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**LEGEND:**
- **M** = Main Plenary, **Po** = Policy, **ST** = Solar Thermal, **BM** = Biomass & WTE
- **FC** = Fuel Cells, **LEA** = Low Energy Architecture, **HO** = Hydro & Ocean
- **PV** = Photovoltaic, **RI** = Renewable Integration, **WE** = Wind Energy

**NOTE:** Plenary 09:00 – 10:30 – Tuesday, Wednesday, Thursday and Friday at: Jacqueline Wilson
Other Plenaries & Technical Sessions are at: John Galsworthy Building – JG Building
Chairman’s Message

As you know this is the thirteenth WREC and 2014/15 is WREC’s 25th anniversary, so it gives me especial pleasure to welcome you to Kingston this year. I believe that all our loyal participants and new comers will find this an exceptionally exciting Congress since we have a very high quality team of plenary and invited speakers and many outstanding papers.

I hardly need to emphasize just how important to global welfare is the work which each of you carry out daily. The opposers of renewable and sustainable energy and climate change deniers continue to exert pressure locally and governmentally and their influence should never be underestimated, but thankfully the voice of reason is being heard. Amazing advances are being made in all fields and installations continue to be constructed and improved. Whilst I, and all the WREC team, remain optimistic, we cannot be complacent. I trust that in this Congress you will find much to stimulate, interest and reinvigorate your endeavours.

The Congress plan of action is outlined in this Programme and follows the same basic principles of plenary presentations and parallel technical sessions as in previous meetings. As always there will be a Gala Dinner and various receptions and dinners hosted by some of our sponsors.

I should like to acknowledge the tremendous support WREC/WREN has received from Kingston University and its staff and host of volunteers and all the members of the Technical Committees, without them there would be no Congress. Thanks also to all the honourable Opening Ceremony speakers. I am delighted to report that we have received cooperation/sponsorship from, Springer, Elsevier, ISESCO, EWEA, EPIA, EU BC&E, ISES, UK-REA, UK-Solar Energy, E&T, UN - Agencies, EU, AFORE, NREL, University of Bahrain, University Kebangsaan Malaysia, and many national and academic organizations around the world. Finally, especial thanks to you, the participants, for presenting your work and attending this Congress. We look forward to an exciting week in August and future WREC events.

Prof Ali Sayigh
Chairman of World Renewable Energy Congress – WREC & Director General of WREN
Brighton, UK
Congress – Executive Chairman
Monday 4 August

All day will be at the ROSE THEATRE 24-26 High Street, Kingston upon Thames KT1 1HL, outside the University

9:00 – 10:30 - Opening Ceremony - Rose Theatre – outside venue
Welcome speech by Prof Ali Sayigh – Executive Chair – WREC/WREN
Welcome speech by Prof Julius Weinberg – Vice Chancellor of Kingston University
Welcome speech by Prof Edith Sim – Honorary Chair – Kingston University

9:10 – 9:20 – WREN is a worldwide organization
Prof Brian Norton - President of Dublin Inst. of Tech. & Ex-President of WREN, Ireland

9:20 – 9:30 – ISESCO programme in clean energy and Renewables
H.E Dr Abdul Aziz O Altwajry – Director General of ISESC, Rabat, Morocco

9:30 – 9:40-- Kingston Energy: Prof Gavin Gilmore, Kingston University, UK

The Rt Hon Edward Davey MP, Secretary of State for Energy & Climate Change

10:10 – 10:30 - A new climate Strategy: Global Cooling
Mr Hans –Josef Fell - DWR eco GmbH, Berlin, Germany

10:30 – 11:00- Coffee Break

11:00 – 13:00  Main Plenary 1  Rose Theatre
Chairs: H E Dr Ebrahim Al-Janahi – President of Bahrain University
Dr Hossein Mirzaii, University of Kingston, London, UK

11:00 – 11:25- The Reality of Climate Change
Dr. Charles F. Kutscher, Director, Buildings and Thermal Systems Center
National Renewable Energy Laboratory, Golden, Colorado USA

11:30 – 11:55 - The Zero Waste Paradigm
Dr Sunand Prasad, Past President of RIBA, Senior Partner, Penoyre & Prasad LLP

12:00 – 12:25 – Wind energy – technology and politics
Dr Andrew D Garrad, DNV GL- Energy, Chairman of European Wind Energy Ass.

12:30 – 12:55 - PV as a Major Contributor to the Global Future Energy Needs
Dr Winfried Hoffmann (ASE), Past President of EPIA, WREN Pioneer

13:00 – 14:30 – Lunch Break at University – Penrhyn Road

14:30 – 16:00  Main Plenary 2  Rose Theatre
Chairs: Prof Soogab Lee, President of Korean Wind Energy Association,
Seoul National University, WREN Pioneer
Mr Luay Al-Khatteeb, D G Iraq Energy Inst. S. Advisor to Iraqi Parliament

14:30 – 14:55- The Future of Renewable Energy
Prof Mohamed El-Ashry, Senior Fellow, UN Foundation, USA

15:00 – 15:25 - Technology Transfer and Infrastructure delivery in Waste
Management– don’t recycle UK mistakes
Khalid Al-Hajeri, Director, Ricardo-AEA, Harwell, Didcot, Oxon, UK

15:30 – 16:00 – Traditional and modern options of energy conservation in buildings
Prof Dorota Chwieduk, Inst. of Heat Eng, Warsaw Univ of Tech., Poland

16:00 – 16:30- Coffee Break

16:30 – 18:30 – Main Plenary 3  Rose Theatre
Chair: Mr Rainer Hinrichs-Rahlwes, German Renewable Energy Federation (BEE), Berlin, Germany
Prof R.E. Critoph, School of Engineering, University of Warwick, UK

16:30 – 16:55 - Assessment of wave energy resources
C. Guedes Soares, Centre for Marine Tech. and Eng.(CENTEC),Univ.de Lisboa, Portugal

17:00 – 17:25- How to Sustainably Heat Buildings in the UK
Bill Watts, Senior Partner, Max Fordham, London, UK

17:30 – 17:55- Fuel processing of low sulphur diesel for fuel cell systems
Prof Joachim Pasel¹, Remzi Can Samsun¹, Ralf Peters¹ and Detlef Stolten¹,²
¹Forschungszentrum Jülich GmbH, Institute of Energy and Climate Research, Jülich, Germany
²Chair for Fuel Cells, RWTH Aachen University, Germany

18:00 – 18:30- A 100% Renewable Energy Future: A Solution to Climate Change, and the Challenge of Renewable Technology Integration
David S. Renné, President, International Solar Energy Society, Boulder, Colorado USA
**Tuesday – 5 August**

09:00 – 10:30  Main Plenary 4 - Room – Jacqueline Wilson  Chair: Dr Jazaer Dawody – Sweden

**Perspectives for Renewable Energy in Europe – Challenges on the way towards stable and reliable policy framework until and beyond 2020**
Mr Rainer Hinrichs-Rahlwes, European Renewable Energies Federation  Energy Federation, EREF Brussels Belgium

**A Systems Approach to Building Integrated Renewable Energy**
Prof Phil Jones, Chair of Architectural Science, Cardiff University, Cardiff, UK

**Wind Energy Progress and Development in KOREA**
Prof Soogab Lee, President, Korea Wind Energy Association (KWEA), Seoul, Korea

10:30 – 11:00  Coffee Break

11:00 – 12:00  Plenary 5- WE  Room – 4002, J G Building  Chair: Prof Don Swift-Hook - UK

**Denmark Wind Energy Programme**
Prof Wen Zhong Shen: Dept. of Wind Energy, Technical University of Denmark, Lyngby, Denmark

**Power System Sustainability of Offshore Wind in the United Kingdom in 2030**
Higgins, P, Foley A.M, School of Mechanical and Aerospace Engineering Queen’s Univ Belfast, UK

**Investigating the Technical Availability of Wind Turbines Operating at High Altitude**
Papazoglou M., Zafirakis D., Kaldellis J.K; Mechanical Eng Dept, Technological Educational Institute of Piraeus, Athens, Greece

11:00 – 12:00  Plenary 6- LEA  Room – 0003, J G Building  Chair: Mr Bill Watts - UK

**Green Building and Eco-city Development in China**
Prof Baizhan Li: Faculty of Construction and Env. Eng., Chongqing Univ, Chongqing, China.

**Green Building Certification and Regulation in the GCC Countries: Does Policy Support Diffusion of Renewable Energy Technology?**
Miss Holley Chant, Corporate Sustainability Director at KEO International Consultants, UAE

**How to reach for the Necessary Synergy between Architecture and Engineering**
Prof Wim Zeiler, Faculty of the Built Environment, Univ of Tech Eindhoven, Netherlands.

12:00 – 13:00  Plenary 7- Policy  Room – 4002, J G Building  Chair: Prof M. Y. Othman – Malaysia

**A High Renewables UK 2050 Pathway**
Prof. David Elliott and Dr David Finney, Open University, Milton Keynes, UK

100% renewable energy – an international project to raise the need for ambitious RE targets
Mr Stefan Schurig, Director Climate Energy, World Future Council Foundation, Hamburg, Germany

**Perspectives of Renewables in Germany – Will the energy transition be successful?**
Rainer Hinrichs-Rahlwes, German Renewable Energy Federation (BEE), Berlin, Germany

12:00 – 13:00  Plenary 8 – PV  Room – 0003, J G Building  Chair: Prof Nader Al-Bastaki – Bahrain

**Photovoltaics in Oman: Statues and future Prospects**
Prof. Pogaku Ravindra, Dr. Hussein A. Kazem, Faculty of Eng. Sohar Univ., Sultanate of Oman

An assessment on the impact of the solar spectrum on different PV materials in sunna sites by using different time scales
Dr. G. Nofuentes, Campus Las Lagunailllas, Universidad de Jaén, Jaén, Spain

**Photovoltaics and the Energy System: Adaptation of layout and load**
Prof. St. Krauter, University of Paderborn; Sustainable Energy Concepts, Germany

13:00 – 14:00  Lunch Break

**Wednesday- 6 August**

09:00 – 10:30  Main Plenary 9 - Room - Jacqueline Wilson  Chair: Prof Bahram Moshfegh – Sweden

**ENERGY EFFICIENCY AND THE CONSEQUENCES OF ENERGY RETROFITS IN SWEDISH HISTORIC BUILDINGS**
Patrik Rohdin, Tor Broström, Petra Eriksson, Linn Liu, Fredrik Ståhl, Division of energy systems, Dept. of manag. and eng., Linköping Univ., Dept. of Art History and Cons., Uppsala Univ., SP Technical Research Institute of Sweden

How to integrate large shares of intermittent renewables in the electricity system
Prof Reinhard Haas:Energy Economics Group, Vienna University of Technology, Austria

What is the Optimall Application of Power to Gas to Ireland?
Prof Jerry D Murphy, Eoin Ahern, Paul Leahy, Univ., College Cork, Cork, Ireland

10:30 – 11:00  Coffee Break
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<td><strong>Renewable Energy Development in Africa: Issues, Challenges and Prospects</strong></td>
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<td>11:00 – 12:00</td>
<td><strong>Why Concentrated Solar Power?</strong></td>
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<td>09:00 - 10:30</td>
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<td>10:30 – 11:00</td>
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**Thursday - 7 August**

**On-shore Wind Generation - Re Engineering after 20 years**

Mr Martin Alder: MD Optimum Energy, Minchinghampton, Glos UK

**Challenges and opportunities in thin film chalcogenide solar cell Technology**

Prof Ahmed Ennaoui, Helmholtz-Zentrum Berlin für Materialien & Energie, Germany

**Understanding greenhouse gas balances of bioenergy systems**

Dr Patricia Thornley, Dr Mirjam Roeder: Univ of Manchester, Mr Craig Jamieson, Int. Ins. of Rice, Philippines

**Hydrogen production from conventional and renewable fuels in micro-structured reactors**

Dr Gunther Kolb: Fraunhofer ICT-IMM, Mainz, Germany

**Hydrogen for mobility: An assessment from economic, energetic and ecological point of view**

Amel Ajanovic, Reinhard Haas: 1 Vienna University of Technology, Vienna, Austria

**An integrated system for energy efficient exhaust after-treatment for heavy-duty vehicles**

Dr Jazaer Dawody1, Lennart Andersson1, Lars J. Pettersson2, Moa ZietheN Granlund2, Hanna Härelind3, Fredrik Gunnarsson3, Anders Palmqvist4, Rickard Hejl5, Ronnie Andersson5, Olle Högbom6, Lennart Holmgren7, Per-Olof Larsson8, Fredrik Andreasson5.1Volvo Group Trucks Tech., Gothenburg, Sweden, 2Royal Institute of Tech., Stockholm, Sweden, 3Chalmers Univ. of Tech., Gothenburg, Sweden, 4Termo-Gen AB, Lårbro, 5Höganan AB, Bruksatman, Höganan and 6Alfa Laval AB, Lund, Sweden
11:00 – 12:00 Plenary 16- LEA Room –0003, J G Building Chair: Prof Marco Sala - Italy

ENERGY-EFFICIENT LIGHTING BY LED
Helmut F.O. Mueller1, Francesco Sasso2, Trainee at Green Building R&D, Duesseldorf, Germany, 2-Trainee at Green Building R&D from University of Florence, School of Architecture, Florence, Italy.

COMPLEX GLAZING AND SHADING SOLUTIONS FOR COMFORT AND ENERGY EFFICIENCY IN HIGH PERFORMANCE BUILDINGS
Michael Hutchins, Sonenergy Limited, Abingdon, United Kingdom

Operational carbon emissions of rural vernacular Malaccan houses
Muhammad Azzam Ismail1, Fahanim Abdul Rashid2: Architecture, Univ. of Malaya, Civil Eng., Merlimau Pol., Malacca, Malaysia

Low energy architecture Cuban contradictions
Dania González Couret: Faculty of Architecture, Instituto Superior Politécnico José Antonio Acheverría, Havana, Cuba

12:00 – 13:00 Plenary 17- Ocean & Hydro Room –0003, J G Building Chair: Dr Arthur Williams – UK

Modelling Tidal Stream Turbines
Tim O’Doherty: School of Engineering, Cardiff University, The Parade, Cardiff, UK

Water footprint evaluation methods for the sustainable water resources management. Special emphasis in the island region activities

Identify Promising Wave Energy Converter Technologies
Matt Folley, SPACE, Queen’s University Belfast, Northern Ireland, UK

12:00 – 13:00 Plenary 18- ST Room –4002, J G Building Chair: Prof Phil Eames– UK

Thermal Energy Storage for Power
Phil Eames: Centre for Renewable Energy Systems Technology, Loughborough University, UK

The development of solar thermal technologies of China and its use in industrial Application
Yanjun Dai1, Rui Li, Ruzhu Wang: Center of Solar Power and Refrigeration, Shanghai Jiao Tong University, China

Increased solar fraction through seasonal solar thermochemical energy storage
Philip W. Griffiths, David A.G. Redpath Mingjun Huang & Neil J. Hewitt: CST, Built Env. Research Institute, Univ. of Ulster, UK.

13:00 – 14:00 Lunch Break

Friday – 8 August

09:00 – 10:30 Main Plenary 19 - Room - Jacqueline Wilson Chair: Dr Ala Hasan - Finland

Photovoltaic Production – Cottage Industry in Malaysia
Prof. Kamaruzzaman Bin Sopian, Solar Research Institute, Bangi, Malaysia

Developing an efficient low and medium temperature solar thermal collector
Stan Shire: School of Engineering, University of Warwick, Coventry, UK

Shawna Henderson (CEO, Bfreehomes Design Ltd., Halifax, Canada)

10:30 – 11:00 Coffee Break

11:00 – 12:00 Plenary 20- WE Room – 0003, J G Building Chair: Mr Martin Alder – UK

Maximising Renewable Electricity Integration through regional aggregation of Wind Farms and Smart Grid Demand Management
Wolf-Gerrit Früh, Institute of Mechanical, Process and Energy Eng., Heriot-Watt Univ., Edinburgh UK

Optimizing Performance of Wind Turbines
Andrew Kusiak, Intelligent Systems Laboratory, The University of Iowa, Iowa City, USA

Wind Energy is the last to be stored
Don Swift-Hook, Wren Trustee, WOKING, Surrey, UK

11:00 – 12:00 Plenary 21- BM Room –4002, J G Building Chair: Dr. Patricia Thornley

Carbon capture from a biomass fuelled CHP plant - towards negative carbon emissions.
Gabriel Oreggioni, Hyungwoong Ahn; Daniel Friedrich and Stefano Brandani: Univ. of Edinburgh, UK

Obtaining long chain esters with lubricant properties from sesame biomass (Sesamum indicum)
Tathlene B.M.G. Arruda1, Francisco Eduardo A. Rodrigues2, Solange A. Quintella1, Manoel B. Dantas2, David T.D. Arruda1, Célio L. Cavalcante Jr.3,4, Nágila M.P.S. Ricardo1: 1Univ. UFC, Fortaleza, Brazil ; 2IFPB, Sousa, Brazil ; 3 UFC, Fortaleza, Brazil

Control of bioelectrogenesis for improved microbial fuel cells and bioelectrochemical systems
Giuliano C. Premier1, H. C. Boghani1, George Papaharalabos5, Ioannis Ieropoulos5, J. R. Kim2, John Greenman2, K. Fradler1, A. Kaur1, I. Michie5, R. M. Dinsdale5, A. J. Guwy1,4: 1 Sustainable Environment Research Centre (SERC), Faculty of Computing, Eng.
and Science, University of South Wales, UK, 2Bristol Robotics Laboratory, Univ. of the West of England and Uni. of Bristol, Bristol UK, 3School of Chemical and Biomolecular Eng., Pusan National Uni. (PNU), Busan, Korea.

