of Excellence in Energy Utilisation, ESRU, University of Strathclyde, Glasgow, G1 1XJ, UK

LEAP59- A Design Optimization Tool for Building Energy Simulation

Gian Luca Brunetti¹

¹ ABITAlab, Dept. of Building, Environment, Sciences And Technology (B.E.S.T.), Polytechnic University of Milan, Milan, Italy

InvLEA102- Energy consuming activity patterns in daily life as revealed by the program VISUAL-TimePacTS/Kajsa Ellegård

Kajsa Ellegård

Technology and Social Change, Linköping University, SE-581 83 Linköping, Sweden

LEA30- Three-dimensional dynamic analysis of buildings thermal behavior

Cristiana Bagozzi¹, Paolo Baggio¹, Marco Baratieri¹, Maurizio Grigante¹, Piercarlo Romagnoni², Andrea Gasparella³

¹ Department of Civil and Environmental Engineering, University of Trento, ITALY

² Department Department of Building Construction, IUAV, Venezia, ITALY

³ Department of Management and Engineering, University of Padova, ITALY

LEA39- The energy certification of buildings through the dynamic simulation of variable consumption

Angelo Milone¹, Daniele Milone², Salvatore Pitruzzella³

^{1,2} Dipartimento di Ricerche Energetiche ed Ambientali. Università di Palermo. Viale delle Scienze. Palermo. Italy.

³ Dipartimento di Ingegneria Civile. Università di Messina. Salita Sperone. Contrada di Dio. Messina. Italy.

Inv24- Modelling of Low-Temperature Heating Systems in Buildings

Prof Sture Holmberg, Department of Fluid and Climate Technology, Royal Institute of Technology (KTH), Marinens väg 30, SE-136 40 Haninge-Stockholm, Sweden

Inv LEA90- ANALYSIS ON COMFORT AND INDOOR CLIMATE FOR A HOSPITAL BUILDING BY MULTIZONE MODELING

– summer condition

M. Cehlin¹, U. Larsson¹ and B. Moshfegh^{1,2}

¹ Division of Energy and Mechanical Engineering, Department of Technology and Built Environment, University of Gävle, Sweden e-mail: mcn@hig.se

² Division of Energy Systems, Department of Mechanical Engineering, Linköping University, Sweden

14:30 -16:00 Session VI- Whole Building III

Chairs: M Imbabi – UK

LEA34- Adjusting an Energy Simulation Model by means of CFD Techniques to Analyze Open-joint Ventilated Façades Energy Performance

Marcos González¹, Eduardo Blanco¹ Jorge Pistono¹

¹ Universidad de Oviedo, EDZE (Energía), Campus de Viesques, 33271 Gijón (Asturias) SPAIN

LEA51- Numerical Analysis on the Performance of a Glazed Corridor for Preheating an Office Building

María José Suárez López¹, Isaac Sarries Olmos¹, Jorge Pistono Favero¹

¹ Universidad de Oviedo, EDZE, Campus de Viesques, 33271 Gijón (Asturias) SPAIN

InvLEA52- A method of assessing indoor environment quality using Evidential Reasoning approach

*Runming Yao¹, Yulan Yang^{1,2,3} and Baizhan Li^{2,3}

¹ School of Construction Management and Engineering, The University of Reading, PO Box 219, Reading, RG6 6AW, UK

² Faculty of Urban Construction and Environmental Engineering, Chongqing University, Chongqing, 400030, P.R. China

³ Key Laboratory of the Three Gorges Reservoir Region's Eco-Environment under the Ministry of Education, Chongqing University, Chongqing 400030, P.R. China

LEA17- Investigating airflow in traditional urban context in Dubai using CFD

Laila Al-Rais¹ & Khaled A Al-Sallal²

¹ Project Dept., Dubai World Trade Centre, Dubai, UAE

² Archtural Engineering Dept., UAE University, Al-Ain, UAE

LEA65- The Influence of Meteorological Parameters on the Performance of Solar Chimney in the Local Region: Experimental Investigation, Numerical Analysis and Simulation

