

PROGRAMME

World Renewable Energy XI and Exhibition

25-30 September, 2010

Armed Forces Officers Club and Hotel
ABU DHABI – United Arab Emirates



Congress patronage

His Highness Sheikh Hamdan Bin Zayed Al Nahyan

Ruler's Representative in the Western Region Abu Dhabi,
and Chairman of Environment Agency-Abu Dhabi

Congress Organizers

Environment Agency – Abu Dhabi (EAD) and

The World Renewable Energy Congress (WREC) - UK



Platinum Sponsor

Room & Hall – ALLOCATION

Session	Hall Name	Date - September
REGISTRATION	Al Jaheli Theatre Foyer	Every Day
3-Mile RACE open to all participants	Assemble at front of Abu Mousa at 7:45 hr.	25
WREN Council	Al Fehaidi	25
Workshop: Energy & Gender	Al Murajib	25
Coffee & Tea Breaks	Liwa	25
Lunch	Al Muwaiji	25
Welcome Reception & Dinner -WREN	Murajib Hall	25
Welcome Coffee & Snacks	Abu Mousa	26
Opening Ceremony, Plenary 1,2,3	Al Jaheli Theatre	26
Exhibition, Every day Coffee & Tea Breaks	Mazaid & Maria	26 & Every Day
Lunch	Abu Mousa	26 & Every Day
Plenary 4, 6, 8, 10 & 12	Al Jaheli Theatre	27, 28, 29, 30
Plenary 5, 7, 9 & 11	Cinema Hall	27, 28, 29, 30
European Workshop - EW	Seer Bani Yas	27 & 28
GALA DINNER	Garden Area	28
Solar Thermal - ST	Al Jaheli Theatre	27 & Every Day
Photovoltaic Technology - PV	Cinema Hall	27 & Every Day
Low Energy Architecture - LEA	Al Fehaidi	27 & Every Day
Biomass Conversion - BM	Murajib	27 & Every Day
Wind Energy - WE	Seer Bu Nair	27 & Every Day
Policy & Strategy - PS	Al Muwaiji	27 & Every Day
Ocean Energy - OE	Al Jaheli Conf. Room 2	27 & 28
Fuel Cell, Hydrogen & Int. Energy System- FC	Murajib	29
Energy & Gender-Equitable Dev.- EG	Maziad Dome 2	27 & 28 & 29
Radiation & Solar Materials - RA	Al Jaheli Conf. Room 2	29
Geothermal Applications - GA	Maziad Dome 2	29

MAIN SPONSORS



Organised by:



Supported by:



PROGRAMME

World Renewable Energy Congress – XI and Exhibition

TOWARDS SUSTANABLE ENVIRONMENT
Green Buildings and Renewable Energy Options

Armed Forces Officers Club and Hotel

ABU DHABI, United Arab Emirates

25 – 30 September, 2010

Programme Content

No.	Item	Page
1	Opening Ceremony	03
2	Plenary Sessions	03
3	European Workshop	08
4	Energy and Gender Workshop	13
5	Energy and Gender –Equitable Development Sessions	15
6	Geothermal Applications Sessions	18
7	Policy and Strategy Sessions	19
8	Biomass Conversion Sessions	23
9	Fuel Cell, Hydrogen and Intelligent Energy Systems Sessions	28
10	Low Energy Architecture Sessions	29
11	Photovoltaic Technology Sessions	37
12	Ocean Energy Sessions	44
13	Wind Energy Sessions	46
14	Solar Thermal Sessions	50
15	Radiation and Solar Materials Sessions	54
16	WREN Pioneers – 2010	56
17	WREC/ALI SAYIGH – Trophy	62
18	Abu Dhabi Environment Agency	63

SUNDAY 26 September

09:00 – 17:00	Registration (every day)	Al Jaheli Theatre Foyer
09:00 – 10:00	Welcome Coffee & Snacks	Abu Mousa
10:00 – 10:45	OPENING CEREMONEY	Al Jaheli Theatre
10:45 – 11:00	Exhibition & Coffee Break	Mazaid & Maria
11:00 – 12:30	PLENARY – 1	Al Jaheli Theatre
	<i>Chair: Dr Abood Hamed Al-Sawafti & Mr Rainer Hinrichs-Rahlwes</i>	

European Union External Energy Challenges

Faouzi Bensarsa, Senior Energy Counsellor, European Commission, Brussels, Belgium

RES Policy Framework in Europe, RES Directive – the most ambitious law on renewable energy world-wide and RES Technology roadmap

Ms Christine Lins, Secretary General of EREC, European Renewable Energy Council, Brussels, Belgium

Silicon Solar Cells

Bhushan Sopori, NREL, Golden, Denver, USA

Energy, Gender and Poverty: Rays of Light

Barbara Farhar, Senior Research Fellow, Institute of Behavioral Science, University of Colorado, Bolder, USA

12:30 – 14:00	Lunch Break	Abu Mousa
---------------	-------------	-----------

14:00 – 15:30	PLENARY – 2	Al Jaheli Theatre
	<i>Chair: Mr Bruno Schmitz & Prof Doug King</i>	

Energy from the Oceans – the Dawn of New Era in Electricity Production

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

Groundwater Resources and Potential Role of Renewable Energy in the GCC Potable Water Sector

Dr Mansur M. Abahusayn, Consultant, Expert in Water and Agriculture, Saudi Arabia

Sustainable Urbanity: the spatialisation of society and economy

Alan Penn, Dean, the Bartlett Faculty of the Built Environment, University College London, UK

Renewable Energy: Perspectives and Challenges

Dr Osman Benchikh, Head of Energy Programme, UNESCO, Paris, France

15:30 – 16:00	Coffee Break	Mazaid & Maria
---------------	--------------	----------------

16:00 – 17:30	PLENARY – 3	Al Jaheli Theatre
	<i>Chair: Prof Brian Norton & Prof Robert J Howlett</i>	

Evaluating Regional Outlook on Carbon Footprint and Energy Usage in the GCC States

Bakr H Khoshaim, Member of Saudi Arabia Al-Shura Council, Power and Energy Consultant Riyadh, Saudi Arabia

Integration of biohydrogen, biomethane and bioelectrochemical systems

Giuliano C Premier, Department of Engineering, Faculty of Advanced Technology (AT)
University of Glamorgan, Wales, UK

The USA Research, Development, Demonstration, and Deployment of Renewable Energy Program

Stanley R Bull, Associate Director Emeritus, Science and Technology, National Renewable Energy Laboratory, Golden, USA

Indian Solar Initiative: National Solar Mission

B. Bhargava and Ahmar Raza, Ministry of New and Renewable Energy, Delhi, India

MONDAY 27 September

08:30 – 10:30

PLENARY – 4

Al Jaheli Theatre

Chair: Dr Don Swift-Hook and Mr Bradley Collins

Renewables and Smart Grids – Research in Europe

Mr Bruno Schmitz, Head of New and Renewable Energy Sources Unit, Research Directorate General, European Commission

Prospects for solar thermal technologies

Dorota Chwieduk, Institute of Heat Engineering, Warsaw University of Technology, Poland

Climate Change and the Role of Renewable Energy and Energy Efficiency

Chuck Kutscher, Principal Engineer, Manager of Thermal Systems Group, NREL, USA

Global Energy Assessment

Thomas B Johansson, International Institute for Industrial Environmental Economics, Lund University, Lund, Sweden

Renewable Sources Can Only Ensure Sustainable Energy Security for the Poor

Pradeep Chaturvedi, Indian Association for the Advancement of Science, Delhi, India

10:30 – 11:00

Coffee Break

Mazaid & Maria

8:30 – 10:30

PLENARY – 5

Cinema Hall

Chair: Prof Thorsteinn I Sigfusson & Harry Lehmann

The Interdisciplinary Scope of solar energy application development

Brian Norton, President Dublin Institute of Technology, Dublin, Ireland

The wind energy evolution: From a complementary energy source to a leading priority in the global energy scene

Kaldellis, Head of Lab of Soft Energy Applications & Environmental Protection, Head of Department of Mechanical Engineering, TEI of Piraeus, Athens, Greece

Fuel cell based power generators for transportation applications

Per Ekdunge · Powercell Sweden AB, Gothenburg · Sweden

Wind Energy Progress and Development in the UK

Martin Alder, Wind-Direct, UK

Critical success requirements in development of waste related renewable energy options in the Emirate of Abu Dhabi

Paul Dumble, Waste Management – Abu Dhabi, SMEC International, U.A.E

10:30 – 11:00

Coffee Break

Mazaid & Maria

TUESDAY 28 September

08:30 – 10:30

PLENARY – 6

Al Jaheli Theatre

Chair: Dr Giuliani C Premier & Mr Ian Giuliani

Decision making under uncertainty in the integration of renewable energy systems into the electricity grid

John Boland, University of South Australia, AUSTRALIA

Review of the various proposals for the European Offshore Grid

Jan De Decker and Achim Woyte, Energy Strategy and Policy Department, Brussels, Belgium

Capturing CO2 from the Air: Does It Make Sense?

Stefano Brandani, Institute for Materials and Processes, School of Engineering

University of Edinburgh, Edinburgh, Scotland, UK

Energy, Buildings and Climate Change

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

SmartGridCity™ Project: Community Context and Household Perceptions

B.C. Farhar, M. Turbin, E. Beckel, A.S. Johnson, R.J. Kemp, E.A. Lowry, and T. Weston
Renewable and Sustainable Energy Institute, University of Colorado at Boulder

10:30 – 11:00

Coffee Break

Mazaid & Maria

08:30 – 10:30

PLENARY – 7

Cinema Hall

Chair: Prof Hazim Awbi & Prof AbuBakr Bahaj

Financial Innovation for the Renewable Energy Industry

Thomas Rueschen, Global Asset Finance & Leasing at Deutsche Bank in Frankfurt, Germany

Breaking the Funding Deadlock, Creating new money to finance climate security and climate justice

Jakob von Uexkull, World Future Council, London, United Kingdom

Renewable Energy: Paving the Way towards Sustainable Energy Security - Lessons learnt from Germany

Rainer Hinrichs-Rahlwes, German Renewable Energy Federation, Berlin, Germany

Energy Option for the GCC Countries

Waheeb Alnaser, Bahrain University, Bahrain

Key Meteorological and Climatological Science Needed to Support Renewable Energy

Melinda Marquis, NOAA/ESRL, Boulder, CO, USA

10:30 – 11:00

Coffee Break

Mazaid & Maria

WEDNESDAY 29 September

08:30 – 10:30

PLENARY – 8

Al Jaheli Theatre

Chair: Mr Bill Watts & Prof Nader Al-Bastaki

100% Greenhouse Gas Free Society in 2050 – the role of renewables

Harry Lehmann, General Director, Environmental Planning and Sustainability Strategies, Federal Environment Agency of Germany, Dessau, Germany

Cu(In,Ga)(Se,S)₂ Thin Film Solar Cells – Potential and Promise

Neelkanth G. Dhere, Florida Solar Energy Center, University of Central Florida, Cocoa, USA

Why CHP and district heating networks are not the answer to saving cost, energy, or carbon emissions in the UK

Mr Bill Watts, Max Fordham LLP, London, UK

Creating Regenerative Cities

Herbert Girardet, World Future Council, Hamburg, Germany

10:30 – 11:00

Coffee Break

Mazaid & Maria

08:30 – 10:30

PLENARY – 9

Cinema Hall

Chair: Prof Baizhan Li & Prof Bahram Moshfegh

Adsorption and Heterogeneous Catalysis Studies Applied for Biodiesel Processing

Celio L. Cavalcante Jr., Universidade Federal do Ceará, Dept. Engenharia Quimica Fortaleza, CE, Brasil

Development of a UK Centre for Efficient and Renewable Energy in Buildings (CEREB)

Antony Robert Day, Director of Centre for Efficient and Renewable Energy in Buildings (CEREB), London South Bank University, UK

Wind Energy Progress and Development in the UK

Martin Alder, Wind-Direct, UK

Progress on Thin Film Ternary and Multinary Semiconductor Compounds

Falah Hasoon, NREL, Denver, USA

10:30 – 11:00

Coffee Break

Mazaid & Maria

THURSDAY 30 September

08:30 – 10:30

PLENARY – 10

Al Jaheli Theatre

Chair: Dr Stan Bull & Prof Robert Critoph

Predicted Charging Efficiency of Latent Heat Energy Storage Systems Utilizing Selected Fin Arrangements

Philip Eames, Centre for Renewable Energy Systems, Loughborough University, UK

Development of New Materials for Alkaline Electrolysers and Investigation of the Potential Electrolysis Impact on the UK Electrical Grid

Andrew Cruden, Dept. of Electronic & Electrical Eng, University of Strathclyde, Glasgow, UK

Thermal comfort conditions in sustainable buildings – results of a worldwide survey of users’ perceptions

George Baird, School of Architecture. Victoria University of Wellington, Wellington, New Zealand

Hybrid Wind/Photovoltaic energy systems

Gilles Notton, University of Corsica, Ajaccio, France

10:30 – 11:00 Coffee Break Mazaid & Maria

08:30 – 10:30 PLENARY – 11 Cinema Hall

Chair: Dr Habib I Abualhamayel & Mr Martin Alder

Assessing the impact of demand management on the viability of polygeneration at the urban scale

J A Clarke, Energy Systems Research Unit, University of Strathclyde, Glasgow, UK

Climate change adapted simulation weather data: implications for cities in the hot, arid climates of the Middle East

Mark Jentsch, Sustainable Energy Research Group, School of Civil Engineering & Environment, University of Southampton, Southampton, UK

Hydropower: An Essential Partner of Renewable Energy Source

André Lejeune¹, Samuel Hui², Michel Piroton³, Sébastien Erpicum³ and Benjamin J. Dewals^{3,4}

¹ University of Liège, Liège, Belgium, ² Bechtel Civil Company, San Francisco, California, USA

³ University of Liège, Liège, Belgium, ⁴ Fund for Scientific Research FNRS, Belgium

10:30 – 11:00 Coffee Break Mazaid & Maria

11:00 – 12:30 PLENARY 12 Al Jaheli Theatre

Chair: Dr Hamda Al-Thani & Dr Falah Hasoon

Will global climate change impact extremes

S.C. Pryor^{1,2}, R.J. Barthelmie^{1,2}, J.T. Schoof³, N.E. Clausen², M. Drews⁴, E. Kjellström⁵
1 Indiana University, Bloomington, USA , 2 Risø DTU National Laboratory for Sustainable Energy, Roskilde, Denmark, 3 Southern Illinois University, Carbondale, USA, 4 Danish Meteorological Institute, Copenhagen, Denmark & 5 Rosby Centre, SMHI, Norrköping, Sweden

Renewable Energy and Solar Photovoltaics: The Revolution Begins . . .

Lawrence L. Kazmerski, Executive Director S & T Partnerships National Renewable Energy Laboratory, Golden, USA

Activities of Collaborative Research Center at AIT for Public Enlightenment on Renewable Energy

Izumi Ushiyama, Yuichi Nakajo, Yasuyuki Nemoto, and Yoshifumi Nishizawa
Ashikaga Institute of Technology, Tochigi-ken, JAPAN

12:30 – 13:00 CLOSING CEREMONEY Al Jaheli Theatre

**European Workshop
on
“Renewable energies: opportunities and challenges of grid integration”**

CONCEPT PAPER

Scene setting

The production of energy from renewable energy sources (RES) is – together with energy savings and energy efficiency – among the most suitable responses worldwide to the issues of climate change, and sustainable energy supply.

Renewables-based electricity generation is expected to grow substantially all over the world over the coming decades, benefiting from high fossil-fuel prices, declining investment costs and government support. In the Reference Scenario of the IEA Energy Outlook 2008, world renewable electricity generation is projected to increase from 3 470 TWh in 2006 to 4 970 TWh in 2015 and to 7 705 TWh in 2030. Before 2015, electricity from renewable energy sources is projected to overtake gas as the world’s second-largest source of electricity behind coal, rising from 18% in 2006 to 20% in 2015 and 23% in 2030.

In the period to 2015, most of the increase in renewables generation is expected to come from hydro and onshore wind power. Hydropower remains the leading renewable source of electricity worldwide, but despite its projected large increase in absolute terms (due to its boost in non-OECD countries), its share of total electricity generation is expected to fall. Biomass power, both from electricity-only generation plants, and Combined Heat and Power plants, and offshore wind power also grow briskly during this period. Solar power, both photovoltaic and concentrating solar, will see their share of electricity output grow in many countries.

To considerably increase the share of renewables in the world energy mix, the paradigm of electricity generation, transmission, distribution and consumption which has developed over the last century has to change: a greater reliance on decentralized and fluctuating RES will change it from mostly centralized, onshore generation close to consumption to a system combining both small-scale local production and large scale decentralized production close to resources, energy storage or carbon sinks. Central to this change is the concept of “Smart grids” and their reliance on new Information and Communication Technologies.