12:00 – 13:00  Plenary 22- Policy  Room –4002, J G Building  Chair: Mr Rainer Hinrichs-Rahlwes Germany

Building Energy Efficiency Research and Field Applications by the National Renewable Energy Laboratory
Dr. Charles F. Kutcher, Director, Buildings and Thermal Systems Center, NREL, Golden, Colorado USA

Contribution of Renewable Energy to the Moroccan Energy Independence
H. Nfaoui1, A.A.M. Sayigh2 : 1SE and Env. Lab. Mohammed V Univ.-Agdal, Rabat, Morocco. 2WREN, Brighton, East Sussex, U K

Solar and Wind Energy Technologies Present and Future Prospects in Middle East & North Africa
Dr ASK Darwish, Phoenix Renewable Energy Centre,Liverpool, UK

12:00 – 13:00  Plenary 23- PV  Room – 0001 JG Building  Chair: Dr. Hussein A. Kazem

PV cell and module degradation, detection and diagnostics
Eleni Kaplani; Mech Eng Department, Technical Educational Institute of Patras, Greece

Design of AlGaAs/CIGS tandem solar cells
M. Emziane, S. Alshkeili: Solar Energy Materials and Devices Lab, Masdar Inst, Masdar City, UAE

DSP-based power manag. system implementation for a stand-alone microgrid on a small island in Korea
Chul Sang, Jong-Bo Ahn, Jin-Hong Jeon, Gyeong-Hun Kim, Eung-Sang Kim:SDRC., Korea, Minwon Park, In-Keun Yu, Elec. Eng. Dept., Changwon National University, Republic of Korea

13:00 – 14:00  Summary & Closing Ceremony  Room 4002 JG Building

14:00 – 15:30  Lunch Break

(Lunches throughout the Congress are at the University, Penrhyn Road)

Technical Session Programme

Biomass & Waste to Energy

Tuesday
14:00 – 15:30  Room – 0001 JG Building  Chair: Prof Raf Dewil & Dr Galliano Grassi

Harnessing Green Technology-Integrated Bio-refinery from Lignocellulose Biomass Waste Pogaku Ravindra
Chemical and Bioprocess Engineering, Director Energy Research Unit and Oil and Gas Eng., University Malaysia Sabah (UMS) , 88400 Kota Kinabalu Sabah,Malaysia

Energy optimization of the fermentative cassava-based fuel ethanol production
Q. Kang1,2, L. Appels1, J. Huybrechts1, R. Dewil1
1KU Leuven, Dept. Chemical Engineering, Process en Environmental Technology Lab, J. De Nayerlaan 5, Belgium
2Beijing Univ. of Chemical Technology, Key Lab of Bioprocess, College of Life Science and Technology, Beijing 100029, China

Incorporation of sweet sorghum juice into current dry-grind ethanol process for improved ethanol yields, energy saving, and water efficiency
Nana Baah Appiah-Nkansah1, Kealin Saul2, Feng Xu1, Donghai Wang1
1Biological & Agricultural Engineering Department, Kansas State University Manhattan, Kansas
2IGERT- Agricultural and Biological Engineering Department, North Carolina State University, Raleigh NC

Bioethanol and biogas production from sweet sorghum plant
Abas Almodares: Biology Department, College of Sciences, University of Isfahan, Isfahan, Iran

Potential of newly isolated yeast strains for ethanol production from sweet sorghum juice under very high gravity fermentation
Suntaree Suporn1, Lakkana Laopaiboon2,3, Preekamol Klanit2 and Pattana Laopaiboon2,4,5
1Graduate School, 2Dept of Biotechnology, 3Fermentation Res. Center, 4Center for Alt. Energy Res. Khon Kaen Univ. and Pattana Laopaiboon1,4,5
Dept of Biotechnology, 6Center for Alt. Energy Res., 7Graduate Sch., 8Fermentation Res. Center Univ., Thailand

Solid acid catalyst derived from coffee residue for biodiesel production
Kanokwan Ngoesuwan: Rajamangala Univ. of Technology Krungthep, 2 Nanglingi Rd, Sathorn, Bangkok, Thailand

15:30 – 16:00  Coffee Breaks

16:00 – 18:30  Room-0001 JG Building  Chairs: Prof Jorge Rodrigues & Prof Jerry Murphy

Optimization of initial sugar, dried spent yeast and CaCO3 concentrations for butanol production from sugarcane molasses by Clostridium beijerinckii using an orthogonal array design
Lakkana Laopaiboon1,2,3, Warut Panbut1, Dawan Leetana1, Likit Sirisantimethakom1, Kitipong Wechgama2 and Pattana Laopaiboon1,4,5
1Dept. of Biotech, 2Center for Alt. Energy Res., 3Graduate Sch., 4Fermentation Res. Center Univ., Thailand

Dark fermentative hydrogen/ethanol production from cellulose by Thermoanaerobacterium ermosaccharolyticum
Arunsri Fangkum Saripan1, Alissara Reungsang2,3

1Env. Science Program, Faculty of Science and Tech., Thamkruai Rajabhat Univ. , 2-Dept of Biotechnology, Faculty of Technology, 3Research Group for Dev. of Microbial Hydrogen Production Processes from Biomass, Khon Kaen Univ., Khon Kaen, Thailand

Energy optimization of the fermentative cassava-based fuel ethanol production
Q. Kang1,2, L. Appels1, J. Huybrechts1, R. Dewil1

1KU Leuven, Dept. Chemical Engineering, Process en Environmental Technology Lab, J. De Nayerlaan 5, Belgium
2Beijing Univ. of Chemical Technology, Key Lab of Bioprocess, College of Life Science and Technology, Beijing 100029, China

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1Biological & Agricultural Engineering Department, Kansas State University Manhattan, Kansas
2IGERT- Agricultural and Biological Engineering Department, North Carolina State University, Raleigh NC

Bioethanol and biogas production from sweet sorghum plant
Abas Almodares: Biology Department, College of Sciences, University of Isfahan, Isfahan, Iran

Potential of newly isolated yeast strains for ethanol production from sweet sorghum juice under very high gravity fermentation
Suntaree Suporn1, Lakkana Laopaiboon2,3, Preekamol Klanit2 and Pattana Laopaiboon2,4,5
1Graduate School, 2Dept of Biotechnology, 3Fermentation Res. Center, 4Center for Alt. Energy Res. Khon Kaen Univ. and Pattana Laopaiboon1,4,5
Dept of Biotechnology, 6Center for Alt. Energy Res., 7Graduate Sch., 8Fermentation Res. Center Univ., Thailand

Solid acid catalyst derived from coffee residue for biodiesel production
Kanokwan Ngoesuwan: Rajamangala Univ. of Technology Krungthep, 2 Nanglingi Rd, Sathorn, Bangkok, Thailand

15:30 – 16:00  Coffee Breaks

16:00 – 18:30  Room-0001 JG Building  Chairs: Prof Jorge Rodrigues & Prof Jerry Murphy

Optimization of initial sugar, dried spent yeast and CaCO3 concentrations for butanol production from sugarcane molasses by Clostridium beijerinckii using an orthogonal array design
Lakkana Laopaiboon1,2,3, Warut Panbut1, Dawan Leetana1, Likit Sirisantimethakom1, Kitipong Wechgama2 and Pattana Laopaiboon1,4,5
1Dept. of Biotech, 2Center for Alt. Energy Res., 3Graduate Sch., 4Fermentation Res. Center Univ., Thailand

Dark fermentative hydrogen/ethanol production from cellulose by Thermoanaerobacterium ermosaccharolyticum
Arunsri Fangkum Saripan1, Alissara Reungsang2,3

1Env. Science Program, Faculty of Science and Tech., Thamkruai Rajabhat Univ. , 2-Dept of Biotechnology, Faculty of Technology, 3Research Group for Dev. of Microbial Hydrogen Production Processes from Biomass, Khon Kaen Univ., Khon Kaen, Thailand
Biomass & Waste to Energy

Wednesday

14:00 – 15:30 Room - 0001 JG Building
Chair: Prof Celio Cavalcante Jr & Dr Faiq Billal

A comparative biodiesel synthesis on yields, fuel properties and optimization of hevea brasiliensis, ricinus communis and reutteistrisperma

Hwai Chuyan Ong 1, A.S. Silitonga 1,2, T.M.I. Mahlia 3, H.H. Masjuki1, W.T. Chong 1, Gunilang D. 1, 1Dept of Mech Eng, Univ. of Malaya, Kuala Lumpur, Malaysia, 2Dept of Mech Eng, Medan State Polytechnic, Medan, Indonesia, 3Department of Mechanical Eng, Faculty of Engineering, Universitit Tenaga Nasional, Selangor, Malaysia

Alkaline catalyzed optimization of biodiesel production from schliechera oleosa L oil: A promising non-edible feedstock resource

A.S. Silitonga 1,2, Hwai Chuyan Ong 1, T.M.I. Mahlia 3, H.H. Masjuki1, A.H. Sebayang 2, W.T. Chong 1, 1Dept of Mech Eng Univ. of Malaya, 2Dept of Mech Eng, Indonesia, 3Dept of Mech Eng., Univ. Tenaga Nasional, Malaysia

 Valorization of waste cooking oil for biodiesel production: Optimization of reaction parameters

F. Danane 1 and A.C Ahmia 1, 1Centre de Dév. des Energies Renouvelables, CDER, Algiers, Algérie

Production of value-added chemicals from biodiesel-derived glycerol by aqeous phase reforming

Javier Remón*, Juan Ramón Gimenez, Joaquín Ruiz, Miriam Olinda Hashim, Jeng Shiun Lim, 1* - I3A, Univ. Zaragoza, Mariano Esquillor s/n, Zaragoza, Spain

Thermochemical Processes Group , Aragón Inst for Eng. Research (I3A), Univ. Zaragoza, Mariano Esquillor s/n, Zaragoza, Spain.

Bioenergy and Bio-based Chemicals from Biomass: A Regional Perspective

Zul Ilham 1*, Nur Nabiba Zulkarnain1, Fadjar Goembira 2 and Shiro Saka1, 1Fac. of Science, Univ of Malaya, 2Andalas Univ. Padang, Indonesia, 3Dept of Socio-Env. Energy Science, Graduate School of Energy Science, Kyoto Univ Kyoto, Japan

Synthesis of appropriate oleaginous plants for biodiesel production. Application to castor oil

A. C. Ahmia*,**, F. Danane* and I. Boumeebah**,2 CDER, Algiers, **Univ. des Sc et de la Tech Houari Boumediene, Algeria

Photoelectrochemistry, an alternative for producing renewable fuels

Anders Hellman: Competence Center for Catalysis and Dept of Applied Physics, Chalmers Univ of Tech, Göteborg, Sweden
Balking at Biofuels in the Middle East
Nadia B. Ahmad: Sustainable Development Strategies Group, Univ. of Denver Sturm College of Law, Denver, USA

Energy Policies for Gaseous Fuels from Waste
Niamh Power1, Aidan Ware1, Daniel Goulding1.1, 2 Cork Inst. of Tech., Ireland. 1, 2 Bord Gáis Eireann, Cork, Ireland

Strategy of implementation of the forest biorefinery: A source of green renewable fuels
Mariya Marinova, Michel Perrier, Jean Paris: Dept. of Chemical Eng., Polytechnique Montreal, Qc, Canada

Sustainable Use of Biomass for Energy and Fuels
Anastasia Zabaniotou: Biomass and Waste Group, Aristotle University of Thessaloniki, Eng School, Dept. of Chem Eng., Greece

Solid biofuel use and prices in Sweden

Econometric estimation of the petroleum products consumption in Nigeria: Assessing the premise for biofuels adoption
Nelson Abila: Department of Industrial Management, University of Vaasa, Vaasa, Finland

The Effects of Using Renewable Fuels on Vehicle Emissions
Larry G. Anderson: Dept. of Chemistry, University of Colorado Denver, Denver, Colorado USA

Engine performance and emission characteristics of a turbocharged diesel engine fueled by optimum blend of jatropha, palm and coconut biodiesel
M.I. Arbab, M. Varman, H.H. Masjuki, M.A. Kalam

Center for Energy Science, Dept. of Mechanical Eng., Faculty of Engineering, University of Malaya, Kuala Lumpur, Malaysia

Applying energy system analysis in the design optimization of biomass-based polygeneration plants
Christoffer Lythcke-Jergensen1*, Marie Münster1, Adriano V. Ensinas1
1-Dept of Mech Eng., 2-Technical Univ. of Denmark. Lyngby, 3-Dept of Management Eng., Technical Univ. of Denmark, Roskilde
3-Industrial Process and Energy System Eng (IPESE), École Polytechnique Fédérale de Lausanne, CH-1015 Lausanne

The Effect of Jojoba Ethyl Ester Blended with Ethanol on Diesel Engine Performance and Emissions
Ahmad Saleh Al Awad1, 2, 3 M.Y.E. Selim1, *, Mohamed Saleh Al Sabek1 c
1, 2 Dept. of Automotive and Heavy Machinery Eng., Damascus Univ., Syria, b Mech Eng. dept, College of Engineering, UAE

Emission measurements from a 150 kW biomass gasifier engine
Anthony Anukam1, 2, *, Sampson Mamphweli1, Edson Meyer1, 2, 3, 4, 5 Fort Hare Institute of Tech., Univ. of Fort Hare, Alice South Africa

Assessing land and water requirements for meeting biofuels targets in Nigeria
Nelson Abila: Department of Industrial Management, University of Vaasa, Vaasa, Finland

Photobioreactors for production of fuel and compounds with pharmaceutical applications
Anca-Irina Galaction1, 2, *, Madalina Postaru1, Dan Caşcaval2, Alexandru Carlescu, Corina Cheptea
University of Medicine and Pharmacy of Iasi, Fac. of Medical Bioeng., Dept. of Biomedical Science, Romania

Utilization of wastewaters for biodiesel production – lipids biosynthesis by Yarrowia lipolytica on olive oil mill wastewater in a basket bioreactor
Corina Cheptea1, Alexandra Cristina Blaga2, Dan Caşcaval2, Gladiola Andrucean2, Anca-Irina Galaction1, 8
1 University of Medicine and Pharmacy of Iasi, Faculty of Medical Bioeng., Dept. of Biomedical Science, Romania, 8
2 Technical Univ. of Iasi, Faculty of Chem. Eng., Dept. of Biochemical Engineering, 71 D. Mangeron Avenue, 700050 Iasi, Romania

Photoelectrochemistry, an alternative for producing renewable fuels
Anders Hellman: Competence Center for Catalysis and Dept of Applied Physics, Chalmers Univ of Tech, Göteborg, Sweden

High Boiling Solvent Pretreatment of Hazelnut Shells for Enzymatic Hydrolysis
Emir Zafer Hoşgün, Berrin Bozan*: Anadolu Univ., Eng. Faculty, Chemical Engineering Department, Eskisehir, Turkey

The variation of ash and inorganic elements concentrations in the biomass of Lithuania-grown switchgrass ( Panicum virgatum L.)
Butkutė B.*, Cesevičienė J., Lemežienė N., Dabkevičienė G., Liatukas Ž., Norkevičienė E.
Institute of Agriculture, Lithuanian Res Centre for Agriculture and Forestry, Inst. al. 1, Akademija, Lithuania

Features of carbon stock in the biomass of hemp and stinging nettle
Butkutė B.*, Jankauskienė Ž., Grudzviene E.2, 3, Laurdanskiene I.1, 4 Institute of Agriculture, Lithuanian Res Centre for Agriculture and Forestry, Inst. al. 1, Akademija, 2 Upytė Experimental Station, Lithuanian Res Centre for Agriculture and Forestry, Lithuania

Sweet sorghum as a raw material for first and second generation bio ethanol

Abas Almodares and Arezo Omid: Biology Dept., College of Sciences, Univ. of Isfahan, Isfahan, Iran.