Nasser Ahmad

Mechanical Engineering Department , College of Engineering, University of Bahrain, Isa Town, PO Box 30876, Kingdom of Bahrain

LEA38- Radiative Cooling Potential in the Tropics: A Case Study in Malaysia

K. Sopian, M.A. Alghoul, M.Y. Sulaiman, and M.Y. Othman

Solar Energy Research Institute, Universiti Kebangsaan Malaysia, Bangi, Selangor Malaysia

LEA21- Quality Assurance and Monitoring of Solar Home Systems in Developing Countries: A Nepalese experience

Subedi Niraj¹ & Munankami Rajeev²

¹ Programme Officer, Solar Energy Support Programme, Energy Sector Assistance Programme, Alternative Energy Promotion Centre

² Energy Officer, Alternative Energy Promotion Centre. GPO 14237, Khumaltar, Lalitpur, Nepal

16:30 – 18:00 Session S1- Case Study I

Chairs: M Aboulnaga

InvLEA2- A Comparative Market and Utility Analysis of New High-Performance Homes in San Diego, California

Barbara Farhar, Ph.D., University of Colorado (Adj.), National Renewable Energy Laboratory (Ret.), USA

LEA14- Design and Study of Different Devices at Self Sufficient Solar house.

Shyam S. Nandwani

Laboratorio de Energia Solar, Departamento de Física, Universidad Nacional, Heredia, Costa Rica

LEA91- Net Zero Energy Homes of the Future: A Case Study of the ÉcoTerra House in Canada

Masa Noguchi¹, Andreas Athienitis², YuXiang Chen², Véronique Delisle³, Yves Poissant³, Josef Ayoub³ & Bradley Berneche⁴

¹ MEARU, Mackintosh School of Architecture, The Glasgow School of Art, Glasgow, UK,

² Solar Buildings Research Network, Dept. of Building, Civil & Environmental Engineering, Concordia University, Montreal, CANADA

³ CANMET Energy Technology Centre-Varenes, Varenes, Quebec, CANADA

⁴ Alouette Homes, St-Alphonse-de-Granby, CANADA

LEA69- Studies on the Rating System for Green Building in Brazil

Sofia C. Cavalcante¹ & Tomaz N. Cavalcante Neto²

¹ Student of Architecture and Urbanism, Universidade Federal do Ceará,

Av. da Universidade 2890, Campus do Benfica, Fortaleza, CE, 60020-181, Brazil

² Professor, Dept. of Electrical Engineering, Universidade Federal do Ceará, Campus do Pici, Bl. 705, Fortaleza, CE, 60455-760, Brazil

LEA48- Energy Study in a Maltese Household

Robert N. Farrugia¹, Charles Yousif² & Marta Villameriel Tejedor³

¹ Institute for Energy Technology, University of Malta, Triq il-Barrakki, Marsaxlokk, MXK 1531, Malta

² Institute for Energy Technology, University of Malta, Triq il-Barrakki, Marsaxlokk, MXK 1531, Malta

³ E.T.S. Ingenieros Industriales, Universidad De Valladolid, Paseo del Cauce, s/n, 47005 Valladolid, Spain

LEA110- Evaluated strategies for urban microclimatic modifications in the centre of Athens

Niki Gaitani¹, Anastasia Tsolaki¹, Mat Santamouris¹, Apostolos Letsios²

¹ University of Athens, Physics Department, Division of Applied Physics

² Hellenic Society for the Environment and Cultural heritage

THURSDAY

11:00 – 13:00 Session VII – Whole Building/ Refurbishment

Chairs: Y Spanos – UK

InvLEA93- An Example of a Low-Energy Building in Sweden

Prof Bahram Moshfegh* and Dr Fredrik Karlsson

Department of Management and Engineering, Division of Energy Systems, Linköping Institute of Technology, S-581 83 Linköping, Sweden

LEA18- Ground Heat Exchangers and ground temperatures in Cyprus

Panayiotis Pouloupatis², Georgios Florides¹, Savvas Tassou², Soteris Kalogirou¹

¹ Department of Mechanical Engineering and Science and Engineering Materials, Cyprus University of Technology, P.O. Box 50329, 3603 Limassol, Cyprus

² School of Engineering and Design, Brunel University, Uxbridge, Middlesex UB8 3PH, UK

LEA80- Thermal Performance of External Plasters Applied to Concrete Blockwork

Andrew Sapienza¹, Alex Torpiano¹ & Vincent Buhagiar¹

¹ Faculty of Architecture & Civil Engineering, University of Malta, Msida MSD 2080, Malta.

