



WSSET
World Society of Sustainable Energy Technologies

NEWSLETTER

Featured article



14th International Conference on Sustainable Energy Technologies

SUSTAINABLE ENERGY FOR A RESILIENT FUTURE

25th - 27th of August 2015, Nottingham, UK

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The 14th International Conference on Sustainable Energy Technologies (SET 2015)

25th – 27th August 2015, Nottingham, UK

SET 2015 is a multi-disciplinary, peer-reviewed international conference on sustainable energy sources and technologies that provides a forum for the exchange of the latest technical information, the dissemination of the high-quality research results, the presentation of the new developments in the area, and the debate and shaping of future directions and priorities for sustainable development and energy security. All accepted papers will be included in the conference proceedings and selected papers will be published in special issues in the partner journals.

Conference topics include, but are not limited to:

- Energy Technology and Renewables
- Energy Storage and Conversion
- Sustainable Cities and Environment
- Policies & Management

A message from the chairman Professor Saffa Riffat:

This year's conference includes a wide range of topics on sustainable technologies including energy, buildings, transport and industry. We shall have lectures given by eminent keynote speakers and technical sessions focusing on important research topics related to sustainable technologies and eco-buildings. As you no doubt realise, climate-change threatens the water and food security of billions of people around the world. Wider application of sustainable technologies/eco-buildings is vital to achieving a sustainable economy, improved quality of life and protection of the environment.

SET 2015 will be hosted by the University of Nottingham, the world's greenest university in 2011, 2013 and 2014 according to the UI Green Metric World University Ranking, in collaboration with the World Society of Sustainable Energy Technologies (WSSET). The conference venue is the Albert Hall in Nottingham City Centre; it is ideally located within minutes of the Nottingham City central Market Square, with exceptional transport links and within a short walking distance from a broad range of accommodation options. Please follow the links below for more information.

SET 2015 website: www.set2015.org **SET 2015 registration:** www.set2015.org/Registration

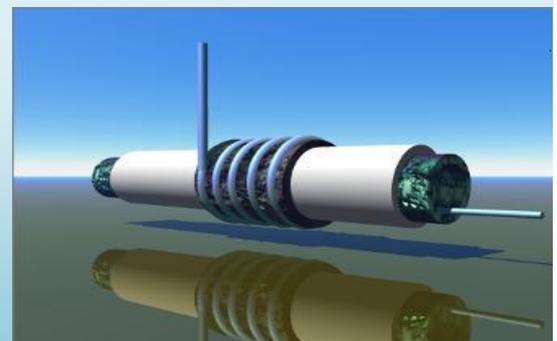
Articles WSSET recommends

RECREATIONAL VEHICLE WITH FUEL CELL POWER SUPPLY – Prof. Kevin Kendall

Adelan Ltd. is a clean tech development company, established by Prof. Kevin Kendall & Dr. Michaela Kendall, inventors of micro-tubular Solid Oxide Fuel Cells (mSOFCs). The company is running several development projects with international institutions and private companies to improve the efficiency of these fuel cells, which are more eco-friendly and portable than combustion generators.

Fuel cells are electrochemical devices that convert the chemical energy of a fuel to electrical energy directly, without producing as much waste as other technologies. Consequently, the mSOFC is low carbon and more sustainable than conventional portable power supplies conventionally used at present. The fuel is continually supplied to the fuel cell, running hot at about 700°C, to convert the chemical energy into electrical power with heat as a by-product. There are numerous benefits including:

- 1) Fuel flexibility; they can use hydrogen, LPG, LNG or natural gas as fuel.
- 2) Low emissions; high efficiency confers a low level of pollutant production.
- 3) Reliability and ease of maintenance; the absence of moving parts minimises up-keep and downtime.
- 4) Quiet operation; the mSOFC can convert propane without noise pollution.
- 5) Co-generation capability; the reactions in the SOFC are exothermic and produce useable heat.