**Strategies to promote waste-to-biogas in La Paz, Bolivia**
Semida Silveira,*, Dilip Khatiwada, Maria Xylia, Erik Dahlquist, Jesper Olsson, Per-Erik Persson, Sandra Lindblom

1Department of Energy and Climate Studies/Dept of Energy Tech., KTH Royal Institute of Technology, Stockholm, Sweden
2School of Sustainable Dev. Västerås, Sweden

**Water in vegetable/diesel oil emulsions to be used as biofuels**
Bernet Esteban, Arnau González, Marc Gibert and Grau Baquero: Univ Politécnica de Catalunya, Catalunya, Spain

**Bioenergy scenario in India - Policies and Practices**
Praveen Kumar Ramanujam, Bharathiraja Balasubramanian

1Dept of Biotechn, Arunai Eng. College, Tiruannamalai, Tamilnadu, India
2Dept of Biotechn., Eng. College, Tamilnadu, India
3Microporosity liquid production from glycerol by thermotolerant oleaginous yeast Pichia sp. Scj 01 for using as biodiesel raw material

**Introducing sludge incineration to the paper recycling industry in Iran**
Ezatollah Mozaffari*, Parvaneh Razi, Mohammad Mozaffari

1Faculty of Eng., 2Fac Social Sc., Imam Khomeini Int. Univ., Iran

**Hydrogen & Fuel Cells**

**Tuesday**

14:00 – 15:30  
Room – 3002 JG Building  
Chair: DR Jazaer Dawody

**Solar thermochemical production of renewable fuels from CO2 and H2O using metal oxide cycles**
Gaël Levêque, Stéphane Abanades

Processes, Materials, and Solar Energy Lab., PROMES-CNRS, Font-Romeu, France

**First results of hydrogen and fuel cell technology evaluations using a new RTD management tool**
Herbert Wancura, Peter Claassen

1-synergesis consulting, Graz, Austria
2-CLIMIT-Claassen Industrie Management Trading GmbH, Graz, Austria

**Photoelectrochemistry: an alternative for producing renewable fuels**
Anders Hellman: Center for Catalysis and Dept. of App. Physics, Chalmers Univ. of Tech., Göteborg, Sweden

**Surface modification and optimization of semiconductor ns-TiO2-WO3 admixed photoelectrode in regard to solar hydrogen production**
Mridula Tripathi*, Priyanka Chawla

1Dept. of Chem., C.M.P. Degree College, Univ. of Allahabad, India

15:30 – 16:00  
Coffee Breaks

16:00 – 18:00  
Room- 3002 JG Building  
Chair: Dr Anders Hellman

**Improved organic matter degradation process through Compost Microbial Fuel Cell**
Jauharah Md Khudzari*, Vijaya Raghavan, Boris Tartakovsky

1Dept. of Bioresource Eng. Faculty of Agriculture and Env. Sciences, Sainte-Anne-de-Bellevue, Quebec , Canada
2-Biotechnology Research Institute, National Research Council, Montreal, Canada

**Continuous Zinc Removal in Three Camber Microbial Fuel Cell**

Sustainable Env. Research Centre, Faculty of Comp. Eng. and Science, Univ. of South Wales, Glamorgan, UK

**Electricity generation and struvite recovery from urine using microbial fuel cells**
Jiseon You*, John Greenman, Chris Melhuish, Ioannis Ieropoulos

1Bristol Robotics Lab., Univ. of the West of England, Bristol, 2School of Life Sciences, Univ. of the West of England, Bristol, UK

**Improved Dynamic Response and Range Using Posed Potential from Microbial fuel Cell Base Volatile Fatty Acid Sensor**
Amandeep Kaur; Iain Michie; Richard M. Dinsdale; Alan J. Guwy; Giuliano C. Premier

Sustainable Environment Research Centre, Faculty of Computing Eng., and Science, Univ. of South Wales, UK

**Proton Modified Pt Zeolite Fuel Cell Electrocatalysts**
Jun Yao*, Yufeng Yao and Hossein Mirzaei

1-School of Engineering, Univ. of Lincoln, Lincoln, UK, 2-Faculty of Env. & Tech., School of Eng. Design and Mathematics, University of West England, Bristol, UK, 3-Faculty of Science, Eng. and Computing, Kingston University, London, UK

**Wednesday**

14:00 – 15:30  
Room - 3002 JG Building  
Chair: DR Jazaer Dawody

**Photocatalytic Conversion of CO2 into Hydrocarbon Fuels on Decorated-TiO2 Nanotube Arrays**
Siham Y. AlQaradawi* and Nageh K. Allam

1Dept. of Chemistry and Earth Science. Qatar Univ., Qatar, 2Energy Materials Lab., School of Science & Engineering, The American Univ in Cairo, Egypt

**Energy system analysis of the implications of hydrogen fuel cell vehicles in the Swedish road transport system**
Mårten Larsson*, Farzad Mohseni, Cecilia Wallmark, Stefan Grönkvist, Per Alvfors

KTH – Royal Institute of Technology, Chemical Tech. and Eng., Division of Energy Processes, Stockholm, Sweden

**HYDROGEN PRODUCTION BY DEGRADATION OF ORGANIC COMPOUNDS IN WATER THROUGH THE ETHERGENOUS PHOTOCATALYSIS PROCESS**
Mario A. Hernández Mazatán,*, Salvador Escobedo Salas, Benito Serrano Rosales, Rosa María Ramírez Zamora

Hydrogen and carbon nanotubes production via methane decomposition over Ni based catalysts: Role of metal-support interaction on the catalytic activity
Egyptian Petroleum Res. Inst., Cairo, Egypt.

15:30 – 16:00 Coffee Breaks

16:00 – 18:00 Room - 3002 JG Building Chair: Dr Joachim Pasel

Enhanced microbial fuel cell performance from hybrid helical anode designed using multiphysics approach
1 Sustainable Env. Research Centre, 2 Faculty of Computing, Eng. and Science, Univ. of South Wales, Glamorgan, UK
2 Numerical investigation of the influence of GDL parameters on water flooding and its effect on the performance of PEM fuel cells
Morteza Khayat: Dept. of Mech. and Aerospace Eng., Science & Research Branch, Islamic Azad University, Tehran, Iran

Parametric study of Polymer Electrolyte Membrane fuel cell performance using CFD modelling
Angus Hood, Shaun Slater, Matthew Bouchet, Sheikh Zahidul Islam *, Mamdud Hossain
School of Engineering, Robert Gordon University, Aberdeen, UK

Study of the effect of inlet humidity conditions on polymer electrolyte membrane fuel cell performance using two-phase CFD modelling
Shau Slater, Angus Hood, Matthew Bouchet, Sheikh Zahidul Islam *, Mamdud Hossain: Robert Gordon University, Aberdeen, UK

Modeling of PEMFC based on a new semi-empirical equation considering operation temperature
Yutaro Akimoto*, Keiichi Okajima: Graduate School of Systems and Information Eng. University of Tsukuba, Japan

Thursday
14:00 – 15:30 Room - 3002 JG Building Chair: Dr Anders Hellman

Hydrogen & Fuel Cells

Basic study on the application of the fuel cell system operated by kerosene to vessel
Kazuoyshi Sumi: Marine Eng. Dept of Marine Technical College, Ashiya, Hyogo, Japan,

System modelling for hybrid solar hydrogen generation and solar heating configurations for domestic applications
Krisztian Ronaszegi, 1 Dan J L Brett 1 & Eric S Fraga 1,2,*. 1 Centre for Chemical Innovation Lab, Department of Chemical Engineering, University College London (UCL), London, UK,
2 Centre for Process Systems Engineering, Department of Chemical Engineering, University College London (UCL), London, UK,

Implications of the cultivation conditions of the unicellular cyanobacterium Cyanothecasp. ATCC 51142 on the economic viability of a bio-hydrogen production facility
Pongsathorn Dechati, Fei Zhe, Geoffrey Maitland and Klaus Hellgardt
Department of Chemical Engineering, Imperial College London, South Kensington Campus, London

A novel Carbon Dioxide Capture and Recycling (CCR) system for Combined Cycle Power Plants as high capacity energy storage
R.Chacartegui1, I. Ortiz1, A. Rouboa1, J.A Becerra1:1 University of Seville, Energy Engineering Department
2 INEGI/FEUP/Universidade de Trás-os-Montes e Alto Douro, Engineering Department

Hydro – Power
Tuesday
14:00 – 15:30 Room – 0003 JG Building Chair: Dr Arthur Williams

Experimental validation of gap leakage flow models in Archimedes screw generators
Andrew Kozyn1, William D. Lublit 1,2,*. 1 University of Guelph, School of Eng., Guelph, Ontario, Canada,

Site Implementation of a Low-Head Pico-Hydro Turgo Turbine
Samuel J. Williamson*, Bernard H. Stark, Julian D. Booker
Faculty of Engineering, University of Bristol, Queen’s Building, University Walk, Bristol, UK

Challenge to Use Small Hydro Power by Contra-Rotating Small Hydro-Turbine
Torus Shimemitsu, Junichiro Fukutomi, Chihiro Tanaka
Institute of Science and Technology, The University of Tokushima, Tokushima, Japan

Interactive planning tool for flatting energy converter
Dr.-Ing. Jana Hadler, Univ. of Rostock, Germany, Rostock, Prof. Dr.-Ing. habil. Klaus Broekel, Univ of Rostock

Demonstration test of flapping wing hydroelectric power generator for extremely low head stream
Hisanori Abiru1,*, Akira Yoshitake1
1 Department of Intelligent Mechanical Engineering, Fukuoka Institute of Technology, Fukuoka, Japan
2 Department of Marine Systems Engineering, Kyushu University, Fukuoka, Japan

15:30 – 16:00 Coffee Breaks

16:00 – 18:00 Room- Room – 0003 JG Building Chair: Dr Arthur Williams

Renewable Energy: Key Solution for Water Scarcity
Geothermal Energy

Wednesday
16:00 – 18:30  Room – 3007 JG Building  Chairs: Patrick BELZILE & Dr Kamil Yousif

The potential of geothermal energy to meet Chile's growing energy demand
1,2 D. Abudinin, 1 L. Appels, 3 J. Baeyens, 1 R. Dewil
1 KU Leuven, Dept. Chem Eng., Process en Env. Tech. Lab, Belgium, 2 Univ. of Warwick, Sch. of Eng., Coventry, U.K.

Optimization strategies and risk analysis for deep geothermal reservoirs
Darius Mottaghy1,2, Gabriele Marquart1, Christoph Clauser1 and the MePrORisk Research Consortium
1-Institute for Applied Geophysics and Geothermal Energy, Aachen University, Germany
2-Geophysica Beratungsgeellschaft mbH, Aachen, Germany

A versatile model for simulation of shared geothermal borefields
Patrick BELZILE1,2, Louis LAMARCHE1,3, Daniel ROUSSE4
1–École de technologie supérieure, 1100 Notre-Dame W., Montréal (Québec), Canada
2–Institute for Applied Geophysics and Geothermal Energy, Aachen University, Germany
3–Geophysica Beratungsgeellschaft mbH, Aachen, Germany

Combined simulation-optimization of multiple borehole heat exchanger fields for sustainable geothermal energy use
Peter Bayer, ETH Zurich, Department of Earth Sciences, Zurich, Switzerland.

Hydrogeothermal potential of the Belgrade city area, the capital of Serbia—first assessment
Dejan Milenic, Ana Vranjes1, and Nadoroslovac: Faculty of Mining and Geology, University of Belgrade, Serbia

Geothermal Modelling – A Review

Darius Mottaghy1,2, and Wolfram Rühak2
1-Institute for Applied Geophysics and Geothermal Energy, RWTH, Aachen University, Germany
2-Geophysica Beratungsgeellschaft mbH, Aachen, Germany

Geothermal Resources in Algeria

Benziada Mébrouk: Centre de Développement des Energies Renouvelables, Bouzaréah, Algiers, Algeria.

Energy Meteorology

Tuesday
14:00 – 15:30  Room – 3007 JG Building  Chairs: Prof John Boland

Estimating DNI and CSP potential for Chile by using Satellite data and ground station measurements
Rodrigo Escobar1, John Boland2, Alberto Ortega3, Cristián Cortés3, Alan Pino3, José Miguel Cardemil3, Enio Bueno Pereira1, and Fernando Ramos Martins4
1-Pontificia Universidad Católica de Chile, Santiago, Chile. 2- University of South Australia, Adelaide, Australia. 3-University Diego Portales, Santiago, Chile. 4- Instituto Nacional de Pesquisas Espaciais, Sao José dos Campos, Brazil.

Preliminary Study on Prediction Intervals for Regional Forecasts of Photovoltaic Power Generation in Japan
Joao Gari da Silva Fonseca Junior1, Takashi Oozeki1, Hideaki Ohtake1, Takumi Takashima1, Kazuhiro Ogimoto2
1- National Institute of Advanced Industrial Science and Technology - AIST, Tsukuba, Japan. 2- Institute of Industrial Science (IIS), University of Tokyo, 153-8505 Komaba 4-6-1, Meguro-ku, Tokyo, Japan.

DEVELOPMENT OF REALISTIC DEMAND SIDE MANAGEMENT STRATEGIES USING ARTIFICIAL NEURAL NETWORKS FOR THE PRODUCTION OF INFORMATIVE WIND SPEED PREDICTION SIGNALS
Zafirakis D.*, Mountris, K., Marakgos Ch., Stathopoulos M., Tzanes G.

Solar power forecasting for a massive and secure injection of photovoltaics on the grid
Sylvain Cros*, Nicolas Sébastien, Olivier Liandrat, Samuel Jolivet, Nicolas Schmutz
Reuniwi SASS, 14 rue de la Guadeloupe, F-97490 Sainte-Colitde, Reunion Island, France

Wind shear assessment using wind LiDAR profiler and sonic 3D for wind energy applications - Preliminary Results
Yoshiaki Sakagami1,2, Pedro Alvim de Azevedo Santos1, Reinaldo Haas1,8, Júlio César Passos1, Frederico de Freitas Taves1,8
Time series prediction of renewable energy: what we can and what we should do next
Yoshihisa Hirata, Kazuyuki Aihara, and Hideyuki Suzuki.

Forecasting Renewable Energy on Various Temporal and Spatial Scales
John Boland, Huang Jing, Adrian Grantham, Peter Pudney, Manju Agrawal.

Estimation of Global and Diffuse Horizontal Irradiance in Abu Dhabi, United Arab Emirates
Hassan A. N. Hejase, Department of Electrical Engineering, UAE University, Al-Ain, UAE.

Ali H. Assi, Department of Electrical and Electronic Engineering, Lebanese International University, Beirut, Lebanon

Study of Direct Solar Radiation in Oran, Algeria
H. Nfaoui and A. Sayigh.

Development of a luminous efficacy model using ground and satellite based data from the tropics
Serm Janjai, Paul Refalo, University of La Reunion, La Reunion.

Shortest term solar energy forecast
Jan Remund and Stefan C. Müller, Meteotest, Berne, Switzerland.

Linear and Nonlinear Modeling for Solar Energy Prediction on the Zone, Region and Global
Hothyfa Mazin, Hussein A Kazem, Hila Al Fadhlí, Sayed Alawi, Qutaibh Mazin, and Mqtam T Chaichan.

Gauging the Effectiveness of a Resource Management Awareness Campaign on a Central Mediterranean Island

Extreme Total Solar Irradiance Due to Cloud Enhancement in the NE of Brazil
Chiguereu Tiba and Ricardo C. de Andrade.

WRF simulated wind field sensitivity experiments over Cantabrian coast.

A benchmarking of machine learning techniques for hour ahead solar radiation Forecasting
Philippe Laurent, University of La Reunion, La Reunion.

Intra-Hour Forecasting of Global Solar Radiation with a Spatio-Temporal VAR Model
M. ANDRE, T. SOUBDHAN, and S. DABO-NIANG.

Evaluating Solar Irradiation Incidence over BIPV Products: Vertical and Horizontal Eaves Case

Boosting blue growth: wave energy converters in multi-purpose off-shore installations
Barbara Zanuttigh: University of Bologna, Dept of Civil, Chemicals, Environmental and Material Eng Bologna, Italy.

Recent advances in characterizing the wave and tidal energy resource of Orkney
Simon P. Neill, M. Reza Hashemi, Matt J. Lewis, John Lawrence.

Extraction of Marine Hydrokinetic Energy for a Sustainable Environment – a Modeling Perspective
Zhaoping Yang and Taiping Wang: Pacific Northwest National Lab, Seattle, USA.

Are Energetic Tidal Straits Suitable for Power Generation?
Paul Evans, School of Earth and Ocean Sciences, Cardiff University, Cardiff, UK.

The importance of wave climate within tidal stream energy resource assessments
Matt Lewis, Reza Hashemi, Simon Neill, Peter Robins and Alice Goward-Brown.

Ocean Energy

15:30 – 16:00 Coffee Breaks

16:00 – 18:30 Room – 3007 JG Building Chairs: Prof H Nfaoui & Prof John Boland

Energy Meteorology

Wednesday 14:00 – 15:30 Room - 3007 JG Building Chair: Prof Chiguereu Tiba

Wednesday 14:00 – 15:30 Room – 0003 JG Building Chair: Dr Matt Lewis
Coffee Breaks

Room – 0003 JG Building  Chair: Dr Jin Hwan Ko & Dr Young Ho Lee

15:30 – 16:00

3D ROMS Modelling of the Pentland Firth – a world-leading Tidal Energy Resource
Alice J. Goward Brown, Simon P. Neill: School of Ocean Sciences, Bangor Univ, Isle of Anglesey, UK

Experimental and Numerical Investigation of blade angle variation on a counter-rotating tidal current turbine
Nak-Joong Lee1, In-Chul Kim1, Beom-Soo Hyun2, Young-Ho Lee3*
1-Dept. of Mech Eng, Korea Maritime and Ocean Univ, Busan, Korea, 2- Division of Naval Architecture and Ocean System Engineering, KMOU, Busan, Korea, 3-Division of Mechanical and Energy System Eng, KMOU.

