



WSSET
World Society of Sustainable Energy Technologies

NEWSLETTER

Featured article

The Creative Energy Homes – The University of Nottingham, UK

The flagship Creative Energy Homes project at The University of Nottingham is a small development of homes built on Green Close at the Department of the Built Environment on University Park. It brings together industrial partners from across the house-building sector to investigate how we can reduce energy use in our homes. There are currently seven developments all looking at energy reduction; however each development has its own specific aims and objectives.

The BASF House has been designed to show-case state-of-the-art energy efficient housing. It is also helping industry accelerate the use of these products, demonstrating to the marketplace that building products and technologies are available today to reach the 2016 UK housing targets.

The E.ON 2016 House aims to develop and assess cost effective measures for reducing carbon emissions from ageing domestic properties. The University was given special planning permission to build the 1930s style house to 1930s specifications. The three-year research programme will test a range of possibilities focused on areas such as changes to the building fabric, heating and cooling techniques and use of energy.

The Tarmac House – will demonstrate how the highest levels of the Code for Sustainable Homes can be practically achieved at a low cost whilst also providing a template for future zero carbon housing across the UK that can easily be replicated.

Nottingham HOUSE was designed as a low energy starter home, providing for a family of two adults and one child. The design explores the concept of the family home, while also considering its role in the wider urban fabric. The house was originally designed for the Solar Decathlon competition in 2010, which is an international competition aiming to advance the knowledge of sustainable homes.

The latest addition to the Creative Energy Homes project is the Mark Group House, opening in October 2013. The Mark Group House is a four-bedroom Level 6 Code for Sustainable Homes detached property with three floors including a basement/garage. It has been designed by members of academic staff of the Department of Architecture and Built Environment with the support of The Mark Group.

For more information, please visit <http://www.nottingham.ac.uk/creative-energy-homes/creative-energy-homes.aspx>

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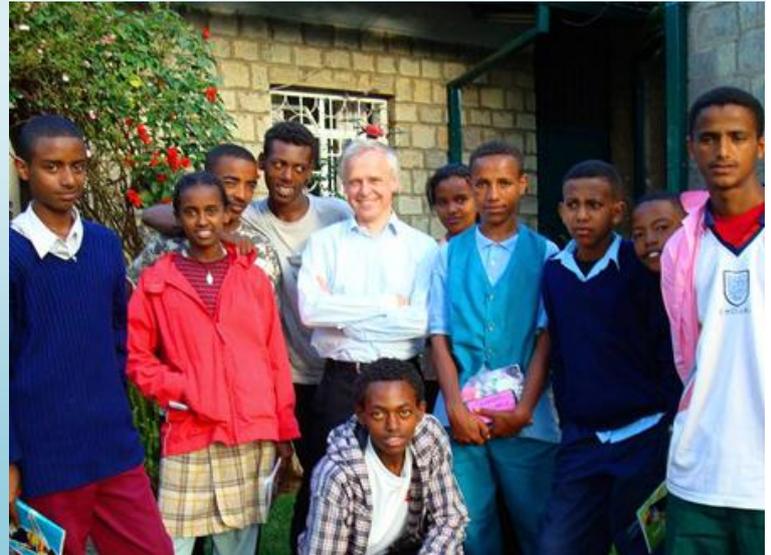


Articles WSSET recommends

Sustainable Computers for the developing world - Tony Winfield, MD, Sustainable Computers Ltd.

Sustainable Computers Ltd. is seated at the hub of academia, scientific research and world-class computing expertise, giving us the flexibility to deliver considered, appropriate educational computer solutions for the developing world. Our expertise comprises extensive experience in education, solar-powered computer systems and project management. Based at the University of Nottingham Innovation Park, we have access to emerging technologies and world-standard project development. We collaborate with universities across the globe, in partnership with companies at the leading edge of their field. Our mission is to carry out international collaborative research with academia and industry for the development and provision of solar-powered computer facilities for education and healthcare in developing countries. A vital part of this mission is to provide pre-loaded educational software for use off-line where the internet is not available.

Projects being currently undertaken include a Teacher Training Centre in Addis Ababa, Ethiopia, which will be a centre of teaching excellence, created in association with The Institute of Physics (London), the Ethiopian Ministry of Education and the world's foremost computer networking and solar industries. The model created is being replicated in regions across Ethiopia and in several other African countries where locations may be off-grid and resources limited. Individual institutions and Ministries of Education can commission Sustainable Computers Ltd and their associates to join them in their application for funding and employ our skilled project management to achieve carefully researched outcomes.