A single micro-tubular SOFC

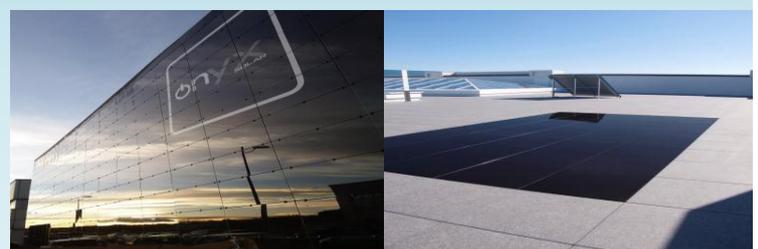
Adelan's SAPIENS project is currently developing mSOFC systems for use in Recreational Vehicles (RVs) and there is significant potential for the application of SAPIENS technology in other vehicles - such as UAVs, boats, trucks, ambulances and environmental testing vehicles. Propane fuel was chosen for this project because of its superior energy density -when compared to hydrogen or methanol - and because it is the preferred fuel for auxiliary systems (such as cookers, fridges, and water heaters) on RVs, and is widely available at fuelling stations throughout Europe.

For more information, please visit www.adelan.co.uk

ONYX SOLAR – BIPV SOLUTIONS

ONYX SOLAR is a technology driven company founded in Ávila (Spain) in 2009 that develops cutting-edge smart building solutions for Building Integrated Photovoltaics (BIPV) to be used as building materials in façades, windows, roofs, skylights, etc. These solutions consist in the replacement of conventional materials such as glass or ceramics for a material with photovoltaic properties, showing not only undeniable aesthetic value but also customised for each project, producing clean and free energy from the sun. ONYX Multifunctional BIPV Solutions allow the entrance of natural light, provide thermal and sound insulation, they filter out harmful radiation, produce clean and free energy thanks to solar power and feature an innovative, customised design which can be integrated into any type of building without limitations of colour, pattern, transparency degree, thickness and size. All these solutions allow to the architect and the client to have a variety of designs for their projects depending on the needs required.

For more information, visit <http://www.onyx-solar.com/>



Onyx PV ventilated facade and PV walkable floor

Articles WSSET recommends

va-Q-tec VACCUM INSULATION TECHNOLOGY

va-Q-tec AG is a dynamic, global, high growth company with over 200 employees. va-Q-tec AG produce vacuum insulation panels (VIPs) for different applications including thermal packaging, building insulation & home appliances.

The va-Q-tec headquarters in Würzburg, Germany (ca. 100 km from Frankfurt) has more than 4500m² of high tech production area, offering excellent facilities for testing and official validation from in-house experts. The high quality of products, checked by the worldwide patented va-Q-check® system, enables long-term, stable and highly efficient thermal insulation performance. va-Q-tec owns more than 50 active patents and is certified according to ISO 9001, ISO 5001 and ISO 1401 by TÜV SÜD.

va-Q-tec has won several awards for its VIP technology. For example, in 2012 va-Q-tec was the first German company to win the prestigious New Energy Pioneer Award by Bloomberg and was honoured as a "Technology Pioneer 2013" by the World Economic Forum.

VIPs are used wherever space is limited and excellent thermal insulation is required. To help resolve difficult spatial design problems, va-Q-tec offers a range of products including cost effective customized vacuum insulation panels. Additionally, heat & cold storage elements containing phase change materials (PCMs) are produced, especially for packaging containers which transport temperature-sensitive goods. With VIPs and PCMs, va-Q-tec are able to offer environmentally friendly thermal solutions for almost every need.

Vacuum insulation panels (VIPs) need up to ten times less insulation space in comparison to conventional thermal insulations. The flat edge design allows assembling of the panels almost without gaps, avoiding thermal bridges. New and innovative products help the customer to improve energy efficiency with better insulation. Different solutions can be offered depending on the requirements like longevity, environmental conditions and weight.

These advancements in research and technology create new opportunities for more effective and sustainable solutions. For example va-Q-tec passive thermal packaging systems need no energy supply during temperature controlled transport and are light weight and high performance. This helps solve many of the technical and environmental problems encountered during the transport of temperature sensitive goods.

