



a sustainable future for people in powys  
dyfodol cynladwy i bobl ym mhowys

# *Renewables Powys Project*

## Report

**Intersolar and estec  
trade fair and solar thermal conference**

**Munich 25 – 28th May 2009**

**By Chris Laughton**

**The Solar Design Company**



Above is a trading name of The Very Efficient Heating Company Limited. Vat 704128371  
Registered in England & Wales 4707083



Llywodraeth Cynulliad Cymru  
Welsh Assembly Government

Old Station, Heol Y Doll,  
Machynlleth, SY20 8BL  
T : 01654 700324  
F : 0 8709 12 12 79  
E : enquiries@solardesign.co.uk

22 June 2009

To: Laura Shewring, Glasu

Report on Intersolar and estec, Munich 25 – 28th May 2009

### **Intersolar 2009**

Described as the largest trade fair for solar in the world, Intersolar 2009 took place over three days at the [New Munich Trade Fair Centre](#) and attracted 1,417 exhibitors and approximately 60,000 visitors, 31% more than in 2008.

Out of the 104,000 square meters of exhibition space (a 37% increase on last year, covering nine exhibition halls and a large outdoor arena) it was notable that the majority of room was taken up by photovoltaics with an entire exhibition hall dedicated for the first time solely to PV production. In comparison only the equivalent of two halls were related to solar thermal, and in general it was felt that although there were signs of product evolution in solar thermal, there was little in the way of revolution.

The event bills itself as an 'innovative marketplace' for new technologies and techniques for builders, investors, specialist companies and consultancy firms, as well as for science and research. It aims to provide stimulus for discussions on climate protection and for effective strategies towards an environmentally friendly and sustainable global energy industry. The key word here is global. This year's fair recorded visitors from over 150 nations and provided a useful space for networking. There was a strong presence from China, particularly in

the form of evacuated tube manufacturers, but a strong absence of European boiler manufactures. There was also increased evidence of ancillary products such as frames and fixings.

Product unveilings at Intersolar included thin-film solar panels with a double layer of amorphous silicone, which were claimed to be 10% more effective than regular single-layer amorphous silicon panels. A prototype device was also unveiled which supposedly enables solar panels to inform a central server of its electrical output, thereby informing the user of malfunctions or theft. The prototypes will be made available to testers for demonstration purposes.

Also presented was a self-cleaning and self-repairing coating for solar cells. Claimed to be waterrepellent, the coating is designed to flow to areas of damage (sand-inflicted scratches, etc) and seal in the impairment, hardening within a few hours. The company claims that this will lengthen the life of solar panels by allowing them to operate at 98% after 20 years instead of the current standard of 80%.

A noted trend at Intersolar this year was the drive to reduce partial shading losses: a necessary trend, if you believe California-based chip manufacturer National Semiconductor, who conducted tests during which a screen representing typical rooftop obstructions shaded a portion of a conventionally-wired solar PV system. Although only 8% to 16% of the array was shaded over the course of a day, it resulted in average power losses of between 35% and 40%. The company were present at Intersolar to present their solution: 'power optimizer technology', which they claim can recoup up to 57% of power lost due to temporary or partial shading of photovoltaic panels.

Meanwhile, a separate California-based start-up has developed and was exhibiting a system using nodes in each solar panel to monitor and adjust the solar array, reducing the disproportionate amount of electricity production that is usually lost when, for example, a cloud passes overhead.

There were not as many integrated multi-heat combined solutions as expected and more collector-only companies than before. Many gas/oil boiler companies now with solar have stayed away. There were examples of solar + heat pumps = 20,000 Euro although these will not be expected to be a big market in the UK given their high capital cost. However, these combinations are capable of providing 100% DHW and space heating coverage albeit with considerable electric content.

Large thermal stores were on show with layering techniques allowing integration multiple heat sources, although the heat sources themselves were not part of the package.

Solar thermal cooling was on show for warmer climates to permit 'over-sizing' of solar collector areas that otherwise just provide DHW. In fact, such systems can realistically also help space heating in spring and autumn, hence obtaining very high solar fractions. As homes become better insulated, the solar fraction of solar space heating improves even for Northern climates although it is still very difficult to achieve 100%.