Training and support in entrepreneurship are central to our projects, empowering communities to achieve sustainable outcomes. We have excellent programmes of collaboration between university students in the UK and their local counterparts in developing countries. Not only does this provide them with invaluable experience in international collaboration, but also gives local entrepreneurs on-going support until they become self-sufficient.

For further information, please contact Tony Winfield, Managing Director of Sustainable Computers Ltd (WSSET Member) for a tailor-made project appraisal: twinfield_uk@yahoo.com

Articles WSSET recommends

Solar Sheep and Windy Cows – Gage Williams, Chairman, West Country Renewables Ltd.

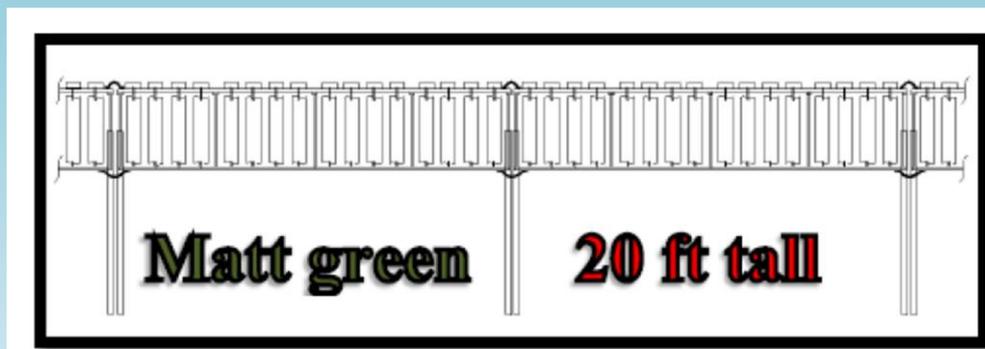
Farmers grow food; we eat food for energy; ergo, farmers harvest energy. With the tumbling fall in the price of renewable technologies, farmers can now harvest energy in new ways with the same acreage. Here is how:

Sheep and solar PV share the same fields. The sheep like the shelter. The grass grows better despite some shading due to lower wind speeds and less frost and dew. The sheep in return trim the grass. Five acres of solar PV panels (1MWp) will generate 1,000 MWh/yr. With the new new CfD of 12.5p/kWh payable for 15 years and an export price of 4.64p/kWh, the return is 17%. The electricity could be sold locally for 9p/kWh which is 50% of the daytime retail price helping alleviate rural fuel poverty. The sheep might generate an income for the farmer of £100 per acre and the solar PV a further £34,000 per acre.

Spinetic Energy Ltd. has patented and is developing a wind-fence that is just 6m tall and matt green. It requires wind speeds ideally averaging more than 5m/sec (about 50% of Cornwall). The average farm in Cornwall has ten miles of hedges some of which face the prevailing wind. A 100m wind fence comprising 20 wind panels should generate 35 MWh per year for ten houses or 100 milking cows. Surplus electricity can be used to top up the dairy ice bank or pump water up hill to a storage tank for hydro-electricity when required using slurry tanks for the water. The grid becomes the emergency back-up.



The ten miles of Cornish hedges per farm have to be trimmed for the single farm payment. The trimmings can be chipped, dried and pelletized using redundant dairy sheds to produce 100 oven dried tonnes per year with a retail price of £24,000 sufficient to heat 30 median dwellings (16.5 MWh/yr/house). If supplemented by woodland, 10 farms could provide a parish with all its heating replacing heating oil as most parishes are not on gas.



Spinetic Ltd. Wind Fence

Finally, why so little interest in electric tractors? Unlike cars, they have space, they need weight and range is not an issue. Five acres of solar PV can generate sufficient electricity for a tractor to drive 600,000 miles assuming 100 kWh per 100km (a Tesla uses 15 kWh per 100km). Farms have the lifting gear needed to change the rechargeable lead acid battery packs.

