WSSET-NEWSLETTER

Volume 1, Issue 1
Newsletter
April 2009

WSSET World Society of Sustainable Energy Technologies NEWSLETTER

INSIDE THIS ISSUE:

Welcome remarks from the President of WSSET

I am delighted to announce the publication of the first issue of the WSSET Newsletter. Quarterly issues will provide information on membership activity, latest news on sustainable technologies, research/development and demonstration projects, funding/collaboration opportunities and events (e.g., conferences/seminars/workshops).

As a non-profit organization, WSSET has an important role in consolidating practical partnerships between academic, government and industrial organisations as well as promoting sustainable technologies worldwide.

Membership of the WSSET provides many benefits including:

- Access to the International Journal of Low Carbon Technologies (IJLCT) at a reduced subscription fee;
- Free access to WSSET database on renewable energy/sustainable technologies;
- Site visits to see latest low energy home facilities at the University of Nottingham and others;
  Attendance of Sustainable Energy Technologies Conferences, seminars and workshops;
- Match making events for collaboration between universities and industry;
- WSSET newsletter and membership certificate;
- Assistance with R&D projects and license agreements for new technologies developed by universities.

Contributions to the newsletter from WSSET members and other organisations are warmly welcomed. I should be grateful for articles on their research or industrial activities, as well as topical articles on developments in sustainable technologies. Members are also invited to comment on the newsletter to ensure it remains relevant to their interests.

Professor Saffa Riffat
President of WSSET

Technologies and products

MASDAR CITY

The World's first zero carbon, zero waste city powered entirely by renewable energy sources.

MOST ADVANCED SOLAR LIQUID DESICCANT SYSTEM AT MASDAR CITY LATEST NEWS

Masdar City located at Abu Dhabi is the most ambitious sustainable development in the world today - it will be the world's first zero carbon, zero waste city powered entirely by renewable energy sources. Masdar City will occupy an area of about 6 km2 and will be built over seven years at an investment in excess of US$20 billion

An important innovation relevant to this project is a large scale, solar-powered central liquid desiccant cooling system, which has a latent load over 40000 tons. The system offers a means to address the challenge of cooling and dehumidification using renewable energy in extremely humid climates.

The first pilot system with a cooling capacity of about 10 to 20 kW has been developed by a China based company, Hangzhou ISAW Technology Corporation.

The system represents the most advanced process of solar liquid desiccant cooling. It features zero carryover of the liquid desiccant due to the unique indirect gas/liquid core (IGLC)

It has a high enthalpy efficiency between fresh air (FA) and return air (RA) of over 70% due to a revolutionary enthalpy device, micro heat/mass cell cycle core (MHM3C). The mechanism of the core is based the natural cycle using liquid desiccant and membrane.

The system has a high thermal COP of over 2 and uses a low grade heat source such as 60 to 80 C hot water from large volume produced solar collectors.

Mr Yijun Yuan, M.D, ISAW

Demand Response in Micro Grids with Plogg and ZigBee SE Profile

Energy Optimizers Limited is the maker of the Plogg, a plug in unit that meters electricity consumption at the point of use, the mains socket. In addition the Plogg acts as a load controller, by switching off a connected appliance either in response to an external command or by activation of the inbuilt timers, and as a data logger, recording the electrical performance of the appliance over time. The Plogg contains embedded wireless communications with the option of either ZigBee or Bluetooth protocols and was launched in version 2.0 in the spring of 2008. An R&D programme

is currently underway to enhance the role of the Plogg device as an integral part of a domestic and commercial Demand Response System (Plogg DRS) with other programmes is due to start later in 2009.

The project is led by the MFKK Invention and Research Center Services Ltd., in Hungary, a private research company, with expertise in research and development. The company has recently been involved in 15 European Union funded R&D projects as participant and coordinator. The expected start date of the project is late 2009.

For further information contact:
www.plogg.co.uk

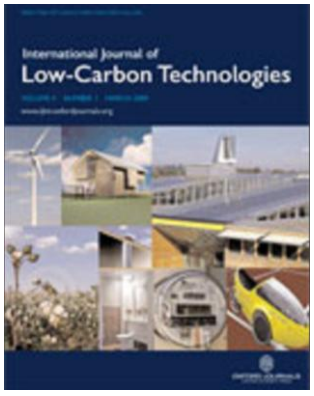
Shaun Merrick, Managing Director, Plogg Ltd, UK.

Latest news

Re-launch of the International Journal of Low Carbon Technologies (IJLCT)

The International Journal of Low-Carbon Technologies has been re-launched under the publication of the prestigious publisher, 'Oxford University Press'.