Influence of Horizontal Axis Tidal Stream Turbines Subject to Wave-Current Interaction.
Tiago A. de Jesus Henriques1, Terry S. Hedges1, leuane Owen2, Robert J. Poole1: 1-School of Engineering, University of Liverpool, UK, 2- School of Engineering, University of Lincoln, Brayford Pool, LN6 7TS, United Kingdom

Study on tandem operation of a flapping tidal stream generator
Jin Hwan Ko, Jihoon Kim, Tuyen Quang Le, Jin-Soon Park, Kwang-Soo Lee:
Korea inst. of Ocean Sci. & Tech Korea

Photovoltaic Technology

Room 2002 JG  Chair: Dr Uwe Hartmann

14:00 – 15:30

Thin film solar cells: Current status and future prospects
Prof.Dr.Takhir Razykov, SERI, UKM, Selangor, Malaysia

Examples of PV installations in the UK
Tony Book, Riomay Ltd., Three Bridges, West Sussex, UK

Cd-free CIGS based solar cells: A successful approach for fabrication and cost reduction
Falah S. Hasoon, Hamda A. Al-Thani, National Energy and Water Research Center, Abu Dhabi, UAE

Fabrication of polyaniline nanofibers heterojunction solar cells
Xuereb Annalise1, Spitri Staines Cyril1, Sant Tonio1, Mule* Stagno Luciano*
1Faculty of Eng., 2Institute of Sustainable Energy Univ of Malta, Msida, Malta

Development of an Efficient Mooring System for WAVE SHIP
Mohammed Asid Zullah1, Byung-Ha Kim2, Rafiuddin Ahmed2, Young Ho Lee2*: 1-Korea Maritime and Ocean Univ, Busan, Korea, 2-Univ of the South Pacific, Suva, Fiji.

Analysis of buoy configurations for ocean energy extraction
H. Sarlak1,2*: 1- Postdoc researcher, Section of Fluid Mechanics, Dept of Wind Energy Technical University of Denmark, Denmark, 2- Alumni, Dept of Mech Engineering, Sharif University of Technology, Iran

Photovoltaic technology: a key player towards a sustainable energy mix
Sophie Avril, & Christine Mansilla, CEA Saclay, Pascal Da Costa, & Jean-Claude Boquet: ChâtenayMalabry, France,

Photovoltaics: Technologies and Markets
Dr. Mahiedine Emziane: Solar Energy Materials and Devices Lab., Masdar City, Abu Dhabi, UAE.

Coffee Breaks

Room 2002 JG  Chair: Prof Rolf Hanitsch & Eleni Kaplani

15:30 – 16:00

Energy performance assessment of solar cells and PV systems integrated with a ventilated façade
Runming Yao, Mehdi Shahrestani, Emanuel Essah, Li Shao:
School of Construction Management and Engineering, University of Reading, UK

Software for the test and the study of the performance of photovoltaic modules under natural conditions
A.Guenounou1,2, A.Malek3, A. Mahrane1, A. Triki1
1Al(A CDER) Tipaza, Algeria, 2 Abou Bekr Belkaid Univ of Tlemcen, Tlemcen, Algeria

Monitoring and diagnostics of photovoltaic power plants
Giuseppe Marco Tina, Cristina Ventura, Fabio Cosentino: Dipot di Ing ElettricaUniversity of Catania, Italy

AC power short-term forecasting of a thin-film photovoltaic plant based on artificial neural network models
Giuseppe Marco Tina1, Cristina Ventura1, Giovanna Adinolfi2, Sergio Ferlito2, Giorgio Graditi2
Photovoltaic Technology

Wednesday
14:00 – 15:30 Room 2002 JG Chair: Prof Rolf Hanitsch

Some remarks on high quality operation and maintenance of photovoltaic systems
Dr. Uwe Hartmann, Deutsche Gesellschaft für Sonnenenergie (DGS), Berlin, Germany

Properties of the CdS,Te, solid solution: As a single product and as a part of the CdS/CdTe solar cell
Dr. Shadia J. Ikhmayies, Al Ihs University, Dept. of Basic Sciences-Physics, Amman, Jordan

Photovoltaic thermal (PV/T) air collectors performance analysis
Prof. Dr. Dato MHY Othman, Solar Energy Research Institute, University Kebangsaan, Malaysia

Forecasting the diffusion and electricity production potential of solar PV systems in Pakistan
Khanji Harijan, Mehran University of Engineering & Technology, Jamshoro, Pakistan

The photovoltaic project of Sudan to reach more than one million homes – an exercise in policy making, finance, strategies, education and sustainability
Prof. Anwar El-Hadi, Khartoum, Sudan

The Photovoltaic of Sudan to reach more than one Million Homes
Prof Anwar El-Hadi – Khartoum, Sudan

15:30 – 16:00 Coffee Breaks

16:00 – 18:30 Room 2002 JG Chair: Prof. Yogender K Yadav & Dr Lisa Lamont

A fast technique for lifetime measurement in industrial silicon wafers under Gamma and UV radiation
U.A. Elani1, A.A. Al-Bassam2, F.M. Al-Alweet1
1 Renewable Energy & Env. Group, Dept. Physics & Astronomy, College of Science, King Saud Univ., Riyadh, Saudi Arabia
2 Renewable Energy Applications in Saudi Arabia, Research Chair, EREAS, Kingdom of Saudi Arabia

Modeling and parametric optimization of hybrid single channel photovoltaic thermal module using generic algorithms
Sanjay Agrawal1, Sonveer Singh2, G.N. Tiwari2:1 School of Engineering & Technology, IGNOU, New Delhi, India
2 CMS Government Girls Poly. Daurala, Meerut, India,3 Centre for Energy Studies, Indian Ins. of Tech Delhi, Delhi, India

Dye-sensitized transparent solar modules for energy harvesting in buildings – recent developments and comparison with conventional technologies
Dimitra Sygkridou1,2, Andreas Rapsomanikis1, Elias Stathatos1
1 Technological Educational Institute of Western Greece, Patras, Greece, 2 Dept. of Physics, University of Patras, Greece

Effect of Ammonium Acetate on the properties of chemical bath deposited CdS films

Formation of nanoparticles in Si embedded in PECVD silicon nitride matrix by rapid thermal annealing
S. Meziani1, A. Moussi1, F. Antoni2, R. Outemzabet1, L. Mahiou1, A. Guenda
1 CRTSE, Alger, Algeria, 2 Univ des Sciences et de la Tech Houari Boumediene, Alger, Algeria

Institut électronique du Solide et des Systèmes (InesS) UDS-CNRS, Strasbourg, France

Enhanced performance of dye-sensitized solar cells aided by olive-shaped ZnO nanocrystallite aggregates as the light scattering layer
Wei-Chen Chang1,2, Hung-Shuo Chen2, Wan-Chin Yu1
1 Ins. of Organic and Polymeric Materials, N. Taipei Univ. of Tech., Taipei, 2 Ins of Nuclear Energy Res Taoyaun, Taiwan

An embedded hardware emulator laboratory of solar photovoltaic modules
J. Castillo-Cruz, O. Zavala-Duran, R. Quijano-Cetina, M. Flota-Bañuelos, A. Castillo Atoche Facultad de Ingenieria, Universidad Autónoma de Yucatá, Mexico

Experimental results of a photovoltaic/thermal phase change material system

Dipti di Ing ElettricaUniversity of Catania, Italy, 2 ENEA, Agenzia naz. per le nuove tec., Res Center of Portici, Naples, Italy
Photovoltaic Technology

Thursday
14:00 – 15:30
Room 2002 JG
Chair: Prof Stefan Krauter

Photovoltaic in Oman: Statues and future prospects
Dr. Hussein A. Kazem: Faculty of Engineering, Sohar University, Sohar, Sultanate of Oman

Steady-state stability of SMIB power system incorporated with high PV penetration with MPPT
Dr. Mohammad S. Widyani1, Dr. R.E. Hanitsch2

Techno-economical analysis of hybrid photovoltaic-diesel-battery power system for remote areas

Power inverter topologies and control for grid connected systems
Linda Hassaine: Centre de Développement des Energies Renouvelables, (CDER) Algiers, Algeria

A practical solution to transport in sundrenched countries
L. El-Chara4, L.A. Lamont5, 1 GE, UK, 2 Mott MacDonald Ltd. UK

Performance Evaluation of Photovoltaic String with Compound Parabolic Concentrator

Study of trap density effect on Current-voltage characteristic of SubPc and C60 organic semiconductors for photovoltaic application
Mebara Daoudi1, Nesrine Mendil2, Zakarya Berkai3 and Abderrahmane Belghachi4: University of Bechar, Algeria.

Renewable Energy Integration

Tuesday
14:00 – 15:30
Room – 3004 JG
Chairs: Dr A Kaabi-Nejadian & Mr Dan Cash

EXERGETIC, ENVIRONMENTAL AND ECONOMIC ANALYSIS OF A BIOMASS COGENERATION PLANT CONNECTED TO A DISTRICT HEATING NETWORK.
Kévin Sartor & Pierre Dewallef: University of Liège – Lab. of Thermodynamic and Energetic, Liège – BELGIUM

NUCLEAR POWER: A PROMISING BACK-UP OPTION TO PROMOTE RENEWABLE PENETRATION IN THE FRENCH POWER SYSTEM?
Camille CARY, Christine Mansilla, Jean-Baptiste Thomas, Gilles Mathonnière, CEA Saclay Gif-sur-Yvette Cedex France, Pascal Da Costa: Ecole Centrale de Paris, Lab de Génie Industriel, Malabry Cedex France

SOLAR ASSISTED ULTRA SUPERCritical STEAM POWER PLANTS WITH CARBON CAPTURE AND STORAGE
Giorgio Cau, Daniele Cocco, Vittorio Tola; DIMCM, Dept. of Mech, Chem and Materials Eng, Univ of Cagliari, Italy

THE APPLICATION OF SOLAR-POWERED POLYMER ELECTROLYTE MEMBRANE (PEM) ELECTROLYSTERS FOR THE SUSTAINABLE PRODUCTION OF HYDROGEN GAS AS FUEL FOR DOMESTIC COOKING
Evangelia Toprika1, Zahir Dehouche2, Maria Kolokotroni2, Ruth Potopsingh1, Earle Wilson1
1 – University of Technology, Kingston, Jamaica, 2 – Brunel University, Uxbridge, United Kingdom

PLANT’S OPERATION STRATEGY VALIDATION AND CONTROL ASSESSMENT.
Fabrizio Alberti1, Adrian Desideri2, Sylvain Quoilin2, Luigi Crema1, Vincent Lemort2
1 ARES Unit, Fondazione Bruno Kessler, Trento (Italy), 2 University of Liège, 4000 Liège, Belgium

Saving Fuel
D T Swift-Hook, Secretary of WREN, Visiting Professor, Kingston University

15:30 -16:00
Coffee Breaks

16:00 – 18:30
Room- 3004 JG
Chair: Dr Lisa Lemont & Dr Minwon Park

SMART GRID TECHNOLOGIES AND NON-TRADITIONAL SOURCES OF ENERGY
L.A. Lamont, Mott MacDonald Ltd.

SUSTAINABLE AND AFFORDABLE ENERGY MIXES FOR NEARLY ZERO ENERGY BUILDINGS
I. VISA, M. D. MOLDOVAN, A. DUTA: Res Centre: R. E. Sys and Recycling, Transilvania Univ of Brasov, Romania

SMART GRID FLEXIBLE MODELING AND SIMULATION USING MODELICA
Javier Campillo, Erik Dahlquist, Iana Vassileva: Future Energy Centre, Sch of Business, (EST), Mälardalen Univ, Sweden

SMART GRID AND INTELLIGENT BUILDINGS: THE BASIS FOR THE OPTIMAL USE OF RENEWABLE ENERGY SOURCES
Kennedy Aduda, Wim Zeiler, Gert Boxem: Faculty of the Built Env., Univ. of Tech. Eindhoven, Eindhoven, Netherlands

Electricity Storage in Power Systems
D T Swift-Hook, Secretary of WREN, Visiting Professor, Kingston University

RENEWABLE ENERGY INTEGRATION: URBAN VILLAGES IN WESTERN AUSTRALIA

Maria C. Browne1, Brian Norton2, Sarah J. McCormack1
1 Department of Civil, Structural and Env. Eng, Trinity College, 2 Dublin Institute of Technology, Dublin, Ireland

Simulation and optimization of CdTe/InGaAs tandem solar cells
M. Emziane, S. Alshkeil: Solar Energy Materials and Devices Lab, Masdar City, Abu Dhabi, UAE
Martin Anda¹, Stewart Dallas¹, Richard Hammond²:¹ - School of Engineering & Information Technology, Murdoch University, Western Australia, 2 - School of Architecture, Curtin University, Western Australia

**Sizing of pumped hydro energy storage for future electricity systems with high RES penetration**

John Anagnostopoulos* and Dimitris Papantonis: School of Mechanical Eng, National Tech Univ of Athens, Greece

**INTEGRATION OF RENEWABLE ENERGY AND ELECTRIC VEHICLES INTO EXISTING POWER NETWORKS**

G. A. Putrus, G. Lacey and E. Bentley:Eng. and Env., Northumbria University, UK

*Techno-Economic Analysis of Microgrid for Semi-arid Region at Geelong, Australia*

GM Shafiullah, Alex Stojcevski, Amanullah M. T. Oo: School of Eng, Fac of Science, Eng .and Built Env., Deakin Univ., Australia

Proposal of Integrated PV System in Curtain Wall Emlem South Façade, A2 Building Las Lagunillas Campus, University of Jaen, Theoretical Study of Energetic Benefits of Intervention

A. Martinez Villar, J. J. de la Casa, A. Martinez Ruiz: Campus de Las lagunillas, Jaén (Spain).

Enhancement in conversion efficiency by surface modification of photoanode for natural dye sensitized solar cell

Mridula Tripathi and Priyanka Chawla, Dept. of Chem., C.M.P. Degree College, Univ. of Allahabad, India

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**Wednesday**

**14:00 – 15:30**

**Renewable Energy Integration**

Room -3004 JG  Chair: Dr Hossein Mirzaei

**TECHNICAL ISSUES OF GRID CONNECTED RENEWABLE ENERGY SOURCES – A NEW AREAS OF RESEARCH-**


**DESIGN OF TRANSMISSION SYSTEM FOR OFFSHORE WIND FARMS UNDER OFFSHORE GRID EXPANSION PLANNING CONSIDERATIONS**

Javier Serrano González*, Manuel Burgos Payán, Rafael Torrecillas Carmona, Francisco López Rodríguez, Daniel Rodríguez Fernández, Jesús Manuel Riquelme, Manuel Burgos Payán, Rafael Torrecillas Carmona, Francisco López Rodríguez, Daniel Rodríguez Fernández, Jesús Manuel Riquelme Santos: Department of Electrical Engineering, University of Seville, Seville, Spain

**STUDY ON THE PERFORMANCE ENHANCEMENT OF REDOX FLOW BATTERY VIA ELECTRODE MODIFICATIONS**

Rei-Yu Chein*, Chia-How Ong: Dept of Mech Eng, National Chung Hsing Univ, Taichung City, Taiwan

**TESTING OPERATION AND CONTROL FUNCTIONS OF WIND POWER PLANT CONTROL SYSTEM BY HARDWARE IN-THE-LOOP SIMULATION**

Jong Yul Kim*, Gyeong Hun Kim, Jin Hong Jeon, Seul Ki Kim, Eung Sang Kim

Smart Distribution Research Center, Korea Electrotechnology Research Institute, Changwon, Korea

**Prof. Dr. Ali Hamzeh**: Dr. Abbas Sendouk**: *Ali-Alhiyya Amman University, Faculty of Engineering, Dept of Electrical Eng, Jordan,** Damascus University, Department of electrical power Engineering

**DSP-BASED POWER MANAGEMENT SYSTEM IMPLEMENTATION FOR A STAND-ALONE MICROGRID IN A SMALL ISLAND, KOREA**

Chul_Sang Hwang*, Jong-Bo Ahn*, Jin-Hong Jeon*, Geong-Hun Kim*, Eung-Sang Kim*, Minwon Park and In-keun Yu**

1-Smart Distribution Res Center, KERI, Changwon city, Korea, 2- Elec Eng Dept of ChangwonNational Univ, Korea

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**15:30 -16:00**

**Coffee Breaks**

**16:00 – 18:30**

**Room - 3004 JG**  Chair: Prof Giles Notton & Dan Cash

**THE ROLE OF RENEWABLE ENERGY SOURCES IN SOLVING ENERGY AND WATER PROBLEMS OF MEDITERRANEAN SEA ISLANDS**

Zafirakis D.¹,², Notton G.³, Darras Chr.³, Kondili E.³, Kaldellis J.K.¹. ¹Soft Energy Applications and Env Protection Lab. Mech Eng Dept, Athens Greece; ²Univ of Corsica, Research Centre of Vignola, Ajaccio, France; ³Optimisation of Production Systems Laboratory

**MITIGATION MEASURES TO MINIMIZE ADVERSE IMPACTS OF RENEWABLE ENERGY INTEGRATION**

*GM Shafiullah, Amanullah MT Oo, Alex Stojcevski : School of Eng, Faculty of Science, Eng & Built Environment Geeloon Waurn Ponds Campus, Deakin University, Australia

**Problomatic of the integration of Fatal Renewable Energy Systems in an Island Grids**

Gilles Notton, Univ. of Corsica , UMR CNRS 6134, Centre of Vignola, Ajaccio, France