The environmental, social and economic characteristics of each country determine its energy needs, the potential of each renewable energy source, and the best model for energy generation and distribution. Decentralised and decentralized grid integration concepts respond to different needs and country’s specificities, with a no-size fits all approach. A combination of the two is probably the best way to address today’s energy challenges.

R&D will have a clear role in the large scale diffusion of RES and their grid integration: the acceleration of technological progress and the increase of the economies of scale in manufacturing the associated equipment will result in lower investment costs for renewables and in the development of new technologies for the improved flexibility and security of the network.

The European Union 7th Framework Programme for R&D offers a unique opportunity to international institutions from both developed and developing economies to work in partnership with a win-win approach.

Besides R&D, the adoption of comprehensive and tailored policies is crucial to the diffusion of RES and their integration to the grid. This encompasses both regulatory approaches and incentive mechanisms, as well as actions on education and training, institutional building and public understanding. These aspects, although fundamental, will not be analysed in depth during the workshop which focuses on R&D and technological deployment issues.

Objectives

The workshop will primarily aim at presenting R&D challenges for increased supply of renewable electricity and its distribution through either decentraliz or centralized networks, including micro-grids. This will be more particularly examined in the context of developing and emerging economies.

Exchanges of best practices among European and non-European experts from all over the world on different renewable technologies and grid development models will allow learning and getting inspired from each others' experience. It will allow also developing and emerging economies' representatives to learn more about the 7th Framework Programme and the way to participate in it.

Content

The workshop will be centered around 2 technical sessions of 3 hours each, preceded by an introduction and followed by a closing.

The first technical session will be focused on the issues of renewable energy supply and grid integration requirements in large scale and decentralized concepts.

The second one will focus on renewable energy supply and grid integration requirements in smaller scale and centralized systems (including for rural electrification).

Participants would be expected to attend all sessions, as most of the issues for debate would most likely be of cross-sectorial interest.

Outcome

The outcome of the workshop will be the identification of relevant R&D priorities for accelerating the take up of renewable energies in electricity generation in the developing and emerging economies.

The workshop will moreover facilitate an increased R&D co-operation on renewable energy supply and grid integration between developing economies and Europe, with a potential increased participation of developing economies in the EU 7th Framework Programme for RTD.

11:00-12:30 INTRODUCTION

The introduction session will provide information on the on-going EU and international cooperation initiatives on renewable energies and grid integration, including the EU-Gulf Cooperation Council Clean Energy Network. Information about the European Union 7th Framework Programme for R&D and the rules for participations for Third Countries will be shared with all participants.

Chair: *Prof. Ali Sayigh, Director General of WREN*

- Welcome, *Mr. Bruno Schmitz, Head, New and renewable energy sources Unit, Directorate General RTD, European Commission*
- The EU-Gulf Cooperation Council Clean Energy Network, *Dr. Wojahn Jorg, EU Delegation in Saudi Arabia*
- International cooperation in the EU 7th Framework Programme for RTD, *Mr. Bernardo Abello-Garcia, International cooperation Unit, Directorate General RTD, European Commission*
- Keynote speech – *IRENA representative to be confirmed*
- Q&A

12:30-14:00 Lunch

Abu Mousa

14:00-15:30 SESSION 1a: Large scale renewable energy supply and grid integration requirements in decentralized systems

Experts will share their experience on R&D and technical challenges for large scale wind, photovoltaic and concentrated solar power electricity supply and grid integration in decentralized systems, with specific examples from developing countries. The issue will be dealt with from both the renewable sources and the grid point of view, tackling the challenges of integrating the actions of all players to efficiently deliver sustainable, economic and secure electricity.

Aspects analysed will include the intermittence of energy generation and the need to take into account consumption patterns; the need to integrate traditional and alternative energy systems; the need to upgrade the existing electricity grid and the building of new infrastructures, both at transmission and distribution level.

Chair: *Representative of the Environment Agency Abu Dhabi to be confirmed*

Rapporteur: *Mr. Henrik Dam, Energy conversion and distribution systems Unit, Directorate General RTD, European Commission*

- Integrating the Trade Wind Resource into Centralized Grids: The Sahara Wind-HVDC Project, *Mr. Khalid Benhamou, Sahara Wind Inc, Morocco*
- Main Challenges for RES integration within the power system: Experiences and Expectations from Red Eléctrica as Spanish TSO, *Mr. Juan Francisco Alonso, Head of Access to the Network Department, Red Electrica de Espana, Spain*

- The First & Largest Solar Farm in Thailand and ASIAN, *Ms. Wandee Khunchornyakong, Solar Power Co Ltd, Thailand*
- Q&A

15:30-16:00 Coffee break Mazaid & Maria

16:00-17:30 SESSION 1b continued

- Planning and operation of electric power systems with significant penetration of distributed and renewable generation in developing countries, *Dr. Joseph Mutale, Senior Lecturer University of Manchester, Zambia/UK*
- Challenges of Large Integration of Wind Generation in Power Systems, *Professor Ana Estanqueiro, Instituto Nacional de Engenharia e Tecnologia Industrial, Portugal*
- Challenges for large scale solar thermal energy projects, *Mr. Shiv Shukla, President and CEO of Abener Engineering Pvt. Ltd., India*
- Q&A

Tuesday 28 September Seer Bani Yas

11:00-12:30 SESSION 2a: Small scale renewable energy supply and grid integration requirements in decentralized systems

Experts will share their experience on R&D and technical challenges for Small scale renewable electricity supply and grid integration requirements in decentralized systems. They will provide their experience on grid development, biomass, wind and photovoltaic energy technology options for decentralized electricity generation in developing countries, either grid-connected or decentralized off-grid or in micro-grid systems.

The option of renewable energy technologies decentralized in off-grid or micro-grid systems will be particularly analysed in the case of remote and rural areas, where they offer an alternative to traditional electrification and conventional energies, allowing the sustainable meeting of energy needs at an affordable price.

Chair: *Prof. Dr Dato' MHY Othman, Solar Energy Research Institute, Universiti Kebangsaan Malaysia*

Rapporteur: *Ms. Maria Velkova, New and Renewable energy sources Unit, Directorate General RTD, European Commission*

- Wind Diesel Hybrid power systems for isolated areas – planning, installing and operating- some Brazilian experiences, *Professor Pedro André Carvalho Rosas, Universidade federal de Pernambuco, Brazil*
- Biomass energy technology options for rural decentralized electricity generation in developing countries; which technology for which demand, *Mr. Philippe Girard, Scientific advisor, Institut international de l'eau et de l'environnement, France*
- Planning and control of small scale renewable energy sources in islanded and grid integrated mode for developing countries, *Professor Khaparde S.A, Department of Electrical Engineering IIT Bombay, India*
- Q&A

- 12:30-14:00 Lunch Abu Mousa**
- 14:00-15:30 SESSION 2b continued**
- Commercial development and implementation of novel PV technologies for grid connected and decentralized system applications, *Professor Vivian Alberts, Managing director of Photovoltaic Technology Intellectual Property, University of Johannesburg, South Africa*
 - Micro-grid power systems based on renewable energy for rural electrification: benefits, examples and steps for grid integration, *Mr. Xavier Vallve, Director, Trama Tecnoambiental, Spain*
 - Flexible SmartGrid concept for rural electrification, *Mr. Per Bromand Nørgård, Senior Researcher, Risoe DTU, Denmark*
 - Q&A
- 15:30-16:00 Coffee break Mazaid & Maria**
- 16:00-17:00 WORKSHOP CONCLUSIONS**
Chair: *Ms. Houda Allal, Scientific manager in charge of renewables and sustainable development, Observatoire Mediterranéen de l’Energie, France*
- Mr. Henrik Dam and Ms. Maria Velkova, rapporteurs of previous sessions
 - and Mr. Bruno Schmitz, DG RTD European Commission

Engaging Women in Energy Enterprises: A Workshop on Energy and Gender-Equitable Development

Organized by the Section on Energy and Gender-Equitable Development, World Renewable Energy Congress-XI

AGENDA

Saturday 25 September

Al Murajib

Sponsored by: The UN Foundation and the National Renewable Energy Laboratory, USA
 Technical Committee: Dr. Barbara Farhar, Gail Karlsson, J.D., and Dr. Priyadarshini Karve

A workshop focused on understanding current issues and impacts of sustainable energy development on poverty in the developing world and using that knowledge to accelerate our transition to a more just energy future.

Introduction to the Workshop and Participant Introductions	
9:00-10:00	Welcome and Opening Remarks Prof. Ali Sayigh, Chair, World Renewable Energy Congress-XI Dr. Barbara Farhar, Workshop Chair, University of Colorado (USA) Chair, WREC-XI Energy and Equitable Development Section Participant Introductions
Keynote Address	
10:00-10:30 Keynote Presentation	Global Clean Cooking Partnership Improves the Health and Environment of Millions of People Brenda Doroski, Coordinator, Partnership for Clean Indoor Air, U.S. Environmental Protection Agency
10:30-11:00	Coffee Break Room: Liwa
Discussion Panel on Biomass Fuels, Efficiency, and Alternatives for Cooking	
11:00-12:00	Moderator: Dr. Priyadarshini Karve, Appropriate Rural Technology Institute (India) Panelists: Milkyas Debebe, Gaia Association (Ethiopia) Prakash Ghimire, Netherlands Development Organisation (SNV) (Cambodia) Nahida Khudadad, Aga Khan Planning and Building Service (AKPBSP) (Pakistan) Marta Rivera, Fundación Solar (Guatemala)
Discussion Panel on Women's Empowerment	
12:00-13:00 Panel discussion	Moderator: Dr. Barbara Farhar Panelists: Sheila Oparaocha, ENERGIA (The Netherlands) Prof. Beth Osnes, University of Colorado (USA) Mercy Thomas, U.S. Agency for International Development (India) Prof. Manfred Weissenbacher, University of Malta (Malta)
13:00-14:00	Lunch Break Al Muwaiji
Discussion Panel on International Perspectives	
14:00-15:00 Panel discussion	Moderator: Gail Karlsson, ENERGIA (USA) Panelists: Andrea Athanas, International Union for the Conservation of Nature (IUCN) (Switzerland)

	Dr. Rose Mensah-Kutin, ABANTU for Development (Ghana) Margaret Owino, Solar Cookers International (Kenya) David Renne, National Renewable Energy Laboratory (USA)
15:00-15:30 Open discussion	United Nations Framework Convention on Climate Change COP-16 in Cancun, Mexico: Gender Perspectives Moderators: Gail Karlsson and Sheila Oparaocha
15:30-16:00	Coffee Break Room: Liwa

Open Discussion	
16:00-16:30 Open discussion	Moderators: Gail Karlsson and Dr. Barbara Farhar Further discussion on gender perspectives for COP-16 and on institutionalizing a section on energy and gender-equitable development in the future

Briefs and Announcements	
16:30-16:50 Briefs	Moderator: Dr. Barbara Farhar Microenterprise and Microfinance Development in India: An Update Gomathi Nair, All-India Women's Conference (AIWC) (India) (10 mins.) Women in Sustainable Energy (WISE) in Colorado Wendy Larsen Bowen, Consultant (USA) (10 mins.) ISES initiative – International Solar Education Exchange (ISEE) Paulette Middleton, Panorama Pathways (USA) (2 mins.) Joint World Renewable Energy Congress-XII and American Solar Energy Society Conference, Denver, Colorado, 2012 Barbara Farhar, Renewable and Sustainable Energy Institute, (USA) (1 min.) Quick Review of EGED Technical Sessions
16:50-17:00	Closing Remarks and Workshop Adjournment

Workshop Goals:

- To provide an overview of the EGED technical sessions at the Congress
- To produce recommendations for COP-16.
- To produce a recommendation on the value of institutionalizing a section on energy and gender-equitable development in the future.

In addition, participants gain a better understanding of (a) important issues in gender, energy, and poverty reduction in the developing world; (b) equitable distribution and access initiatives, and (c) the role of sustainable energy in reaching the Millennium Development Goals. Professional networking is encouraged. A report on the Workshop will be prepared.

Acknowledgments:

Financial and administrative arrangements for the Workshop were provided by Prof. Ali Sayigh, WREN Director-General and Chair of the World Renewable Energy Congress-XI, the UN Foundation, the National Renewable Energy Laboratory, especially Larry Kazmerski and Bob Noun, and the Institute of Behavioral Science and the Renewable and Sustainable Energy Institute, University of Colorado.

This workshop was organized by Dr. Barbara Farhar, Gail Karlsson, Dr. Priyadarshini Karve, and Julie Teel.

Energy and Gender-Equitable Development Sections

Monday 27

Maziad Dome 2

11:00 – 12:30

Technical Session A:

Chair: Dr. Barbara Farhar and Gail Karlsson, J.D.

Novel Strategy to Reduce Fuel Wood Consumption at Household Level

Priyadarshini Karve, Appropriate Rural Technology Institute, INDIA

Overcoming Challenges in Energy Technology Entrepreneurship

Margaret Owino, Solar Cookers International, KENYA

Demonstrating the Benefits of Ethanol Fuelled Cooking Stoves in Refugee Settings

Milkyas Debebe, Gaia Association, ETHIOPIA

14:00-15:30

Technical Session B:

Chair: Dr. Priyadarshini Karve and Milkyas Debebe

Energy Access for the Poor and Women: ENERGIA's Efforts at Mainstreaming Gender in Energy Access Projects and Markets

Sheila Oparaocha, ENERGIA, THE NETHERLANDS

Women Empowerment in South Asia – Advancing Access to Clean Energy – A Case Example

Mercy Thomas, U.S. Agency for International Development, INDIA

Survival Energy for the Poor: Proposal for a Regional Legal Framework

Marta Rivera, Fundación Solar, GUATEMALA

16:00 -17:30

Technical Session C:

Chair: Gail Karlsson

Roadmaps to Sustainable Development in Offgrid Communities

David Renne, National Renewable Energy Laboratory, USA

Engaging Women's Voices through Theatre for Energy Development and Film Preview: *Pushing 10 Billion*

Beth Osnes, Department of Theater, University of Colorado, USA

11:00 – 12:30

Technical Session D:

Chair: Dr. Priyadarshini Karve and Mercy Thomas

Tapping Climate Funds to Expand Renewable Energy Access, Empower Women and Build More Resilient Communities

Gail Karlsson, J.D., ENERGIA, USA

Women Selling and Promoting Energy Efficient Products in Northern Pakistan

Nahida Khudadad, Aga Khan Planning and Building Service (AKPBSP), PAKISTAN

SNV Supported Domestic Biogas Programmes in Asia and Africa

Prakash C. Ghimire, Renewable Energy/Biogas, Program, SNV Netherlands, Development Organization, CAMBODIA

14:00-15:30

Technical Session E:

Chair: Marta Rivera and Gomathi Nair

Expanding the Role of Women in Science, Technology, and Engineering in the UAE

Noor Ghazal Aswad, Masdar Institute of Science and Technology, UAE

Promoting Women's Access to Renewable Energy in the Context of Oil Discovery in Ghana

Rose Mensah-Kutin, ABANTU for Development, GHANA

Energy as Women Business-The AIWC Experience

Lalita Balakrishnan, All-India Women's Conference, INDIA

16:00-17:30

Technical Session F:

Chair: Gail Karlsson, ENERGIA

Book Launch: *Biofuels for Rural Development and Empowerment of Women*

Panelists: Nadine McCormick, IUCN, Lorena Aguilar, IUCN & Sheila Oparaocha, ENERGIA

From the Introduction: “After reviewing information about a variety of different biofuels projects, it seems that village-level projects have great potential in terms of sustainable fuel production and increased access to energy in rural areas of developing countries – if participatory processes are employed in the development and implementation of the projects. On a small scale, locally produced plant oils and biodiesel can successfully be used to power diesel engines and generators in rural villages – for agricultural processing, new enterprises, and income generation. These systems can also ease the burdens of women and foster women's participation in decision-making processes.”