### **Intersolar AWARD 2009**

The Intersolar AWARD is now in its second year and was again presented by Intersolar organizers Solar Promotion GmbH and Freiburg Wirtschaft Touristik und Messe GmbH (FWTM) in co-operation with the German Solar Industry Association (BSW-Solar).

The awards are designed to celebrate innovation, so only those products and solutions exhibited for the first time at Intersolar in 2009 or which show significant further development compared to earlier trade show exhibits were applicable.

A total of 76 entries were submitted, 58 of which came from Europe. The ceremony took place at the Innovation Exchange on 27th May.

Winners in the photovoltaic category included:

- Aerowest (Germany), for software calculating the irradiation potential of different roof areas
- Solon (Germany), for its solar roofing-tile system
- National Semiconductor (USA) for SolarMagic, optimizing the power output from each solar panel

In the solar-thermal category, winners were:

- RESOL Elektronische Regelung (Germany), for their control sensor for solar thermal systems
- Ritter Energie- und Umwelttechnik & Co. (Germany), for developing an air- and waterheating system including high-efficiency solar thermal storage.
- NEP Solar (Australia), for a parabolic trough system using a light polymer foam instead of metal

In particular, the RESOI winner showed a new concept of a pump station with integral temperature sensors and permanent low wattage magnet pump and integrated data-logging.

## **estec2009**

The 4th European Solar Thermal Energy Conference (estec2009) invited stakeholders of the solar thermal sector to attend the conference on 25th and 26th May 2009 at the Bayerischer Hof.

estec2009's target groups included managers, marketing and sales persons of solar thermal companies and suppliers; executives of national and regional energy ministries and energy agencies; energy market experts from private

and public financing; marketing managers of energy utilities and energy contractors; technical researchers from universities and research institutes; and market researchers. Altogether the conference attracted over 600 delegates.

The conference's emphasis as stated was on providing 'up-to-date information on current and emerging solar thermal markets, newest technological innovations and latest policy developments'.

This year's key aim was to help participants 'get ready for the global solar thermal boom', which is expected to occur within the next 12 months.

Christine Lins delivered a paper discussing the new legislative framework for renewable energies in Europe which explored the EU's Renewable Energy Directive. This constituted an agreement made in 2007 with the 27 EU Member States to ensure that, by 2020, 20% of total energy consumption will be delivered by the renewable energy sector. Lins' paper provided an outline of the RES Roadmap with predictions on the expected contribution of renewables to electricity and heat consumption and of biofuels to transport fuel consumption, concluding that the European Renewable Energy Industry believes it will by 2020 be able to 'reach and exceed' the 20% share.

David Perez and Victor Cervantes' paper on the effects of the Spanish solar thermal obligation on demand, products and value chain focussed on the Spanish Technical Building Code (CTE) two years after its inception, analysing the consequences of this significant reform which made solar thermal integration a legal requirement for all new buildings and major refurbishments in Spain. The paper investigated why less than half of the square metres of solar arrays expected had been installed in 2008, concluding that as the total capacity installed until the end of 2008 had represented only 60% of the original PER expectations, this could lead to a failure to meet the CTE target by 2011.

Riccardo Battisti and Marco Calderoni presented a paper outlining the tools for supporting local authorities in the implementation of solar obligations. They analysed the EU-funded 'ProSTO' project which aims to implement best practice in this process by developing optimised solar thermal obligations (STOs): legal provisions obligating owners to install solar systems on new and renovated buildings. The paper outlined the tools available to develop an STO and how the Communities could best use them to stimulate the reproduction of best practice implementation.

Roger Hastrock's paper "European Solar Days" discussed the implementation of national solar days in Austria, Switzerland and Germany as an awareness-raising initiative for the solar thermal market. By March 2009 more than 2,000 solar events had been registered in nine countries; the paper predicted a long-term rise in the number of participant countries which would encourage an increase in the number of people using solar energy.