LEA62- Performance Improvement of Air Type PVT Collector Units

Jinhee Kim¹, Yeonwon Yang², Joongu Kang³ & Juntae Kim⁴

¹ PhD Candidate, Graduate School, Department of Architectural Engineering, Kongju National University, Chungnam, KOREA

² Graduate School, Department of Architectural Engineering, Kongju National University, Chungnam, KOREA,

³ Graduate School, Department of Architectural Engineering, Kongju National University, Chungnam, KOREA,

⁴ Associate Professor, Department of Architectural Engineering, Kongju National University, Chungnam, KOREA

LEA101- Energy Gain in a cold season using mat insulation in Buildings in Tehran

Jahangir Payamara

Physics Department, Shahed University, Tehran, Iran

LEA61- Sustainable technology for rural houses in Mexico

Silvia Arias¹

¹ Professor of Environmental Research Center; University of Guadalajara, Guadalajara, MEX

LEA76- Climate change and energy outlook of large scale retail units:

A 'home improvement store' perspective

Mark Jentsch, Patrick James & AbuBakr Bahaj

Sustainable Energy Research Group, School of Civil Engineering & Environment, University of Southampton, Highfield, Southampton, SO17 1BJ, UK

InvLEA7- OPPORTUNITIES AND CONSTRAINTS FOR UPGRADING 1960s HOUSING TO LOW-CARBON STATUS

C.D.A. PORTEOUS, R MENON

MACKINTOSH ENVIRONMENTAL ARCHITECTURE RESEARCH UNIT, GLASGOW SCHOOL OF ART, GLASGOW G3 6RQ SCOTLAND, UK

InvLEA25- Visual Quality Issues in Classroom Design in the UAE

Khaled A Al-Sallal¹ & Laila Al-Rais²

¹ Architectural Engineering Dept., UAE University, Al-Ain, UAE

² Project Dept., Dubai World Trade Centre, Dubai

14:30 – 16:00 Session VIII - Internal Environment/ Lighting

Chairs: K Al-Sallal - UAE

InvLEA29- Optical properties of tubular light guides

Jitka Mohelnikova¹

¹ Faculty of Civil Engineering, Brno University of Technology, Brno, Czech Republic

LEA75- The use of advanced glazing in combating residential greenhouse emissions in subtropical and tropical regions in Australia

Prof John Bell¹, Wendy Miller²

¹ Assistant Dean Research, Faculty of Built Environment and Engineering, Queensland University of Technology, Brisbane, AUSTRALIA

² Senior Research Fellow Sustainable Energy, Faculty of Built Environment and Engineering, Queensland University of Technology, Brisbane, AUSTRALIA

LEA35- Evaluation of the Minimum Natural Illumination for Habitations in Algiers

Hanene Mimouni¹, Abderrachid Mefti² & Abd El Hamid Adane¹

¹ University of Science and Technology of Algiers (U.S.T.H.B.), Faculty of Electronics and Computer Science, Telecommunication Department, Laboratory of Image Processing and Radiation (L.T.I.R.), Po Box 32 El Alia, Bab Ezzouar 16111, Algiers, ALGERIA

² Centre of Development of Renewable Energy, Laboratory of Energy Ressources, Po Box 62, Observatory road, Bouzar-eah, Algiers, ALGERIA

LEA22- Design of a “Mocárabe” Skylight of the Energy Agency of Andalusia in Sevilla, Spain
Pilar Oteiza¹, Hernán Buguéno²

¹ PhD Architect, Professor Polytechnic University of Madrid, ETS of Architecture, Madrid, Spain

