

# WSSET World Society of Sustainable Energy Technologies NEWSLETTER

## Comments from WSSET Members

### 8th International Conference on Sustainable Energy Technologies, held in Aachen, Germany

#### INSIDE THIS ISSUE:

Latest news	2
Technology and products	2
Funding & Awards	3
Research and development projects	4



The SET2009 conference was held in Aachen organized by the University of Duisburg-Essen and the World Society of Sustainable Energy Technologies. Both the number and quality of the contributions exceeded everyone's expectations, and motivated a rich exchange of ideas among the scholars, government officials and entrepreneurs who attended

#### Delegates from different countries



The SET 2009 conference in Aachen, Germany. More than 350 delegates from over 40 countries attended the event

and innovation and face to face match-making sessions with international companies, universities and governments



Further presentations can be found under Keynote Speakers - Plenary and Technical Sessions on: [www.set2009.org](http://www.set2009.org)

#### Opening Speech from Vice Minister Dr Jens Baganz, Ministry of Economic Affairs and Energy, NRW



Dr Jens Baganz, Vice Minister at the Ministry of Economic Affairs and Energy of the State of North Rhine Westphalia

#### Main Key Note speech from Prof Dr Steffen Lehmann



Professor Steffen Lehmann, UNESCO Chair in Sustainable Urban Development for Asia and the Pacific Chair in Architecture, The University of Newcastle, (Australia)

The SET organizers would like to thank all participants for their valuable contribution to SET 2009 and would like to encourage you to join SET in 2010, Shanghai, China on August 25<sup>th</sup>-27<sup>th</sup> 2010.

Presentation on Technology transfer, international cooperation

**WSSET - New Industrial Members**

- [Pure Energy Centre Ltd](#)
- [Plogg Ltd](#)
- [Carbon Legacy Ltd](#)
- [Zenex Ltd](#)
- [Gleeds Ltd](#)



**9th International Conference on Sustainable Energy Technologies**

Shanghai, China  
August 25th-27th, 2010

Organizers:  
Shanghai Jiao Tong University  
The University of Nottingham

Co-organizers:  
Shanghai Society of Refrigeration  
Shanghai Society of Solar Energy  
University of Science & Technology of China  
Tsinghua University  
Hong Kong Polytechnic University  
University of Shanghai for Science and Technology  
Sungshin University  
Dalian University of Technology  
Zhejiang University

[www.set2010.org](http://www.set2010.org)

[www.set2010.org](http://www.set2010.org)



## Latest news

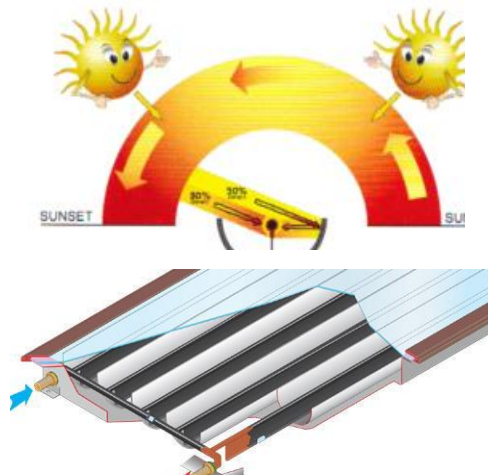
# Cut through in solar thermal energy !

We are the proud suppliers of SOLARFOCUS products and have been operating in the mature renewables market of Austria for over 25 years. Our tried, tested and proven technology is amongst the highest quality on the market.



SOLARFOCUS hold worldwide patents for their innovative, low-profile CPC collector, which combines the efficiency of evacuated tubes with the low profile and durability of a flat plate collector.

### Features of the SOLARFOCUS CPC collector



- Compound parabolic reflectors concentrate light to ensure even diffused and low angled light produces usable temperatures.
- Patented product with 35 years fantastic track record, providing consistent level of energy for hot water preparation and heating supply.
- Extremely flat construction (no back insulation required)
- Hermetically sealed.
- UV-resistant materials.

Oxford Renewables is able to design, supply, install, commission and service all SOLARFOCUS products.

For more information you can visit our website:

[www.oxfordrenewables.co.uk](http://www.oxfordrenewables.co.uk) or call us on **0845 313 8430**

## Technologies and products

### LOW AND ZERO CARBON REFURBISHMENT IT IS NOW POSSIBLE!

Developer David Hill of Carbon Legacy Ltd has now proved the point that Low and Zero Carbon refurbishment is possible even when dealing with the conversion of redundant farm buildings.