The Journal aims to disseminate new research on low-carbon technologies and encourage international collaboration between researchers. It also provides a strong platform for collaboration and exchange of information between universities and industry to encourage commercialization of new low-carbon technologies. These activities are supported by the Journal's Editorial Board, which includes eminent members from 28 countries.



To Subscribe: www.ijlct.oxfordjournals.org.

Topics covered include:

† Sustainable design for buildings/eco-cities

† Energy and the built environment

† Innovative design strategies

† Practical evaluation tools for urban sustainability

† Integration of renewable energy systems in building design

† Low and zero carbon houses and buildings

† Rainwater collection, recycling and treatment systems

† Passive heating/cooling design

† Innovative lighting and day-lighting systems

† HVAC systems and ventilation systems

† Glazing, window technologies and facade systems

† New insulation materials and techniques

† New building materials and recycling

† Smart metering and sensors

† Renewable energy in the built environment

† Community regeneration technology

Members of the WSSET will benefit from a discount on subscription rates to the Journal, and special issues will be published on key international conferences including the International Conference on Sustainable Energy Technologies (SET). The next SET conference will be held in Aachen, 31 August and 3 September 2009.

Researchers are encouraged to submit papers to the Journal. Four issues will be published each year and contributors will be provided with excellent support.

For more information on the Journal, including information on submitting your paper, please visit the Journal website at www.ijlct.oxfordjournals.org.

Prof. Saffa Riffat
Editor-in-Chief
University of Nottingham
UK
e-mail: saffa.riffat@nottingham.ac.uk

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Funding/collaboration opportunities

Technology Strategy Board

a) Energy Generation and Supply: Fuel cells and hydrogen technologies >leaflet
Expressions of interest by 23 April 2009

b) Energy Generation and Supply: Carbon Abatement Technologies
Opens June 15th 2009; expressions of interest by 23 July 2009

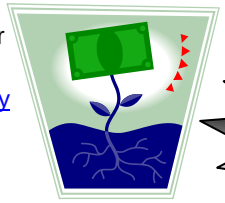
c) Monitoring of Demonstrator Buildings
Opening date to be determined

d) Retrofit for the Future
Opening summer 2009

For more information about the above and other TSB programmes please see: www.innovateuk.org/deliveringinnovation

2010 Energy Programme for EC Framework Programme 7

The programme covers a range of topics including photovoltaics, wind energy, concentrated solar power, bio-fuels, bio-mass, CO2 storage and conversion technologies. For further information please see: www.ec.uropa.eu/energy



Demonstration projects

Zero Carbon Houses, University of Nottingham Ningbo China (UNNC).

Zero Energy Housing Ningbo

ZedFactory Ltd will demonstrate Zero Carbon Houses at UNNC Campus. The design is based on the following:

Design statement: Our approach is to demonstrate that high quality urban design and well informed architecture can be environmentally driven and economically viable, as well as offering a better quality of life. The aim is to develop affordable housing for the Chinese market. According to current China national housing policy, 70% of all housing is regulated to be affordable housing smaller than 90 square metre.

Low-energy design: The Zero (fossil) Energy Development (ZED) standards used to produce our environmental designs, reduce energy consumption and energy loss to a point where the energy load can be met by renewable energy sources.

ZED standards have been researched and developed over many years and tested through numerous building projects.

For further information contact:
www.zedfactory.com

Creative Energy Homes

Six Creative Energy Homes will allow testing and demonstration of a range of new construction methods and energy systems. The houses are being constructed as a collaborative project between the School of the Built Environment and Stoneguard Ltd; Roger Bullivant, BASF, E.ON and Tarmac. Each home is unique and has been designed by leading architects in collaboration

with the School of the Built Environment. **The Stoneguard C60 House** reduces carbon emissions by 60% (to meet the UK Government's goal to reduce CO2 emissions by 60% by 2050): This house has been constructed on site using a light weight steel frame.

E.ON 1930s House: This home is designed to replicate a 1930s house. The house will allow for incremental step change modifications (in terms of insulation, glazing and energy systems) between Level 1 to Level 6 (zero carbon).

BASF House: This is a solar passive house designed to maximize the use of solar energy and use of a phase change material (Smart Boards) to enhance thermal mass and reduce overheating in summer.

Roger Bullivant House: This is a 60k House (i.e., a maximum budget of £60,000 is allocated to build the house) and is made of light-weight concrete panels. The house incorporates unique geothermal heat pumps/thermal energy storage.

