

WSSET
World Society of Sustainable Energy Technologies
NEWSLETTER



Featured article



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A very Merry Christmas from everybody at WSSET

Firstly, a very merry Christmas and happy new year to you all from everybody here at WSSET. We wish you all the very best in the coming new year!

SET 2015 - a date for everybody's diaries

WSSET is proud to announce the 14th International Conference on Sustainable Energy Technologies (SET 2015). **SET 2015** is a multi-disciplinary, peer-reviewed international conference on sustainable energy sources and technologies that provides a forum for the exchange of latest technical information, the dissemination of 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.

SET 2015 will be hosted by the University of Nottingham, the world's greenest university in 2011 and 2013 according to the UI Green Metric World University Ranking.

Chair: Professor Saffa Riffat.

Co-Chairs: Professor Mark Gillott & Dr Lucelia Rodrigues

Email: info@set2015.org

The call for abstracts is now open; please follow the link www.set2015.org for more information and the abstract submission process. WSSET looks forward to seeing you in Nottingham.



14th International Conference on Sustainable Energy Technologies

SUSTAINABLE ENERGY FOR A RESILIENT FUTURE

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



The University of Nottingham

UNITED KINGDOM · CHINA · MALAYSIA

Articles WSSET recommends

Seeley International's - Breezair Icon Evaporative Air Conditioner

Seeley International is Australia's largest air conditioning and heating manufacturer and a global leader in developing ingenious, energy-efficient cooling and heating products. In fact, in the 1970's, Seeley International pioneered all-plastic evaporative coolers, and since then it's gone on to design an ever growing number of world-first, innovative climate control solutions with environmental sustainability in mind. It is now Australia's largest and most awarded air conditioning and heating manufacturer, with sales offices around the world. **Seeley International's iconic product - Breezair Icon evaporative air conditioner** - is the most energy-efficient whole-of-home evaporative cooling system available in the world - capable of cooling a whole home from the cost of running a single light bulb.

One of Seeley International's most ground-breaking innovations is the development of Climate Wizard. Climate Wizard is a highly efficient indirect evaporative air conditioner suitable for a wide range of commercial and industrial applications. It produces much colder air than conventional evaporative coolers and doesn't add any moisture. Cooling performance increases as ambient temperature rises. On a 30 °C day the Climate Wizard's cooled air temperature is typically 19 °C degrees but from a direct system is around 23 °C. With an ever increasing focus on costs and environmental impact, Climate Wizard's revolutionary approach uses up to 80% less energy compared to traditional (refrigerated) air conditioning system used under the same conditions thus vastly reducing cooling costs.

Climate Wizard supports greenhouse gas abatement. The system alone can provide a building's cooling needs or may be used as a pre-cooler to a refrigerated air conditioning system. It can also be retro-fitted for this purpose to reduce the running costs.

Independent testing by the Sustainable Energy Centre at the University of South Australia has confirmed that this application can slash ongoing running costs by up to 38%.

Seeley International is also Australia's only air conditioning and heating manufacturer with NATA (National Association of Testing Authorities) accreditation for its purpose-built test laboratory. The testing laboratory ensures Seeley International's products perform at the highest industry standards.

Seeley International and its products have won many awards for innovation and sustainability.

For more information on products, contact Seeley International UK on +44 7900 900207.

Visit our websites: www.seeleyinternational.com / www.climatewizard.com / www.breezair.com



Articles WSSET recommends

A DRAINAGE TRENCH GROUND HEAT EXCHANGER COUPLED WITH PHASE CHANGE MATERIALS - Marco Bortoloni, Michele Bottarelli, Yuehong Su

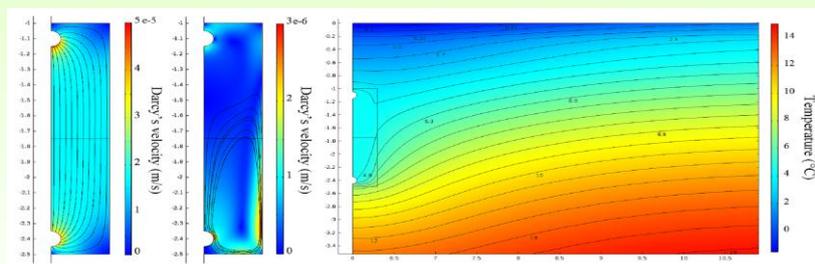
Ground-source heat pumps (GSHPs) are regarded as a sustainable technology for space heating and a profitable solution due to their high energy efficiency. GSHPs exploit geothermal energy by means of ground heat exchangers, which can be installed horizontally (HGHEs) as a loop placed in shallow diggings. The shallow soil can serve as a seasonal energy storage owing to the energy balance at the ground surface, but it is more vulnerable to the changing ambient conditions. The seasonal variation of the shallow soil temperature can lead to unfavourable working conditions and thus to a reduced efficiency of a heat pump.

