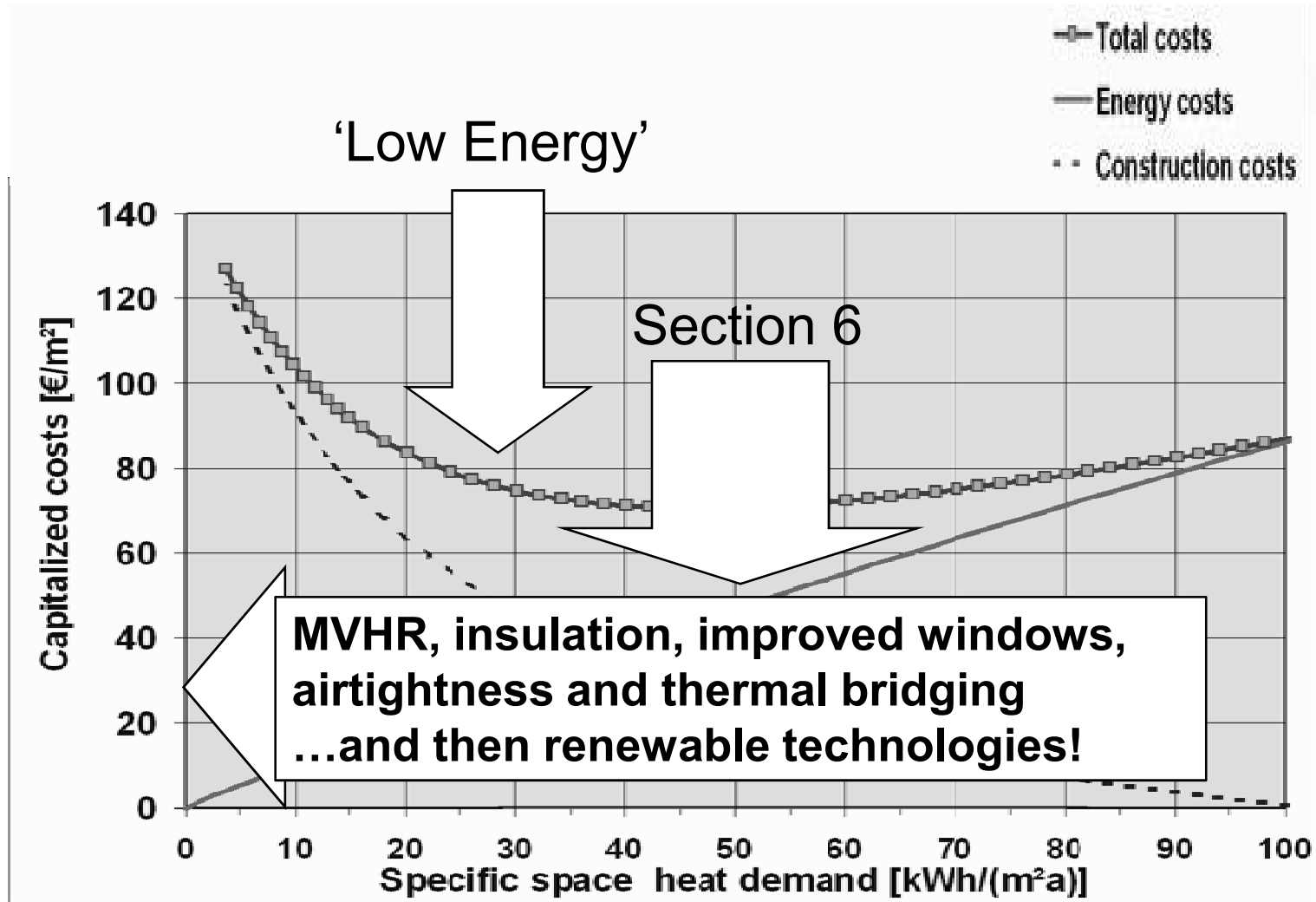




PassivHaus activities in UK

Gavin Hodgson, BRE

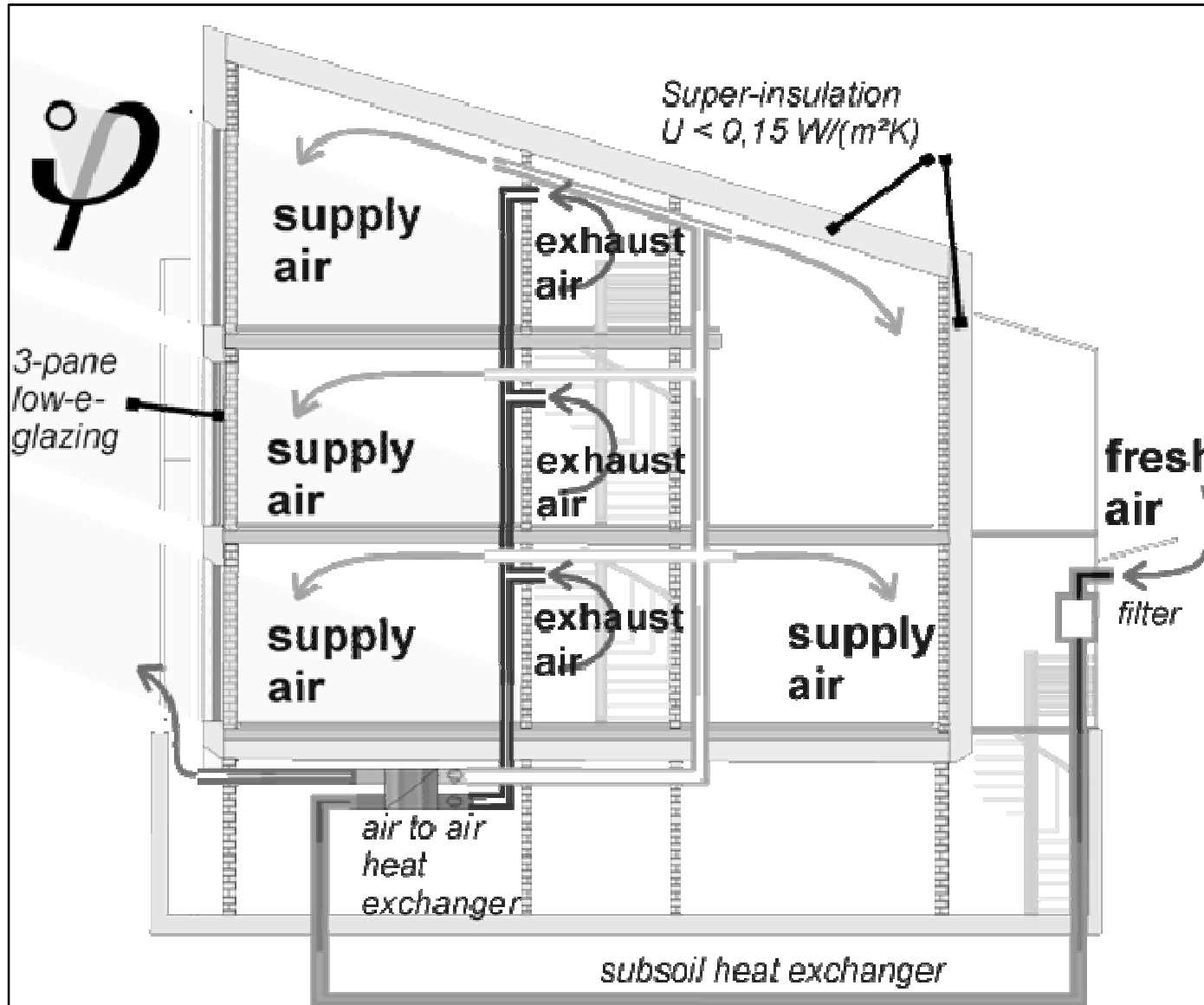
Towards zero carbon – the problem



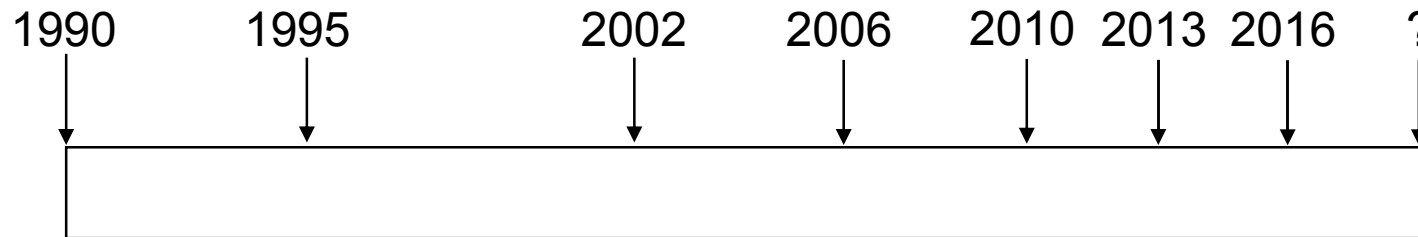
What is a 'PassivHaus'?

Not just the incorporation of traditional passive solar features but...

- The reduction of the heating requirement to the point where a traditional heating system is no longer required
 - Air tightness, 10 times better than Section 6
 - All opaque U-values $\leq 0.15 \text{ W/m}^2\text{K}$
 - PassivHaus windows $\leq 0.8 \text{ W/m}^2\text{K}$
 - Elimination of all significant thermal bridges



England and Wales timeline



1990

20% improvement over 1985 regs

Standard Assessment Procedure is accepted as an alternative way of demonstrating compliance

EcoHomes first introduced

1995

25% improvement over 1990 regs

Elemental, calculation and energy use methods

Elemental trade offs allowed

2002

20% improvement over 1995 regs

Elemental, Target U-value and Carbon Index methods

SAP required to be produced

2006

20% improvement over 2002 regs

Approved document split L1A and L1B

TER/DER assessment

Increased low-energy lighting and quality of workmanship and airtightness req.