11:00 – 12:30

Technical Session G:

Chair: Dr. Rose Mensah-Kutin

Women as Sustainable Environment Managers in Cooking, Health, Sanitation and Water

Kalpakam Yechury, All-India Women's Conference, INDIA

Energy Consumption and the Empowerment of Women—Lessons Learned throughout History

Manfred Weissenbacher, Institute for Sustainable Energy – University of Malta, MALTA

Does Increased Energy Consumption Indeed Serve the Empowerment of Women in Developing Countries? A Review of Recent Experience

Manfred Weissenbacher, Institute for Sustainable Energy – University of Malta, MALTA

Geothermal Applications

Wednesday 29

Maziad Dome 2

14:00 – 15:30

Special Technical Session S1:

Chair: Prof Thorstein Sigfusson

Adoption of flat panels in soil heat exchange

Michele Bottarelli & Vittorio Di Federico, Department of Architecture, University of Ferrara, Italy

The geothermal resources in the region Guelma (Algeria)

Mébrouk Benziada, Centre de Développement des Energies Renouvelables, Alger, Algeria

Geothermal properties of the ground in Cyprus and their affect on the efficiency of ground coupled heat pumps

Georgios Florides, Soteris Kalogirou, Dr. Vassilios Messaritis, Mr. Panayiotis Pouloupatis, Department of Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology, Limassol, Cyprus

An investigation to enhancing the performance of ground coupled heat exchangers of closed loop geothermal cycles installed in tailing piles

Seyed Ali Ghoreishi Madiseh, Hassani Ferri, Peter Radziszewski, and Peter H., EMERG, Mechanical Engineering Department, McGill University, Montreal, Canada

Geothermal Development in the Caribbean, with special focus on Nevis

Indra Haraksingh, Dept of Physics at the University of the West Indies, Trinidad

16:00 – 17:30

Special Technical Session S2:

Chair: Prof Thorstein Sigfusson

Analysis of Integrated Efficiency for Surface Water Heat Pump System

Yong Ding, Yu Jia, Baizhan Li, Chongqing University, P.R.China

Geothermal application in low-enthalpy region

Hubert Quick, H. Quick – Ingenieure und Geologen GmbH, Ulvi Arslan, Heiko Huber, Joachim Michael, Technische Universität Darmstadt, Germany

Analysis of Integrated Efficiency for Surface Water Heat Pump System

Yong Ding^{1*}; Yu Jia¹; Baizhan Li¹; Abednico Montshiwa¹, ¹Key laboratory of the three gorges reservoir, Chongqing University, Chongqing, China

Policy and Strategy Sessions

Monday 27

Al Muwaiji

11:00 – 12:30

Technical Session A:

Chair: Rainer Hinrichs-Rahlwes + Benjamin Sovacool

FIT for Future – How a Feed in Tariff (FIT) and other policies can boost the renewable energy sector

Stefan Schurig, Director Climate Energy, World Future Council, 20401 Hamburg, Germany

The Case for Renewables apart from Global Warming

Don Swift-Hook, Bourne Place, Horsell Common Road, WOKING, Surrey, UK

Global Energy policies for Sustainable Development

Azim Sahatimehr * Tohid Sahatimehr * Karim Moosa zadeh

Islamic Azad University (Bonab Branch) * Ucna * Islamic Azad University (Tabriz Branch)

Clean and Sustainable Future Power Generation

Ashwani K. Gupta, University of Maryland, College Park, Maryland, USA

Optimization methods and tools for sustainable water resources management.

Experiences and trends

Emillia Kondili, J K Kaldellis, TEI of Piraeus, Greece

14:00 – 15:30

Technical Session B:

Chair: Dörte Fouquet + Jong-dall Kim

Questions Related To Reduction Emission From Deforestation & Forest Degradation (REDD) And Suggested Solution

Herliyani Suharta* and Ali Sayigh**, * The Center of Energy Technology – BPPT, PUSPIPTEK, Indonesia, ** WREN, Brighton, UK

An Alternative approach for the prevention of deforestation using Renewable Energies as substitute

M. Abbaspour, S.Ghazi2, Graduate College of Environment and Energy, Science and Research Campus, Islamic Azad, Tehran, Iran

Clean energy that safeguards ecosystems and livelihoods: integrated assessments to unleash full sustainable potential for renewable energy

Andrea Athanas, Senior Programme Officer Energy, Ecosystems and Livelihoods IUCN & Nadine McCormick, Energy Network Coordinator IUCN (International Union for Conservation of Nature)

Saving Birds by Promoting Wind Energy

Benjamin K. Sovacool, Centre on Asia and Globalisation, Singapore

16:00-17:30

Technical Session C:

Chair: Wilson Rickerson & Stefan Schurig

FIT, RPS, Green Business: Korea's Challenge for Green Development

Jong-dall Kim, Kyungpook National University, the Republic of Korea

Various geographical scales and the challenges of sustainable development

Evanthie Michalena^{1*}, Vilma Zotou², Yannis Tripanagnostopoulos³

¹ EneC Laboratory (Environment, Nature and Culture), Sorbonne and Paris 8 Universities,

² Institut d'Etudes Européennes, Université Libre de Bruxelles, Voula, Greece,

³ University of Patras, Physics Dept, Patra 26500, Greece

Adopting Energy policy on the ground-an aging population perspective

Authors: Dr. Neveen Hamza and Rose Gilroy, School of Architecture, Planning and Landscape, Newcastle University, UK

Climate change mitigation opportunities in Palestine through the utilization of the renewable energy sources

Imad A. Khatib, Renewable Energy and Environment Research Unit / Palestine

FBK – REET Energy Vision and the +energy building

Bozzoli, and L. Crema, Renewable Energies and Environmental Technologies, Povo-Trento, Italy

Strategic green building policy of Dubai-UAE to address sustainability and sustainable development

Advisor Environment & Infrastructure – Strategy & Policy Dept., PMO, Dubai, UAE

Tuesday 28

Al Muwaiji

11:00 – 12:30

Technical Session D:

Chair: Rainer Hinrichs-Rahlwes & Stefan Schurig

Renewable Energy is the Last to be Stored

Don Swift-Hook, Bourne Place, Horsell Common Road, WOKING, Surrey, UK

Scaling up concentrating solar thermal power generation in India

Ishan Purohit¹ and Pallav Purohit^{2*}

¹The Energy and Resources Institute (TERI), New Delhi – 110016, India

²International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria

Policy instruments for Renewable Energy

Dorte Fouquet, Kuhbier law firm sprl, Brussels, Belgium

The creation of a global fund for feed-in tariffs in developing countries

Wilson Rickerson, & Christina Hanley, *Meister Consultants Group, Inc., Boston, USA*

Renewable energy supply curves – assessment of technological and economic potential

Kinga Gergely, Hungarian Academy of Sciences, Budapest, Hungary

14:00 – 15:30

Technical Session E:

Chair: Wilson Rickerson & Harry Lehmann

Pico Hydro Application for Off-Grid Settlement

Juhari Ab. Razak¹, Masjuri Musa, Md Razali Ayob, Muhammad Zahir Hassan, Mohd Nizam Ab Rahman & Kamaruzzaman Sopian²

¹Faculty of Mechanical Engineering, Universiti Teknikal Malaysia Melaka, Durian Tunggal, Melaka, MALAYSIA, ² Solar Energy Research Institute, Universiti Kebangsaan Malaysia, Bangi,

Review of energy resources and challenges of Sudan: Past, present and future

Abdeen Mustafa Omar, ERI, Khartoum, Sudan

Opportunities and Challenges in using renewable energy in Kurdistan of Iraq

Kamil M. Yousif, and Luqman M. S. Dosky, Dept of Physics, Dohuk University, Dohuk, Iraq.

Renewable Energy Position in Sustainable Development of Iran

Mehdi Barimani Varandi and Dr. Abdolrazzagh Kaabinejadian, National Academy of Sciences the Republic of Armenia

The Need for Sustainable Cities to Counterbalance Climate Change: Towards a Strategic Policy Assessment for a Low Carbon Society

Mohsen M Aboulnaga, Dubai, UAE

16:00 – 17:30

Technical Session F:

Chair: Dörte Fouquet & Jakob von Üexküll

How to develop a sustainable fossil fuel free Stockholm-Malardalen region

Professor Erik Dahlquist, School of Sustainable Development of Society and Technology, Malardalen University, Västerås, Sweden

Exploring the (remaining) barriers to renewable electricity in the United States

Benjamin K. Sovacool, Centre on Asia and Globalisation, Singapore

Stand Alone Integrated Complex, driven by Renewable Energy, For the Sustainable Development of small communities Living in Remote Areas

Hassan El-Banna, MASDAR, Abu Dhabi, UAE

A Comparative Study of Sprawling and Compact Regions: Way to Sustainable Development of Cities

Gisele Silva Barbosa, Patricia R. C. Drach, Oscar D. Corbella, PROURB/ FAU, UFRJ, Brasil.

Wednesday 29

Al Muwaiji

11:00 – 12:30

Technical Session G:

Chair: Rainer Hinrichs-Rahlwes & Thomas Johansson

An overview of the current status of research into adopting high levels of renewables in Ireland

M. L. Kubik^{1*}, P. J. Coker² and C. Hunt³

¹ Technologies for Sustainable Built Environments, University of Reading, United Kingdom

² School of Construction Management and Engineering, University of Reading, United Kingdom

³ AES, Richmond upon Thames, United Kingdom

The Role of Renewable Energy in Reduction of Carbon Dioxide Emission in EU Member Countries and Turkey

Can Ertekin, Deniz Alta, Department of Farm Machinery, Faculty of Agriculture Engineering, Akdeniz University, Antalya, Turkey

Solar energy in Macedonia: policy, perspectives and challenges for application

Hristina Spasevska, University Ss Cyril and Methodius, Faculty of Electrical Engineering and Information Technologies, Skopje, Republic of Macedonia

Renewable Energy in the United Arab Emirates – A Need for Action

Lisa Ann Lamont, Electrical Engineering Program, The Petroleum Institute, Abu Dhabi, UAE

Biomass Conversion Sessions

Monday 27

Murajjib

11:00 – 12:30

Technical Session A:

Chair: Prof Stefano Brandani

Bioethanol Production of Sweet Potato with Co-immobilization with Saccharolytic Molds and *Saccharomyces cerevisiae*

Wen-Shiang Lee and Shang-Shyng Yang, China University of Science and Technology, Taipei, Taiwan

Castor bean as Source for Biodiesel production

Ebtisam K.Heikal and I.K.,Abdou, Egyptian Petroleum Research Institute, Nasr City, Cairo, Egypt.

Situation of industrial and agricultural biogas units in Tunisia

A. Mlaouhi(1), F. Ouneis (2) and H. Zouaghi (2), (1): I.N.R.G.R.E.F – Tunis, Tunisia (2): E.S.I.E.R. Tunis, Tunisia

Multi-Objective Optimization of a Biodiesel Production Process: Comparison Between Algorithms

M.Moglie, F.Pololanara, G.Santori

Università Politecnica delle Marche, Dipartimento di Energetica, Ancona, Italy

Biodiesel oil derived from jojoba solid waste

M. Y. E. Selim*, Y. Haik, S.-A. B. Al-Omari and H. Abdulrahman

Mech. Eng. Dept., Faculty of Engineering, UAE University, Al-Ain, United Arab Emirates

Use of Pyrolysis Oil for CHP Application: Difficulties and Prospects

A. K. Hossain* and P. A. Davies, Sustainable Environment Research Group, School of Engineering and Applied Science. Aston, University, Birmingham UK.

14:00 – 15:30

Technical Session B:

Chair: Prof Celio L. Cavalcante Jr.

Green (Cellulosic) Biofuels-Challenges and Opportunities

Pogaku. Ravindra, School of Engineering and Information Technology University Malaysia Sabah, Malaysia

Anaerobic digestion of agricultural units in Tunisia: prospects and development

A. Mlaouhi(1), F. Ouneis (2) and H. Zouaghi (2), (1): I.N.R.G.R.E.F – Tunis, Tunisia (2): E.S.I.E.R. Tunis, Tunisia

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

Shang-Shyng Yang 1,2, Hui-Na Chou2, and Wen-Shiang Lee2

1China University of Science and Technology, Taipei, Taiwan

2National Taiwan University, Taipei, Taiwan

Effects of Pretreatments of Anaerobic Sludge and Culture Conditions on Hydrogen Productivity in Dark Anaerobic Fermentation

Eunsung Kan and Monwar Hossain, Department of Chemical & Petroleum Engineering, United Arab Emirates University, Al-Ain, United Arab Emirates

Studies on Biodiesel Production from Cottonseed Oil

Mônica C.G. Albuquerque*, Regina C. R. dos Santos, Diana C.S. Azevedo, Célio L. Cavalcante Jr., Universidade Federal do Ceará, Dept. Eng. Química, Grupo de Pesquisa em Separações por Adsorção Campus do Pici, Fortaleza, CE, Brazil

16:00 – 17:30

Technical Session C:

Chair: Dr Giuliano C. Premier

New biochar-based soil management strategies as a combined tool for bioenergy, climate change mitigation and enhanced crop production

Saran P. Sohi, School of GeoSciences, University of Edinburgh, Scotland, UK

Potentialities of the Use of Miscanthus and Wood Biomasses for the Production in Fluidized Bed Gasification Units

Paulo S.D. Brito, Anabela S. Oliveira e Luiz F. Rodrigues, Escola Superior de Tecnologia e Gestão de Portalegre, Instituto Politécnico de Portalegre, Portalegre, Portugal

Efficiencies and Environmental Impact on use of Agro-Forestry Wastes for Energy Production

L. Crema¹, A. Bozzoli¹, S. Bartashevich¹, S. Silvestri², A. Cristoforetti², G. Picchi³, A. Boschetti⁴

¹ Renewable Energies and Env. Technologies, Fondazione Bruno Kessler, Trento, Italy

² Biomasses and Renewable Energies unit (BMER), (Trento), Italy

³ CNR-IVALSA, Trees and Timber Institute, Italian National Council of Research, Italy

⁴ IFN-CNR, Institute for Photonics and Nanotechnologies, Povo, Trento, Italy

Energy optimization of a prototype improved cooking hearth for fuel briquettes of the agro-industrial waste: theoretical modeling and simulation

André Talla, Jean Nganhou, Pierre Meukam, Energy, Water and Environment Laboratory, Department of Industrial and Mechanical Engineering, National Advanced School of Engineering, University of Yaounde I, Yaounde, Cameroon

Environmental Effects when using Coconut Biodiesel as a Fuel Substitute for Diesel Engines

Andrew ONGUGLO, John PUMWA, Mechanical Engineering Department Papua New Guinea

Tuesday 28

Murajjib

11:00 – 12:30

Technical Session D:

Chair: Prof. Kai Zhang

Conception et dimensionnement d'une unité de production de biodiesel à l'huile de palme brute (Conception and dimensioning of a biodiesel production unit from crude palm oil).

Nouadjep Serge Narcisse, Tchatchueng Jean Bosco, Kapseu César

Ecole Nationale Supérieure des Sciences, Université de Ngaoundéré, Ngaoundéré, Cameroun.

Supercritical fluids and micro-reactors: a dynamic combination for a novel biorefinery

Kiran L. Kadam and Srinivas Kilambi, Sriya Innovations, Inc., Marietta, USA

Increased Power Generation by Humidification of Gasification Agent in Biofuel Production

Martin Görling, Mats Westermark KTH, Royal Institute of Technology, School of Chemical Science and Engineering, Energy Processes, Stockholm, Sweden

Biomass Gasification as an Alternative for Small-Scale Electricity Generation in Isolated Communities in Brazil

Guilherme de Paula Moreira Fracarol^{1,*}, Samuel Nelson Melegari de Souza², Carlos Eduardo Camargo Nogueira², Jair

Antonio Cruz Siqueira² and Maurício Medeiros¹, ¹ Student of Masters degree in agricultural energy, State University of West Paraná, Cascavel, Brazil, ² Centre for Science and Technology, State University of West Paraná, Cascavel, Brazil

Micro-Scale Biomass Generation For Remote Off-Grid Continuous Power Supply

Centre of Sustainable Power Distribution, Electronic & Electrical Engineering, Bath, UK

Evaluation of the Oxidative Stability of Biodiesel from Castor and Soybean Oil Fame Using a Rapid Method

S. V. Araújo, Y. L. Machado, F. M. T. Luna[†], M. C. G. Albuquerque, D. C. S. Azevedo and C. L. Cavalcante Jr.

Universidade Federal do Ceará, Departamento de Engenharia Química

Grupo de Pesquisa em Separações por Adsorção - GPSA, Campus do Pici, Brazil

14:00 – 15:30

Technical Session E:

Chair: Prof. Shang-Shyng Yang

Modelling of a Swedish biogas system

Shahnaz Amiri^{1,2}, Dag Henning³, Björn G. Karlsson¹

¹ Department of Management and Engineering, Division of Energy Systems, Linköping University, Linköping, Sweden

² Department of Technology and Built Environment, Division of Energy and Mechanical Engineering, University of Gävle, Gävle, Sweden

³ Optensys Energianalys, Örngatan 8C, Linköping, Sweden

Heat and Power Production from Forest Residues in Turkey

Isik Taskiran^{1*}, Ismail Belen² and Erdem Kaplan³

¹ Climate Change and Bioenergy Working Group of General Directorate of Forestry, Ankara, Turkey

² Deputy General Director of General Directorate of Forestry, Ankara, Turkey

³ Sales and Marketing Department of General Directorate of Forestry, Ankara, Turkey

Omnigen: providing electricity, food preparation, cold storage and pure water using a variety of local fuels

A. K. Hossain¹, R. Thorpe², P. Vasudevan³, P. K. Sen³, R. E. Critoph² and P. A. Davies¹

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

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

³ Indian Institute of Technology, Delhi, India

Analyzing Energy Potential of Olive Pomace as an Alternative Fuel for Yatagan Thermal Power Station in Turkey

Arif Kivanç Üstün¹, Mehmet Kurban²,

¹ Bilecik University, Dept. of Electrical and Electronics Eng., Bilecik, Turkey,

² Anadolu University, Dept. of Electrical and Electronics Eng., Eskisehir, Turkey

The Study of Biogas Production Systems, DEDE 1 and DEDE 2, in Small Livestock Farms

Raniwat Nittarak, Department of Alternative Energy Development and Efficiency (DEDE) Bangkok, Thailand

16:00 – 17:30

Technical Session F:

Chair: Prof Stefano Brandani

Development of biomass gasification and Programme in China

Kai Zhang^{1, 2}, Yanjun Guan², Honggang Chen¹, Yongping Yang¹

1. National Eng Lab for Biomass Power Generation Equipment, North China Electric Power University, Beijing 102206, China

2. State Key Lab of Heavy Oil Processing, China University of Petroleum, Beijing 102249, China

Energy evaluation of some main cultivation techniques in three farms in Tunisia

A. Mlaouhi⁽¹⁾, F. Ouneis⁽²⁾ and H. Zouaghi⁽²⁾,

(1): I.N.R.G.R.E.F – Tunis– TUNISIE, (2): E.S.I.E.R. Tunis, TUNISIE

Biomass fueled cogeneration systems: a comparison among possible solutions for a case study

Lorenzo Ferrari, Andrea Chesi, Federico Trippi, and Giovanni Ferrara

Municipal Solid Waste (MSW) As An Energy Source: Analysis Of The Availability Of Suitable Biomass As A Potential Source For Bio-Ethanol: A Case Study For London.