Using tried and tested solutions, three barns in East Leake Nottinghamshire dating back to 1880 have been successfully turned into three low and even Zero Carbon homes. They all have the ability to be Zero Carbon in use when the full package of renewable site-integrated technologies are combined with the simple but effective practices of good insulation, air tight structures and maximum use of thermal mass.

All three homes have between 7 and 15 months energy results to prove that theory can match reality when the right mix of renewables is chosen to fit the location and structures.

Common elements include: Super insulation with design heat losses of between 23-26W/m<sup>2</sup> and heat loss parameter's of 1.01 to 1.2, triple glazing 1.1u overall



Air tight construction with measured results between 2.47-3.5 m<sup>3</sup>/m<sup>2</sup>@50 Pascal's pressure;

Ground sourced heat pumps combined with solar hot water systems and under floor heating

1.5 kW and 10 kW Swift and Alvesta wind turbines; 2-5-3.5 kWp roof mounted PV on Barn's 1+2

Extensive use of thermal mass in floors, walls and ceilings; whole house ventilation with heat recovery;

Build costs range from £1,450-2,000/m<sup>2</sup>. The cost of achieving what many still say is not possible has been shown to be affordable. With falling renewable costs the picture will continue to get better.

Carbon Legacy is currently focusing on the design, supply and installation of renewables to residential and non-residential buildings as well as providing consultancy services.

For more information please visit the web site at [www.carbonlegacy.co.uk](http://www.carbonlegacy.co.uk)



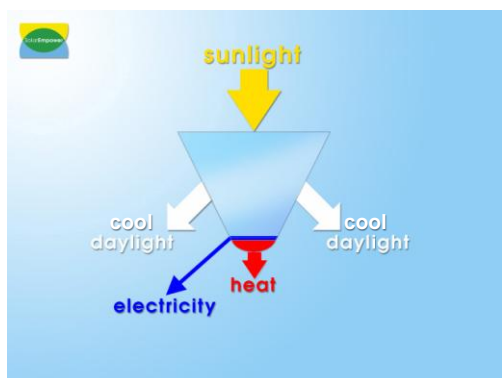
## Introducing into the Global market the brand New Thermaltricity



**S**olarEmpower Ltd was formed in 2006 to manufacture and further develop the solar technology of Optical Products Ltd. The latter created innovative routes to combining solar thermal and photovoltaic systems.

The multifaceted solar resource can now be cost effectively harnessed within the envelope of a building by optically splitting the sky into the region containing the sun's path and the rest of the sky.

The cool skylight is ideal for lighting the interior of a building, saving on artificial lighting and cooling cost, and carbon, whilst the direct sunlight cogenerates heat and electricity.



Additionally, innovative use of the cogenerated heat for ventilation, space heating and even cooling has the potential to change most buildings into net generators of energy.

13 years of development in collaboration with leading institutions such as Imperial College and the Fraunhofer Institute has already led to a fully accredited product - a highly versatile solar thermal vacuum tube system which can be installed on walls or flat roofs without loss of efficiency.

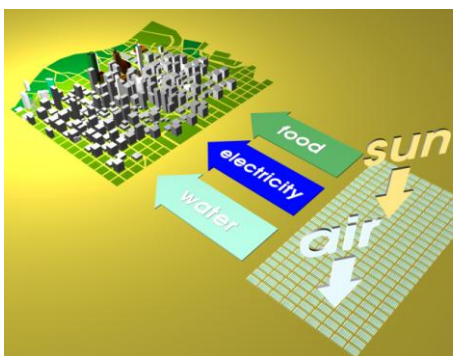
This very efficient solar heater can also drive a low temperature desalination system developed by a successful EU

project which now has led to integration with a water-from-air technology.

The synergetic synthesis of these cutting edge technologies, resulting from decades of dedicated work by many leading researchers, has very far reaching implications.

One novel way to reduce carbon emissions and provide nations with energy security would be to erect an array of contained-environment greenhouses with solar thermal vacuum tubes embedded in their double skin walls. This could provide a cost-effective way to provide electricity, food and water for communities, even in arid regions.

Independent investigation of the viability of this approach is currently being undertaken by Nottingham University and other leading establishments specialized in sustainability.



For full details about all solar thermal and photovoltaic products please contact at:

[admin@solarempower.com](mailto:admin@solarempower.com)

## FUNDING AND AWARDS

- 1- Energy Globe Awards 2009  
<http://www.energyglobe.com/energy-globe-award>
- 2- RCUK China Office Support UK-China Summer Schools programme. See  
<http://www.rcuk.ac.uk/news/080122.htm>
- 3- **FP7 Call for Proposal:**  
PEOPLE Calls: FP7-PEOPLE-2009-IIF  
Marie Curie International Incoming Fellowships (IIF)  
**Deadline:** 18 August 2009 at 17:00:00 (Brussels local time)  
<http://cordis.europa.eu/fp7/dc/index.cfm?fuseaction=UserSite.PeopleDetail>

## New energy source - bacteria harvest light!

An international team of scientists has determined the structure of the chlorophyll molecules in green bacteria that are responsible for harvesting light energy. The team's results one day could be used to build artificial photosynthetic systems, such as those that convert solar energy to electrical energy.