**NOVEL POLYGENERATION SYSTEMS POWERED BY RENEWABLE ENERGY**

Francesco Calise: *DII – Dept of Indust Eng, Univ of Naples Federico II, Naples (Italy)

**INVESTIGATING THE FEASIBILITY OF SOLAR PHOTOVOLTAIC AND WIND ELECTRICITY INTEGRATION FOR LIKOMA ISLAND IN MALAWI: TECHNO-ECONOMIC ANALYSIS APPLYING THE HYBRID OPTIMIZATION MODEL FOR ELECTRIC RENEWABLES (HOMER)**

Colleen Zalenga², Dr Richard Blanchard¹, Prof Philip Eames¹: ¹Centre for Renewable Energy Systems Technology School of Electronic, Electrical and Systems Engineering, Loughborough University, U K

**Contribution of Battery-Assisted Photovoltaic on Home/Community Energy Management**

Tomoyuki Murakami:Energy Sciences, Tokyo Institute of Technology, Yokohama, Japan

**CFD NUMERICAL SIMULATION OF A SOLAR MEDICAL MOBILE REFRIGERATOR**

Maamar Ouallili,², Randha Bellatreche¹, Ahcene Bouabdallah², Mohamed Ali Djebiret³
1-Solar Equipment Development Unit-UDES- EPST/CIDER, Bou-Ismail, 42412 Tipaza, ALEGRIA
2-Lab. of Thermodynamics and Energy Systems LTSE, Univ of Sciences Techn Houari Boumediene, Algiers, ALGERIA
ENERGY ANALYSIS OF A HOUSEHOLD VAPOR COMPRESSOR REFRIGERATOR SUPPLIED BY PV ENERGY USING A PHASE CHANGE MATERIAL AS A COLD STORAGE DEVICE.
M. Berdają1,2, A. Hamid3, B. Abbad1, A. Tedefrit1, F. Yahia1, M. Mokrano1; 1Unité de développement des équipements solaires, (UDES), Tipaza, Algeria. 2Université de Saad Dahleb, Bleda, Algeria.
Towards a Comprehensive Approach to Sustainable Urban Planning: Housing Electricity Consumption and PV Generation Potential Using Web-Platform IGUESS
A. Mastruccia: Dept.of civil Eng., Edile e Arch.Univ. Poli.delle Marche,C. Brauna,O. Baumea, F. Stazib:Pub. Res. C., Italy
Implementation and Validation of Energy Conversion Efficiency Inverters Models for Small PV Systems in the North of Brazil
Luis Monteiro1, Ignor Finelli2, André Quinlan1, Wilson N. Macêdo2,2*, Pedro Torres2, João T. Pinho2, Eduardo Nohme1, Bruno Marciano1**, Selênio R. Silva1. 1Federal Univ. of Minas Gerais, 2Federal University of Parà, 3Energy Comp. of Minas Gerais, Brazil

POLICY, FINANCE, EDUCATION & SUSTAINABILITY

TUESDAY
14:00 – 15:30 Room 3003 JG Chair: Rainer Hinrichs-Rahlwes
Methodology for Sustainability Evaluation of Renewable Energy Technologies in Rural Environments
Msc. Miguel Hadzich1, Dr. Isabel Ortiz2, Dr. Juan José Muñoz2, Dr. Emilio Bautista2
1-Sección Ingeniería Mecánica, Pontificia Univ. Católica del Perú, Lima, 2-Universidad Politécnica de Madrid
A Study on the Volatility of Listed Renewable Energy Companies in Korea according to Global Issues
Yonghoon, Park - Sunwoo, Cho
Korea Electric Research Institution about electric car(EV), Sustainability and Security Analysis of Chilean Energy Policy
M. Pilar Garate and Francisco Dall’Orso:Univ. Téc. Federico Santa María Santiago, Chile.
Evaluation of Energy Demand and Air Emissions by Using LEAP Model in Transport Sector of Punjab, Pakistan
Sheik Saeed Ahmad and Syeda Qamar Batool
Progress and Challenges of Low Carbon Energy Development in Indonesia
Herman Darnel Ibrahim Vice Chairman Expert Board of Indonesian Jakarta, Indonesia

15:30 – 16:00 Coffee Breaks
16:00 – 18:30 Room 3003 JG Chair: Stefan Schurig
Middle East & India
TRANSFORMING INDIA’S ENERGY INFRASTRUCTURE: A 20 GW OPPORTUNITY FOR ENERGY STORAGE & MICROGRIDS
Dr. R. S. Walawalkar, ED, IESA & VP, Emerging Tech & markets, & V. Walimbe, Director, Financial Services, ASSESSMENT OF SOLAR POLICIES AND PROCUREMENT PROCESSES FOR GRID CONNECTED PROJECTS IN INDIA
Shirish Garud, Siddha Mahajan, The Energy and Resources Institute, New Delhi, India
The role of decentralized energy for widening rural energy access in developing countries
S. Ghazi, Department of Environmental Engineering, Islamic Azad University-Parand branch, Parand, Iran
Techno-economic evaluation of renewable energy driven desalination processes in UAE
Uday Kumar.N.T.1,2, Goutham Mohan1, Gaurav Pravin Kumar Raval2, Hamid Kayal2
1-Dept of Energy tech, KTH Stockholm, Sweden, 2-CSEM-uae Innovation center Ras al khaimah, UAE
Thilanka M. Soriyaarachchi, & Tsung Tsai, Toufic Mezher: Masdar Institute of Science and Technology, UAE
Future Indian Programme in Renewable Energy
Pradeep Chaturvedi, President, Indian Association for Advancement of Science, Delhi, India
Survey the Renewable Electricity tariffs in Iran
The development of renewable energy in Russia
Sergey Karabanov*, Evgeniy Slivkin*, Pavel Bezrukikh**: 1Ryazan State Radio Eng. Univ., 2Krzhizhanovsky Power

POLICY, FINANCE, EDUCATION & SUSTAINABILITY

WEDNESDAY
14:00 – 15:30 ROOM – 3003 JG, CHAIR: RAJER HINRICH-RAHLMES
AWARENESS & EDUCATION – A
BIAS IN ENERGY STATISTICS – A REVIEW OF MIS-INFORMATION ABOUT SUSTAINABLE ENERGY
Arthur A. Williams, Dept. Electrical & Electronic Engineering, University of Nottingham, Nottingham, UK
Enable environmental policies for Eco-Industrial growth: a voluntary government tool for local productive areas in Tuscany (Italy)
P. Gallo University of Florence, Department of Architecture DIDA - Via S. Niccolò 93 , 50125 Florence - Italy
Intellectual property rights in the field of renewable energy
Matteo Biancardo, M. Sc., Ph. D., Senior Patent Attorney, Plougmann & Vingloft, Intellectual property consulting

**Protecting the promise of sustainability: Dealing with imminent threats to renewable energy Proliferation**
Morton B. Blarke, ENERGIAANALYSE.DK, 9220 Aalborg, Denmark

**14:00 – 15:30**
**ROOM – 4007 JG, CHAIR: STEFAN SCHURIG**
**DEVELOPING THE FUTURE OF ENERGY - B**

**Transitions to a Post Carbon Society: Scenarios for Western Australia**
Martin Andra1, Martin Bruecnner2, Nadir Moheiani3
1 - School of Engineering, 2 - School of Manag, & Government, 3 - School of Veterinary & Life Sc., Murdoch Univ., W. Australia

**The Effects of Materialism and Consumer Ethics on Ecological Behavior: An Empirical Study**
Hülya Bakirtaş, G. Canberk Bukş, İbrahim Bakirtaş; Aksaray University, Aksaray, Türkiye

**Equipment for technical education in the field of Energy and Environment**
K. Boedecker (GUNTZE Hamburg) PO Box 1125, D-22881 Barsbüttel, Germany

**Renewable Energy against an Oil and Gas Backdrop: Challenges, Drivers and Case Studies**
Indra Harakingshing, Department of Physics, The University of the west Indies, St. Augustine, Trinidad

**Specifications and Waiting Time for Quick Charge Station of Electric Vehicle**
Oda Takuya*, Muhammad Aziz, Mitani Takashi, Kashiwagi Takao: Tokyo Institute of Tech., Tokyo, Japan

**Coffee Breaks**

**15:30 – 16:00**

**16:00 – 18:30**
**ROOM 3003 JG CHAIR: RAINER HINRICHES-RAHLWES**
**EUROPE**

**Integrated regional planning and economics for renewable energy**
Prof Peter Richard Head CBE FREng FRSA, 11 Manor Way, Beckenham, Kent, BR33LH

**Cost-effectiveness and Potential of Greenhouse Gas Mitigation with the Support of Renewable Transport Fuels in Iceland**
Ehsan Shafei1, Brynhildur Davidsdottir2, Jonathan Leaver3, Hlynur Stefansson4, Eyjolfrur Ing Asgeirsson5
1,2 School of Eng. & N. Sciences, Univ of Iceland, 3 Unitec Inst., New Zealand, 4,5 Sch. of S.and Eng, Reykjavik Univ, Iceland.

**The ‘Reduce and Save’ Project: An Island-wide Resource Management Awareness Initiative**
Paul Refalo1, Luciano Mule’ Stagno1, Robert N. Farrugia1, Charles Yossil2, Tonio Sant3, Anthony Zammit4, Joseph Portelli2. 1- Institute for Sustainable Energy, Malta, 2 - Ministry for Gozo, Gozo, Malta.

**Energy grand challenges: integrated thinking for research impact**
Professors Tony Day, International Energy Research Centre, Cork, Ireland
UK Government Support for Renewables 2010 to the Present

**Development of an optimisation model for the evaluation of alternative energy and fuel supply chains**
Martin Alder MD Optimum Energy, Director Energy UK, Bubblewell Barn, Glos UK

**Mind the gap – rebound effect, renewable energy and low carbon economy**
Jyoti Painuly,1 Pedro Filipe Paraalt Carqueija,2 Norbert Wohlgemuth3
1&2 UNEP Risø Centre, Department of Management Eng. Technical Univ. of Denmark, 3 Univ of Klagenfurt, Austria.

**Renewable Energy Technologies for Sustainable Development in Nigeria**
Prof Eli Jidere Bala, Director General /CEO: Energy Commission of Nigeria, P.M.B. 358, Gariki, Abuja, Nigeria

**POLICY, FINANCE, EDUCATION & SUSTAINABILITY**

**THURSDAY**

**14:00 – 15:30**
**ROOM 3003 JG CHAIR: RAINER HINRICHES-RAHLWES**
**VISIONS & STRATEGIES**

**Imagine a world without fossil fuel**
Vidya Amarapala, Ex-Chairman, Ceylon Electricity Board,Sri Lanka.

**Future Energy without Oil and Fossil Fuel**
Dr John y, Hillsborough, New Town Lane, Bishopstone, Swindon, UK

**Smart grid and Intelligent Buildings: the basis for the optimal use of renewable energy sources**
Kennedy Aduda, Wim Zeller, Gert Boxem, Faculty of the Built Env., Univ. of Tech. Eindhoven, Netherlands

**An overview of Smart Grid Communications**
Aziz Naamane, LSIS-UMR 7296, Avenue escadrille Normandie Niemen 13397 Marseille cedex 20

**Sustainable Development using Decentralized Hybrid Renewable Energy based Micro-Energy and Mini-Grid based applications through formation of Microfinance Co-operative Energy Society**
Abhijit Malankar, Solar Technology at Global Production Engineering -Technische Universität - Berlin (TU-Berlin)

**Coffee Breaks**

**15:30 – 16:00**

**16:00 – 18:30**
**ROOM 3003 JG CHAIR: RAINER HINRICHES-RAHLWES**
**RURAL ENERGY & AFRICA**

**New Renewable Energy Promotion Approach for Rural Electrification in Cameroon**
Joseph Kenlack1,2, Olivier Vidoeme Bossou3, Joseph Voulo4, Samuel Djom5.1-Nat. Advanced School of Eng., Univ. of Yaounde I, Cameroon,2- Univ. of Maroua, 3-Rural Elect. agency, Yaounde, Cameroun

The Economic Development-Energy Needs System: A Simulation of Alternative Futures for Ghana
Frank Kyeyeku Nti¹ and Vincent Amanor-Boadu²:¹ Dept of Agricultural Econ., Kansas State Univ, Manhattan,USA
² Department of Agricultural Economics, Kansas State University, Manhattan, Kansas, USA

Sustainable Rural development by Renewable Energies in Afghanistan
Robert Dilger, GIZ-ESRA, Director of Energy Program of Afghanistan, Zabillullah Tahirzada, GIZ-ESRA, Afghanistan

Capacity Building in Alternative Energy as an impetus for Provision of Sustainable Energy in South Africa
Kola O. Odekú, Faculty of Management and Law, School of Law, University of Limpopo, South Africa

Developing a Renewable Energy Curriculum for a Caribbean Associate Degree Program
Annie Egan, Kenroy Questelles, Div.of Tech and Vocational Ed., St Vincent and the Grenadines Community College

Sustainable & Low Energy Architecture - A

Tuesday
14:00 – 15:30 Room – 4002 JG Chair: Mr Bill Watts

LOW ENERGY ARCHITECTURE – FROM THEORY TO DESIGN
Prof Despina Sergidou: ¹,² Cyprus University of Technology, Dept of Env. Science and Technology, Limassol, Cyprus

Sustainable Cities for Climate Change Adaptation: Urban Challenges, Measures and Actions
Prof Dr Mohsen M Aboulna¹,2 Sustainable Built Environment, Faculty of Eng, Cairo University, Giza, Egypt

Energy Efficiency Building Codes and Green Pyramid Rating System
Dr George Bassili Hanna, Emeritus Prof., Building Energy Consultant, Housing & Building National Research Center, Cairo, Egypt.

Towards net Zero Energy Buildings in 2020 in the Netherlands
Kristian Gvozdenovic, Wim Zeiler, Wim Maassen: Faculty of the Built Env., Univ. of Technology Eindhoven, Netherlands

Tuesday
14:00 – 15:30 Room – 5004 JG Chair: Prof Andrew Miller & Dr Ruxandra Crutescu

Sustainable & Low Energy Architecture - B

INTEGRATING SOLAR ENERGY TECHNOLOGIES WITH VERNACULAR HEATING AND LIGHTING SYSTEMS: RETROFITTING HERITAGE HAMMAMS FOR LOW CARBON EMISSIONS.
Dr. Magda Sibley – Senior Lecturer, the University of Manchester , UK, &Dr. Martin Sibley: Reader, the Univ of Huddersfield, UK

BUILDING ENERGY EFFICIENCY RESEARCH AND FIELD APPLICATIONS BY THE NATIONAL RENEWABLE ENERGY LABORATORY
Dr. Charles F. Kutscher: Director, Buildings and Thermal Systems Center, NREL, Golden, Colorado USA

WHICH CLIMATE FOR EACH URBAN CONTEXT? A PRELIMINARY COMPARATIVE STUDY ON URBAN CLIMATE PREDICTION AND MEASUREMENT IN DIFFERENT DISTRICTS IN ROME AND BARCELONA.
Agnese Salvati¹, Helena Coch², Carlo Cecere³; 1- Dept of Civil, Building and Env Eng DICEA, Sapienza Univ, Rome, IT
2: Dept of Arch, Tech I, Univ Politecnica de Catalunya UPC, Barcelona, ES. 3- Dept of Civil, Eng., Sapienza University, Rome, IT

TOURISM ACCOMMODATIONS IN THE DUROU RIVER REGION – IN THE NORTH OF PORTUGAL
Manuel Correia Guedes: Director of the Architectural Research Centre, Instituto Superior Técnico,Lisboa, Portugal

15:30 – 16:00 Coffee Break

16:00 – 18:30 Room – 4002 JG – A Chairs: Dr Chris Pretlove & Prof Khalid Al-Sallal

ASSESSING THE ENVIRONMENTAL IMPACT OF GOVERNMENTAL RESETTLEMENT HOUSING IN NORTHERN AFRICA – THE CASE OF MOROCCO
Manuel Correia Guedes: Director of the Architectural Research Centre, Instituto Superior Técnico

HOW DARK IS THE SHADOW? LIGHT AND SHADE CONTRAST THROUGH REAL MEASUREMENTS IN MEDITERRANEAN COUNTRIES
Judit López-Besora, Helena Coch: Architecture & Energy, School of Architecture of Barcelona. UPC, Spain

THE SOLAR GREENHOUSE: A STRATEGY FOR ENERGY SAVINGS IN SOCIAL HOUSING IN MILAN
Valentina Dessi¹: Politecnico of Milano, Dept DASU, via Bonardi 3, Milano, Italy

SOLAR ARCHITECTURE AS SUSTAINABLE HOUSING CONCEPT AND FUTURE LIVING CULTURE EXEMPLIFIED FOR THE LOCATION OF NORTHERN CYPRUS
Harun Sevinç¹, Ahadollah Azami², 1-Dept of Arch, North Cyprus, 2- Eastern Med Univ.