For more information please visit: <http://www.va-q-tec.com/>

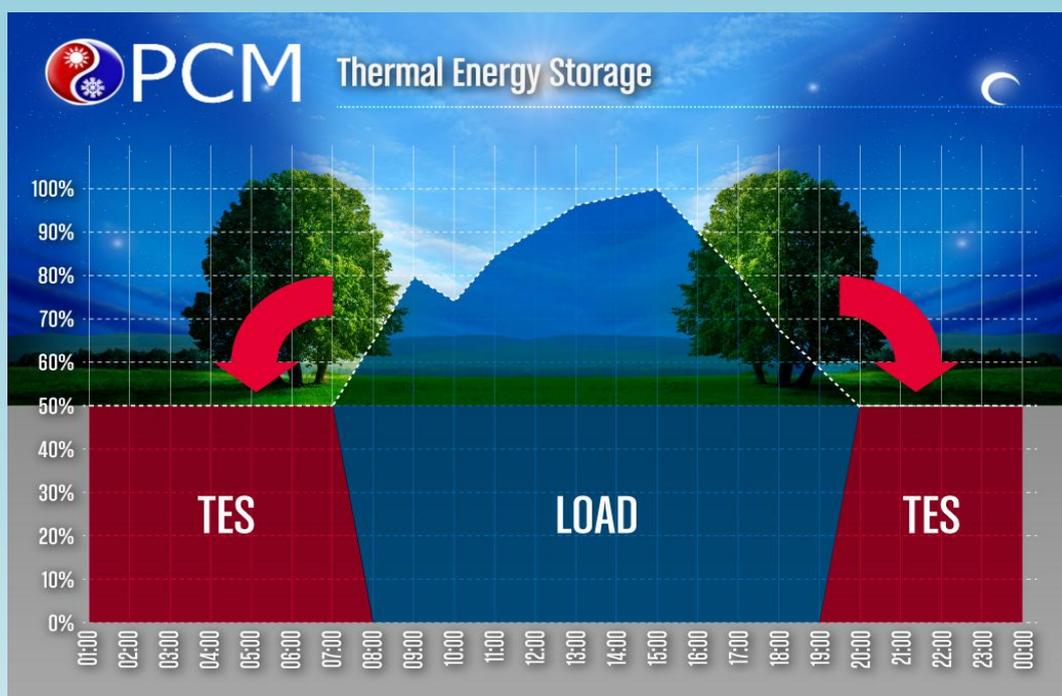


Articles WSSET recommends

PHASE CHANGE MATERIALS FOR BUILDING APPLICATIONS – Zafa Ure PCM Products Ltd.

Phase Change Materials (PCM) store and release thermal energy during the process of melting & freezing, and the latest range of PCM solutions between -100°C and +885°C offer new TES application opportunities.

TES is the temporary storage of thermal energy for later use, bridging the gap between energy availability and energy use. TES can reduce chiller size by up to 50%, simply by spreading the load over a 24 hour period. It also reduces the running cost by utilising over-night lower ambient and lower electricity costs. In a conventional chilled water application PCM TES offers smaller roof space and full stand-by capability utilising +8~15°C Phase Change Material (PCM) containers.



PCM TES application concept

For example, the cool energy available over-night is naturally stored without using any mechanical cooling in +27°C PCM containers within a building. Later, the stored energy is utilised to absorb the internal and solar heat gains during day-time for an energy free passive cooling system. By simply adding PCM, which has a 50 times higher thermal capacity in comparison with conventional building materials, as part of the building fabric, the thermal mass of the building can be increased 10~20 fold without the need for large and heavy building construction. PCM passive cooling offers a green energy free cooling solution. For example, using +8°C and +46°C PCM materials on both cold and hot side of a heat pump would spread the loads over 24 hours, reducing the machine size by as much as 50%. By also storing both hot and cold sides, the overall COP nearly doubles, not only reducing the running cost, but also offering a reliable and stand-by capacity system.

