Hannover-Bristol Green Energy Summit – Friday 10th June

Workshop 1: Energy Efficiency in New Buildings and Low Carbon Retro-fit

Facilitated by Sven Andres, Kompetenzzentrum fur Energieeffizienz and Celia Beeson, Bristol City Council.
Reported by Mark Taylor, Low Carbon South West and Reading University.
Attendees:

- Torsten Schwarz, Passivhauskonzepte GmbH
- Stephan Wluka-Rentz, RW-Energie UG
- Hanna Porter, Bristol City Council
- Mike Tierney, Bristol University
- Fionnuala Costello, Technology Strategy Board
- Nick Lloyd, Urbane Building Company
- Ian Hutchcroft, Energy Saving Trust
- Simon Blonde
- David Matthews, Hoare Lee
- Ben Ross, Forum for the Future
- Paul Collins, Telepure
- Bill Box, Carnego Systems
- Nick Harris, Power Perfector
- Robin McDowell, Bristol City Council
- Ken Aylmer, Footprint Building
- Craig White, White Design.

The workshop consisted of six presentations given by Torsten Schwarz, David Matthews, Nick Harris, Craig White, Bill Box and Stephan Wluka-Rentz.

The first presentation by **Torsten Schwarz** from **Passivhauskonzepte GmbH**, was on Retrofitting a historic building in Germany using Passivehaus principles to reduce the energy consumption below that of the current regulation requirement, where a 60 % energy reduction was achieved. The technical challenges were seen to be ensuring the fabric breathability of the refurbishment. The achievement of this goal has lead to an internal level of thermal comfort that is widely appreciated by the occupants of the building that is not found elsewhere, making it a desirable building to occupy.

David Mattews from **Hoare Lee** gave a presentation on 'Horizon House', a new building for the Environment Agency and explained how a ground source heat pump, solar thermal, PV and innovative ventilation including an occupant lighting indicator, has led to a very efficient and environmentally conscious building design. The building achieved an 85% BREEAM

rating. The improvement in user density along with working atmosphere has allowed the Environment Agency to change it business as usual approach to new building procurement.

Nick Harris from **Power Perfector** explained how an average saving of 13% can be made by installing a voltage optimization unit onto the electricity supply of a building. Justifying the voltage optimization device, Mr. Harris said, "the National Grid cannot micro manage voltage." It was envisaged that a model similar to Japan may be possible in the UK where a large scale roll out of these devices could achieve a significant electricity load reduction.

Craig White from **White Design** highlighted his company's philosophy to ecological development and refurbishment. The 'reHAB' approach (thinking of energy use as a drug to be weaned off) is adopted within White Design to bring the emphasis away from a purely technical material and engineering solution, to include the behavioral issues of the occupant of the building as well. Since 1999, White Design has been using 'Mod/Warm Cell' insulation to current code level standards and reminded the conference that energy reduction reduces the risk of fuel security ('GasPutine' turning off the gas tap in 2008). A method of carbon capture by using natural materials to lock CO_2 into the fabric of new buildings was highlighted as possibly a more effective way of storing carbon than the current CCS strategies. Locally sourced and constructed, natural material, pre-fabricated panels are used to insure a fast build time whilst minimizing the transport costs and maximizing the benefits to the local economy.

Bill Box from **Carnego Systems** aims to "turn data into meaningful information." The emphasis of Mr. Box's presentation was to enable the occupant of a building to understand their use of energy and be informed of the options available to them not only in terms of energy but also in terms of local transport. A new development in Swindon is to have a hybrid energy monitor installed that displays this transport and energy information on a real time basis together with a method of comparison and communication with similar properties. It is hoped that this will lead to a decrease in expensive pre-payment meter usage and an increase in the use of public transport options. It was suggested that when considering how to change user environmental aspirations, "change the culture of the group to change performance."

Stephan Wluka-Rentz from **RW-Energie** commented on the mindset of the UK house buyer compared to a German house buyer. In Germany it is normal to only buy one house in a lifetime, whereas in the UK people may be prone to moving house every 3 – 5 years. The justification for costly and disruptive refurbishment is therefore far more difficult in the UK. A system of achieving 99% energy efficiency through the 'Energy Tower' was promoted. This new CHP unit is TUF certified and small enough to fit within domestic properties, generating all of the properties' heating requirements and supplying electricity at the same time. Mr. Wulka-Rentz explained how the high levels of performance can be achieved through complete condensation.

The attendees were asked to give feedback from the morning and afternoon sessions and the following points were highlighted as areas for further thought:

- Economics and cultural change
- Technology is mostly in existence, change in user and designer behavior
- Compared to 5 years ago, the technology mostly exists now to solve the technical challenges, challenges now are people and politics
- The UK housing stock may not be able to deliver 80% energy reduction if viewed in isolation, district heating needs better understanding especially implementation into housing estates
- There is a gap between the theoretical and used energy in buildings

- Collaboration and knowledge sharing, the ability to ask people who have done similar projects, used similar products before
- New questions were started to be thought of to be asked of key people leading to a combination of different approaches
- Culture vs. Technology, reflections on energy efficiency, struggling with public engagement, Craig White and Bill Box could collaborate to initiate a new project
- Can client cost issues justify the efficiency measures
- District heating needs an additional session
- User influence on automation, support for the products installed – skills gap on maintenance
- Technologies have been trialed, need now is for training
- A wish that everyone would 'wake up and do it'
- Germans have been described as 'Energy Efficiency Junkies'
- Existing efficient technologies need to replace items due for renewal
- The right mix of solutions is needed
- An analysis at the right level is needed to specify fit for purpose
- There is a different financial control in Germany
- How are the financial costs justified, where is the support from local and national government

In summary the days' discussion led to focusing on:

- The occupant behavior and philosophy of design.
- The cost of refurbishing existing stock and the need for political support for this sector.
- Education and training of new skills was seen as an important next step rather than further product development.
- A means of communicating workable approaches across the industry would be beneficial.