M. Khraisheh^{1*} & A. Li²

1 Department of Chemical Engineering, Qatar University, Doha P.O Box 2713, Qatar.

2 Department of Civil and Environmental Eng., Univ. College London, London WC1E 6BT, UK.

Technologies for Future Fuels

A S Ramadhas, V P Singh, G K Acharya, M Subramanian, P Sakthivel

Indian Oil Corporation Ltd, R&D Center, Faridabad, India

Wednesday 29

Murajjib

11:00 – 12:30

Technical Session G:

Chair: Dr Giuliano C. Premier

Energy potential of residue oil in Tunisia

A. Mlaouhi⁽¹⁾, F. Ouneis⁽²⁾ and H. Zouaghi⁽²⁾,

(1): I.N.R.G.R.E.F – Tunis – TUNISIE, (2): E.S.I.E.R. Tunis, TUNISIE

Effect of Heat-Pretreatment Temperature on Isolation of Hydrogen Producing Functional Consortium from Soil

Anita Ravindran¹, Sunil Adav¹ and Shang-Shyng Yang^{1, 2, 3}

¹Institute of Microbiology and Biochemistry, and, ²Department of Biochemical Science and Technology, National Taiwan University, Taipei, Taiwan, ³Department of Food Science, China University of Science and Technology, Taipei, Taiwan

Technological and Environmental Impacts Evaluation of Biomass and Biofuels' Supply Chain

Christiana Papapostolou, Emilia Kondili and John K. Kaldellis

Department of Mechanical Engineering, Technological Education Institution of Piraeus, Greece

Beating back biofuel crop invasions: guidelines on managing the invasive risk of biofuel invasions

Nadine MCCORMICK, International Union for Conservation of Nature,

Geoffrey HOWARD, Global Invasive Species Coordinator, Regional Office for Eastern Africa

Development of biomass combustion system to replace diesel fired hot air generation system in the process of tea manufacturing in Sri Lanka

Mr. Nandana (K) Edirisinghe, NERDC, Industrial Estate, Ekala, Ja-Ela, Sri Lanka

The Impact of Using Local Materials on the Manufacturing Cost of a Cylindrical Floating Digester to Produce Biogas

Tize K. J.1, Mawouma S.1, Djomdi1, Aboubakar1*, Tangka J.2

1 ISS, University of Maroua Po. Box 46 Maroua-Cameroon

2 FASA, University of Dschang Po. Box 222 Dschang-Cameroon

Estimation of Energy from Forestry & Agricultural Residues

Jahangir Payamara, Shahed University, Physics Department, Tehran-Iran

Fuel Cell, Hydrogen and Intelligent Energy Systems Sessions

Wednesday 29

Murajjib

14:00 – 15:30

Special Technical Session S1:

Chair: Prof Robert J. Howlett and Prof Kamaruzzaman Sopian

Smart Sustainability in Energy and Buildings

KES International, London, UK

Pumped-Storage and Renewable Energies in Reunion Island

Mathieu DAVID (LPBS, University of La Reunion), Reunion, France

Fitting it all together: On the way - to a real hydrogen society

Arno Evers (Arno A. Evers FAIR-PR), Starnberg, Germany

Analytical Modeling of the Polarization Curve of a 40-W Fuel Cell Stack

Shaker M Haji, Department of chemical engineering, Bahrain University, Bahrain

Hydrogen generation from logistic fuels for PEM fuel cells

Jazaer Dawody, PowerCell, Sweden

16:00 – 17:30

Special Technical Session S2:

Chair: Dr. Jazaer Dawody and Dr Shaker M Haji

Design and Analysis of a Proton Exchange Membrane Fuel Cells (PEMFC)

S.Pandiyani^{1*}, A. Elayaperumal^{2*}, N. Rajalakshmi³, K.S. Dhathathreyan³
1,2Dept. of Mechanical Engineering, College of Engineering, Anna University, Chennai

³ Centre for Fuel Cell Technology, ARC-International (ARCI), Chennai, India

Numerical Simulation of Hydrogene Turbulent Diffusion Flame

Obounou Marcell¹; Chelem Charles²

1- Corresponding author; University of Yaoundé 1; Yaoundé Cameroon

2- University of Maroua; Maroua Cameroon

Experimental Study on Control Algorithm for A Building Energy Management System Coupling with Renewable Technologies

Jin-Seok Oh^{1*}, Jun-Ho Kwak¹, Kwan-Jun Jo¹, Ji-Yoon Kim¹, Ji-Young Lee², Jae-Min Kim³,
Cameron Johnstone³

¹ E2E, Korea Maritime University, Busan, Korea

² Manufacturing Engineering Centre, Cardiff University, Cardiff, UK

³ Energy System Research Unit, Strathclyde University, Glasgow, UK

Experimental characterization of an hydrogen fueled SOFC generator

E. Brunetti¹, A. Arteconi², F. Polonara¹, G. Santori^{2*}, S. Wirth³

¹ Università Politecnica delle Marche, Facoltà di Ing., Dipartimento di Energetica, Ancona, Italy

² Università degli Studi e-Campus, Via Isimbardi 10, 22060 Novedrate (CO), Italy

³ Acumentrics Corp., 20 Southwest Park, Westwood, MA 02090-1548, USA

Hydrogen Generation And Application For Power, Heat And Cold Production

Dmytro Buyadgie^{1*}, Sergii Nichenko^{1,2}, Olexiy Buyadgie¹

¹ Wilson Ltd, Odessa, Ukraine, ² Odessa State Academy of Refrigeration, Odessa, Ukraine

Low Energy Architecture Sessions

Monday 27

Al Fehaidi

11:00 – 12:30

Technical Session A:

Urban microclimates - Master-Planning & Infrastructure

Chair: Dr Runming Yao and Prof Bahram Moshfegh

Use of Intelligent Transportation Systems in Urban Developments

Mohamed Hussein Ismail

Architecture, tourism and sustainable development for the Douro region

António Feio & Manuel Correia Guedes

The SURE-Africa Project: Sustainable Urban Renewal – Energy Efficient Buildings for Africa

Manuel Correia Guedes, Nick Baker, Torwong Chenvidyakarn, Gustavo Cantuária, Klas Borges, Luis Alves, Joana Aleixo & Italma Pereira

Numerical and experimental studies of an integrated strategic simulation model for urban microclimates

Runming Yao

Towards a multiscale microclimatic characterization of urban forms in desert cities. Case of Beni Isguen (Algeria)

Moussadek Djenane, Nicolas Bioret & Abdallah Farhi

Migrated Environments and an identity for sustainability

Neveen Hamza

Sensitivity Analysis on the Effects of Urban Structure Properties on the Urban Microclimate and Energy Demand of Urban Buildings

Fazia Ali-Toudert

Potential of Energy Efficiency and Renewable Energy towards Green Buildings in Egypt

George Bassili Hanna

Proposals to improve the conditions of outer space. The environmental comfort of the pedestrian circulation in the coastal line

Mireya Alicia Rosas Lusett & Helena Coch Roura

The Role of Renewable Energies in Sustainable Community Design

Farzin Paknia & Maryam Singeri

14:00 – 15:30

Technical Session B: Climate – The challenge of adaptation

Chair: Mr Bill Watts & Mr Nazar Sayigh

The use and impact of weather and climate change information in building design

Nigel Banks

Challenge of climate – Chance for Evolution

Christian Pietschiny

The possible impact of the climatic change on the built environment: the importance of flexibility and energy robustness of the architecture

M. Palme, A. Isalgué, H. Coch & R. Serra

Effect of Courtyard on the Thermal Conditions of a Link House in Malaysia

Mohd. Riza Ismail, Azni Zain-Ahmed Sabarinah Sh.Ahmad, and Abdul Razak Sopian

The use of seasonal cooling storage in the ground in Abu Dhabi and other hot countries.

Bill Watts

Sustainable Locality Design Criteria in Tabriz

M. Singery, S. M. Mofidi Shemirani & Farzin Paknia

Designing a Sustainable House in the Desert of Abu Dhabi

Khaled A. Al-Sallal

Understanding people in open spaces: can it enhance our adaptive capacity under climate change?

Marialena Nikolopoulou

Study of Indoor Thermal Comfort and Daylighting in Hot Dry Climate: Simulation of Windows and Solar Protection Parameters

Magri Elouadjeri Sahar & Boussoualim-Zebbiche Aicha

Solar Shadow Charts for the Optimization of Shading Devices for Sustainable Architecture in Oman

Awni K. Shaaban

Analysis of old and new buildings of Tabriz from stand point of stable development

Vahideh Beledari & Maryam Singeri

16:00 – 17:30

Technical Session C:

Construction – Green Building Materials and Technologies

Chair: Prof Doug King & Dr Mark Jentsch

Effect of Natural Ventilation and Wind Direction on the Thermal Performance of a Building Ceiling

Abdel Aziz Ali Ali Guirguis Nabil Milad & Hassan Mahmoud Ali

Feasibility study on the use of single-crystalline PV Installations in Cyprus

G. Panayiotou, A. Koukkouli & S. Kalogirou

Study on solar energy collection and storage technology of rural residence envelope in cold region of China

Wei Ling & Hong Jin

Building Thermal and Energy Performance for Insulated and Non-Insulated Roof in the

S. Syiful Irwan, A. Zain-Ahmed & N.Z. Zakaria

The tropical roof: thermal simulations of the ventilated double roof in moist-warm climate

Mariana Guimarães Merçon, Helena Coch & Rafael Serra

Energy and the Occupant's Thermal Perception of Low-Income Dwellings in Hot-Dry Climate: Mexicali, México.

Ramona A. Romero, Gonzalo Bojórquez, María Corral & Ricardo Gallegos

Thermal and Energy Analyses of a North European Rational Movement Influenced Dwelling in the City of Mendoza, Argentina

Gustavo Barea, Carolina Ganem & Alfredo Esteves

Towards Zero Energy Homes Down Under

Wasim Saman

Environmental effect of living plants on buildings

Kenneth Ip & Andrew Miller

Energy Savings in Buildings with Phase Change Materials in Mild Climates

El Hadi Bouguerra, Abdelkader Hamid & Noureddine Retiel

Sustainable Traditional Buildings of Iran, a Climatic Analysis

Ghobadian

Tuesday 28

Al Fehaidi

11:00 – 12:30

Technical Session D:

Construction – Green Building Materials and Technologies

Chair: Dr Runming Yao and Prof Y G Yohanis

The architecture of shadows: prominence of the veranda on Brazilian architecture.

Gogliardo Vieira Maragno & Helena Coch

Envelope characterization and self-climatic regulation assessment for wineries in the province of Mendoza, Argentina.

Carolina Ganem & Helena Coch

Energy Efficiency of a Single Flate for Different Egyptian Regions

N. M. Guirguis

Indoor Thermal Environment of Rural Housing in Hot Summer & Cold Winter Region of China

Wang Xiu-ping & Jin Hong

Economic Analysis of Improvement of Energy Performances of Dwelling Housing in Belgrade

Aleksandra Krstic-Furundzic, Tatjana Kosic & Marija Grujic

Internet-based remote condition monitoring system for building integrated Wind-PV hybrid energy systems

Cameron Johnstone, Jaemin Kim, Matthew Martin, Jin-Seok Oh & Hoon Kang

Advanced Daylighting by Micro Structured Components

Stephan Klammt, Helmut F.O. Mueller & Alexander Neyer

PV Technology in Building Elevations – Architectural Context

Janusz Marchwiński

Study of the effect of high-Albedo coatings on roof, facades and pavements on energy consumption (case study of Ekbatan town in Tehran)

Maryam Nouri, Sanaz Khorshidian Ahmar & Maryam Singeri

LED based Small Solar Home System (SSHS): Prospect and Opportunities in Bangladesh

N. M. Zobayer

Impact of glazing on total energy consumption of commercial building in hot and humid climates

Vishal Garg, Srishti Srivastava, Surekha Tetali & Jyotirmay Mathur

Improvement of Energy Efficiency in Lightweight Passive Solar Designed Housing Using Microencapsulated Phase-change Material Plasterboard and the Development of the “PCM Chimney.”

D Goodfield, M Anda & K Mathew

Energy analysis of double-envelope buildings ventilated in Mediterranean areas

Carolina Aparicio-Fernandez, José-Luis Vivancos

Application of green buildings technologies in the construction regulations of Mexico

David C. Avila

The Design Strategy of Green Rural Housing of Tibetan areas in Yunnan,China

Junyan Dong, Hong Jin

14:00 – 15:30

Technical Session E:

Energy consumption – Low carbon technologies

Chair: Mr Nazar Sayigh & Dr Mark Jentsch

Comparative Study between a Thermodynamic Model and the Modular Computer Simulation (ABSIM) for Solar Powered Vapor Absorption System

M.M. Abo Elazm, A.F. Elsafty & A.I. Shahata

Energy Efficient Museum Buildings

Helmut F.O. Müller

Testing of an Air Source Heat Pump Water Heater in Malta

S. Morentin Gutiérrez, C. Yousif & R.N. Farrugia

UK Zero Carbon Homes 2016 – Exemplary Development

Robert Burzynski, Runming Yao & Martin Crane

Low Energy Greenhouses in Hungary

Judit Pintér

An investigation of the scope for improvement of the performance of multi-stage downdraught evaporative coolers using CFD. Preliminary study of aerodynamic behaviour

S. Sarjito & G. Simpson

Measuring the Impact of Low Carbon Technologies and Products on Domestic Fuel Consumption in Northern Pakistan

Nahida Khudadad, Barkat Ali & Karim Jan

For a building materials life-cycle with low energy intensity

M. Milardi & A. Focà

Control Strategies for Low Carbon Buildings

Doug King

Follow the Flow and Make Better Predictions of Solar-Assisted Natural Ventilation

Guohui Gan

Green Building design: a question of the right BEAT (Building Environmental Assessment Tools)?