REDUCING CANADIAN GREENHOUSE ENERGY COSTS USING HIGHLY-INSULATING GLAZING
William D. Lubitz: Univ of Guelph, School of Eng. Guelph, Ontario, Canada

SUSTAINABLE PROJECT MANAGEMENT OF GOVERNMENTAL OFFICE BUILDINGS; A COMPARATIVE STUDY BETWEEN MALAYSIA AND YEMEN
Mohammed H. Al-Sabahi¹, Amaal A. Al-Hamidi², Mastura Adam³, Keumala,N.⁴, Ahmad Ramly⁵, Kamaruzaman Mat Rejab⁶
¹Student, ²R A in Research Centre for Urban design, ³Lecture in Dept of Arc, ⁴Expert Cons⁵Lec, ⁶ProfDept of Building Sur. Malaysia

EXPERIMENTAL AND THEORETICAL STUDY FOR THE PERFORMANCE OF NEW LOCAL THERMAL INSULATION IN IRAQI BUILDING
Ghanim Kadhim Abdulsada³, Tawfeeq Wasm M. Salih³: Mechanical Eng Dept., Al-Mustansiriya University, Iraq,
SIMULATION ANALYSIS AND PLANNING STRATEGIES FOR THE WIND ENVIRONMENT OF RESIDENTIAL QUARTER IN HARBIN
Ming Li, Hong Jin*, Shao Teng: Harbin, China
16:00 – 18:30 Room – 5004 – B Chairs: Prof Marco Sala & Dr Peter R. Head

REFERENCE 57 - RENEWABLE ENERGY DRIVEN HEATING AND COOLING FOR BUILDINGS
Professor Xudong Zhao: Energy Tech. Laboratory, University of Hull, UK,

LEVERAGING RENEWABLES: GROUND SOURCE HEAT PUMP SYSTEMS IN THE BUILT ENVIRONMENT
Dr HJL Witte: Groeholland Geo-Energysystems Ltd, Valschermkade 25, Amsterdam, The Netherlands

ALTERNATIVE ENERGY FOR ELEVATED WALKWAY COOLING SYSTEM IN KUALA LUMPUR CITY CENTRE
Keumala, N1, Mastura Adam2, Norafida Binti Ab Ghafar3, Taofeekat Oluwafumilola Mustapha4, Mohd Farizuda Bin Rosli5, Mohammed Amer Younus6, 7,8,9 Centre for Urban Design, Cons and Trop Architecture (UCTA), 10 F B E, Univ of Malaya

BETTER THAN OPTIMUM: INTEGRATED. THE INTEGRATION OF RENEWABLE ENERGY IN ARCHITECTURE AS AN OPTIMIZATION FACTOR.
Pardal, C, Pages-Ramon, A, Coch, H: Department of Architectural Technology I, School of Architecture, UPC, Barcelona (Spain)

ENERGY SAVING AND EMISSION ANALYSIS VIA LIGHTING RETROFITTING IN A LARGE SCALE HOSPITAL: CASE STUDY IN MALAYSIA
S. Moghimif, F. Azizpour, C. H. Lim, E. Salleh, S. Mat, K. Sopian: SERI, Univ Kebangsaan Malaysia MALAYSIA

INVESTIGATION OF ENERGY USAGE OF ELECTRICAL HOUSE APPLICATIONS IN TERMS OF ENERGY EFFICIENCY

POTENTIAL OF ENERGY AND CARBON DIOXIDE EMISSION REDUCTIONS WHEN RETROFITTING MULTI-FAMILY BUILDINGS IN A NORTHERN REGION – WHAT IS ECONOMICALLY VAILABLE AND WHY?
Jan Akander (PhD) and Mathias Gehlin: Dept of Building, Energy and Environ Eng., Faculty of Eng. Dev. Univ. of Gävle, Sweden

IMPROVING THE EFFICIENCY IN LOW ENERGY OFFICE BUILDINGS THROUGH THERMAL ZONING
M. D. Moldovan 1, i. Visa1, a. Duta1:1 res centre: resr, transilvania univ. Of brasov, romania

SUSTAINABLE HOTEL DESIGN IN COLD AND DRY CLIMATE OF MARAND CITY, IRAN
Mir Bagher Zamzami, Islamic Azad University. Ahadollah Azami, Eastern Mediterranean University
Eram Azami, Department of Architecture, Islamic Azad University – Jofla International Branch

Building Energy Index and Student’s Performance Analysis in Public University Buildings
S.N.N. Syed Yahya, A.R. Mohd Ariffin, M.A. Ismail: Dept of Arch, Faculty of Built Env, Univ of Malaya, Kuala Lumpur, Malaysia,

An analysis of the energy behaviour of dwellings in Cyprus
Gregoris P. Panayiotou, Soteris A. Kalogirou, Elisavet Theofanous, Cyprus University of Technology

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Wednesday 14:00 – 15:30 Room – 4002 JG Chair: Prof Mohsen Aboulnaga & Prof Najma Alaaroussi

THE VERIFICATION AND ANALYSIS OF PASSIVE SOLAR HOUSE TO IMPROVE THE INDOOR THERMAL COMFORT ENVIRONMENT IN WINTER IN LHASA, CHINA
Ming Zhang1,2, Wei Yu1,2, Yili Wang1,2, Baizhan Li1,2

The Intricacies of Insulation and The Implications for UK National Energy Strategies
Hareth Pochee: Research and Innovation Team Leader Max Fordham LLP

THE ROAD TO INTEGRATED DESIGN PROCESS OF NET-ZERO ENERGY SOLAR HOUSE
Dr Mona Azarbayjani, LEED AP: Int. Mona Design Labs, School of Arce, College of Arts + Arch., Univ of North Carolina, USA

PRELIMINARY RESULTS CONCERNING THE THERMAL COMFORT IN A ROMANIAN PASSIVE HOUSE
Ruxandra Crutescu1, Udrea Ioana2, Ilincu Nastase2, Cristina Croitoru2, Viorel Badescu2
1Spiru Haret Univ, Bucharest, Romania. 2Politehnic Univ. of Bucharest, Bucharest, Romania. Email: 3Politehnic Univ. of Bucharest, Faculty of Mechanical Eng

EXAMPLES OF GREEN BUILDINGS FROM THE MEDITERRANEAN REGION AND MODERN ARCHITECTURAL. THE REAL CLEAN ENERGY: ENERGY EFFICIENCY IN EXISTING BUILDING
Prof. Arch. Marco Sala, University of Florence – ABITA Research Centre

14:00 – 15:30 Room – 5004 JG – B Chair: Prof Runming Yao & Dr Gregoris P. Panayiotou

AIR SOURCE HEAT PUMP APPLICATION IN RESIDENTIAL BUILDINGS
Ming Jun Huang: Centre for Sustainable Tech, University of Ulster, N. Ireland

BUILDING INTEGRATION OF CONCENTRATING SOLAR SYSTEMS
Daniel Chemisana: Applied Physics Section of the Environmental Science Dept., University of Lleida, Lleida, Spain.

SIMULATION-BASED OPTIMIZATION FOR ENERGY AND BUILDINGS
Ala Hasan1, Matti Palonen2, Mohamed Hamdy2,3, 1VTT Technical Research Centre of Finland, Teknikantie 4A, Espoo, Finland
2Aalto University, Dept Techn., Espoo, Finland & 3Building Physics and System Unit, Eindhoven University, The Netherlands

Effectual Cross Ventilation by application of “TRANSOM” as a Vernacular Architectural Element Tropical Climate

A REVIEW OF MULTIPLE INPUT-OUTPUT MIXED ARRANGEMENT BOREHOLE SYSTEMS
Louis Lamarche : Département de genie mécanique, École de Technologie Supérieure Canada,

15:30 – 16:00 Coffee Breaks

16:00 – 18:30 Room – 4002 JG– A Chairs: Dr Mona Azarbayjani & Prof Peter R. Head

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16:00 – 18:30 Room – 5004 JG – B Chairs: Prof. Yogender K. Yadav & Dr Magda Sibley

A FEASIBILITY STUDY ON THE DOUBLE SKIN FAÇADES APPLICATION FOR NATURALLY VENTILATED BUILDINGS UNDER BRAZILIAN CLIMATE. Sabrina Barbosa¹, Kenneth Ip¹, Simeon Oxiydizi²: School of Env. and Technology, Univ. of Brighton, Brighton UK.

ARCHITECTURAL FACTORS INFLUENCED ON PHYSICAL ENVIRONMENT IN ATRIUM. Wei ZHAO¹, Jian KANG¹, Hong JIN¹: School of Architecture, Harbin Inst of Tech, Harbin, China; School of Arch, Sheffield, UK. RESEARCH ON NATURAL LIGHTING INTRODUCTION OF COMMERCIAL BUILDINGS IN DIFFERENT CLIMATE ZONING OF CHINA. LI Xin xin & JIN Hong: School of Architecture, Harbin Institute of Technology, Harbin 150001, China.

DOUBLE OR SINGLE SKIN FAÇADES FOR LOW-CARBON OFFICE REFURBISHMENTS IN THE UK: A COMPARATIVE CASE STUDY. Francesco Pomponi¹, Dr. Kenneth Ip¹, Dr. Simos Oxiydizi: Centre for Sustainability of the Built Env., Univ. of Brighton, UK.

SOLAR PERFORMANCE OF ATRIUM ROOF AND SKYLIGHT DESIGN THROUGH SEQUENTIAL APPROACH IN WARM HUMID REGION. Norafida A. Ghafar, Gadi, M.B.², and Mastura Adam²³: Dept of Arch., Univ of Malaya, Kuala Lumpur, MALAYSIA; Institute of Building Technology, Faculty of Engineering, University of Nottingham, UK.

SELF-SUFFICIENT PREFABRICATED MODULAR HOUSING. PASSIVE SYSTEMS INTEGRATED. Alberto Garcia Marin¹, Jorge Barrios Corpá², Javier Terrados Cepeda³, Juan de la Casa Higuera³, Jorge Agileña Tejero²: School of Architecture, University of Malaga. Plaza de El Ejido 29071 Malaga (Spain).

STUDENTS’ PERCEPTION ON SUSTAINABILITY IN ARCHITECTURAL EDUCATION. Zakaria Alcheikh Mahmoud Awad¹, Mohammed Amer Younus², Nila Keumala³, Asrul Sani Bin Abdul Razak³¹²: Dept Of Architecture, Faculty of Built Environment, University of Malaya.

INNOVATIVE ELEVATED WALKWAY FOR A LIVEABLE KUALA LUMPUR CITY. Mastura Adam A1, Keumala N2, and Taeoekat O Mustapha3: Lecturer in Department of Architecture, Expert Consultant Dept of Arch., Faculty of Built Environ, Univ. of Malaya, Kuala Lumpur.

SUSTAINABLE PROJECT MANAGEMENT OF GOVERNMENTAL OFFICE BUILDINGS; A COMPARATIVE STUDY BETWEEN MALAYSIA AND YEMEN. Mohammed H. Al-Sabahi¹, Amal A. Al-Hamidi¹, Mastura Adam², Keumala N³, Ahmad Ramly⁴, Kamaruzaman Mat Rejab⁵: Faculty of Built Environment, University of Malaya.

THE BUILDING ENERGY CONSUMPTION AND OUTDOOR DESIGN CONDITIONS OF SEVERE COLD REGIONS BASED ON CLIMATE CHANGE. Teng Shao*, Hong Jin: School of Architecture, Harbin Institute of Technology, 15001, Harbin.

LOW ENERGY HOME IN THE UK. SP Rao, Dept. of Architecture, Fac. of Built Env., Univ. of Malaya.

ENERGY EFFICIENT OFFICE BUILDING DESIGN IN COLD AND DRY CLIMATE OF TABRIZ CITY, IRAN. Aniza Abdul Aziz, Inst. of Graduate Studies, Univ. of Malaya; SP Rao, Dept. of Architecture, Fac. of Built Env., Univ. of Malaya.
GREEN BUILDING AND ENERGY SAVING
Mahmoud Hassan, Nabil Guirguis - Housing and building national research center, dokki, giza, Egypt
THE COOLING EFFECT OF WING WALL LOCATION AND OPENING SIZE ON A HOUSE
Basak Kundakci Koyunbaba, Faculty of Architecture, Yaşar University

Sustainable & Low Energy Architecture - A
Thursday
14:00 – 15:30 Room – 4002 JG Chair: Mr Dan Cash
INVESTIGATING PROPER DAYLIGHTING VIA ATRIA IN COMMERCIAL/OFFICE BUILDINGS IN THE UAE
Khaled A. Al-Sallal*, Elham Ebadi: Department of Architectural Engineering, UAE University, Al Ain, UAE
COURTYARDS OPTIMUM USE AS MEANS OF PROVIDING DAYLIGHT INTO ADJACENT ZONES
Maiha Bin Dalmouk, Khaled A. Al-Sallal*: Department of Architectural Engineering, UAE University, Al Ain, UAE
THE USE OF INSULATED CONCRETE FORMS FOR THE THERMAL ENVELOPE OF ZEB BUILDINGS
Dr Ruxandra Crutescu: Spiru Haret Univ., Faculty of Arch., Bucharest, Romania
WINDOW DESIGN FOR OPTIMIZING DAY LIGHT IN PASSIVE DESIGN OFFICE BUILDING IN KELANG VALLEY, MALAYSIA.
Michael Hutchins, Sonnergy Limited, Abingdon, United Kingdom
A comparison of computational simulation and physical measurement of solar radiation and Photovoltaic outputs for residential dwellings

14:00 – 15:30 Room – 5004 JG – B Chair: Prof Michael Hutchins
DESCRIBING THE FEATURES OF KANDOVAN NATIVE ARCHITECTURE: A SUSTAINABLE VILLAGE WITH ROCK ARCHITECTURE
Navid Nahi, & Maryam Singery : Dept. of Architecture, East Azarbaijan Science and Res., Islamic Azad University, Tabriz, Iran
SUSTAINABLE AND LOW ENERGY BUILDINGS: A CASE STUDY FOR THE CYPRUS TERRACE HOUSING
D.K.Serghides1, T. Koutra2, N. Sapuhi3, M.C.Katafygiotou4 & M. Markides5
Cyprus University of Technology/Department of Environmental Science and Technology, Limassol, Cyprus
INVESTIGATING THE EFFECT OF CLIMATIC FACTORS ON THE SPATIAL STRUCTURE OF OLD YAZD CITY TEXTURE: AN EXAMPLE OF A SUSTAINABLE URBAN TEXTURE
Navid Nahi, & Maryam Singery : Dept. of Architecture, East Azarbaijan Science and Res., Islamic Azad University, Tabriz, Iran
Self-powered Multifunctional Glazing System
Ghosh A.*, Norton B., Duffy A.; Dublin Institute of Technology, Focas Institute, Dublin 8, Ireland.
THE EFFECT OF WIND VELOCITY AND NIGHT NATURAL VENTILATION ON THE INSIDE AIR TEMPERATURE IN PASSIVE COOLING IN ARID ZONES
Dr. Hamida Bencheikh, Laboratoire de génie civil université Amar Telidji Laghouat, Algeria

15:30 – 16:00 Coffee Breaks
16:00 – 18:30 Room – 4002 JG – A Chairs: Dr Herliyani Suharta & Prof Salam Darwish
EVALUATION OF ENVIRONMENTAL CONTROL OF TRANSITIONAL MICROCLIMATIC SPACES IN TEMPERATE MEDITERRANEAN CLIMATE
Claudia Poggi1*, Alessandro Rogora 1: Politecnico di Milano University, Milan, Italy
THERMAL ENVIRONMENT OF RURAL HOUSINGS IN SEVERE COLD ZONES OF CHINA IN WINTER
Hong Jin*, Kai Chen.: School of Architecture , Harbin, China
RESEARCH ON THE BUILDING ENERGY CONSUMPTION AND OUTDOOR COMPUTATION PARAMETERS OF SEVERE COLD REGIONS BASED ON CLIMATE CHANGE
Teng Shao*, Hong Jin, School of Architecture, Harbin Institute of Technology, Harbin, China
SUSTAINABILITY AND HOUSEHOLD'S ADAPTIVE ACTIONS, OFTEN AN OPPOSITE DISCOURSE: THE ALGERIAN CASE STUDY
Nadia S Daoudi, Algeria
THERMAL MONITORING AND INDOOR TEMPERATURE IN LOW-INCOME DWELLINGS IN HOT-DRY CLIMATE: MEXICALI, MEXICO
Ramona Romero-Moreno1, Gonzalo Bojórquez-Morales1, Eduardo González-Cruz2, Anibal Luna-León1, Teresa Gutiérrez-García1
1- Universidad Autónoma de Baja California, Blvd. Benito Juárez, s/n. Mexicali, México. 2-Univ. del Zulia, Maracaibo, Venezuela. Technical and Culturally Sensitive Solutions to Foster Sustainable Housing in Southern Angola
Manuel Correia Guedes: Director of the Architectural Research Centre, Instituto Superior Técnico, Lisboa, Portugal
Garbage LAB: efficient buildings from waste materials
Alessandro Rogora, Milan’s Polytechnic, Department DASU, Milan, Italy
EARTH CONSTRUCTION: THE MECHANICAL PROPERTIES OF ADOBE WITH THE ADDITION OF LAPONITE
Francesca Scalisi 1, Cesare Sposito 2*, Department of Architettura - University of Palermo, Palermo Italy
Tree shading impact on luminous environment under desert conditions of the UAE
Khaled A. Al-Sallal*, Elham Ebadi: Department of Architectural Engineering, UAE University, Al Ain, UAE.
DEVELOPMENT OF A LUMINOUS EFFICACY MODEL USING GROUND AND SATELLITE BASED DATA FROM THE TROPICS