² Architect, Director I+D, Ruiz-Larrea & Associates Architects, Master degree in Environmental and en Bioclimatic Architecture

LEA43- A CALCULATION CODE FOR DAYLIGHT ILLUMINANCE PREDICTIONS INSIDE BUILDING ROOMS

M. A. Cucumo, A. De Rosa, V. Ferraro, D. Kaliakatsos, V. Marinelli

Mechanical Engineering Department – University of Calabria 87036 Arcavacata di Rende (CS) – Italy

16:30 – 18:00 Session SII- Case Study II

Chairs: I Giuliani - UK

InvLEA58- Energy consumption and CO₂ emissions in the construction and use of flats according to floor area

Anna Pagès, Massimo Palme, Helena Coch, Toni Isalgué

Architecture, energy and environment. School of Architecture. Technical University of Catalonia, (UPC) Barcelona, Spain.

LEA77- Impact of user behaviour on the heating season carbon footprint of naturally ventilated UK offices

Briana Kirchgässner, Patrick James, Mark Jentsch & AbuBakr Bahaj

Sustainable Energy Research Group, School of Civil Engineering & Environment, University of Southampton, Highfield, Southampton, SO17 1BJ, UK

LEA4- Experimental Studies of a passive cooling roof In hot arid areas

Hamida Ben Cheikh*, Ammar Bouchair**

* Département d'architecture, Université de Laghouat, Laghouat, Algeria

** Laboratoire de Recherche Cadre Bâti et Environnement (LRBCE), Département d'Architecture, Faculté des Sciences de l'Ingénieur, Université de Jijel, Jijel, Algeria

LEA41- Heat transfer in buildings: thermal responses of walls

Dr Idriss Ahmed Hared¹ & Mr Said Ismael Awaleh²

¹ Renewable energy department, Djibouti Centre for studies and Research, Djibouti, Djibouti Republic

² Earth Sciences Institute, Djibouti Centre for studies and Research, Djibouti, Djibouti Republic

LEA1- Ventilation and Indoor Air Quality

Abdeen Mustafa Omer: Forest Road West, Nottingham NG7 4EU, UK

World Renewable Energy Network & Congress Council acknowledges the outstanding contribution to Renewable Energy Globally by H E Dr Altwajri and Dr Arvizu, warded them The Special Award at The Congress in Glasgow 2008.

H E Dr Abdulaziz Othman Altwajri



Dr Altwajri is Director General of Islamic Educational, Scientific and Cultural Organization – ISESCO since 1991. ISESCO consists of 56 countries. He is member of Board of Trustees of Islamic University in Niger, Uganda, Pakistan and Bangladesh. He is member of various cultural and Islamic Organizations in Jordan, France, Egypt, Argentine, Sharjah, Iran and Peru. He is author of numerous educational and cultural monographs, research papers and articles published in leading magazines. Member of the council of the 100 Leaders, affiliated to the World Economical Forum. He was awarded many prizes for his innovative work in religion, culture and science.

His keynote presentation at the Congress is:

ISESCO Programme for Sustainable Development and Environment

Dr Dan Arvizu, Director of the US Department of Energy' (NREL), Golden, Colorado, USA



He is the eighth director of the US Department of Energy' National Renewable Energy Laboratory (NREL) since January 15, 2005.

NREL, in Golden, Colorado began operations in 1977 and is the Department of Energy's primary laboratory for energy efficiency and renewable energy research and development. NREL is operated for DOE by Midwest Research Institute (MRI) and Battelle. Dr Arvizu also is a Senior Vice President with MRI, headquartered in Kansas City, Missouri.

Prior to joining NREL, Dr Arvizu was the chief technology officer with CH2M HILL Companies, Ltd. Before joining CH2M he was an executive with Sandia National Laboratories in Albuquerque, New Mexico. He started his career and spent four years at AT&T Bell Telephone Laboratories.

In 2004, Dr Arvizu was appointed by President George W Bush, and confirmed by the full US Senate, to be on the 24-member National Science Board (NSB), which is the government board of the National Science Foundation and the national science policy

advisory body to the President and the Congress.