Wim Zeiler & John van Deursen

Quality as management framework for successful delivery of environmental projects

Josip Durda

16:00 – 17:30

Technical Session F:

Energy consumption – Low carbon technologies

Chair: Mr Bill Watts and Prof Y G Yohanis

Passive Ground Cooling System for Low Energy Buildings in Malaysia (hot and humid climates)

Aliyah N.Z. Sanusi, Li Shao & Najib Ibrahim

A combined electrical and thermal energy demand-supply matching analysis to quantify a utilization factor for city based renewable hybrid energy systems

J.A. Clarke, J. Hong, C.M. Johnstone & J.M. Kim

Thermal Performance of a Dynamic Transparent Cavity Structure

Guohui Gan

The Effect of Distinct Control Strategies on Energy Consumption of Commercial Buildings with Higher Thermal Resistance in Hot Climates

Karin Chvatal

Ground Cooling and Heating Potential in a Mediterranean Climate: An Evaluation of Temperature Extremes in Malta

Vincent M. Buhagiar, Tonio Sant & Cornelia Tabone

Strategies of Rural Housing Integrated Renewable Energy Technology in China

Hong Jin, Lingling Li & Beichen Zhao

Energy Efficiency Features and Renewable Energy Technologies in Malaysian Office Buildings

Chin Haw Lim, Sohif M, Yusof Sulaiman & Kamaruzzaman S. Sopian

Potential of Cooling for Building in Hot and Humid Climatic Conditions of Solar Assisted Desiccant Cooling System

C. Ruberneshan, Chin Haw Lim, Yusof Sulaiman, Sohif Mat & Kamaruzzaman S. Sopian

Energy Management, To Optimize Energy Consumption In Residential Buildings

M. Khodaparast, A. Kaabinejadian & A. Padash

Net-Zero Energy Building Schools

Wim Zeiler & Gert Boxem

The UAE Eco-Villa Research and Demonstration Project

E. Elsarrag, F. N. Sahawneh & M. S. Imbabi

11:00 – 12:30

**Technical Session G:
Human Behaviour – Expectations and Energy Use**

Chair: Prof Bahram Moshfegh and Dr Runming Yao

Zero Energy Building and the occupant

Wim Zeiler

Don't Discount the Occupants

Doug King

Bridging the gap between predicted and actual energy performance in schools

Christine Demanuele, Tamsin Tweddell & Michael Davies

Aspects of technologies and occupants' behaviour for sustainable non-domestic building refurbishment

M.M. Aghahosseini, A.A. Elmualim, M.J. Williams & A.D. Kluth

Collective dwellings

Sara Cardoso Silva & Helena Coch

Post Occupancy Evaluation of Projects

Laura Birrell & Leanne McMillan

Wireless sensor networks: An assessment of behaviour change impact in a naturally ventilated UK office

N.A.J. Bakker, P.A.B. James & A.S. Bahaj

Thermal Loading of Building Elements in Malta

Mario Fsadni & Ali Sayigh

Post-Occupancy Energy Assessment of Air Conditioning System in Dormitories at Shinawatra University

Apichat Praditsmanont & Ronnachai Vutthivithayarak

The LT-Portugal software: a design tool for Architects

Manuel Correia Guedes, Nick Baker, Nabeel Shaikh, Luis Calixto & Ricardo Aguiar

14:00 – 15:30

Special Technical Session S1:

Chair: Dr Patrick James and Prof Doug King

Case Studies of Low Energy Office Buildings in Malaysia

Lim Chin Haw, Sohif M, Yusof Sulaiman & Kamaruzzaman Sopian

The optimum decision making based on impact of façade design variables: shading devices, WWR, Glazing type, SHGC, VLT, U-value and daylight controls, on total energy consumption in commercial green buildings

Vishal Garg

Simulating the thermal efficiency of earth-air heat exchanger (EAHX) for low-energy cooling and heating applications in buildings

Abdullahi Ahmed, Kenneth Ip & Andrew Miller

Green building movement in India: status, issues and opportunities

Jyotirmay Mathur & Vishal Garg

Enhancing ecosystem services for energy system reliability and resilience

Andrea Athanas & Nadine McCormick

Eco-efficiency of contemporary green roofs compared to traditional ventilated flat roofs on the Mediterranean climate.

Ramos Sanz & H. Coch

Analyses of Calendar Architecture of Solar Observatory of Naghsh-e-Rostam, Iran

Ahadollah A'zami

Solar Retrofit of a Residential House in Southern Serbia

Sanja Stevanović & Mila Pucar

Applicability of Enclosed Fog Systems in Rural Development Region (Study on Toshki-Egypt Region)

Ahmed A. Medhat, A. Fahim

Simulation-Based Optimisation for Low Energy, High Comfort and Cost Effective Designs of Buildings and HVAC Systems

Ala Hasan, Mohamed Hamdy, and Matti Palonen

16:00 – 17:30

Special Technical Session S2:

Chair: Mr Bill Watts and Dr Mark Jentsch

Sustainable standards in the construction regulations for the development of houses with zero emissions

Silvia Arias

IR learning remote attachment for occupancy sensors to switch off air-conditioner during unoccupied hours for saving energy

Vishal Garg, Niranjana Keesara & Surekha Tetali

AMVIC Passive Office Building – Bragadiru Romania

Ruxandra Crutescu, Marin Crutescu, Viorel Badescu & Nadine Laaser

Effect of Passive Cooling Strategies in Relation to Radiant Heat on Malaysian Residential Buildings

Allen Lau Khin Kiet, Lim Chin Haw, Sohif Mat, Yusof Sulaiman & Kamaruzzaman Sopian

Built Environment Energy Storage – The Challenges for Heat Pumps and Air-Conditioning

Neil J Hewitt

On the performance of a new ventilation strategy for office space

B. Moshfegh

Experimental Investigation of Heat Recovery System in Leisure Center

M.M. Abo Elazm, A.F. Elsafety & A.I. Shahata

A case study of the effect of insulation materials on HVAC energy consumption

M.M. Abo Elazm, A.F. Elsafety & A.M. Elharidi

Natural Ventilation Inside a Room Model With Openings on Two Adjacent Walls

N. M. Giurguis

Minimizing the effect of solar radiation upon residence building in hot arid regions (Iraq)

Ghanim Kadhim AbdulSada & Munadhila Kassim Ahma

Integral design workshops for ZEB

Wim Zeiler, Elphi Nelissen, Duncan Harkness & Rinus van Houten

Approaching Buildings as a case study for an integrated renewable energy concept

Yannis Tripanagnostopoulos, Evanthie Michalena & Vilma Zotou

Tunable U-Values for Energy Efficient, Low Carbon Building Envelopes

M.S. Imbabi & E. Elsarrag

Photovoltaic Technology Sessions

Monday 27

Cinema Hall

11:00 – 12:30

Technical Session A: PV Technology

Chair: Xavier Mathew

Solar Power as a major technology for power generation in the World: The case of Enel Green Power

Marco Raganella, Gioacchino Bellia, Gigliucci Gianluca
Solar Business Development Enel Green Power; Italy

Extracting the model parameters of organic and inorganic illuminated solar cells

M. Chegaar^{1,2*}, K. Bouzidi¹, M. Aillerie³ & J. P. Charles³

¹ Department of Physics, Ferhat Abbas University, 19000, Setif, Algeria

^{2*} CoRE-RE, King Fahd University of Petroleum & Minerals, Dhahran 31261, Saudi Arabia

³ LMOPS, Université Paul Verlaine Metz & Supélec, 2 rue E. Belin, 57070, Metz, France

Overall energy performance of semi-transparent single-glazed photovoltaic (PV) window for a typical office in Hong Kong

Lin Lu*, Kin Man Law, Renewable Energy Research Group, Dept., of Building Services Engineering, The Hong Kong Polytechnic University, Hong Kong, China

A quantitative explanation for annealing effect and In incorporation on internal quantum efficiency of dilute nitride N⁺ GaAs/p Ga(In)Nas solar cells

Hosen Eshghi, Faezeh Mohammad Beigi, Department of Physics, Shahrood University of Technology, Shahrood, 316-36155, Iran

A state-of-the-art solar simulation facility for multidisciplinary research on sustainable technologies

Jayanta Deb Mondol, Aggelos Zacharopoulos & Mervyn Smyth

Centre for Sustainable Technologies, School of the Built Environment, Univ.. of Ulster, Northern

Effect of Hydrogenated Microcrystalline Silicon Oxide ($\mu\text{-SiO:H}$) in Amorphous Si Based Thin Film Solar Cells

M. Ikbal Kabir¹, Zahari Ibrahim², Kamaruzzaman Sopian² and Nowshad Amin^{1,2,3}

¹Department of Electrical, Electronics and System Engineering, Universiti Kebangsaan Malaysia,

²Solar Energy Research Institute (SERI), Universiti Kebangsaan Malaysia,

³(CEREM), College of Engineering, King Saud University, Riyadh, Saudi Arabia

A Novel Low cost, High Productive and Energy Efficient Monocrystalline Silicon Industrial Wet Texturization Process

S. Singhal¹, S. Kamat¹, A. Jain¹, R. Malik¹ and P.K. Basu^{2,3}

¹Lingaya's Institute of Management and Technology, Haryana, India

²Echelon Institute of Technology, Faridabad, Haryana, India

14:00 – 15:30

Technical Session B: CdTe/CIGS Thin Film Solar Cells

Chair: Ammar Munir

Characterization of CdTe Thin Films and Devices Using Scanning Probe Microscopy and Electron Backscatter Diffraction

H.R. Moutinho, C.-S. Jiang, R.G. Dhere, and M.M. Al-Jassim

National Renewable Energy Laboratory, Golden, CO 80401, USA

Overview of the present status and research opportunities for CdTe thin film Solar Cells

Ramesh Dhere, National Renewable Energy Laboratory(NREL),Golden, USA

Thickness Dependence of the Bandgap Energy and Urbach Tail for CdS Thin Films

Prepared by Vacuum Evaporation

Shadia J Ikhmayies* and Riyad N Ahmad-Bitar

University of Jordan, Faculty of Science, Physics Department, Amman , Jordan.

Recent progress in scaling up highly efficient Cadmium free Cu-chalcopyrite thin film solar cells and modules

Ahmed Ennaoui, Institute of heterogeneous material systems, Helmholtz-Center Berlin for Materials and Energy, Berlin, Germany

Investigation of ZnO buffer layer on physical properties of ITO thin films on different substrates for photovoltaic application

N. Manavizadeh^{1,2}, S. Bagherzadeh^{1,3}, A. Khodayari² E. Asl-Soleimani¹

¹Thin Film Laboratory, ECE Department, University of Tehran, Tehran, Iran,

²Islamic Azad University, Pardis Branch

³Islamic Azad University, Science and Research, Branch of Tehran, Iran

An Investigation of the Bandgap and Urbach Tail of Vacuum-Evaporated SnO₂

Thin Films

Shadia J Ikhmayies, and Riyad N Ahmad-Bitar, University of Jordan, Faculty of Science, Physics Department, Amman, Jordan.

Experimental validation of the optimum photovoltaic angle in urban environment areas

Kosmas A. Kavadias*, John Karagiannis, Dimitrios Zafirakis and John K. Kaldellis

Lab of Soft Energy Applications & Environmental Protection, TEI of Piraeus, Greece

16:00 – 17:30

Technical Session C: PV Systems and Power Generation

Chair: Larry Kazmerski

FPGA-Based implementation of an intelligent MPPT for photovoltaic module

Messai, A. Mellit† and H. Mekki, *CRNB Ain Oussera, Djelfa, Algeria*

Operation of photovoltaic cells to supply electricity

Hadi Besharat, Mehdi Barimani, Seyed Hossein Moradi, and Mohammad Alami

Mazandaran Regional Electric Company, Iran

Need for Inclusion of Outdoor Monitoring and High Voltage Bias Testing of Modules in the Current Best Practices for PV Module Reliability Testing

Neelkanth G. Dhere, Shirish A. Pethe, and Ashwani Kaul, Florida Solar Energy Center,

University of Central Florida, USA

Utilization of solar cells for feeding of agricultural products dryers in rural area: Cameroon case

César Kapseu^{1*}, Jean Benjamin Bidas¹, Désiré Djacba Tere², Louis Matos², Bernard

Mabiala³. Zéphirin Mouloungui⁴

^{1, 2} Ngaoundere, Cameroon, ³University Marien NGOUABI, ⁴(INRA), Toulouse, France

Network-Enabled Intelligent Photovoltaic Arrays

Colin T Mallett , Founder and CEO, Trusted Renewables Ltd, Friston, Saxmundham, UK

Utilization of Combined Renewable Energy System(Solar/Wind) for Electrical Energy

Production and Applications in Remote Areas in Malaysia

Salem Bin Qadhi and Riza Muhida, Kuala Lumpur, Mechanical Engineering Department,

Faculty of Engineering, University of Aden, Yemen

Silicone Materials for Photovoltaic Module Assembly

Axel Giesecke. Dow Corning Corporation, Germany

11:00 – 12:30

Technical Session D: Thin-film PV and NOVEL/HYRID CONCEPTS*Chair: Stan Bull***Photovoltaic-Thermal (PVT) Technology – The Future Energy Technology**

Mohd Yusof Othman, Adnan Ibrahim, Goh Li Jin, Mohd Hafidz Ruslan and Kamaruzzaman Sopian, Solar Energy Res. Inst., Universiti Kebangsaan Malaysia

Computational Modeling of Two-Phase Flow Through a Sea Wave Energy Converter (SWEC)

Mustafa TUTAR, Mechanical and Manufacturing Department, MGEP Mondragon Goi Eskola Politeknikoa, Mondragon, Spain,

Gul BULDU & Hüseyin CANBOLAT, Mersin Univ., Elec., Eng. Dept., Mersin, Turkey

Harnessing the CdTe technology for developing wide band gap alloys for applications in tandem solar cells

Omar S. Martínez, Xavier Mathew, Centro de Investigación en Energía, Universidad Nacional Autónoma de México, Temixco, Morelos, México

New Textile-Based Hybrid Photovoltaic / Thermal (PV/T) System

Dr. Barbara Pause, Textile Testing & Innovation, LLC, Longmont, Colorado, USA

Utilization of the thermal energy potential in photo voltaic solar panels

Aleksandar Georgiev¹, Rumen Popov², Ivan Valkov³, Naiden Kaloferov⁴

¹Dept. of Mechanics, Technical University of Sofia, Branch Plovdiv, Bulgaria

²Dept. of Optoelectronics and Laser Technique, TU of Sofia, Branch Plovdiv, Bulgaria

³ Dept. of Mathematics, Physics and Chemistry, TU of Sofia, Branch Plovdiv, Bulgaria

⁴ Solarity Bg Ltd , Iosif Shniger 2, 4000 Plovdiv, Bulgaria

Feasibility Study of a PV-Diesel Hybrid Power System with Battery Backup for a village

Shafiqur Rehman and Luai M. Al-Hadhrami

(CER) and Centre of Research Excellence in Renewable Energy (CoRERE) , Research Institute, King Fahd University of Petroleum and Minerals, Box 767, Dhahran-31261, Saudi Arabia

An Interactive Monitoring System for PV-Wind Hybrid Energy System

Mustafa Engin, Ege University Ege Tech., Electronics Technology Izmir, Turkey

Theme: Photovoltaic electricity as an alternative solution to rural electrification: The case of the Northern part of Cameroon

Tchoffo Houdji E1; Tchaya Guy1; Kamta Martin2, Haman Djalo1, Kapseu C.3

¹ Department of Renewable Energies, ISS –University of Maroua ,Maroua Cameroon

² Electric Department of IUT- University of Ngaoundere, Ngaoundere /Cameroon.

³ Department of Processing engineering, ENSAI-Univ., de Ngaoundere Ngaoundere Cameroon

Design and Implementation of a Digitally Controlled Photovoltaic System using Series Connected Buck Converters

Jaouad Tanouti, Abdelhak Aziz and El Mamoun Aziz

Lab., of Elec., Eng., and Maintenance, Higher School of Tech., Univ., of Mohammed I, Morocco

Study of Temperature Influence on Productivity of Photovoltaic Modules In Annual Aspect

D.A. Abdullaev*, Post-graduate student O.F. Tukfatullin**

*UNICON.UZ, Uzbekistan, **Physical-Technical Institute, Uzbekistan

14:00 – 15:30

Technical Session E: PV Technology and World Market

Chair: Ramesh Dhere

Comparative analysis of non-toxic abundant materials for photovoltaics applications

Abadulmajeed Salhi, Ahmed Alyamani, and Fahhad Alharbi*

King Abdulaziz City for Science and Technology, Riyadh, Saudi Arabia

Influence of substrate temperature on physical properties of Nanocrystalline Indium Oxide Thin Films

S.M.Rozati. Z.Bargebidi, Department of physics, University of Guilan, Rasht , Iran

Optical, structural and electrical properties of nanostructure thin films of tin doped indium oxide

S.M.Rozati. Z.Bargebidi, Department of physics, University of Guilan, Rasht , Iran

Influence of PV Generators on the Host Grid in Case of Unbalanced Faults

Ali Hamzeh, Damascus University / Syrian Engineers Society, Damascus, SYRIA

The structural, electrical and optical properties of ZnO/Al₂O₃ multilayer deposited on PET substrate by RF sputtering

N. Khazamipour, Sh. Kabiri-Ameri-Aboutorabi, E. Asl-Soleimani

Thin Film Laboratory, ECE Department, University of Façaderan, Façaderan, Iran

16:00 – 17:30

Technical Session F: CPV and Grid Parity

Chair: Bhushan Sopori

Luminescent Solar Concentrators – a low cost photovoltaics alternative

W.G.J.H.M. van Sark, Utrecht University, Copernicus Institute for Sustainable Development and Innovation, Utrecht, the Netherlands

Positive power market value for grid-connected roof-top solar power in Sweden

Andreas Molin, Patrik Rohdin and Bahram Moshfegh

Division of Energy Systems, Dept., of Management and Eng., Linköping University, Sweden

Photovoltaic-Grid Connection in the UAE: Technical Perspective

Ammar M. Al-Sabounchi, Esmaeel Al-Hammadi, Saeed Yalyali, and Hamda A. Al-Thani

National Energy and Water Research Center (NEWRC)

Abu Dhabi water and Electricity Authority (ADWEA), Abu Dhabi, UAE

Innovative concentrating photovoltaic systems: options towards very high efficiencies

Alaeddine Mokri, Mahieddine Emziane

Masdar Institute of Science and Technology, Laboratory for Solar Energy Materials and Devices, PO Box 54224, Abu Dhabi, UAE

Performance analysis of a new Concentrating Photovoltaic System under the real climatic conditions of Abu Dhabi

Alaeddine Mokri, Mahieddine Emziane, Masdar Institute of Science and Technology, Laboratory for Solar Energy Materials and Devices, Abu Dhabi, UAE

The design and experimental characterization of isolated cells photovoltaic module under compound parabolic concentrator

D. I. Paul, M. Smyth, A. Zacharopoulos and J. Mondol

Centre for Sustainable Technologies, School of The Built Environment, University of Ulster, Jordanstown Campus, Shore Road, Newtownabbey, Co. Antrim, BT37 0QB, UK

Comparison of V-trough and asymmetric CPC linear dielectric concentrating PV covers for building integration

Aggelos Zacharopoulos, Trevor Hyde, Jayanta Mondol, Mervyn Smyth, Centre for Sustainable Technologies, University of Ulster, UK

11:00 – 12:30

Technical Session G: PV installation and Niche applications

Chair: Falah Hasoon

Training and Certification of PV Installers in Europe, The PVTRIN Project

Theocharis Tsoutsos, Environmental Engineering Dept., Technical University of Crete, Crete
 Zacharias Gkouskos, Renewable and Sustainable Energy Lab, Env. Eng., dept, Stavroula
 Tournaki, Renewable and Sustainable Energy Lab, Environmental Engineering dept., Tech.,
 University of Crete

How to deliver Sustainable Rural Energy Services with Solar Home Systems: Management and Institutional Design Issues

Xavier Lemaire, MSM, Warwick Business School, Coventry, United Kingdom

Exploitation of Solar Energy in the Field of Telecommunications: The Mobile Telephony

Professeur Fatiha Youcef Ettoumi*, Tarik Kaouane, Laboratoire de Traitement d'Images et
 Rayonnement- Univ., of Sciences and Technology– USTHB, Algiers, Algeria

Potential of Solar Irrigation Pumping in Bangladesh

A.K.M. Sadrul Islam¹ and M. Ahiduzzaman²

¹Mechanical and Chemical Engineering Department, Islamic University of Technology, Gazipur
²Bangladesh Rice Research Institute, Gazipur, Bangladesh

Economic Analysis of a Brackish Water Photovoltaic-Operated (BWRO-PV) Desalination System

Ali Al-Karaghoul and Lawrence L. Kazmerski, NREL, Golden, USA

Design Construction and Study of Direct and Indirect Natural Circulation Solar Dryer in Costa Rica- II.

