THE DOCTOR PAYS A VISIT
– To the Annual Conference of the AECB

I reported last year on the AECB’s annual conference, at which the keynote speaker was Berthold Kaufmann from the Passivhaus Institut in Germany. Normally I would not report on the annual conference again this year – I don’t want to be repetitive. But this year the keynote speaker was none other than the founder and head of the institute, Dr Wolfgang Feist, and in view of the big role that the Passive House method will soon have in house building, a report on this year’s conference does seem apposite.

For new readers, I should explain that ‘AECB’ stands for the Association for Environment Conscious Building, or, as their strapline puts it, the Sustainable Building Association. Founded way back in 1989 for the green building enthusiasts, the association is now coming into its own, and many of the things it has been pioneering are becoming mainstream.

The two-day conference was held in June at Oxford Brookes University, and it was bigger than ever. About 210 people attended, and they came from many different backgrounds. Mostly they were professionals (notably architects), but there were also some self-builders and home renovators.

At the start of the conference I was waiting to get a cup of coffee when a man came and stood in front of me. I suggested that he stand behind me. He apologised, saying that he was German and that the Germans were not so used to queuing as the English. He took his place behind me and added that by now the Germans had learnt not to upset the English! I realised it was Dr Feist himself, and his reaction was a sign of his modest demeanour and wry humour.

Having enticed the doctor to come to the UK – the fact that his son is studying mathematical physics at Cambridge University might have helped – the conference organisers made full use of him. He was the keynote speaker at the start of the conference, and he spoke to full audiences about the Passive House method at four workshops:

• Why high performance insulation?
• Do we need triple glazing?
• The role of ventilation.
• Why Passivhaus?

The Doctor’s prescription

Dr Feist is suggesting that we apply the Passive House method to both new build and renovations. By using the method we can slash the amount of energy used in buildings – which at present account for about half of our total energy use. We can dramatically reduce our carbon emissions into the atmosphere and so help an ailing Planet Earth.

I must admit that at first I was wary about a method that depended upon mechanical ventilation – and Dr Feist confessed that he had been, too. But it is possible to open windows. And if the electricity supply were to fail – well, my present gas central heating system wouldn’t work anyway, so no difference there except that a Passive House would stay warm longer.
The Passive House method

I described the Passive House method in the October issue of the magazine last year, but perhaps a summary here might be useful. (There is not the space to report on the workshops in depth.) The aim is to greatly reduce the energy that will be required within a building. So the key requirement of the Passive House method is:

- The energy required for space heating and ventilation over a year must not exceed 15 kWh per square metre of floor area.

This limit is about a quarter of that required for a house built to the Building Regulations’ present Part L requirements.

The greatly reduced energy requirement is achieved by:

- Ultra insulation to reduce heat losses from the envelope of the building.
- Very efficient Heat Recovery Ventilation (HRV).
- An airtight envelope to cut out uncontrolled ventilation.

The practical implications are:

- U-values of the envelope should usually be no more than 0.15 W/m²°C. This can be achieved with about 40 cm of insulation in the roof, 30 cm in the walls, and 25 cm in the floor. (In fact, at the conference Dr Feist said that the U-values could be as high as 0.18 for the mild climate of the UK.)
- An HRV system that is at least 80% efficient.
- The air permeability, q50, should be no more than 1 m³/hr.m². This is a somewhat laxer standard than on the Continent because of the milder climate in the UK – but it will still be a huge challenge to British builders. (The airtightness of the envelope is measured by a blower door test.)

As Dr Feist stated in one of his workshops, limiting the annual heat losses to 15 kWh/m² allows the house to be heated by warm air from the ventilation system, without any need for a separate central heating system. (A pedant might dispute this on theoretical grounds, though I am confident it is true in practice.) Money saved by not installing central heating can go a long way towards the cost of the extra insulation and HRV system. (Note that ancillary heating is allowed, eg, a wood burning stove.) It is the absence of a separate (active) central heating system that led to the term ‘Passivhaus’ (or ‘Passive House’), and though this is not a particularly satisfactory term, it is the one we are stuck with.

An important aspect of the work of the Passivhaus Institut is the collection of data from occupied Passive Houses, both physical data and the impressions of the occupants. From the outset, the institute has been checking theory against practice. The empirical evidence shows that the method works and that the occupants like the results.

A key part of the Passive House methodology is the Passive House Planning Package (PHPP). This is an Excel spreadsheet which enables the energy losses to be calculated fairly easily. It is in contrast to the complex simulations that had to be
used 18 years ago to design the first Passive Houses. And it is also in contrast to the
UK’s SAP software which has become so complex that only specialists can use it.
More than 15,000 Passive Houses have been built worldwide, mostly in Germany
and Austria. (The Austrian government gives a subsidy of €50 – €100 per square
metre of floor area for Passive Houses.) By the end of this year, there will be a few
Passive Houses in Britain – we have a lot of catching up to do.

Other sessions

There were many other workshops to choose from besides those of Dr Feist, and
many of them were given by leading experts in their field. Topics of interest to
selfbuilders included heat pumps, eco-materials, water conservation, airtightness, and
the Code for Sustainable Homes.

Construction details

At the conference it was announced that the AECB had just published construction
details for achieving both the Passivhaus standard and the somewhat more stringent
CarbonLite Gold energy standard. (But I’m disappointed that there is no detail for
cavity wall construction.)

Networking

Just as important as the formal sessions at these conferences is the informal
networking that goes on – I met up with fellow writers Mark Brinkley and David
Olivier, amongst others. An evening was set aside for socialising, and this included a
buffet dinner at Headington Hill Hall (the former home and offices of the infamous
Robert Maxwell). The following evening, some of us, including Dr Feist, met up to
dine out at the Black Boy, and the food was so good that for the first time I’ve
included a restaurant in the Further Info list!

Tour of eco-renovations

Getting to zero carbon for all new housing by 2016 is going to be a big challenge.
But an even bigger challenge is going to be to slash the carbon emissions of the
existing housing stock.

After the conference, there was an optional tour of three very different eco
renovations/extensions. Their owners shared with us both their enthusiasm and the
knowledge they had gained – about wood-powered Under Floor Heating, solar hot
water, hemp and lime walls, and much else.

In short

The AECB conferences are always stimulating and enjoyable, and this year’s was no
exception. Any potential selfbuilder/renovator who is keen on an eco approach will
find it well worth while joining the Association.

Next month: A wood heating miscellany.
FURTHER INFO:

**AECB (Association for Environment Conscious Building)**
– the Sustainable Building Association.
Yearly membership (£40) includes the excellent quarterly magazine, ‘Green Building’.
The Forum, some of which is open to the public, is a good source of technical info and advice.
Regional groups in some areas.
Fee for annual conference: £230 (including food).
www.aecb.net.

**Passivhaus Institut**
www.passiv.de.

**Pass-Net**
Network site for Passive Houses. By the end of 2009, it will include a database of Passive Houses in Europe.
www.pass-net.net.

**PassivHausUK**
BRE represent the Passivhaus Institut in the UK.
www.passivhaus.org.uk.

**Oxford Brookes University**
Has a highly rated department of architecture
www.brookes.ac.uk.

**The Black Boy, Oxford.**
Excellent food at modest prices.
www.theblackboy.uk.com.

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