23
16:00 – 18:30 | Room – 5004 JG – B | Chairs: Dr Ruxandra Crutescu & Prof John Boland

**NUMERICAL SIMULATION OF WIND ENVIRONMENT ON TRADITIONAL VILLAGE COURTYARD IN SEVERE COLD REGION**
Zhang Xinyu¹, Hong Jin², Dong Xu²: Harbin Institute of Technology, Harbin, Heilongjiang province, China

**THE EFFECT OF URBAN CANYON BOUNDARIES ON THE SOUND PROPAGATION**
Hupeng WU¹, Jian KANG², Hong JIN²: Harbin Inst. of Tech., China, ³School of Arch., Univ. of Sheffield, UK

**THERMO-ELECTRIC AND CHEMICAL CHARACTERISTICS OF OCEAN AND Al2O3 NANOFLUIDS ELECTROLYTES APPLICATIONS IN LEDS LIGHTING LAMP**
Jung-Chang Wang: Dept of Marine Eng., National Taiwan Ocean University, Keelung, Taiwan

**FEASIBILITY OF SOLAR ENERGY UTILIZATION IN EARTH SHELTERED CONSTRUCTIONS FOR ENERGY EFFICIENCY**
Ahadollah Azami¹, Seyyede Aye Amin Mirzaee², Harun Sevinc³, Eram Azami¹, Meysam Saveh Shemshaki*⁴
¹²³Department of Arch., Eastern Med. Univ., Cyprus, ⁴Dept. of Arch, Islamic Azad Univ., Iran

**STUDY OF THE AERIAL FLOWS IN THE BUILDING OF THE VALLE HILLS MANDARINS, FRANCE**
N. Laaroussi¹, L.V.Bènet², F. Lacroux³, M. Garoum⁴
¹Univérieité Mohammed V Rabat, Maroc., ²Socotec Industries, France, ³AREVA T&D, Paris La défense cedex

**EFFICIENT ENERGY HARVESTING TECHNIQUE IN ROTATING SYSTEMS FOR LED LIGHTING APPLICATIONS**
Mallikarjuna B M¹, Akash Adithya Raju¹, M Mahesh²: 1&2- Dept., of E & E Engg., 3 E & E Engg., PES Univ., Bangalore, India

**THE DEVELOPMENT OF RENEWABLE ENERGY APPLICATIONS IN BUILDINGS IN GREECE DURING THE LAST DECADE**
Nikos Papamaniou: School of Architecture, Technical University of Crete, University Campus, 73100 Chania, Greece

**ENERGY ENVIRONMENTAL AND BENEFITS FROM SOLAR WINDOW FILM FOR BUILDINGS IN KURDISTAN OF IRAQ**
Dr Kamil M. Youssif: Head of Dept. of Environmental Sciences, Faculty of Science, Zakho University, Zakho, Iraq.

**Analyses of Architectural Forms Effects for PV Integration in Buildings**
Ahadollah Azami¹, Seyyede A. Mirzaee², Erazem Azami², Meysam Saveh Shemshaki: ¹N. Cyprus, ²Dept. of Arch, Islamic Azad Univ., Iran

**NUMERICAL SIMULATION ANALYSIS AND ECOLOGICAL EVALUATION ON WIND ENVIRONMENT OF CLOSED DWELLING GROUPS**
Teng Shao, Hong Jin, Lihua Zhao: Harbin Institute of Technology, Harbin, China

**COMPARISON BETWEEN NATURAL AND HYBRID VENTILATION FOR SEVERE HOT CLIMATE**
A. Rizk¹, A. ALDeberky², N. M. Guirguis³: ¹Dept. of Arch. Tanta Univ., ²Dept of Arch., Minia Univ., Minia, ³H & B N R Center, Egypt

**Solar Thermal Applications- Cooling**

**Ejector chillers for solar cooling**
Adriano Milazzo: Department of Industrial Engineering – University of Florence, ITALY

**Solar-Assisted adsorption chillers: recent developments and future challenges**
Angelo Freni¹, Lucio Bonaccorsi², Luigi Calabrese², Angela Capri², Valeria Palomba¹, Salvatore Vasta¹, Giovanni Restuccia¹
¹CNR - Istituto di Tecnologie Avanzate per l’Energia “Nicola Giordano”, Messina, Italy, ²Dept. of Electronic Eng., Chemistry and Industrial Engineering, University of Messina, Contrada di Dio, 98166 Messina, Italy

**Adsorption refrigeration system powered by solar energy in Polish climatic conditions**
Andrzej Cieziebielec¹, Artur Rusowicz, Dorota Owieduk, Maciej Jaworski, Hanna Jędrzejuk: Warsaw Univ. of Tech., Poland

**Heat driven heat pumps – the future of domestic heating in Europe?**
Prof. R.E. Critoph, School of Engineering, University of Warwick, Coventry CV4 7AL, UK

15:30 – 16:00 | Coffee Breaks

16:00 – 18:30 | Room – 3006 JG | Chair: Prof. Soteris A. Kalogirou

**High Temperature Solar Thermal Applications – A**

**Manufacturing and Testing of a Local Solar Trough**

**Integration of Concentrated Solar Power plant and coal fired power plant for block size of 100 MW**
Pankaj Deo: Solar Technology - Global Production Engineering, Technische Universität Berlin, Germany

**Implementation of a CSP Plant for Local Energy Supply at Core Towns in Chile**
JOSÉ M. LOBO* and M. PILAR GARATE: Univ. Técnica Federico Santa Maria, Santiago, Chile

**Optimisation of a Kalina cycle for a central receiver solar thermal power plant with direct steam generation**
Anish Modi¹,² Fredrik Haglind:³ Dept of Mech Eng Technical University of Denmark, Lyngby, Denmark

**Evaluating the potential for solar thermal energy utilization in Chile**
Rodrigo Escobar¹, José M. Gardemil², Alberto Ortega¹, Cristian Cortés¹, Alan Pino¹: ¹Mech Eng Dept, Pontificia Univ. Católica de Chile, ²School of Industrial Engineering, Universidad Diego Portales, Av. Ejército 441, Santiago, Chile

**Development of a Stirling Engine Generator and Heat Loss Analysis**
Md. Didarul Islam†, Tassawar Hossain†: ¹Dept of Mechanical Engineering, Petroleum Institute, Abu Dhabi, UAE

**Concentrated Solar Power in Sunny but Cold Desert in the People’s Republic of China: Opportunities and Challenges**
Woo Yul Lee¹, Energy Specialist, Asian Dev. Bank, 6 ADB Avenue, Mandaluyong City, 1550 Metro Manila, Philippines

14:00 – 15:30 | Room – 3006 JG | Chair : R E Critoph

**Ejector chillers for solar cooling**
Adriano Milazzo: Department of Industrial Engineering – University of Florence, ITALY

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**Concentrated Solar Power in Sunny but Cold Desert in the People’s Republic of China: Opportunities and Challenges**
Woo Yul Lee¹, Energy Specialist, Asian Dev. Bank, 6 ADB Avenue, Mandaluyong City, 1550 Metro Manila, Philippines
Indoor Experimental Investigation of Two Different Static 3_D Solar Concentrator
Imhamed M. Saleh Ali\textsuperscript{1}, K S. Reddy\textsuperscript{2}, Tapas K Mallick\textsuperscript{1}, \textsuperscript{1}Dept of Mechanical Eng., Sirte University Sirte Libya, \textsuperscript{2}Heat Transfer and Thermal Power Lab., Dept of Mech Eng. IIT Madras, \textsuperscript{3}Env. and Sustainability Inst.; Univ. of Exeter UK

16:00 – 18:30 Solar Thermal – Hybrids & Novel Energy Conversion – B
Room – 4007 JG Chair: Prof. D. Chwieduk

Heat Removal Factor of an Unglazed Photovoltaic Thermal Collector with a Serpentine Tube
M. A. M. Rosli\textsuperscript{1,2,3}, K. Sopian\textsuperscript{1,4}, S. Mat\textsuperscript{1,5}, M. Yuşof Sulaiman\textsuperscript{1,6}, and E. Salleh\textsuperscript{1,6}
\textsuperscript{1}Solar Energy Res, Univ Kebangsaan Malaysia, \textsuperscript{2}Faculty of Mech Eng, Univ Tek Melaka, Malaysia.

Experimental comparisons of domestic type of heat storage thermal oils during cool-down thermal cycles
Ashmore Mawire, Abigail T. Phori, Simeon H. Taole: Dept of Phy. and Electro., N. West Univ. Mmbabatho ,South Africa

Comparative Investigation of Solar Photovoltaic (PV) and Photovoltaic/thermal (PV/T) Systems
Xingxing Zhang\textsuperscript{1}, Jinching Shen\textsuperscript{1}, Xudong Zhao\textsuperscript{1}, Ying Xu\textsuperscript{1}, Benno Nibeler\textsuperscript{2}, \textsuperscript{1}Sch. of Eng., University of Hull, Hull HU6 7RX, UK

An innovative dynamic model for the performance analysis of a concentrating photovoltaic/thermal (CPV/T) solar collector
Giuseppe Fiorenza\textsuperscript{1}, Giovanni Luigi Paparo\textsuperscript{2}, Felice Apicella\textsuperscript{1}, Nicola Bianco\textsuperscript{1}, Giorgio Graditi\textsuperscript{1}
\textsuperscript{1}ENEA, Portici Res Centre, Photovoltaic Tech Unit, (Naples), Italy, \textsuperscript{2}Univ of Naples Federico II, Industrial Eng Dept, Naples, Italy

Development of Mixtures from Waste-Process Salts to be Applied as PCM in Domestic Hot Water Heating
A. Gutierrez\textsuperscript{1}, M. Grageda\textsuperscript{1,2}, S. Ushak\textsuperscript{1,2}, Center for Advanced Research in Lithium and Industrial Minerals (CELiMin), Universidad de Antofagasta, Campus Coloso, Av.Universidad de Antofagasta 02800, Antofagasta, Chile.

Evaluation of solar assisted ground heat pump for residential premises in Morocco
Hossein Mirzaii., Lamia Berrada.: School of Aerospace & Aircraft Engineering, Kingston Univ. London

Performance evaluation of a novel solar industrial wastewater treatment unit for reuse
Hamdy El-Ghetany\textsuperscript{1,2} and Hamdy El-Awady\textsuperscript{1,2} Solar Energy Dept., National Research Centre, Dokki, Cairo, Egypt

Solar thermal systems for zero energy buildings: perspectives and challenges
Prof Agis M. Papadopoulos: Department of Mechanical Engineering, Aristotle University Thessaloniki, Greece

Investigation on the thermal characteristics of a bi-fluid type hybrid solar collector
Mohd Nazari Abu Bakar\textsuperscript{1}, Mahmood Othman\textsuperscript{2}, Mahadzir Hj Din\textsuperscript{3} Hasila Jarimi\textsuperscript{1,3,4}
\textsuperscript{1}Faculty of Applied Sciences, Universiti Teknologi MARA Perlis, 02600 Arau, Perlis, Malaysia

Performance Evaluation of Photovoltaic String with Compound Parabolic Concentrator

Solar Thermal Applications

Wednesday 14:00 – 15:30 Room – 3006 JG Chair: Dr GSF Shire

Solar thermal poly-generation system for cooling, fresh water and domestic hot water supply: Experimental analysis
Gowtham Mohan\textsuperscript{1}, Uday Kumar.N.T\textsuperscript{1,2}, Manoj Kumar.P\textsuperscript{2}, Andrew Martin\textsuperscript{2}
\textsuperscript{1}Department of Energy tech, KTH Stockholm, Sweden, \textsuperscript{2}CSEM-uae Innovation Center Al Khaimah, U A E

Modular Linear Fresnel Reflecting Solar Collector for Low Enthalpy Processes
O. A. Jaramillo\textsuperscript{1,2}, J. O. Aguilar\textsuperscript{1}, R. Castrejón-Garcia\textsuperscript{1}, N. Velázquez\textsuperscript{1,2},
\textsuperscript{1}Instituto de Energías Renovables, Univ N. Autónoma de México, \textsuperscript{2}División de Ciencias e Ing., Univ. de Quintana Mexico.
\textsuperscript{2}Coord. de Óptica, Inst N. de Astro., Óptica y Electrónica, Puebla, México., \textsuperscript{3}Inst de Ing., Univ. Autónoma de Baja California, México.

The use of dense particle suspensions as heat transfer carrier in solar thermal plants
Zhang H.L., Flamant G., Gauthier D., Ansart R., Hemati M., Baeyens J., Boissière B.
\textsuperscript{1}Department of Chemical Eng, Chem and Bioch Process Technology and Cont Section Katholieke Univ. Leuven, Belgium
\textsuperscript{2}Proc. Materials and Solar Energy Lab. PROMES-CNRS, Font Romeu, France, \textsuperscript{3}Univ de Toulouse, France
\textsuperscript{4}School of Engineering, University of Warwick, Coventry, United Kingdom

Design, Construction and Study of a Single Axis Solar Tracker
Shyam S. Nandwani, Ph.D. Retired Professor, Costa Rica. P.O.Box 728, Heredia 3000, Costa Rica.

Case Studies on Upper Austria examples of Integrated Solar Thermal Systems for buildings
G.M. Leindecker : Institut für Analytische Strukturbewertungsplanung, AT 4600, Wels, Austria

15:30 – 16:00 Coffee Breaks

16:00 – 18:30 High Temperature Solar Thermal Applications – A
Room – 3006 JG Chair: Dr. Sarah J. McCormack

Optimisation of heliostat in central receiver power tower plant using graphical model and wind load analysis using ANSYS
D. Saktihavadiel, Dr. S. Iniyan:Institute for Energy Studies (IES), College of Eng. Guindy, Anna Univ.India

Design, fabrication and experimental study of a solar tracking system (STS) for box type solar cookers
Rajawat P., Mahavar S., Ponia R.C., Marval V. and Dashora P: Dept of Physics, Univ of Rajasthan, Jaipur-302004, India.

Modelling of a Multistage Flash (MSF) Desalination Plant
16:00 – 18:30

**Medium Temperature Solar Thermal Applications – B**

Room – 4007 JG
Chair: Dr H Mirzaii

**Solar Combsystem Technologies**
Mohd Yusof Othman, Ahmad Fudholi, Mohd Hafidz Ruslan, Sohif Mat, Kamaruzzaman Sopian (SERI), Malaysia

**Simulation of Solar Liquid Desicant Cooling System for Bushehr City**
A. Kaabi Nejadian1, B. Bakhhtiari Heleyeh1, Renewable Energy Organization of Iran, *1,2*Islamic Azad University, Iran

**Experimental Study on Regenerator Performance of a Solar Hybrid Liquid Desiccantir-conditioning System**
Sohif Bin Mat, K. Sopian, M. Y. Sulaiman, Abdulrahman Th. Mohd, and Abduljali A. Al-abidi, SERI, UKebangsaan, Malaysia

**Solar Combisystem Technologies**
Mohd Yusof Othman, Ahmad Fudholi, Mohd Hafidz Ruslan, Sohif Mat, Kamaruzzaman Sopian (SERI), Malaysia

**Simulation of Solar Liquid Desicant Cooling System for Bushehr City**
A. Kaabi Nejadian1, B. Bakhhtiari Heleyeh1, Renewable Energy Organization of Iran, *1,2*Islamic Azad University, Iran

**Performance of a Recirculation Type ICDC Solar Dryer**
Yefri Chan and Kamaruddin Abdullah, Renewable Energy, Darma Persada Univ, Jl. Radin Inten II, Pondok Kelapa, East Jakarta

**Thirty Five Years of Experience with Research, Promotion and Use of Solar Cookers to save conventional fuels and reduce Carbon emission.**
Shyma S. Nandwani, Ph.D. (Retired Professor). P.O.Box 728, Heredia 3000, Costa Rica.