Shyam S. Nandwani, Lab. De Energia Solar, Depto. De Fisica, Univ., Nac., Heredia, Costa Rica.

Comparison study to select an optimum photovoltaic pumping system (PVPS) configuration upon experimental performances data of two different DC pumps tested at Ghardaïa site

A BOUTELHIG, A.STAMBOULI, Y BAKELLI, Photovoltaic pumping team, Applied Research
 Unit for Renewable Energies, URAER/Ghardaïa, Algeria

Dust Deposition Impact on Photovoltaic-Assisted Water Pumping Systems

John K. Kaldellis¹, Panagiotis Fragos¹, Marina Kapsali¹, Dimitrios Zafirakis¹ and Georgios
 Spyropoulos¹

¹ Soft Energy Applications & Environmental Protection Lab, TEI of Piraeus, Greece

Feasibility study on the use of single-crystalline PV Installations in Cyprus

G. Panayiotou¹, A. Koukkouli² and S. Kalogirou¹

¹. Department of Mechanical Engineering and Materials Science and Engineering,
 Cyprus University of Technology, Limassol, Cyprus, ². SW Solarwatt Ltd, Nicosia, Cyprus

14:00 – 15:30

Special Technical Session S1:

Chair: Ramesh G. Dhere

Conducted EMI Issues in Grid-connected PV System Interface

Djilali Hamza, Mei Qiu and Praveen Jain

ePOWER group, Electrical & Computer Eng., Dept., Queens University, Kingston, Ontario,
 Canada

Technical configuration, economic feasibility and environmental impacts of a 100 MW, solar PV plant in desert areas in the Abu Dhabi Emirate

C. Zhang, W.G.J.H.M. van Sark, M. van Schalkwijk*

Utrecht University, Copernicus Institute for Sustainable Development and Innovation, Science, Technology and Society, Heidelberglaan 2, 3584 CS Utrecht, the Netherlands

*Centrosolar Benelux BV, De Prinsenhof 1.05, 4004 LN Tiel, The Netherlands

Investigation of Band Gap Grading in Cu(In,Ga)Se₂ Solar Cells by Numerical Modeling

Puvaneswaran Chelvanathan¹, Mohammad Istiaque Hossain¹ and Nowshad Amin^{1,2,3}

¹Department of Electrical, Electronics and System Engineering, Universiti Kebangsaan Malaysia,

²Solar Energy Research Institute (SERI), Universiti Kebangsaan Malaysia,

³(CEREM), College of Engineering, King Saud University, Saudi Arabia

Development and evaluation of a microcontrollers-based stand-alone photovoltaic system operating in complex physical environments

J.TANOUTI, A. AZIZ, and E.M. AZIZ, Electrical Engineering and Maintenance Laboratory

Higher Institute of Technology – Oujda, Morocco

Modeling of nnipp+ CIGS solar cell

M. Y. Sulaiman, M. A. Alghoul, K. Sopian, L. C. Haw, S. Mat, N. Amin

Solar Energy Research Institute Universiti Kebangsaan Malaysia Bangi, Malaysia

Luminescent Solar Concentrators: The way forward for improving PV?

Yao-Tsung Hsieh and Mahieddine Emziane, Masdar Institute of Science and Technology, Abu Dhabi, UAE

Novel designs for enhanced performance PV and CPV cells

M. Emziane, Masdar Institute of Science and Technology, Abu Dhabi, UAE.

Improvement of an indirect solar dryer by the temperature control

Tchaya Guy B1., Tchoffo Houdji E1, Kamta Martin², Haman-Djalo¹, Kapseu C.3 ¹ Department of Renewable Energies, ISS –University of Maroua ,Cameroon ²Electric Department of IUT, University of Ngaoundere, Ngaoundere, Cameroon. ³ Department of Processing engineering, ENSAI, University of Ngaoundere, Ngaoundere Cameroon.

Separation and Removal of Toxic Metals Ions From Aqueous

Solution by Polymer Inclusion Membranes PIMS

N.Benosmanea, B.Guediurab, S.Hamdic, M.Hamdia, B.Boutemeura

a Laboratoire de Chimie Organique Appliquée (Groupe Hétérocycles Associé CRAPC). Faculté de Chimie. Université des Sciences et de la Technologie Houari Boumediène. bDivision réacteur / Centre de Recherche Nucléaire de Draria , CRND, Algérie

c Laboratoire de Biochimie-Purpan, Institut Fédératif de Biologie, CHU Toulouse 330, avenue de France – Toulouse cedex 9, France.

A New Approach for the Growth of ZnO Nanostructures for Light Trapping in Solar Cells

A.A. Abdallah, N. Tabet and S.A.M. Said

Center of Research Excellence in Renewable Energy (CoRE-RE), King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia

Study on the Optimum Tilt Angle and Orientation for Photovoltaic Panels and Feasibility

Study of One axis-two positions tracking Solar PV in Palestine

Shadi Nabil Albarqouni, Information Technology Department , University College of Applied Science, Gaza, Gaza Strip, Palestine

Prospects of Cadmium Zinc Telluride (CZT) in a Graded Band Tandem Solar Cell

M. Mannir Aliyu¹, M. A. Matin^{1,3}, M. Y. Sulaiman² and N. Amin ^{1,2,3}

¹Department of Electrical, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia

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

³(CEREM), College of Engineering, King Saud University, Riyadh 11421, Saudi Arabia

Benefits of CIGS/CdTe Hetero-Structure Based Solar Cells by SCAPS

Mohammad Istiaque Hossain¹, Puvaneswaran Chelvanathan¹ and Nowshad Amin^{1,2,3}

¹Department of Electrical, Electronics and System Engineering, Universiti Kebangsaan Malaysia,

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

³Center of Excellence for Research in Engineering Materials (CEREM), College of Engineering, King Saud University, Riyadh 11421, Saudi Arabia

Ultra Thin Absorber Layer with Novel Back Contact for High Efficiency CdS/CdTe Solar Cells

M. A. Matin^{1,4}, M. Mannir¹, M. A. Islam¹, M. Y. Sulaiman² and N. Amin^{1,2,3}

¹Department of Electrical, Electronics and System Engineering, Selangor, Malaysia

²Solar Energy Research Institute (SERI), Universiti Kebangsaan Malaysia, Selangor, Malaysia, (CEREM), College of Engineering, King Saud University, Riyadh 11421, Saudi Arabia

⁴Department of Electrical & Electronics Engineering, Chittagong University of Engineering and Technology (CUET), Bangladesh

Solar cell technologies used in the built environment: Overview and recommendations

Ali Asghar & Mahieddine Emziane

Masdar Institute of Science and Technology, PO Box 54224, Abu Dhabi, UAE

Modeling of GaAs solar cell performances

M. Abderrazak, F. Djahli, I. Bouchama, Dept., of Elec., Univ. of Ferhat Abbas, Setif Algeria

Ocean Energy Sessions

Monday 27

Al Jaheli conference room 2

11:00 – 12:30

Technical Session A: Challenges and opportunities for the growth of ocean energy

Chair: Prof A S Bahaj – University of Southampton, UK

Invited paper: Status of wave energy conversion

A F O Falcão

Greening Blue Energy: managing the risks and opportunities of offshore renewable energy to the marine environment

N McCormick and D Wilhelmsson

Invited paper: Design of tidal turbine arrays

L Myers and A S Bahaj

Measuring underwater background noise in high tidal flow environments

M R Willis, M Broudic, C Haywood, I Masters and S Thomas

14:00 – 15:30

Technical Session B: Novel ocean energy technologies

Chair: J Bard – ISET, Germany

Laminated Reinforced Concrete Technology for the SPERBOY Wave Energy Converter

A Tucker, J M Pemberton, D T Swift-Hook, J M Swift-Hook, M J Burrett and J W Phillips

A novel heat engine thermodynamic cycle for OTEC application

H Semmari, D Stitou and S Mauran

Design of an oscillating-arm of double-stroke mechanism to harvest ocean wave energy

P Viggiani

Assessment of the annual energy production of a heaving wave energy converter sliding on the mast of a fixed offshore wind turbine

V Baudry and A Babarit

16:00 – 17:50

Technical Session C: Into the water

Chair: L E Myers – University of Southampton, UK

Invited paper: Marine Renewables: The challenge of going offshore

J Bard

Marine current turbines: collecting clean energy from the seas

P Fraenkel

Investigating the wake of a marine energy converter through flume channel testing

S Rose, A Grant and C Johnstone

Experimental tank testing of contra rotating marine turbines to quantify the parameters influencing system dynamic response

S Ordonez-Sanchez, C Johnstone and A Grant

11:00 – 12:30

Technical Session D: Ocean energy technology and resource assessment

Chair: A F O Falcão – IST, Portugal

Invited paper: A techno-economic analysis of tidal energy technology

C M Johnstone, D Pratt, J A Clarke and A D Grant

Tidal current power in Indonesia? A resource assessment for the Alas Strait

L S Blunden, N S Aziz, A S Bahaj

Methodology for estimating wave power potential in places with scarce instrumentation in the Caribbean Sea

S Ortega, AF Osorio, P Agudelo and JI Velez

Comparison of the seas of Turkey for wave energy potential

A K Üstün, B Tığlı, and M Kurban

14:00 – 15:30

Technical Session E: Assessing the performance of ocean energy devices

Chair: C M Johnstone – University of Strathclyde, UK

Invited paper: EquiMar: The need for protocols in ocean energy conversion

D Ingram, G Smith, J-F Dhedin, C Johnstone and J L Villate

Failure rates assessment for power take-off train of tidal current turbine

C Iliev and D Val

Laboratory testing schema for linear generators used in ocean wave energy conversion

M Blanco, M Lafoz, L García-Tabarés, G Navarro, G Pinilla and C Vázquez

Energy capture assessment of a point absorber wave energy device

A Tabaei and M H Nokob

16:00 – 17:30

Technical Session F: Advanced computational characterisation of ocean energy devices

Chair: D Ingram – University of Edinburgh, UK

Transient BEMT characterisation of tidal stream rotors with combined tidal flows and waves

I Masters, J C Chapman, J A C Orme, M R Willis and A J Williams and T N Croft

Unsteady wake characterisation for arrays of tidal current turbines

TR McCombes, CM Johnstone and A Grant

Performance evaluation of a direct drive wave energy converter using CFD

M Zullah, D Prasad, M Ahmed and Y Lee

Investigating environmental issues related to operation of tidal stream turbines using a BEM-CFD model

A J Williams, N Croft, I Masters and M R Willis

Wind Energy Sessions

Monday 27

Seer Bu Nair

11:00 – 12:30

Technical Session A:

Chair: Mr Martin Alder

Solar energy in Morocco : reality and perspectives

Nfaoui, Essiarab, Sayigh

Projected Avoided Costs of Conventional Power Plants in Libya Compared to Costs of Wind Energy

El-Osta, Abuzend, Borass, Ekhlal

Exploitation of Wind Energy for Algerian Electricity Production

Himri, Agus Setiawan, Draoui, Himri

Wind Energy Development in Iran- An overview

Tabarjafar, Abbaspour, Ibrahim Nattaj Jelowdar, Khakbazan

14:00 – 15:30

Technical Session B:

Chair: Dr Don Swift-Hook

Critical aspects in the design of a small-size Darrieus wind turbine

Ferrari, Bianchini

Study of blockage effects on the performance of twisted three-bladed airfoil shaped & twisted three-bladed straight shaped H-Darrieus rotors

Biswas, Gupta

Vertical Axis Wind Turbine with Power-Augmentation-Guide-Vane for Urban High Rise Application

Pan, Abdullah, Chong, Naghavi, Poh

Performance measurement of a two-bladed helical Savonius rotor

Bhaumik, Gupta

A study of the improvement of the performance of straight bladed vertical-axis wind turbine

Sekiya, Ueki, Nishizawa, Ushiyama, Suzuki, Taniguchi

16:00 – 17:30

Technical Session C:

Chair: Prof Hasan Mfaoui

Site assessment for off-shore wind farm construction

Al-Hamdani

Floating offshore power farm using renewable energy sources

Timofeev, Kartashev, Platonov, Trub, Valdman

Transnational offshore wind farms: harmonized regulation needed?

De Corte

Modes of response of an offshore wind turbine with directional wind and waves

Philippe, Babarit, Ferrant

Ester Transformer Fluids – A Total Solution to Windpark Transformer Technology

M & I Material Ltd

11:00 – 12:30

Technical Session D:

Chair: Dr Don Swift-Hook

Aeroelastic Modeling and Analysis of Wind Turbine Blades

Hajj

Simulation of wind turbine airfoil in a two line wind tunnel using computational fluid dynamic

Mohammadian, Mahmoodi

CFD analysis of an airfoil shaped two-bladed H-Darrieus rotor made from Fibreglass Reinforced Plastic (FRP)

Roy, Biswas, Gupta

14:00 – 15:30

Technical Session E:

Chair: Dr Muhammad R. Hajj

Feasibility Study on Introduction of Wind and Solar Hybrid System for Rural Areas in Mongolia

Nemoto, Chen, Tuvshinbaatar, Ushiyama

Islands Electrical Situation: increasing the integration of PV and Wind Energy Plants in using the hydraulic potential: case study in Corsica

Notton, Lazarov, Stoyanov

Optimization of energy autonomous wind-photovoltaic hybrid systems

Zafirakis, Kaldellis, Kavadias

Optimization of a hybrid system

Kamoun, Hédi, Siwar

16:00 – 17:30

Technical Session F:

Chair: Dr Don Swift-Hook

Lebesgue integral inspired estimation of 5 minute wind energy output

Ridley, Boland, Filar

Advanced control for wind turbine by using high performance wind speed observer

Bezzazi, Ayyat, De Saxcé, El Bakkali, Khamlichi, Vivas Venegas

Influence of building geometry on microeolic installations in urban context

Ferrari, Balduzzi, Bianchini, Carnevale, Chesi

Evaluation of noise impact on the basis of acoustic noise emissions measurements for onshore wind farms

Garakis, Kaldellis

Initial Considerations and Planning for the installation of Wind Farms in the Province of Neuquen, Argentina.