Tarmac Houses: These form a pair of semi-detached houses (Codes: Level 6 and Level 4) which are designed for the social/affordable market. The houses use innovative materials of biological and recycled origin (houses constructed using zero Portland cement).

For further information please see: www.nottingham.ac.uk/sbe.

Research and Development Project

Photovoltaic cogeneration: Experimental analysis of different modules

Photovoltaic / Thermal cogeneration (PV/T) aims to utilise the same area to produce electricity and heat. The main problem of this technology is that solar cells are sensitive to temperature and their efficiency falls when temperature increases. Heat cannot therefore be collected at high temperature. Nonetheless, at moderate ambient temperatures there are benefits to be had for power generation. PV/T technology offer interesting prospects, particularly in view of recent economic incentives on renewable energies in Italy.

The main purpose of the test rig set at the Department of the University of Padova in Italy is to measure the thermal and electrical performances of a self-built PV/T glazed liquid cooled collector and to compare it with other state-of-the-art commercially available PV/T collectors.

The three collectors are set southward with a tilt angle of the three collectors are set southward with a tilt angle of 30° (as to get the maximum annual energy for a latitude of 45°). The test rig piping lines can be split into two circuits:

- The water storage tank circuit, kept between 12 °C and 14 °C using a 5 kW chiller. The chilled water before reaching the storage tank is sent to a plate heat exchanger via an automatic 3-way valve driven by a temperature controller. So, the chilled water mass flow rate through the plate heat exchanger is set to have a well defined collector circuit water temperature at the outlet of the heat exchanger;
- The collector circuit: The water at the outlet of the plate heat exchanger passes to the header where it is possible to send the water to the PVTWIN collector or/and to the COGEN/MSS collector and to partially by-pass the collectors through the by-pass line. In such a way it is possible to measure the inlet and outlet temperatures and the mass flow rate of the collectors on the two lines.

Each collector can be connected to a current-voltage measurement circuit to measure the electrical power produced by the PV collector. The outside ambient conditions (solar radiation, ambient temperature) and mass flow rates are measured.

For glazed systems, there is risk of high PV stagnation temperatures when no heat is removed from the collector during high solar radiation days.

It is potentially interesting to consider a PV/T panel made up of a PV layer (silicon cells incapsulated between two glasses or thin-film on a glass substrate) that replaces the cover glass of the flat thermal solar collector. The energetic and economic analysis done on a simulation model, taking into account the feed-in tariff granting system coupled to the tax deduction of the 55% of the capital costs applicable in 5 years, show a very profitable possibility of energy and economic savings using the proposed PV/T concept. An experimental analysis will be necessary to confirm such positive features.

Professor Renato Lazzarin,
Professor of Mechanical Engineering
Padova University, Italy

Events

China-UK Forum on Sustainable Energy and Environmental Technologies for Buildings

11-12 September 2009, Beijing, China

The proposed two-day workshop will be held at Beijing in September 2009, and will be hosted by Tsinghua University, China Academy of Building Research, Nottingham University, and ICUK. Representatives from the UK and China universities, companies and local government units will make presentations on their technologies and indicate their intentions for collaboration on research and development.

For further information, please contact Chang Le at the University of Nottingham (E-mail: le.chang@nottingham.ac.uk).

International Renewable Energy Conference -IREC-Africa
13th – 15th *October 2009, Nigeria*
info@irec-nigeria.com
www.irec-nigeria.com/2008/

SuDBE2009/IAQ2009
Sustainable Development in Building and Environment
28th~30th October, 2009
Chongqing University, Chongqing, China
http://www.sudbe2009.org

8th International Conference on SUSTAINABLE ENERGY TECHNOLOGIES

Welcome to Aachen, Germany

31st August to 3rd September 2009

Sustainable energy technologies and climate change are becoming central issues for academics, industrialists, governments and businesses. Besides the core topics from 2008, two additional fields have been added to the conference programme. The 8th International SET conference will take place in the unique, historic city of Aachen in Germany. We look forward to welcoming you in Aachen in 2009 at what will be a very successful event.

Prof. Dr.-Ing. Ingo Romey
General Chair – SET

Registrations are now open!
www.set2009.org

Deadline for Abstract Submission - Please submit your abstracts before 15th April 2009!

PUBLISHED BY: WSSET

School of the Built Environment

University Park Nottingham, NG7 2RD

United Kingdom

Tel:+44(0)1159513158

Fax:+44(0)1159513159

WSSET Memberships
For Information on becoming an WSSET Member: E-Mail:

Claire.Hardwidge@nottingham.ac.uk

See us at: **www.wsset.org**

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