The image shows a hot spring in Yellowstone National Park, Montana, a site where bacteria containing chlorosomes can be found in the brightly colored mats

For more information visit:

<http://www.sciencedaily.com/releases/2009/05/090504171947.htm>

Debasish Choudhury

## BedZED concept to Shanghai Expo 2010!

ZEDfactory has been invited to take the BedZED concept to Shanghai Expo 2010, as the London example of Urban Best Practice. Two mixed use zero carbon urban blocks will be built on site to remain after the Expo as a permanent legacy.

Zero carbon status will be achieved as a model development type by a combination of state of the art energy efficiency and building integrated renewable energy technologies without resorting to offsetting or remote generation -

as pioneered by BedZED and ZEDfactory's subsequent projects.

The pavilion will remain after the Expo to inform future zero carbon development in China. The two plots assigned to ZEDFactory will provide around 2,400 square metre spaces. Facilities will include

catering and a lecture hall, which will be available for the whole six months duration of the Expo.

Visitor numbers are expected to reach 7 million.



BedZED principles, and a further 10 years experience of zero carbon design, will be used to demonstrate in Shanghai that a step change reduction in carbon footprint can be achieved. The buildings will increase quality of life for most ordinary citizens with a building that is climate appropriate to its locality.

Explaining the health, lifestyle and commercial benefits from this approach will be one of the pavilion's priorities.

Working with local small scale organic farms around Shanghai, food will be delivered to the Expo site in solar-charged electric vehicles - the ZEDcafe will demonstrate how food can be grown without using fossil fuel, delivered to the city without using fossil fuel, and with no packaging. An on-site biodigester will use food waste to produce biogas for Chinese cuisine, and the waste stream nutrients will be returned as fertiliser to the farms. An excellent local Shanghai chef will run the facility.

A range of events will take place during the six month period including various Zed carbon lectures and seminars, a climate change art festival and an eco fashion show. Various organizations that are at the forefront of developing zero carbon communities will be represented including development agencies and academic institutions.

**ZEDfactory 2009,**  
**Bill@zedfactory.com**

## Research and Development Project

### A high-speed micro turbine for Organic Rankine Cycle (ORC)

Solar energy is characterized by a strong dispersion and low energy flow density, while organic fluids possess high pressure and a low boiling point. In an Organic Rankine Cycle (ORC) system, an organic medium is used as the working substance instead of water, much like the regular water-steam Rankine cycle. With the ORC system, it is possible to turn any kind of low-temperature heat source into electricity efficiently.

To utilize the low temperature source, a certain kind of micro turbine has been successfully manufactured. The radial-axial turbine stands out due to its many advantages, such as a compact structure with good manufacturability, a simplex-type lightweight construction, high efficiency, and a single-stage expansion rate that indicates a big enthalpy drop.



The organic fluid employed in the turbine is R123 and it is designed to run at a speed of 60,000 rpm, with a power output of 3.5 kW.

Preliminary experiments have been conducted to validate the performance of the turbine replacing the organic fluid with compressed air. Results show that while the compressed air kept the

operating temperature and pressure at 34°C and 0.5 MPa, respectively, the turbine ran at a speed of 55,000 rpm with an efficiency of 42%. In effect, it produced 650 W, and the temperature drop of the air reached 43°C.

The indication is that the turbine can be applied in the ORC system. Its capability to drop the system temperature would enable its use for cooling as well.

**Pei Gang, Li Yunzhu, Li Jing, Ji Jie**  
Department of Thermal Science and Energy  
Engineering  
University of Science and Technology of China  
Hefei, Anhui, China Email: [peigang@ustc.edu.cn](mailto:peigang@ustc.edu.cn)

**Important for the repudiation of WSSET:** Neither the WSSET, nor any person acting on its behalf: (1) assumes any responsibility with respect to the use of information of, or damages resulting on the information on this WSSET-Newsletter. (2) gives warranty or representation, express or implied, with respect to the accuracy of the information, opinion or statement contained here in

**PUBLISHED BY: WSSET**

**School of the Built Environment**

University Park Nottingham,  
NG7 2RD United Kingdom  
Tel: +44(0)1159513158  
Fax: +44(0)1159513159  
[www.wsset.org](http://www.wsset.org)