

AECB 2010 Annual conference: Event overview and selected workshop reports

Sally Hall, AECB founder, and long-standing member Bob Matthews pooled their impressions of this year's AECB Annual Conference to bring you this report.

Conference Overview: Sally Hall

This year's popular, sell-out AECB conference was held later than normal, on two autumnal, wet days at the beginning of October. Attended by over 200 members, the venue was the Centre for Alternative Technology (CAT) in the inspirational new WISE building. WISE stands for the Wales Institute for Sustainable Education. The building provides a state-of-the-art environmental education centre. It was designed by David Lea and long-standing AECB member, Pat Borer.

David is driven by a philosophy that architecture cannot be divorced from nature and this is apparent in the WISE building, with its natural materials and carefully considered design. The design evolved slowly over a ten-year period, and the basic architectural premise was that all principal rooms would be shallow in plan, enabling good levels of daylight and simple, user-controlled ventilation. The goals have, in the main, been achieved, despite some major problems with the build and contractors.

The natural light levels were excellent and every room had a view, a connection to nature or the courtyard. For our plenary sessions we gathered in the beautiful circular Sheppard Theatre with its 500mm thick rammed earth walls. CAT is rightly proud of this very special building. Chris Herring, AECB's chair opened the conference and welcomed delegates with his speech (see opening plenary session, below) informing members how the AECB has progressed over the last year. He outlined its main achievements. The first guest speaker was CAT's director, Paul Allen. He talked about CAT's education programme, drawing on CAT's 30 years experience to educate a wide range of participants. Particularly popular are the Graduate School of the Environment MSc courses, that have been running at CAT for several years teaching the principles of sustainable development.

Paul also introduced CAT's Zero Carbon Britain 2030 report. This aims to integrate thinking across a range of sectors and identify a potential road map for 'powering down', through reducing demand, and powering up renewables to 100% by 2030, leaving no requirement for nuclear energy.

Later on the keynote speaker, George Monbiot, a well known writer and environmental campaigner, brought everyone back to earth with a grim note of reality, as he described the missed opportunities of the Copenhagen Summit. He painted a pretty depressing picture for the future and is undoubtedly pessimistic about the world's ability to cut emissions soon

enough. He thinks that governments will be unable or unwilling to take the drastic steps that are necessary within the next ten years.

In particular, he told us the world's biggest polluter, the USA, will do too little, too late. By 2050, global temperatures will have risen by more than the target limit of 2C above pre-industrial temperatures. Indeed, they may rise by as much as 4C, or more with grave consequences. Emissions produced within the UK have fallen by 19% since 1990. But because so much manufacturing now takes place on our behalf overseas, we 'export' a huge proportion of our emissions, and overall emissions resulting from our consumption have risen by 29%.

Delegates were spoilt for choice with the diverse range of workshops. There were ones on renovation and building to the Passivhaus standard. The retrofit for energy conservation examples included the AECB's CEO, Andy Simmonds' own Victorian terraced house. There were examples of other projects too, and a session on the TSB Retrofit for the Future project. This was accompanied by a session on the AECB's current Less is More project, looking at the cost effectiveness of measures addressing energy efficiency and carbon emissions.

Sessions on building to Passivhaus standard and beyond included discussions of UK pioneer projects; Denby Dale, Essex Disability Centre, The Crophorne Autonomous House and RSL developments. Passivhaus certification was also covered and information provided on the AECB's new Passivhaus Trust, an independent, non-profit organisation set up by the AECB to provide leadership in the UK for the adoption of the Passivhaus standard and methodology.

Moving away from Passivhaus, additional subjects covered included dynamic insulation, installing for airtightness (including a practical demonstration), forty years of energy efficient design and a debate on airtight breathable/vapour diffusion open construction, is there a combined solution? The authors of the AECB's infamous Biomass discussion paper gave an impromptu session describing the reasoning behind the report. The guided tours of the WISE building, led by the designers David Lea and Pat Borer, and walks around the grounds of CAT were very popular.