Biancucci

11:00 – 12:30

Technical Session G:

Chair: Prof John Kaldellis

The impacts of global climate changes on the wind power in Brazil

Pereira, da Cruz Segundo, Lyra, Martins, Pes

Research of the wind energy resources distribution in the Baltic region

Shipkovs, Bezrukov, Bezrukovs, Pugachev, Silutins

Seawater wind powered pumped hydro for baseload power generation

Idriss, Said

Wind-based combined electricity and clean water production for remote islands

Kondili, Kaldellis, Tiligadas

An Experimental Study of the Shapes of Rotor for Horizontal-axis Small Wind Turbines with and without Winglet

Ejiri, Suzuki, Taniguchi, Nishizawa, Ushiyama

14:00 – 15:30

Special Technical Session S1:

Chair: Prof Hasan Nfaoui

Modeling of a Photovoltaic/Wind/Hydro Storage system in view to increase the grid penetration rate of renewable energy sources

Notton, Lazarov, Stoyanov

Cost analysis of renewable energy for power supply for remote area in Yemen : a case study for Socotra Island

Bin Qadhi, Alkaf, Muqbel

Wind Resource Assessment in Kuakata, Bangladesh

Sadrul Islam, Alam, Bhuiyan

Feasibility of Wind Energy Utilization in Dohuk city on north of Iraq.

Kamil. M. Yousif, Dept of Physics, Dohuk University, Dohuk, Iraq.

The study of wind characteristics and energy potential

Keshtkar, Berimavandi, Salajegheh

Size optimization of wind-based pumped hydro storage systems based on economic criteria

Kapsali, Anagnostopoulos, Kaldellis

16:00 – 17:30

Special Technical Session S2:

Chair: Dr Don Swift-Hook

Wind Turbine Emulator using microcontroller

Benzaoui

Output Voltage Control of a Wind Generation Scheme using Neural Networks

Abdulsada, Abbas, Abusief

Optimization of wind turbine airfoil shape using genetic algorithm

Mahmoodi, Ar, Jafari

Effect of the Wake behind Wind Rotor on Optimum Energy Output of Wind Farms

Husien, Dekam, El-Osta

Comparative study of a three-bladed airfoil chord & a three-bladed straight chord h-darrieus rotor

Biswas, Gupta

A Development of High Performance Horizontal - axis Small Wind Turbine
Arakawa, Miyashita, Nishizawa, Elson, Ushiyama

Solar Thermal Sessions

Monday 27

Al Jaheli Theatre

11:00 – 12:30

Technical Session A: COLLECTORS

Chair: Prof Kamaruzzaman Sopian

Effects of the load level on the performance of a two-phase water heating thermosyphon

O. García-Valladares*, A. Ordaz-Flores b and V.H. Gómez

Effect of Colored Absorbers on the Performance of a Built-In-Storage Type Solar Water Heater

K.M.A.Nakoa, M.R. Karim, S.L. Mahmood, M.A.R. Akhanda

A building integrated solar collector

Fabrice Motte, Gilles Notton, Christian Cristofari, Jean-Louis Canaletti

A New Thermal Performance Factor for Solar Air Collectors

Donatien Njomo, Michel Daguénet

Experimental investigation of the performance of a novel heat exchanger for solar hot water systems

Jayanta Deb Mondol*, Mervyn Smyth & Aggelos Zacharopoulos

14:00 – 15:30

Technical Session B: COCENTRATING SOLAR POWER I

Chair: Prof Phil Eames

Optical performance evaluation of a 2-D and 3-D novel hyperboloid solar concentrator

Imhamed M. Saleh Ali, Tapas K Mallick, Peter A Kew, Tadhg S O'Donovan, K S Reddy

Influence of Solar Energy Resource Assessment Uncertainty in the Levelized Electricity

Cost of Concentrated Solar Power Plants in Chile

Matías Hanel, Rodrigo Escobar

Solar Thermoelectric Power Generation in Cyprus Selection of the Best System

Soteris A. Kalogirou

Heat and fluid flows analysis in solar chimney power plants

Salah Larbi, Toufik Chergui, Amor Bouhdjar

Diamond Like Carbon (DLC) for Parabolic Trough Collector Absorber Coating

Soteris A. Kalogirou and Pantelis C. Kelires

Technical and economic assessment of a solar Dish Stirling power plant in Algeria

Mohamed Abbas, Boussad Boumeddane, Nouredine Said and Ahmed Chikouche

16:00 – 17:30

Technical Session C: COCENTRATING SOLAR POWER II

Chair: Prof Soteris Kalogirou

Transient Analysis of Integrated Shiraz Hybrid Solar Thermal Power Plant

Iman Niknia, Mahmood Yaghoubi

Methodology for performance evaluation of fixed focus moving solar concentrators

Indu R. Pillai, Ajay G. Chandak, Vishal Sardeshpande and Sunil K. Somani

Parametric studies on parabolic trough solar collector

Sudhansu Sekhar Sahoo, Suneet Singh and Rangan Banerjee

Distributed CHP Generation from small size concentrated Solar Power

L. Crema, A. Bozzoli, E. Wackelgard², B. Rivolta, S. Hesse, M. Luminari, D. Hislop⁶, B. Restall

Research Needs for Solar Thermal Energy Deployment in UAE

Matteo Chiesa, Peter Armstrong

Tuesday 28

Al Jaheli Theatre

11:00 – 12:30

Technical Session D: SOLAR COOLING I

Chair: Prof Angelo Freni

Thermal Cooling- cooling/dehumidification using heat

Afshin Afshari

Numerical Results on Operating Parameters Influence for a Heat Recovery Adsorption Machine

Chekirou W, Karaali A., and Boukheit N

Analysis and Simulation of a Novel Hybrid Double Absorption Open Cycle Solar Space-conditioning System

Yogender Kumar Yadav

Empirical Study of Cooling for Building in Hot and Humid Climatic Condition of Solar Assisted Desiccant Cooling System

Arfidian Rachman*, Sohif Mat, Muhammad Yahya, Chin Haw Lim, Yusof Sulaiman, Baharuddin Ali and Kamaruzzaman Sopian

Analysis of a solar assisted vapour compression cooling system

Andrea Chesi, Giovanni Ferrara, Lorenzo Ferrari, Fabio Tarani

A novel solar-powered adsorption chiller

Angelo Freni, Giulio Santori, Alessio Sapienza, Fabio Polonara³, Giovanni Restuccia, Roger Thorpe and Robert E. Critoph

The Future of Solar Powered Cooling Systems

Henk De Beijer

14:00 – 15:30

Technical Session E: SOLAR COOLING II

Chair: Mr Henk De Beijer

A solar-powered liquid desiccant cooling system (LDCS) to adapt crop production to climate change

G. Lychnos, A. K. Hossain and P. A. Davies

Ejector technologies for solar refrigeration

Dmytro Buyadgie, Sergii Nichenko, Olexiy Buyadgie

Future Perspectives of Solar Air Conditioning in UAE

Farzad Jafarkazemi

Solar driven thermal energy storage for domestic applications in heating and cooling

L. Crema, A. Bozzoli, G. Cicolini, A. Zanetti

A 4-bed Carbon-Ammonia Gas-Fired Heat Pump Concept – Technical Overview and Potential for Carbon Reduction

Robert Critoph

Building integrated evaporative cooling: From natural porous materials to hydrophilic nanocomposites

Eftychios Vardoulakis and Dimitris Karamanis

16:00 – 17:30

Technical Session F: APPLICATIONS FROM DEVELOPING COUNTRIES

Chair: Prof Robert Critoph

Potential use of solar energy in Ngaoundere, Cameroon: Application to the drying of sheanut kernels (*Vitellaria paradoxa* Gaertn.)

Divine Nde Bup, Charles Fon Abi, César Kapseu, Dzudie Tenin, Clergé Tchiegang

Improvement of an indirect solar dryer by the temperature control

Tchaya Guy B., Tchoffo Houdji E, Kamta Martin, Haman-Djalo I, Kapseu C.

Contribution of Phase Change Materials in Solar Cooking

A.Saxena, Nitin Agarwal, Nitesh Kumar, Parul Gupta

Hybrid solar-biomass power plant for India

J. D. Nixon, Z. Engineer, A. K. Hossain, P. A. Davies

Potential of Solar Energy Use and Reducing Greenhouse Gases Emissions in South-West of Iran

Maryam Saki Pour, Abdolrazzagh Paabinejadian, Mohammad Sadegh Sekhavt Jou, Taraneh Taheri

Sorption Isotherms of Sheanuts Kernel and Canarium Pulp: Application to Products Dehydration

Gilles Bernard Nkouam, Danielle Barth, Michel Dirand, César Kapseu

Design of a concentrating unglazed transpired air-heating (CUTAH) system

Nasif Shams

Wednesday 29

Al Jaheli Theatre

11:00 – 12:30

Technical Session G: RELATED SOLAR THERMAL TOPICS

Chair: Dr T.K. Mallick

Improvement of Hybrid Photovoltaic Thermal Solar Energy Systems

M.R. Karim, Arafat A. Bhuiyan, R.I. Zaman, M.A.R. Akhanda

Analysis of a Planar Solar Thermophotovoltaic System

Ishtiaq Maqsood and Mahieddine Emziane

Recent Advances in Photovoltaic Thermal Solar Collectors

Kamaruzzaman Sopian*, Mohd Yusof Othman, Adnan Ibrahim, Roonak Daghigh and Goh Li Jin

The Challenge and Opportunity for Feed in Tariffs (FiTs)

Tony Book, Riomay

Solar Energy Storage - Critical Success Factors for Passive Houses in Ireland

Shane Colclough, Philip Griffiths, Mervyn Smyth

Enhanced heat transfer techniques in Erythritol phase change material (PCM) to improve the coefficient of performance (COP) of solar powered LiBr/H₂O absorption cooling system

Francis Agyenim

14:00 – 15:30

Special Technical Session S1: COLLECTORS/MATERIALS I

Chair: Dr P Davies

New development of spectrally selective solar-absorbing coating for low and intermediate temperature applications

Ewa Wäckelgård, Tobias Boström, Andreas Mattsson, Shuxi Zhao, Luigi Crema, Ruben Bartali and Barbara Rivolta

Smart Windows: Optical Modelling and Evaluation

S. M. Naqvi and P. C. Eames

Development of a Solar Membrane Distillation Seawater Desalination Pilot Unit for fresh water production

Giorgio Micale, Andrea Cipollina and Lucio Rizzuti

Performance and Social Aspect of LED based Solar Home System: Bangladesh

Arafat Ahmed Bhuiyan* and A.K.M. Sadrul Islam

Performance Analysis of a Heat Pump Dryer

Ronak Daghigh, Adnan Ibrahim, Mohd Hafidz Ruslan, Kamaruzzaman Sopian

CFD simulation of the thermal performance of slinky heat exchangers for ground source heat pumps

Yupeng Wu, Guohui Gan Anne Verhoef, Pier Luigi Vidale and Raquel Garcia Gonzalez

16:00 – 17:30

Special Technical Session S2: COLLECTORS/MATERIALS II

Chair: Dr J.D. Mondol

Solar Desalination by Humidification and Dehumidification Process: A model for optimizing the global system

Karim Bourouni and Wajdi Haj Ali

Omnigen: providing electricity, food preparation, cold storage and pure water using a variety of local fuels

A. K. Hossain, R. Thorpe, P. Vasudevan, P. K. Sen, R. E. Critoph and P. A. Davies

Solar Energy Application for Desalination of Caspian Sea Water

Fuad Mammadov

Solar Desalination by Humidification and Dehumidification Process:

Karim Bourouni and Wajdi Haj Ali

Pumped Solar Heating System with a Vertical Flat-Plate Collector

Ó. Martín, R.N. Farrugia and C. Yousif

Quantification of Energy Produced from an Evacuated Tube Water Heater in a Real Setting

Ahmad Hourri, Hussein Salloum, Anwar Ali, Abdel Karim Abdel Razik, Laila Hourri

Performance analysis and testing of solar thermal water disinfection system

Ibrahim.E. EL-Seesy, M.A.Mohamad and M.El Faisal El Refaie

Radiation and Solar Materials Sessions

Wednesday 29

Al Jaheli Conference Room 2

11:00 – 12:30

Technical Session G:

Chair: Prof John Boland

Role of resource assessment for an increasing use of solar energy

Elke Lorenz, Jethro Betcke, Annette Hammer, Detlev Heinemann, Oldenburg, Germany

Introducing GRADRAD: The Greater Durban Radiometric Network

Ms Khulisile (R) Kunene, Mr Michael (J) Brooks and Lance (W) Roberts

How typical are my data?

Roger (B) Webby and John Boland, Adelaide, Australia

Estimating Hourly Global Solar Radiation from Satellite Images and Artificial Neural Network

Nald (E) Erusiafe and Michael (A C) Chendo

Determination of direct normal irradiation over Thailand from GMS5 satellite data

Serm Janjai, Jarungsaeng Laksanaboonsong, Prasan Pankaew, Itsara Masiri, Worrappass Promsen

Artificial Neural Network Applied to Daily UV Solar Radiation Estimating In Pernambuco

Sérgio Leal, Tiba Tiba Chiguera and Ruben Ruben Piacentini

One Dimensional Photonic Crystal-Based Absorber/Emitter Systems Fabricated in Amorphous Matrices

Hysam Abu-Safe, Lebanese American University, Lebanon

Characteristics of selective solar absorber coating using sol gel technique

Nahed El-Mahallawy, Madiha Shoeib, Tarek Khalil and Yehia Ali

Soft-chemical synthesis of the protonic compounds with layered structure

R Nedjar, W Ouagagui and H Rebbah

14:00 – 15:30

Special Technical Session S1:

Chair: Dr Roger B Webby

Density Functional Study of a New Fluorescent Photochromic Compound

Dalila Hammoutene

Bayesian statistical analysis applied to solar radiation modelling

Philippe LAURET

Mapping of Direct Solar Irradiation in the State of Alagoas

Chiguera Tiba, Victor M Pimentel, and Jose L Souza

Comparison of Solar Radiation in Marsaxlokk, Malta and Valladolid, Spain

Charles Yousi, Gorka Oña Quecedo, Julia Bilbao Santos

Development of models for estimating diffuse fraction of global solar radiation from satellite data for a tropical environment

Serm Janjai and Pinporn Phaprom

A Comparison and Estimation of Diffuse Solar Radiation

Sued Ilyas, Allama Iqbal Open University, Islamabad, Pakistan

New Innovative sun tracking system using image processing and neural network

Omar (O) Badran and Ismail Arafat, Jordan

Analysis of solar radiation measurements at Ghardaia area, Algeria

M. Kacem (GK) Gairaa, M Said (BS) Benkaciali, Algeria

Assessment of Downwelling Surface and TOA Solar Radiation Fluxes in Cameroon using a Parameterized Solar Radiative Transfer Model in a Molecular Atmosphere

Donatien Njomo and Leonard Akana Nguimdo

Assessing the Aerosol Optical Thickness in Cameroon Using Ground-Based Solar Radiation Measurements

Donatien Njomo and Leonard Akana Nguimdo

Study of Relationship between (UV) Radiation and Nitrogen Oxides (NO_x) and Ozone (O₃) IN Homs city ? Syria During 2008

R Al-Abdellah and Y Jauher, J Al-Kurde, Syria

16:00 – 17:30

Special Technical Session S2:

Chair: Prof John Boland

A study of the concentrations of Uranium in the phosphorus fertilizers using Nuclear track detector (CR-39)

Rajih (Rasheed) Mahmoud

Estimate of atmospheric pollutants coming from vehicles in Yaounde City

Pierre Meukam, André Talla and Inoussah Moungnutu

Development of Microhydro in Indonesia

Erwin Sadirsan, Indonesia

Global Energy policies for Sustainable Development

Azim sahatimehr, Tohid Sahatimehr and Karim Moosazadeh

Fabrication of Silicon Doped Indium Detector by Laser Radiation Method

Nabil (J) Al-Bahnam, Rahman (I) Mahdi and Yassin (H) Mahmood

InAsSbP-based diode heterostructures and photoconductive cells with quantum

Karen (Martin) Gambaryan, Vladimir Aroutiounia and Vardan Harutyunyan

Prediction of Monthly Average Daily Global Solar Radiation in Al Ain City ? UAE Using Artificial Neural Networks

Ali Assi, Maitha Al Sahmisi and Mohammed Jama, UAE

Predicting Global Solar Radiation on Horizontal Using Sunshine Duration in Abu Dhabi Emirate ? UAE

Ali Assi and Eng. Mohammed Jama, UAE

Building Comprehensive Meteorological Data Files with the Use of Artificial Neural Networks

Kosmas A. Kavadias, Athanasios G. Paliatsos, Konstantinos P. Moustris, Ioanna K. Larissi and Aristides Bartzokas, Greece

Solar Food Warming for the Educational Centres to Save conventional energy and reduce Global Warming.