For more information, products and services please visit: <http://www.pcmproducts.net/>

Latest innovations WSSET recommends

1) SOLAR HEATED AND COOLED HOMES – PDM SOLAR, INC

PDM Solar is developing vapour compression air conditioners and heat pumps that are powered by heat rather than by electricity. The heat to power the technology can be provided by solar thermal, waste heat from data centres, or from the exhaust of trucks and buses. Please visit <http://pdmsolar.com/index.html>

2) THERMAL SOLAR AIR CONDITION - AC-Sun

AC-Sun turns solar heat into cooling with a minimum use of electrical power. With a combination of low pressure turbines and using water as refrigerant their patented technology creates efficient cooling from solar heat featuring:

- 90% savings on electric power
- 85% reduction in carbon emissions
- No chemical refrigerants - only water

AC-Sun's mission is to bring this thermal air conditioning solution driven by solar panels to the market. Please visit <http://www.ac-sun.com/>

3) HVAC ENERGY SAVINGS - enVerid

enVerid Systems ("n-VEH-rid") revolutionises HVAC energy savings for buildings of all types by dramatically reducing costly air replacement while maintaining excellent indoor air quality.

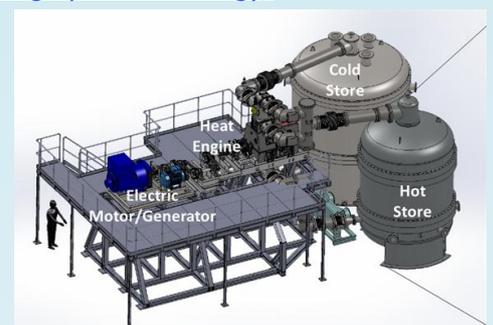
Able to produce double-digit energy savings, the enVerid HVAC Load Reduction (HLR™) "smart scrubber" modules efficiently remove molecular contaminants from indoor air, and can be added as retrofits to existing HVAC systems or designed into new projects. Please visit <http://enverid.com/site/>

4) PUMPED HEAT ELECTRICITY STORAGE (PHES) – ISIS Innovation

An opportunity to invest in an innovative company developing an energy storage system which promises to be the cheapest and most convenient way to store and recover electricity at the ~2MW scale.

The PHES technology uses two large containers of mineral particulates in a highly reversible gas cycle machine that works both as an engine and a heat pump. The design includes special compressors capable of operating at 500°C with no oil lubrication. Electricity is used to pump heat from one vessel to the other resulting in the first container cooling to around -160°C and the second container warming to around 500°C. The heat pump machine can be thermodynamically reversed to operate as an engine and the electricity is recovered by passing the heat from the hot container back through the machine to the cold container, while the machine drives an electrical generator.

Please visit <http://isis-innovation.com/licence-details/pumped-heat-electricity-storage-phes-technology/>



The PHES concept

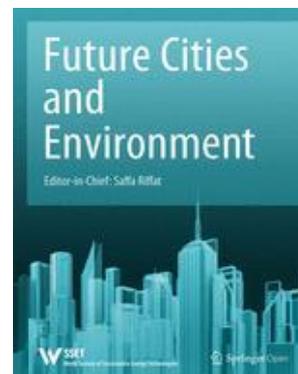
Journals WSSET recommends

Along with the successful *International Journal of Low Carbon Technologies* (<http://ijlct.oxfordjournals.org/>), Professor Saffa Riffat would like to invite you to submit articles to his newest Journal from Springer publishers:

Future Cities & Environment <http://www.futurecitiesenviro.com/>

Scope of the journal - Future Cities and Environment publishes high quality multi-disciplinary research which aims to reduce the environmental impact of cities. Considering research in the areas of transport, urban planning, architecture and design, and energy and infrastructure, it publishes fundamental and applied research, critical reviews and case studies. This includes experimental development, demonstration and computer modelling.

Future Cities & Environment is an open access journal. Articles related to the topics of Future Cities & Environment 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 and search *World Society of Sustainable Energy Technologies*.



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.

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