Dr Arvizu serves on number of Boards, Panels and Advisory Committees including the Advisory Board of the American Council on Renewable Energy, the Board of the National Hispanic National Achievement Awards Corporation, and the Greater Metro Denver Board of the Salvation Army.

He has received numerous recognitions and awards and has been selected as one of the "50 Most Important Hispanics in Technology and Business" by Hispanic Engineer and Information Technology magazine for the past four years.

His keynote presentation at the Congress is::

US Renewable Energy Policy and National Renewable Energy Laboratory

World Renewable Energy Network Pioneering Awards 2008 were given to the following outstanding personalities, for more details about each person please consult our website: www.wrenuk.co.uk

Dr May Christine Sengendo, Makerere University, Kampala, Uganda



Among her many projects, Dr. Sengendo was part of a feasibility study team for a biogas programme in Uganda funded by Winrock International and the government of The Netherlands. Her international policy and planning work has included Mauritius, Kenya, Eriteria, Ethiopia, Ghana, Botswana, Rwanda, Senegal, and Somaliland. Organizations funding Dr. Sengendo's work include the ITDG-UK, Care International, DIFD, ESMAP-The World Bank, The Netherlands, ADRA Somalia, UNDP/GEF/SGP, SIDA, Commonwealth Secretariat, Federation of Uganda Exporters Association, and the EU.

Dr. Indra Haraksingh, University of the West Indies, St. Augustine, Trinidad



Dr. Haraksingh is one of the major organizers of the SATIS (Sustainable Applications for Tropical Island States) series of conferences which started in 1994 in Barbados. Since then the conference has been held bi-annually. She has been serving as a member of the International Steering Committee of the World Renewable Energy Network for over ten years. In an effort to help develop renewable energy technologies in the Caribbean region, she also serves as a Member of the Projects Steering Committee of the Caribbean Renewable Energy Development Programme (CREDP), CARICOM. She heads the Monitoring and Evaluation Committee of the Pilot Project on The Use of Renewable Energy Technologies in Trinidad and Tobago, a new initiative of the Government of Trinidad and Tobago.

**Dr. Soteris Kalogirou – WREN Pioneer
Mechanical Engineering and Materials Sciences and Engineering of the
Cyprus University of Technology, Limassol, Cyprus**



For more than 20 years, he is actively involved in research in the area of solar energy and particularly in flat plate and concentrating collectors, solar water heating, solar steam generating systems, desalination and absorption cooling. Additionally, since 1995 he is involved in a pioneering research dealing with the use of artificial intelligence methods, like artificial neural networks, genetic algorithms and fuzzy logic, for the modelling and performance prediction of energy and solar energy systems.

He has been a member of WREN since 1992 and is a member of the Chartered Institution of Building Services Engineers (CIBSE), American Society of Heating Refrigeration and Air-conditioning Engineers (ASHRAE), Institute of Refrigeration (IoR) and International Solar Energy Society (ISES).

Dorota Chwieduk, RTD on Energy, Buildings and Environment



Dr Chwieduk editor for several national and international journals. She worked closely with the European Commission on an evaluate of many of their projects. Member of the Advisory Group on Energy for FP 7, since 2006. Coordinator of the sub-network “Eco-Buildings” of the National Network “Sustainable Energy Systems”, since 2004. Member of the European Construction Technology Platform, Priority Sustainable Development and Quality of Life, since 2004. Leader of Priority Sustainable Development and Quality of Life of the Polish National Construction Technology Platform. Leader and coordinator (from Polish side) of energy efficiency and renewable energy projects of SAVE, ALTENER, V and VI Framework Programmes.