Shyam S. Nandwani, Costa Rica

WREN Pioneers – 2010

It has been our proud tradition over the last twenty years for WREC/WREN to honour some the most outstanding scientists, engineers, innovators and industrialists who through their publications, discoveries and innovations have made an outstanding contribution to the progress and acceptance of renewable energy technologies. This year is no exception and we are pleased to bestow the title of WREN Pioneer on:

H E Dr Hilal Al-Hinai



H.E. Dr. Al-Hinai is the Secretary General of the recently established Research Council in Oman. He was the Director of the Water Research Center and an Associate Professor in the Department of Mechanical and Industrial Engineering at Sultan Qaboos University. He obtained his B.Eng. in Manufacturing Systems Engineering from Bradford University in 1986 and joined Sultan Qaboos University as a Maintenance Engineer. He obtained his M.Sc. (1988) and Ph.D. (1992) from the Applied Energy Department at Cranfield Institute of Technology in the UK. Beside his teaching duty,

he was appointed as an Academic Assistant for Innovation and Industrial Links at SQU.

Dr. Al-Hinai's research interests are in Solar Energy and Water Desalination with emphasis on solar water desalination and on Solar Cooling Techniques for Buildings in Hot Climates.

Professor David Elliott



Prof. David Elliott BSc, Ph.D has been active in the renewable energy field in the UK and EU since the 1970s, when he set up Renew, which is still one of the leading journals in the area. www.natta-renew.org. He worked for many years at the Open University where he pioneered courses and research on renewable energy policy and he has published extensively on that topic including 12 books, more than 40 reports and over 50 academic journal papers. He was an early supporter of WREC and has contributed regularly to WREC events and activities around the world. He is currently Emeritus Professor of Technology Policy at the Open University and

teaches courses on energy policy at a number of UK Universities including Bath, Cranfield, Kingston, Loughborough, Southampton, Warwick and UEC Falmouth.

Mr. Henk de Beijer



Henk de Beijer has been trained in the field of Mechanical/Construction Engineering, subsequent to which his focus was on thermodynamics, innovation and industrial marketing. He has worked extensively in the field of Renewable Energy. For the last twenty-six years he has been the Director of his company, De Beijer RTB BV (Strategy, Development and Renewable Energy systems) and MKB Winstpunt (Management and Innovation Consultancy for Small and Medium Enterprises). More recently, he has been Director of Inalfa-Ares Energy Systems BV, focusing on Renewable Energy products, SWEAT (Salt Water Energy Accumulation and Transformation), which is a joint venture with ECN/NUON, and Franklin Business Centre BV.

Mr. de Beijer is a member of the Dutch Engineer Association (KIVI/NIRIA), Verein Deutschen Ingenieure (VDI), European Heat Pump Association (EHPA) and the International Solar Energy Society (ISES), and an avid participant of the World Renewable Energy Congress. Over the last twenty-five years De Beijer Raadgevend Technisch Bureau BV has been involved in the Netherlands & International Energy Agency (IEA) and European Union (EU) Energy research programs. Studies were conducted in the future development of the field of district heating and cooling, heat pumps, energy storage and solar energy. Product development and testing is one of the main areas of focus of De Beijer RTB, which works closely with Universities, TNO, ECN and industrial companies. Some of the awards received include Ministry of Economic Affairs Industrial Award for the production and development of environmentally friendly products (heat pumps and solar systems) in 1995, Winner of the competition “Best Heat Pump System” from the Dutch Heat Pump Association in 1997, Dutch Building Association award for the Eco-Nok Ridge Solar system in 2003 and Economic Affairs Southern Netherlands winner of the Industrial Design and Engineering for Heat Pumps and District Heating Systems in 2004. The more recent innovations are the Solid Absorption Heating and Cooling system SWEAT BV and the Solabcool (cooling with heat) JAGA (B).

Professor Philip C Eames



Philip C. Eames is Professor of Renewable Energy and Director of the Centre for Renewable Energy Systems Technology at the University of Loughborough, UK. He was previously Director of the Warwick Institute for Sustainable Energy and Resources (WISER) where he held the Chair of Energy Efficiency and Conservation in the School of Engineering at the University of Warwick, UK. Before this he was Professor of Solar Energy Applications, directed the Centre for Sustainable Technologies and was Director of the Built Environment Research Institute within the School of the Built Environment at the University of Ulster. He has led research that has secured major advances in the dynamic simulation of the thermophysics of a broad range of building façade components (particularly very-low heat loss glazing and building integrated photovoltaics), thermal energy storage systems and concentrating solar energy collectors. He has also developed new experimental performance characterization techniques for building components. Research awards of in excess of £4 million have been awarded to support his research from funding bodies including the EPSRC, EU, and TSB. He has published over 170 papers and supervised 13 PhD students to successful completion.

Professor Eames chairs the Solar Thermal Technical Panel for the World Renewable Energy Congress. He has a B.Sc. in Engineering Mathematics from the University of Bristol and a M.Sc. in Energy Conservation and the Environment and PhD in Applied Energy from Cranfield University, UK.

Dr. Falah S. Hasoon



For more than 25 years, Dr. Falah Hasoon is actively involved in research in the areas of material growth and characterization of photovoltaic materials and device processing. Dr. Hasoon has Master degree in Physics from University of Bath, England, UK and he has Ph.D. degree in Electrical Engineering from University of Salford, England, UK. Dr. Hasoon is a senior scientist at National Renewable Energy Laboratory, and he is a research professor at Colorado School of Mines, in Golden, Colorado, USA. He has more than 120 scientific research publications and he is an inventor of four US patents.

The long term experience of Dr. Hasoon covers wide range of material growth techniques such as vertical Bridgeman method, iodine vapor transport technique, solution growth method, physical vapor deposition, and closed space sublimation.

Whereas, his experience in the growth of semiconductor thin film materials includes growth of ternary and multinary semiconductor compounds such as CdTe/CdS, CuInGaSe₂/ZnO, CuInGaSe₂/ZnMgO. Furthermore, Dr. Hasoon's interests include design and fabrication of growth and characterization research tools. His current primary research interest is the growth and characterization of silicon material and devices.

Dr. David S. Renné



Since 1991 Dr. Renné has been at the National Renewable Energy Laboratory, developing and managing programs on renewable energy resource assessment and analysis, and the integration of resource data into GIS. His expertise is in solar resource assessments, and he is currently the Operating Agent of an International Energy Agency Solar Heating and Cooling Programme Task titled “Solar Resource Knowledge Management”. He also currently manages the US Department of Energy’s Solar Resource Assessment activities funded under the Solar Energy Technology Program. Much of his recent work at NREL has been for international organizations such as the US Agency for International Development and the United Nations Environment Program. In these programs he has managed solar and wind energy resource assessments and the development of GIS tools for a number of countries, including several countries in Asia and South Asia, Central

America, South America, and Africa.

Dr Renné is currently the President of the International Solar Energy Society (ISES), which was founded in 1955 and whose membership represents a major global network of renewable energy scientists and practitioners. ISES has over 50 Sections around the world, including the American Solar Energy Society, for which Dr. Renné is a past board member. He also serves as an Associate Editor in the area of Resource Assessment for the Solar Energy Journal, the primary scientific magazine of ISES.

Prior to coming to NREL he was a senior program manager at Pacific Northwest National Laboratory, where he was heavily involved in both domestic and international wind studies, such as the U. S. Candidate Site wind measurement program, and a wind resource assessment study for Egypt. Dr. Renné received his Masters and PhD at Colorado State University in Atmospheric Sciences and Earth Resources.

Professor John K. Kaldellis



He holds a Mechanical Engineering Degree from the National Technical University of Athens (NTUA) and a Business Administration Diploma from the University of Piraeus. He obtained his PhD from NTUA sponsored by Snecma–Dassault, France. He is currently the Head of the Mechanical Engineering Department and the Head of the Soft Energy Applications and Environmental Protection Laboratory (since 1991) of the Technological Education Institute of Piraeus. Prof J.K. Kaldellis is also the Scientific Director (for TEI of Piraeus) of the MSc in Energy program organized by Herriot Watt University and TEI of Piraeus.

Prof Kaldellis expertise focuses in technological developments in the energy and environmental sector and has accumulated significant academic and professional experience in various contemporary energy and environmental issues. More specifically, his research interests include feasibility analysis of energy applications and projects, technological advancements in wind, hydro and solar energy market, hybrid energy-energy storage systems, social attitude towards renewable energy applications and environmental technology-atmospheric pollution. Prof Kaldellis has participated in numerous research projects, funded by the European Community, European/Greek Industries and the Greek State.

Prof Kaldellis has published six books concerning the Renewable Energy Applications and the Environmental Protection and he is the author of almost one hundred (100) papers in International peer reviewed Journals and more than 250 papers in International Technical/Scientific Conferences. He is also the Editor of International Conference Proceedings and Books related with RES applications and Hybrid Energy Systems. During the last decade he is also Member of the Scientific Committee of the Hellenic Society of Mechanical-Electrical Engineers as well as member of the organizing and scientific committee of several national and international conferences.

He is currently Associated Editor (Member of Editorial Board) of the Renewable Energy International Journal and reviewer in several International Journals in the Energy and Environment Sector, like *Renewable Energy*, *Energy Policy*, *Solar Energy*, *Desalination*, *Energy*, *Applied Energy*, *Wind Energy*, *Journal of Global Energy Issues*, *Journal of Environmental Management*, *IET Renewable Power Generation*, *Journal of Power and Energy*, *Journal of Electrical Power and Energy Systems*, *Fuel*, *Journal of Environmental Planning and Management*, *Bioresource Technology*, *Fresenius Environmental Bulletin*, *Journal of Hydrogen Energy*, etc.

Dr. Gouri Datta



Dr Datta is presently Senior Reader in University of Delhi India. She completed her M Sc in Physics from Calcutta University and PhD in Solar energy applications from Indian Institute of Technology, Delhi in 1984. Her research work has mainly been on solar air and water heaters, drying, solar radiation, storage, collector testing and passive solar architecture. She has more than eighty publications in international journals and conferences in these fields and has completed several research projects including an international project on solar energy with Italy. Dr Datta has attended more than 50 International conferences and has been an invited/keynote speaker on several occasions, as well as been an organizer for many Solar energy workshops. She has had many foreign research assignments; including the SERC fellowship to work in SERC, Borlange Sweden (1990) on Solar collector geometries at high latitudes. Dr Datta was awarded the prestigious TRIL fellowship from ICTP Trieste Italy (1998) to work with ENEA Rome on Solar passive architecture, and the DST fellowship (1996) to work in MNES lab in

Gurgaon on Solar collector testing. She is also a member of 8 International Societies including WREN and is on the executive of ICTP. Dr Datta is also interested in Physics and Philosophy and has presented papers on correlation between ancient Hindu religion and solar science in ancient times in India- particularly on astronomy and cosmology. At present she is Convener in the Gender Sensitization committee at her institute, which has initiated her to study the plight of women in India's rural areas. She is making efforts to reduce the vulnerability of these rural women and empower them by sustainable energy use.

Dr. Chuck Kutscher



He is a Principal Engineer and Manager of the Thermal Systems Group at the National Renewable Energy Laboratory in Golden, Colorado where he currently leads the research on parabolic trough solar collector systems. He is a Past Chair of the American Solar Energy Society (ASES) and was General Chair of the SOLAR 2006 national solar energy conference held in Denver, which led to the 200-page ASES report, *Tackling Climate Change in the U.S.*, available at www.ases.org/climatechange. He is an adjunct professor at the University of Colorado at Boulder, where last fall he developed and taught a course entitled "Climate Change Solutions." He also writes a monthly column about addressing climate change for *SOLAR TODAY* magazine. He has given many invited presentations around the country on renewable energy and

climate change. He was the keynote speaker for the first "Colorado's New Energy Economy" Conference in October 2007, and this past January he received the 2008 Governor's Excellence in Renewable Energy Individual Award.

WREN / ALI SAYIGH TROPHY

We are proud to announce that the third award of the WREC/ALI SAYIGH Trophy will take place on the Gala Dinner on Tuesday 28 September 2010 at the

Armed Forces Officers Club and Hotel, Abu Dhabi



The next award will take place at WREC XII, May 2012 in Denver, USA

Environment Agency – Abu Dhabi

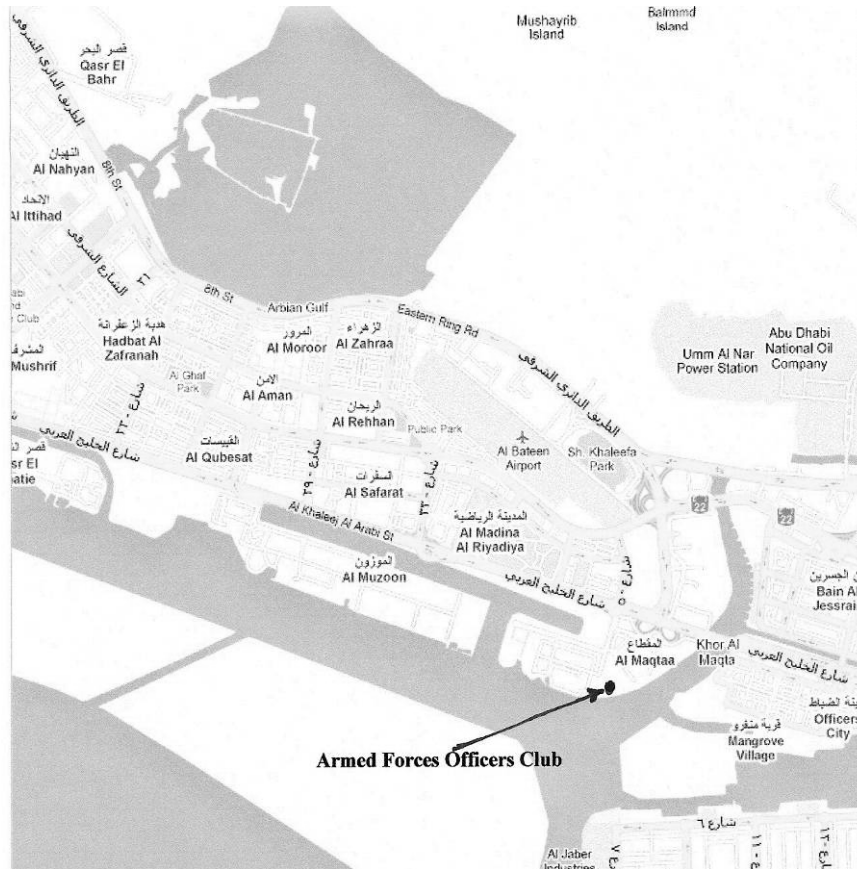


The Environment Agency – Abu Dhabi (EAD) is a governmental agency that was established in 1996. We are committed to protecting and managing biodiversity, providing a clean environment and promoting Sustainable Development in the Emirate of Abu Dhabi. We are also committed to giving environmental protection, regulation and natural resources conservation a high priority on the national agenda. We provide a direction for Government, business and the community to build environmental considerations into the way they plan and live without compromising Abu Dhabi development. In 2008, EAD was awarded ISO 9001 for Quality; ISO 14001 for Environment and ISO 18001 for Health and Safety.

Contact Details:

Environment Agency – Abu Dhabi (EAD)
P.O Box: 45553
Tel: +971 (2) 4454777
Fax: +971 (2) 4463339
E-mail: customerservice@ead.ae
Al Mamoura Building A, Murour Road
Abu Dhabi, United Arab Emirates

CONGRESS LOCATION



IMPORTANT NOTES

All presentations must be delivered as Powerpoint slides

Half an hour presentation, do not show more than	35 slides
Twenty minutes presentation	25 slides
Fifteen minutes presentation	18 slides
Ten minutes presentation	12 slides
Five minutes presentation	07 slides

WREN/SAYIGH Trophy is going to be awarded to Germany at the GALA DINNER

Pioneering Awards will be presented to the winners at the GALA DINNER

Appreciation Awards to some Institutions will be presented at the Opening Ceremony

Armed Forces Club and Hotel, Abu Dhabi, United Arab Emirates
PROGRAMME AT GLANCE

TIME	Saturday September 25	Sunday September 26	Monday September 27	Tuesday September 28	Wednesday September 29	Thursday September 30	REMARKS
09:00 – 17:00	Registration	Registration	Registration	Registration	Registration	-----	Cong. Office
08:30 – 10:30			PLENARY 4 & 5	PLENARY 6 & 7	PLENARY 8 & 9	PLENARY 10 & 11	* Al Fehaidi Hall ** Al Muraiji Hall
09:00 – 10:30	WREN * Council Meeting	ENERGY ** & GENDER					
		OPENING CEREMONY					
10:30 – 11:00			COFFEE	BREAK			
11:00 – 12:30		WORK- SHOP	PLENARY 1	Technical Session A	Technical Session D	Technical Session G	PLENARY 12 & CLOSING CEREMONY
12:30 – 14:00			LUNCH	BREAK			
14:00 – 15:30			PLENARY 2	Technical Sessions B	Technical Sessions E	Sp Technical Sessions S1	
15:30 – 16:00			COFFEE		BREAK		
16:00 – 17:30			PLENARY 3	Technical Sessions C	Technical Sessions F	Sp Technical Sessions S2	
19:30 – 22:30	Main Reception &	WREN Dinner***			GALA DINNER		***** M.Club

Note: Three mile race in open for all participants, 25 September, assemble in front of Abu Mousa Restaurant at 7:45 am