Entitled Something Old, Something New, this event was also a celebration of the AECB's 21st birthday, with a party, complete with a huge birthday cake and band on the Friday evening. The AECB's founders, Keith and Sally Hall were there, along with Chris Baines, President who joined AECB members in a very enjoyable evening.

The AECB is primarily a membership organization so the highlight of the two days was for many the meeting up with old friends and the chance to network. AECB members are the pioneers for low energy and sustainable building. This is where the AECB remains strong and has been the focus for the regional groups that are now so popular in many areas of the UK.

Selected Workshops: Reports from Bob Matthews

(Slides from these and many of the other conference presentations can be downloaded from the 2010 conference page, www.aecb.net/conference2010.php)

Friday afternoon and most of Saturday were given over to workshops. With a choice of 4 or 5 workshops for each session, difficult choices had to be made, so I can only give a flavour here of what was on offer.

The Denby Dale Passivhaus

This is the first passivhaus in the UK with cavity wall construction. Bill Butcher, its thoughtful builder, showed how our traditional methods can be adapted to produce a passivhaus. With details of the interface of the walls with floors, windows, and roof, this was invaluable information.

Dynamic insulation

Dynamic insulation is at the leading edge of technical advance: whether it will lead into a cul-de-sac or onwards along the highway of progress remains to be seen.

Dr Mohammed Imbabi of Aberdeen University led this workshop, and introduced us to the concept, which is beguilingly simple. If a wall incorporates dynamic insulation, then fresh air for ventilation is sucked into the interior through the wall. In its passage through the wall, the air becomes warmed by the heat passing outwards by conduction. So the escaping heat is captured by the incoming fresh air and recycled back into the room.

The theory is that this approach allows relatively thin walls (or roofs) to attain excellent U values (eg, below 0.1). But some of the audience were sceptical, and said that attaining this level of insulation would require in over-ventilation in order to obtain a low U-value, as too much air would have to be sucked through. (However as some of the scepticism was expressed by proponents of HRV I think we ought to see published calculations before coming to any conclusions.)

To obtain the inward flow of fresh air, the air pressure in the interior needs to be lowered eg, by mechanical extract ventilation. (I think that dynamic insulation could fit well with using an Exhaust Air Heat Pump for water heating.)

Since the conference, Jablite have announced their Dynamic Wall insulation, developed in collaboration with Energyflo.

Airtight but breathable construction

Regular visitors to AECB.net will be well aware that generally we need to build with much improved airtightness. However, some people are concerned that the building envelope should also be breathable, especially for roofs and timberframe walls, in no small part because of concerns about fabric damage from persistent moisture. Niall Crosson of Ecological Building Systems explained how both desirable features, airtightness and

breathability, can be obtained by using Pro Clima's intelligent membranes. "Intelligent" is not used as some fanciful, marketing word, but as a technical term. The higher the average of the Relative Humidity of the air on the two sides of an intelligent membrane, the damper the membrane becomes and the more water vapour it allows to diffuse through.

Biomass - a route to increased carbon emissions?

The orthodox view is that the burning of wood is more or less carbon neutral. But there is a heretical view gaining ground amongst the AECB that this is far from the case, and that sometimes burning biomass can result in even more emissions than burning gas! This controversial workshop, lead by Nick Grant of Elemental Solutions, attracted a lot of people, with a lot of voices on both sides of the debate.

For myself, my understanding of the anti-biomass argument is as follows:

Energy wasteful design.

If heating is to be by biomass, the building regulations allow a building to be less energy efficient. This results in the burning of more biomass than would be required in a more energy efficient building. To prevent the wasteful burning of biomass, buildings should be stipulated to be low energy rather than low carbon.

Dirty emissions

Even the most efficient wood and pellet stoves result in dirtier emissions than gas. So local air quality deteriorates if biomass is burnt rather than gas.

Broken carbon cycle

On a much bigger scale: co-firing wood with coal in power stations sometimes results in forests being cleared but not replanted.

My own take on the argument is that an individual selfbuilder who builds an energy efficient house in a rural setting can rest easy in believing that burning logs in a woodstove is largely benign. Note that the house is to be energy efficient, not merely low carbon.