Professor Irene Blasco Lucas, National University of San Juan, Argentina



From 1985 to 1987 evolved like Invited Scientist in the Fraunhofer Institut für Bauphysik in Stuttgart, Germany. From 1995 to 1998 the National Council for Science and Technique (CONICET) recognized the Doctoral degree in merit to her antecedents, being distinguish with its Postdoctoral Fellowship. In 1998 she approved the courses of Masters in Renewable Energies applied to Buildings in the International University of Andalusia, Spain, becoming Master in 2000. At the moment she is preparing his Doctoral Thesis in Architecture (University of Mendoza, Argentina). She is working in teaching and research in the UNSJ from 1983, being up 1990 Effective Titular and Associate Professor. From 1999 she develops its research activities in the Regional Institute of Planning and Habitat (IRPHa), and educational ones in the Faculty of Architecture Urbanism and Design (FAUD).

Mr. James Husbands, Managing Director and CED of Solar Dynamics Ltd, Barbados, West Indies



The growth of the solar hot water industry has been propelled by Solar Dynamics throughout the Caribbean, with the companies playing a dominant role in the markets of Barbados, The OECS and to lesser extent Jamaica and the Bahamas.

James was awarded The Gold Crown of Merit in 1994 by Barbados for his role in developing the solar water heating industry. He was the first businessman to be awarded the honour and the youngest at 45 years old. He has been in business for 35 years.

He was the first Entrepreneur of the year in 1997. He has served The Cave Hill University of the West Indies Campus as Entrepreneur in Residence.

James Husbands has served on the Board of Directors of the Barbados Mutual Life Assurance Society (now SAGICOR) and Capital Life. He is also the past Vice President of the Barbados Chamber of Commerce and Industry and serves as President of The Barbados Manufactures Association.

Scottish Enterprise Energy Team

The Scottish Enterprise Energy Team fully supports the aims of the World Renewable Energy Network and is delighted to be a sponsor of the 10th World Renewable Energy Congress and Exhibition in Glasgow

Scottish Enterprise's role in renewables is to support the development and demonstration of key technologies and to champion the creation and growth of businesses in the sector. In addition, we aim to stimulate critical mass in emerging industry sectors, particularly marine energy, offshore wind, fuel cells and hydrogen.

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- find other means of support.

For further information contact:

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www.scottish-enterprise.com/energy



The next World Renewable Energy Congress will be in Abu Dhabi in May 2010.