However, the seasonal energy storage in shallow soil may be enhanced by employing Phase Change Materials (PCMs) as an effective solution to meet the system design requirements. Moreover, it could be an effective method to smooth the irregular thermal wave generated in the ground from operation of a GSHP. PCMs are usually introduced directly in a tank but this could be an expensive solution for HGHEs and the heat transfer may not be effective for the bulky PCM tank. A more effective way is to mix encapsulated PCMs directly with backfill material close to the GHEs or install them in a surrounding shell. Other alternative solution is to use a drainage trench as an advanced HGHE, which is supposed to be dug in shallow soil and filled with encapsulated PCMs as granular filler. The working fluid (water) flows directly through the filler, between two horizontal pipes at the top and bottom of the trench. This new design has been developed recently to improve the performance of HGHE by increasing heat transfer surface.

The energy performance of the novel ground heat exchanger in coupling of encapsulated PCMs have been analysed by means of a 2D finite element model performing a yearly simulation with realistic environmental conditions. The results have been compared with those of an equivalent GHE filled with coarse gravel. The design has proved effective, if properly sized. The drainage trench showed good performance in comparison with other advanced GHEs and could be an attractive option, owing to its environmental feasibility and low cost. Moreover, better working conditions for the heat pump are achievable employing PCMs, since the temperature of the working fluid has more favourable and stable values. Since it is possible to restore the depleted latent heat moving from winter time to summer time, it should be considered the opportunity for HGHEs to attempt seasonal underground thermal energy storage (UTES). Additionally, PCMs can be sized as a protective barrier to prevent the freezing of the working fluid, thus avoiding the use of environmentally harmful antifreeze additives.



The drainage trench



On/off fluid flow on a cross section of the HGHE

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:

International Journal of Future Cities and Environment (IJFCE)

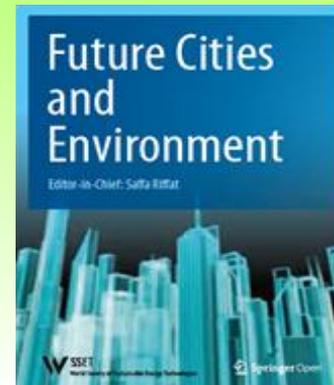
Editor-in-Chief Professor Saffa Riffat
Professor in Sustainable Energy
President of the World Society of Sustainable Energy Technology

Aims and scope of the Journal

The IJFCE will publish a wide range of original and high quality papers/multi-disciplinary work covering fundamental and applied research, critical reviews and case studies. The IJFCE will focus on research and multi-disciplinary work aiming to reduce the environmental impact of cities. The journal will include fundamental and applied research, experimental development, demonstration, case studies, reviews and computer modelling. The Journal is published by 'Springer International Publishing AG'.

The journal will address the following four topics areas:

- 1. Transport**
- 2. Urban planning**
- 3. Architecture and Design**
- 4. Energy and Infrastructure**



SET 2015 donations

The **SET 2015** conference will be held in Nottingham, United Kingdom on the 25-27 August 2015.

The conference will be held in the City of Nottingham and we are expecting up to 600 delegates from over 40 countries to attend the event. We are planning to organise visits to Nottingham Castle and the Creative Energy Homes at the University of Nottingham.

WSSET would be grateful if you would consider providing a sponsorship for the SET conference in return of the following:

- Add your organisation's logo and information to the SET website
- Acknowledge your contribution at the opening ceremony
- Provide a display board at the conference to promote your organisation/products
- Give you the opportunity to give a short talk at the Gala dinner (optional)

Please contact the SET organising committee if you wish to discuss the matter further: info@set2015.org

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 world 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 secretary@wsset.org

Furthermore please contact secretary@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.

Important for the repudiation of WSSET

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