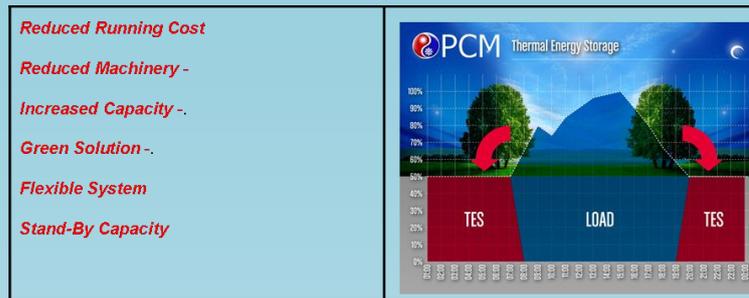
For further information regarding West Country Renewables Ltd. and the work they do, please visit www.westcountryrenewables.com or email Gage Williams at GageWillms@aol.com

Latest technologies & products

An Introduction to Phase Change Materials – Zafa Ure, President, PCM Products Ltd.

Thermal Energy Storage is the temporary storage of high or low temperature energy for later use, bridging the gap between requirement and energy use. The storage cycle might be daily, weekly or seasonal depending on the system design requirements, and whilst the output will always be thermal, the input may be thermal or electrical.

Phase Change Materials (PCMs) are ideal products for thermal management solutions. This is because they store and release thermal energy during the process of melting & freezing (changing from one phase to another). When such a material freezes, it releases large amounts of energy in the form of latent heat of fusion, or energy of crystallisation. Conversely, when the material is melted, an equal amount of energy is absorbed from the immediate environment as it changes from solid to liquid.

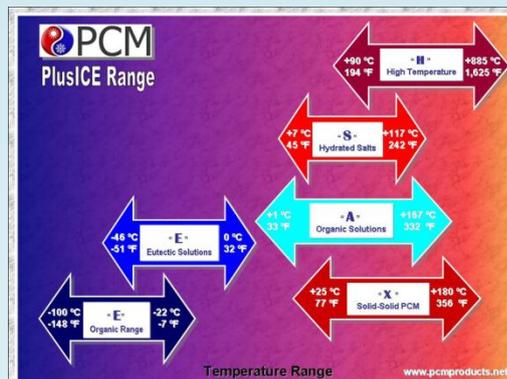


This property of PCMs can be used in a number of ways, such as thermal energy storage whereby heat or coolness can be stored from one process or period in time, and used at a later date or different location. PCMs are also very useful in providing thermal barriers or insulation, for example in temperature controlled transport.

The simplest, cheapest, and most effective phase change material is water/ice. Unfortunately, the freezing temperature of water is fixed at 0°C (32°F), which makes it unsuitable for the majority of energy storage applications. Therefore a number of different materials have been identified and developed to offer products that freeze and melt like water/ice, but at temperatures from the cryogenic range to several hundred degrees centigrade. PCMs can broadly be arranged into three categories: eutectics, salt hydrates, and organic materials.

- **Eutectics** tend to be solutions of salts in water that have a phase change temperature below 0°C (32°F).
- **Salt hydrates** are specific salts that are able to incorporate water of crystallisation during their freezing process and tend to change phase above 0°C (32°F).
- **Organic materials** used as PCMs tend to be polymers with long chain molecules composed primarily of carbon and hydrogen. They tend to exhibit high orders of crystallinity when freezing and mostly change phase above 0°C (32°F). Examples of materials used as positive temperature organic PCMs include waxes, oils, fatty acids and polyglycols.

PCM Products Ltd (UK) offers a wide range of commercially available PCM solutions as well as encapsulated products.



Please contact PCM Products Ltd. at info@pcmproducts.net or visit their website at www.pcmproducts.net for more information.