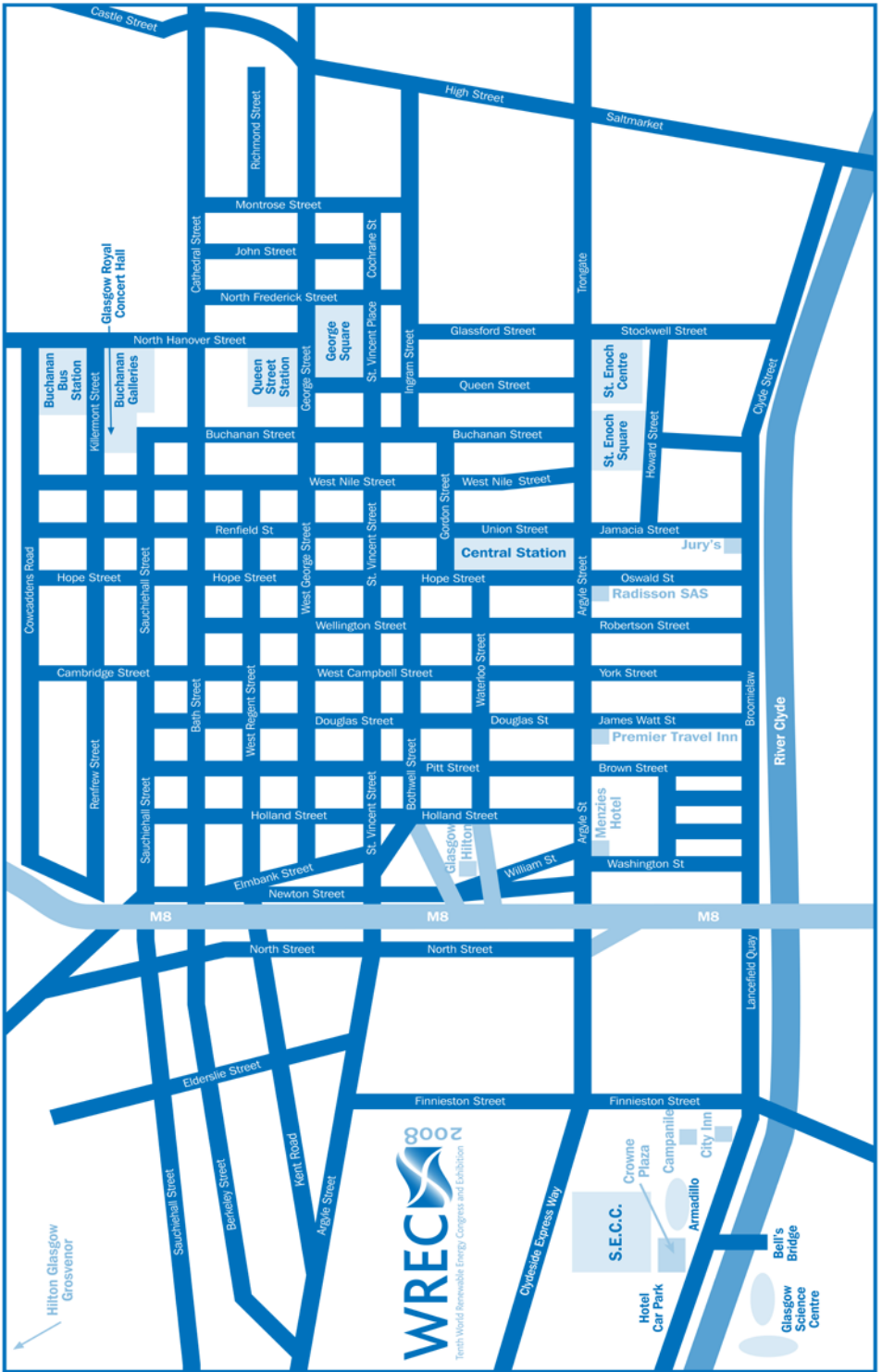
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PROGRAMME AT A GLANCE

Time	Saturday July 19	Sunday July 20	Monday* July 21	Tuesday** July 22	Wednesday** July 23	Thursday** July 24	Friday** July 25
08:15–08:45	WREN Meeting at MENZIES Hotel	WREN 3–mle race Breakfast*	Chairman, Contributor Meeting**	Chairmen Contributor Meeting**	Chairmen Contributor Meeting**	Chairmen Contributor Meeting**	Chairmen & Speakers Breakfast
09:00–10:30	WREN Council Meeting	Workshops	OPENING CEREMONY A	Technical Sessions (1)	Plenary A4 & B1	Plenary A5 & B2	Plenary A6 & B3
10:30–11:00	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
11:00–12:30	WREN Council Meeting	Workshops	Plenary A1	Technical Sessions (2)	Technical Sessions (5)	Technical Sessions (7)	Plenary A7 & B4
12:30–13:00							Closing Ceremony****
13:00–14:30	Lunch Break	Lunch Break	Lunch Break	Lunch Break	Lunch Break	Lunch Break	Lunch Break
14:30–16:00	Special lecture by EU Director	Workshops	Plenary A2	Technical Sessions (3)	Technical Sessions (6)	Technical Sessions (8)	
16:00–16:30	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break	
16:30–18:00			Plenary A3	Technical Sessions (4)	Special Technical Sessions (S1)	Special Technical Sessions (S2)	Free Time
18:00–19:00							
19:30–21:00	WREN Dinner ELSEVIER Dinner	Reception Free to All	Dinner by Invitation Only		CONGRESS BANQUET	Sponsored Reception	
20:00–22:30							

REGISTRATION is open every day 8:30–5:30. At the Conference Centre.

* Saturday WREN Council meeting will be at Menzies Hotel.

** Sunday 3-miles race start at 8:00 o'clock in front of Crown Plaza Hotel and finishes at the Menzies Hotel where a breakfast will be taken.

*** Chairman and Contributor meeting every morning will take place at the Conference Centre.

**** Best papers award in each section.