Robin M. Welling provided an overview of the experiences and strategies of international company TiSUN specifically in terms of marketing solar thermal to different countries. Welling's paper discussed the value chain behind the TiSUN model and its rise from a simple flat-plate collector to a 'big brand' with well-defined marketing strategies that have a strong emphasis on market trend identification. Welling emphasised the importance of cultivating satisfaction, trust and faith in the company, achieved by strong (360o) customer support and an ethical, culturally respectful approach to business.

Evanthia Michalena and Yiannis Tripanagostopoulos also spoke about marketing strategy, but this time in terms of using solar thermal as a tool with which to develop alternative forms of tourism. They posited that solar energy systems could contribute to raising tourism revenue both globally and, more specifically, in Mediterranean countries and island regions which experience mass tourism during the summer months. They reasoned that solar thermal could assist in reducing the negative impacts of this mass tourism by promoting the concept of 'sustainable tourism development', improving the

quality of experience undergone by tourists and allowing local societies to benefit directly from the natural and cultural wealth of their regions.

Education and training was a key theme at this year's conference, with three papers given on improving the quality of installations (Wael Elamine), the state of training in German speaking countries (Klaus Vajen), and the potential for teaching solar thermal systems using simulation software (Andreas Witzig).

Wael Elamine talked about the role of solar thermal qualifications which use 'commitments' from installers as a way of increasing and guaranteeing quality in solar installations, giving or taking away the right for companies to use a quality trade mark.

Klaus Vajen, working with Klaus Lambrecht and Ralf Lambrecht, reviewed a German initiative in which electronic questionnaires were distributed to experts from manufacturers, research institutes and crafts enterprises in order to get an overview of the demand for highly-trained staff in solar heating and of the educational capacities of universities. The results found that 80% of respondent companies expect problems to arise as a direct result of the lack of qualified staff over the next 3 years, and that even today the labour market is unable to fill their demands, stating that they would hire 20% extra staff members if sufficiently-qualified applicants were available. The paper concluded that an action plan for training needed to be implemented nationwide, as the job market in solar heating is not trained for growth.

Andreas Witzig (writing with Simon Geissshusler, Rene Kohli, Baptiste Lacoste and Andreas Wolf) came to the same conclusion, that there is a significant need for more and better training in solar thermal system design. They posited that simulation software packages could potentially be used as an educational tool to meet this need, and discussed various classroom situations in which these could be used to teach solar thermal system technology from component details to overall dimensioning and optimisation.

Other reports were given on identification of new technologies and approaches in the fields of solar cooling and air-conditioning, high solar fraction systems, industrial processes and district heating, as well as quality assurance and performance monitoring.

These included Daniel Mugnier et al.'s paper on the SOLARCOMBI+ project, a smart online tool that aims to identify the most promising solar heating and cooling systems for market entry; Christian Zahler et al.'s report on PSE AG's development of their linear concentrating Fresnel collector, which uses individually tracked reflector rows to concentrate direct solar radiation on to a stationary linear receiver; and Frank Thole et al.'s presentation on 'the zero energy house', a new and integrated approach to reducing energy consumption which uses 100% solar energy to give the user of the building 'a profound feeling of independence'. Thole's approach advocates a combination of solar thermal energy, electric heat pump and a photovoltaic system which together provide sufficient energy for space heating and domestic hot water.

Several reports were given on the development of European and International markets, including Germany (Werner Koldehoff), Spain (Pascual Polo Amblar), Italy (Valeria Verga), Sweden (Jan-Olof Dalenback), Tunisia (Tahar Achour), Poland (Grzegorz Wisniewski) and Australia (Ken Guthrie).

Each spoke from a different perspective with, for example, Germany's Warner Koldehoff speaking about developing a lead market, Italy's Valeria Verga talking about the opportunities and threats in a high-potential market, and Australia's Ken Guthrie on the current drive to mainstream solar in an emerging market, using newly-introduced national programs to improve the capacity of industry to deliver solar solutions.

What all these reports had in common was a sense of optimism in terms of the industry 'boom' that is expected to occur over the next few years, and a general support of the strong policies which are being implemented on an international basis in order to optimise solar thermal's potential.