Conferences WSSET recommends

- **12th International Conference of Sustainable Energy Technologies**
26 - 29 August 2013, Hong Kong, China
www.set2013.org
- **Batteries, Fuel Cells & EV Public Seminars**
Throughout 2013, please follow the link
<http://sdle.magicnet.co.il/modulesWeb/mail.aspx?id=624>
- **Bioenergy exhibition and conference**
4th – 6th September 2013, Jyvaskyla, Finland
<http://service.acc.fi/ ACC/ components/ACSurvey/Kysymyslomake.asp?kyselyID=486>
- **13th International BBE Conference "Wood Energy"**
26th -29th September 2013, Augsburg, Germany
<http://www.renexpo.de/kongressprogramm.html?&L=1>
- **7th Conference on Decentralized Mini and Micro Cogeneration**
27th September 2013, Augsburg, Germany
<http://www.renexpo.de/kwk-fachtagung.html?&L=1>
- **7th SGC International Seminar on Gasification**
16th – 18th October 2013, Gothenburg, Sweden
<http://sgc-konf.camero.se/?pg=1445748>
- **2013 International Conference on Frontiers of Environment, Energy and Bioscience**
24th – 25th October 2013, Beijing, China
<http://www.icfeeb.org/>
- **BIT's 1st Annual International Conference of Emerging Industry-2013**
5th – 6th November 2013, Shenzhen, China
<http://www.bitconferences.com/icei2013/>
- **2013 International Symposium on Intelligent Building and Building Automation**
9th – 10th November 2013, Zhangjiajie, China
<http://www.ddamt.org/conference/symposium-1.html>
- **2nd International Conference on New Energy and Sustainable Development**
29th November – 1st December 2013, Sanya, China
www.engii.org/workshop/nesd2013november/
- **3rd International Conference on the Developments in Renewable Energy Technology**
9th – 11th January 2014, Dhaka, Bangladesh
<http://www.icdret.uju.ac.bd/>
- **10th International Hydrogen & Fuel Cells Conference, Exhibition & Partnering**
March/April 2014, Birmingham, UK
- **1st International Conference on Renewable Energy Gas Technology**
22nd – 23rd May 2014, Malmo, Sweden
<http://regatec.org/>
- **6th International Conference from Scientific Computing to Computational Engineering**
9th – 12th July 2014, Athens, Greece
http://www.scce.gr/index.php?option=com_content&view=article&id=301&Itemid=102&lang=gr

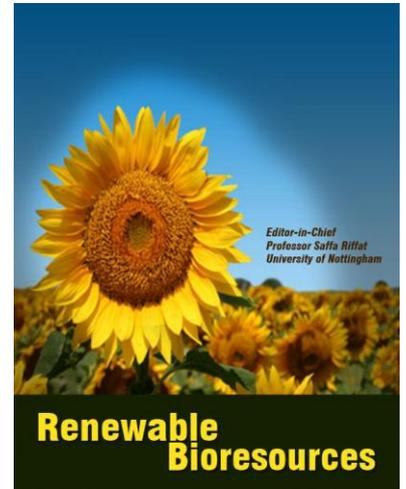
Journals WSSET recommends

Along with the successful *International Journal of Low Carbon Technologies* (<http://ijlct.oxfordjournals.org/>) and *International Journal of Sustainable Cities and Societies* (<http://www.journals.elsevier.com/sustainable-cities-and-society/>) Professor Saffa Riffat would like to invite you to submit articles to his newest Journal:

Renewable Bio-resources (<http://www.hoajonline.com/renewablebioresources>)

Scope of the journal - As global energy requirements change and grow, it is crucial that all aspects of the bio energy production process are streamlined and improved, RENEWABLE BIORESOURCES emphasises, on the advanced applications of biotechnology to improve biological ecosystems through renewable energy derived from biological sources.

Articles related to the topics of renewable bio resources are all welcome, and should be submitted using the above link.



Contributing to WSSET newsletters and e-bulletins

All WSSET members are kindly invited to submit articles for publication in future WSSET newsletters. Articles can be on a range of topics surrounding the word of sustainable energy technologies. With over 1000 active members, the WSSET newsletter provides a great opportunity to publicise new ideas, technologies or products – all free of charge!

Articles should be no more than 400-500 words and one or two photographs would be very much appreciated. Submissions should be emailed to secretay@wsset.org

Furthermore please contact secretay@wsset.org regarding any conferences, seminar or symposiums relating to topics of sustainable energy technologies that wished to be advertised in the newsletter.

Once again WSSET wishes to thank the continued support of its members.

Along with LinkedIn, WSSET has recently joined the social network Facebook. Being connected with WSSET on Facebook is an effective way of getting in touch with members from both academic and industrial backgrounds, finding the latest updates and news from WSSET and get the latest updates and news of up-and-coming events. Follow us at www.facebook.com/wsset



Donations are welcomed and greatly appreciated!

We would like to remind our members that WSSET is a non-profit organisation, hence providing free membership. We would not be able to play a significant role in consolidating practical partnerships between academic and industrial organisations without the help of our members.

Whether you would like to get more involved or contribute financially, please get in touch with us at secretary@wsset.org.

Important for the repudiation of WSSET

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