**Advanced Solar Space-conditioning Systems for Buildings**
Prof. Yogender Kumar Yadav: Sardar Swaran Singh National Institute R Energy, Punjab, (India)

**Sustainable Rural development by Renewable Energies in Afghanistan**

**Design and development of a parabolic solar water pumping system for use in the Tukun Gara Village of Nigeria**
Mirzaii H., Udoh A., Dembele S.:School of Aerospace & Aircraft Engineering, Kingston University London, SW15 3DW, UK

**A modified solar/gas thermodynamic hybridization scheme in ISCC plants for reducing the air-cooled condenser power consumption**
Fouad KHALDI*, Mourin AKSAS**:Department of Physics, Faculty of Sciences, University of Batna, Batna, Algeria

**Building Integrated Solar Thermal Applications**

**Thursday**

14.00 – 15.30

Room – 3006 JG
Chair: Prof P C Eames

**Building Integrated Solar Thermal Systems**
Soteris A. Kalogirou: Dept. of Mech. Eng. and Materials Science and Engineering, Cyprus University of Technology, Cyprus

**Various Design of Hybrid Single Pass Photovoltaic – Thermal (PV/T) Solar Collector**
Mohd Yusof Othman1, Faridah Hussain2, “Kamaruzzaman Sopian”3, Baharuddin Yatim”4, Hafidz Ruslan”5

1,2(SERI), Univ. Kebangsaan Malaysia, 3National Metrology Lab., 4SIRIM Berhad, 43900 Sepang, Selangor, Malaysia

3006 JG

**Advanced Space-conditioning Systems for Buildings**
Prof. Yogender Kumar Yadav: Sardar Swaran Singh Nat. Inst. of RE, Kapurthala-144 601, Punjab, (India)

**Performance improvement of a BIST water collector: a parametric study**
Gilles Notten*, Christian Cristofari, Fabrice Motte, Jean-Louis Canaletti : Univ. of Corsica France. PV/Thermal Material System

**Experimental Results of a Photovoltaic/Thermal Phase Change Material System**
Maria C. Browne1, Brian Norton1, Sarah J. McCormack1, Dept. of Civil, Structural and Env. Engineering, Trinity College Dublin,
College Green, Dublin 2, Ireland, 2Dublin Institute of Technology, Kevin Street, Dublin 8, Ireland

**An experimental study on characteristics of building element containing phase change material (PCM) integrated with ventilation system**
Maciej Jaworski*, Dorota Chwieduk, Hanna Jędrzejuk, Andrzej Grzebielec, Artur Ruszowicz: Warsaw Univ. Warsaw, Poland

16:00 – 18:30

**Solar Thermal Applications Storage, Drying- A**

Room – 3006 JG
Chairs: Prof Yanjun Dai
Performance and Entropy Generation of Water based Photovoltaic Thermal (PVT) Collector with Web Flow Absorber

1 Mohd Yusof Othman, 2 Ahmad Fudholi, 3 Adnan Ibrahim, 1 Mohd Hafidz Ruslan, 4 Kamaruzzaman Sopian
1 (SERI), Univ. Kebangsaan Malaysia, 2 Univ. Kuala Lumpur (UniKL IPROM), Kuala Lumpur, Malaysia

An Experimental Investigation of Solar Assisted Heat Pump Combined with Latent Heat Storage
Devrim Aydin 1 and Zafer Ulu 2: 1 Inst. of Sus. Energy Tech., Univ. of Nottingham, UK, 2 Istanbul Aydin Univ, Eng Faculty, TURKEY

Phase change materials (PCMs) in novel heat capture and storage systems.
1 Zhang H.L., 2 Baeyens J., 3 Degrève J.: 1 Dept. of Ch. Eng., Katholieke Universiteit Leuven, Heverlee, Belgium.
2 School of Engineering, University of Warwick, Coventry, United Kingdom.

Evaluation of the thermal performance of finned tube heat exchangers in a standing wave thermoacoustic refrigerator
A. Piccolo: Env. Eng. And Applied Math., University of Messina Italy

Solar Thermal Energy Utilisation Using Small Thermo-Mechanical Converters
K. Makhkamov and I. Makhkamova: Faculty of Energy and Environment, Northumbria University, Newcastle upon Tyne, UK

Sustainable Rural development by Renewable Energies in Afghanistan
Robert Dilger, GIZ-ESRA, Zabiiullah Tahirzada, GIZ-ESRA, Energy Program of Afghanistan

Energy Saving Potential of Solar Water Heating Systems in Pakistan
Khanji Harjian: Mehran University of Engineering & Technology, Jamshoro, Pakistan

Long-term Performance Prediction for Domestic Solar Water Heating Systems
José Luis Duomarco, A.I.U. Montevideo, Uruguay

Multi-purpose tracking of flat plate solar collectors
Mircea Neagoe 1, Ion Visa, Anca Duta, Macedon Moldovan, Daniela Ciobanu, Bogdan Burduhos

Transilvania Univ. of Brasov, R&D Center of Renewable energy systems and recycling, Eroilor 29, 50036 Brasov, ROMANIA

Theoretical and Experimental Investigations of Solar Heating Systems at Specified Output Conditions of Hot Water
W. Tadros 1, M. Saadeldin 2 and S.A. Hassan 1: 1 National Research Center, 2 Faculty of Science, Cairo University, Giza, Egypt

16:00 – 18:30 Solar Thermal Applications – Collector Technology - B
Room - 4007 JG Chairs: Prof M Y Othman

Performance of a Recirculation Type ICDC Solar Dryer
Yefri Chan and Kamaruddin Abdullah, The Graduate Sch./RE, Darma Persada Univ., Jl. East Jakarta, Indonesia

Mathematical Modelling and Experimental investigation of Rock-Bed Solar Thermal Storage Tank
M. A. Karim, Zakaria Mohd. Amin and Anthony Nguyen: Engineering Discipline, Queensland University of Technology, Australia

Analytical modelling of Integrated Solar Drying system
M. A. Karim and Zakaria Mohd. Amin: Mechanical Engineering Discipline, Queensland University of Technology, Australia.

Solar air heaters thermal performance enhancement - The effect of air duct height
Amel Boulematbou-Boudkoudou 1, Mustapha Koussa 2, Ahmed Benzaoui 2: CDER,16340, Algiers, Algeria &USTHB, Algiers, Algeria

The Similarity Theory of Parabolic Trough Solar Collectors (PTC)
Antonio Marcos de Oliveira Siqueira 1*, Geraldino Macler da Cruz Pereira 2*, Adriano Gomes Medeiros 3*, 1 Dept. of Ch., Univ. Federal de Viçosa, Brazil, 2 Dept. of Stat., Univ. Federal de Viçosa, Brazil, 3 Industrial Eng. Itacoiatiba, Brazil

PCM-Cold storage system: an innovative storage tank technology for the improvement of charge and discharge kinetics.
Marcello De Falco 1*, Giovanni Delisio 2, Francesco Tedeschi 2, Dario De Blasis 2*, Alessandro Zaccagnini 2*
1 Upgrading Services S.p.A., via Dante Alighieri 142, 70122 – Bari, Italy, 2 Centro Laser S.c.r.l., 1 Labor S.r.l., Rome, Italy

Performance evaluation of a novel solar industrial wastewater treatment unit for reuse
Hamdy El-Ghetany 1* and Hamdy El-Awady 2: National Research Centre, 2 Water Pollution Res. Dept., Dokki, Cairo, Egypt

Increasing the efficiency of façade integrated solar thermal collectors by using single axis tracking systems
Mihai Comsit 1, Ion Visa, Macedon Moldovan, Anca Duta, Mircea Neagoe: Transilvania Univ. of Brasov, Romania

Solar Thermal Collectors with Low and Medium Concentration
Matteo Bortolato 1, Ahmed Aboulimagd 2, Andrea Padovan 3, Davide Del Col 3, 1 Università degli Studi di Padova, Padova, Italy,
2 Cairo University, Faculty of Engineering, Mechanical Power Dept., Cairo, Egypt

Tuesday
14:00 – 15:30 Wind & Hybrid Energy
Room - 0002 JG Chair – Prof Donald Swift-Hook

Impacts of a cluster of wind farms on the wind resource availability and the wind power production over complex terrain
Angela Hidalgo 1, Jorge Conte 1, Pedro Angel-Jiménez 2, Jorge Navarro 3, Jesús Fidel González-Rouco 3, Luis Prieto 4
1 Global Forecasters SL, Madrid, Spain, 2 CIEMAT, Madrid, Spain, 3 Univ. Complutense, Madrid, Spain, 4 Iberdrola SA, Spain

Preliminary wind energy potential study of Taiwan south-eastern area by the application of mesoscale meteorological model
Hsin-Fa Fang 1, Ching-Guo Lin 1, Pay-Liam Lin 2
1 Institute of Nuclear Energy Res, Taoyuan, Taiwan, 2 Institute of Nuclear Energy Research, Taoyuan, Taiwan

Assessment of Wind Characteristics and Electricity Generation Potential for Yanbu City in Saudi Arabia
Hazim Moria 1, Sayedus Salehin 2, Mohammed N. Alghamdi 1, A.K.M. Sadrul Islam 2
Multi-Objective Design of Small Wind Turbine Blades
Matias Sessarego and David Wood, Dept. Mechanical and Manufacturing Eng. Univ. of Calgary Calgary, Canada

Analysis of Unsteady Blade Forces in a Vertical-axis Small Wind Turbine
Choon-Man Jang1, Jong-Sung Lee1 and Reeho Kim1

Environmental Eng. Research Division, Institute of Construction Tech., Goyang-si, Gyeonggi-do Korea

Modeling of an Optimized Hybrid Energy System for Kutubdia Island, Bangladesh
Sayedus Salehin1*, A.K.M. Sadru Ismail1, 2Dept of Technology Bangladesh

Optimum Design of a Wind-Solar-Diesel Hybrid System for Remote Consumers
J.K. Kalidakis1, Soft Energy Applications and Env Protection Lab, Mech. Eng. Dept, Athens, Greece

Hybrid energy system for Pedro Vicente Maldonado research station on Antarctica
Jerro Labus1, Jesus Lopez1, Ivan Korolija1, Carlos Naranjo1, Andres Montero1


Innovative Design and Numerical Study of the Integration of Power-Augmented Shroud and a Vertical Axis Wind Turbine
Wen Tong Chong1, Ahmad Fazllizan1, Kok Hoe Wong1, Lik Fang Sim2 and Sin Chew Poh1

1Department of Mechanical Engineering, Faculty of Engineering, University of Malaya, 50603 Kuala Lumpur, Malaysia
2Department of Mechanical and Industrial Engineering, College of Engineering, Qatar University, Doha, Qatar

PERFORMANCE OF HEAT GENERATOR FROM ROTATIONAL ENERGY OF WIND TURBINE ROTOR WITHOUT AN ELECTRIC GENERATOR
Jang-Ho Lee1, School of Mechanical and Automotive Engineering, Kunsan National University, Kunsan, Korea

Analysis of blade throw in case of wind turbine blade breakdown
H. Sarlak and J. N. Sorensen:Section of Fluid Mechanics, Dept of Wind Energy, Tech Univ of Denmark

Wednesday
14:00 – 15:30
Room – 0002 JG
Chair – Prof Hasan Nfaoui

Evaluation of wind energy potential and estimation of cost using wind energy turbines for electricity generation in north of Algeria
B. Belabes3, A. Youcefi5, O. Guerri4

3 Centre de Développement des Energies Renouvelables, Bouzaaheb, Algiers, Algeria. 4 Faculté de Génie Mécanique, Laboratoire de Mecanique Appliquée, USTO-MB, El Mnaour, Oran, Algérie.

Life cycle cost analysis and payback period of wind energy sources for remote telecommunication base station
A. Azmi, S. Mekhilef: Dept of Electrical Eng., Faculty of Eng., University of Malaya, Kuala Lumpur, Malaysia

Integration of wind energy in power system – modeling of a market-oriented energy concept
Yassin Bouyaarman, Jörg Bendfeld, Stefan Krauter: Univ. of Paderborn, Germany

Economic feasibility of floating offshore wind farms in the Galician Coast (North West of Spain)
Laura Castro-Santos1, Alba Martinez-Lopez2, Sara Ferreño-Gonzalez2, Vicente Diaz-Casas4

Integrated Group for Eng. Res., Centro de Innov’ Tecnoloxicas, Depto de Exnerheria Naval e Oceánica, Ferrol, Spain

Integrating Deep Offshore Wind with Pumped Hydro-Storage in an Central Mediterranean Archipelago’s Electricity Generation System

15:30 – 16:00
Coffee Breaks

16:00 – 18:30
Room – 0002 JG
Chair – Prof Ghanim Putrus

Aerodynamic characteristics and performance of vertical axis wind turbines with improved self-starting capabilities
S.T. Mitchell, K.N. Volkov1, O. Al-Khudairi, H. Hadavinia: Faculty of Science, Eng. and Comp., Kingston Univ., UK

Hybrid wake model for free vortex viscous-inviscid simulations
Néstor Ramos García*, Jens Nørkær Sørensen and Wen Zhong Shen: Technical University of Denmark, Lyngby Denmark

Blade Element Momentum Theory and CFD modeling as a tool for optimizing wind turbine blade design
K. Dogan and G. Martinopoulos:Sch. of Science and Tech., International Hellenic Univ., Thessaloniki, Greece

Design and experimental validation of thick airfoils for large wind turbines
Iva Hrgovanc1, Wen Zhong Shen1, Wei Jun Zhu1, Jesper Madsen2, Rolf Hansen2

1 - Dept of Wind Energy, Tech. Univ. of Denmark, Kongens Lyngby, Denmark, 2 – LM Wind Power, Kolding, Denmark

On the aerodynamic characteristics of a novel vented aerofoil for a vertical axis wind turbine
Thursday
14:00 – 15:30
Wind & Hybrid Energy
Room – 0002JG
Chair – Prof John K Kaldellis

A Novel Techniques Proposed to Solve Low Voltage Ride through (LVRT) in Wind Energy
Yasser Gaber Dessouky: Electrical and Control Eng. Dept. Arab Academy for Science and Tech., Alexandria, Egypt

A Robust Finite Element Technique to model Interlaminar damage in Composite Wind Turbine Blade Materials
Hessam Ghasemnejad, Hossein Mirzaii: School of Aero. & Aircraft Eng., Kingston Univ. London, UK

Research and Development of Conceptual Airborne Wind Turbine Designs
Mirzaii H., Griggs L.: School of Aerospace & Aircraft Engineering, Kingston University London, UK

The Impact of Smart Blades on Wind Turbine Efficiency and Advancement in Non Destructive Testing of Wind Turbine Blades
Olatunji Richard A¹*, Dr Anjali DeSilva², Dr Babakalli Alkali³, Prof David Harrison: Glasgow Caledonian University, UK

Understanding the wind climate: the role of lidar measurements in developing and delivering wind power targets
Peter Clive: SgurrEnergy, Glasgow, UK

Coffee Breaks
15:30 – 16:00

16:00 – 18:30
Wind & Hybrid Energy
Room – 0002 JG
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Stand alone wind power plants for rural and remote areas in Pakistan
Mohammad A. Uqaili¹, Mokhe M. Siddique²: Dept of Elec. Eng., Mehran Univ. of Eng. & Technology, Pakistan

Study of a single wind turbine wake and interaction between two HAWT Darwin-180kw
D. Hamane, & O. Guerri: Division Energie Eolienne, Centre de Dév. des Energies Ren. Bouzaréah, Algeria

Coupling Floating Wind Turbines with Large-Scale Air Conditioning Systems Through Deep Sea Water Pumping: Case Studies of System Performance in European Deep Waters
Tonio Sant¹, Robert N. Farrugia¹, David Arroyo López-Carro²: Dept of Mech Eng, Malta, ²ETS, Univ. Valladolid, Spain

Assessment of the Anemometer Position on the Wind Turbine Nacelle
M. Tata¹, A. Smailii¹ and O. Guerri¹
¹Centre de Dév des Energies Ren., Bouzaréah, Algeria.
²Lab de Génie Mécanique et Dév, École Nat Polytechnique

Unified Compensation Control of a Hybrid Energy Storage System for a Small Wind-turbine in Stand-alone Microgrid
Jin-Hong Jeon, Chul_Sang Hwang, Gyeong-Hun Kim: Smart Distribution Research Center, Changwon city, Korea

The design and techno-economic analysis of Eco-Greenenergy™ outdoor lighting and charging energy generation system for urban high-rise application
D. Hamane, O. Guerri: Division Energie Eolienne, Centre de Dév. des Energies Ren., Bouzaréah, Algeria

Comparative study of two types of wind turbine simulators for wind energy conversion system
Gyeong-Hun Kim¹, Jin-Hong Jeon¹, Jong-Bo Ahn¹, Chulsang Hwang¹, Eung-Sang Kim²
¹Smart Distribution Research Center of Korea Electrotechnology Research Institute, Rep. of Korea.

Cost-effective design for electricity generation from a Hybrid wind – solar system in a rural township in Catalonia.
Arnau González, Antoni Rius, Rita Puig, Bernat Esteban: Escola d’Enginyeria d’Igualada, Univ Politècnica de Catalunya, Spain

Analysis of wind share and wind energy potential on shore of Baltic Sea in Latvia
V P Bezrukovs¹,², V V Bezrukovs²
¹Institute of Physical Energetics, Riga.
²Ventspils University College, Ventspils, Estonia

Blade Design and Performance Prediction of Horizontal Axis Wind Turbine
Ahmed M. Bofares, Mohamed S. Elmenli: Mechanical Engineering Dept, Faculty of Eng. Univ. of Benghazi, Libya


Robust Design of Savonius Wind Turbine
Vishaal D¹, Ranjana Meena², Piyush Jadhav³, Sai Gole⁴, Palaniappan Ramu⁵, Arul Prakash⁶
¹Dept. of Eng. Design, IIT Email: visitim2011@gmail.com.
²Dept of Applied Mechanics, IIT Madras, India

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¹Dept. of Eng. Design, IIT Email: visitim2011@gmail.com.
²Dept of Applied Mechanics, IIT Madras, India
Prof Ali Sayigh/WREN Trophy

This is an award given to the country which installs & uses the greatest percentage of renewable energy in their own country over the last two years. It was established in 2006 by WREN members. The previous recipients have been:

2006 – Cyprus, 2008 – Brazil, 2010 – Germany, 2012 – Spain

2014- This Year the Award is given to DENMARK

List of Pioneers for 2014

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