Energy Performance Certificates

2010

25% improvement over 2006 regs

CSH level 3

2016

Circa 149% improvement
CSH level 6

2013

44% improvement over 2006 regs

CSH level 4

?



CSH sets minimum performance standards for Energy/CO₂

Based on Part L SAP2005 calculation

- Level 1 10% – Above Building Regulations (ADL1A)
- Level 3 25% – ‘Equivalent’ to EST Best Practice
- Level 4 44% – PassivHaus/EST Advanced/AECB
- Level 5 100%– Zero carbon (Part L energy use)
- Level 6 – Zero carbon for all home energy use





EU Commission aims to make PassivHaus compulsory for all member states by 2015

Building Regulations
Energy efficiency requirements for new dwellings

A forward look at what standards may be in 2010 and 2013

Provides an indication of the changes that seem likely, not possible to forecast to 2016 at this time. Similar publication for existing buildings due shortly.

www.planningportal.gov.uk



BRE INNOVATION PARK – DEMONSTRATIONS



bre



Hanson



Code level 4

All opaque U-values
<0.18

Triple glazed windows

Ground source heat
pump with SHW

Natural ventilation

Airtightness 5
 $\text{m}^3/(\text{hr} \cdot \text{m}^2) @ 50 \text{ pa}$

Wonderwall system

Concentrates on use of
thermal mass and
providing comfortable
summer temperatures.

OSBORNE



EcoHomes Excellent (Code level 3/4)

All opaque U-values
<0.15 SIP + pre-fab
bathroom pods

Triple glazed windows

A-rated gas boiler with
SHW

100% low-energy
lighting and appliances

MVHR

Airtightness <3
 $\text{m}^3/(\text{hr} \cdot \text{m}^2)@50 \text{ pa}$

Lifetime homes



Code level 4

All opaque U-values
<0.18 timber frame
panels

Single storey flat on
bottom with two storey
house on top.

Pre-fab bathroom and
kitchen (all services in
one central unit).

Triple glazed windows

Viessmann compact
service unit with SHW
– incorporates MVHR.

Airtightness, design
target $1 \text{ m}^3/(\text{hr.m}^2)@50$
pa



Code level 5

All opaque U-values
<0.15 timber frame

Pre-fab bathroom pods

Triple glazed windows

A-rated gas boiler with
SHW

3 Micro window
turbines

PV 2.6 kWhp roof + 0.8
kWhp wall mounted

Mixture of MVHR
supplemented by MEV

Airtightness, design
target $1 \text{ m}^3/(\text{hr.m}^2)@50$
pa



OFF-SITE



Code level 6

All opaque U-values
<0.11 SIPS panel

Bedrooms on ground
floor

Triple glazed windows

Biomass boiler with
SHW

PV 4.7 kWhp

MVHR, with solar
chimney for summer
and shading to west
façade.

Airtightness, design
target $1 \text{ m}^3/(\text{hr.m}^2)@50$
pa

European wide focus

- National adaptation
 - Calculation methodologies
 - EPBD
 - Conflicts with regional building practices
- Training and Education
- Supply chain
 - Availability of local PassivHaus products
- Design vs. reality
 - Further incentives in building standards for quality control procedures
- The requirement for certification
- Ensuring that future housing fulfils our needs.



BRE Dissemination

- Successful Feb and May 2007 study tours with 74 and 50 delegates respectively.
 - Jan 08 - new tour for 50 delegates for UK Green Building Council.
 - Architects CPD
 - Code for Sustainable Homes tool
- www.europeanpassivehouses.org
- Interbuild
 - PassivHaus presentations each day.



12th International PassivHaus conference

- Organised tours for UK
- 11th and 12th April 08
- Simultaneous translations to English
- View products and visit real examples



PassivHausUK website

- Unique visitors >9,000
- Registrations nearly 600
- Forum very well used
- Source of product information
- Over 600 enquiries generated.
- Now selling PHPP2007 and international conference proceedings

PassivHausUK
TOWARDS SUSTAINABLE DESIGN

Home | Overview of PassivHaus dwellings

Basic Principles | The term 'PassivHaus' refers to a specific construction standard for residential buildings which have excellent comfort conditions in both winter and summer.

Outline specification

PassivHaus Examples

PassivHaus Products and Services | PassivHaus dwellings:

- are the worlds leading standard in energy efficient construction
- are designed and built using a step-by-step approach
- use efficient components and a whole house ventilation system to achieve exceptionally low running costs
- are comfortable, healthy and sustainable

PassivHaus Planning Package | PassivHaus dwellings typically achieve an energy saving of 90% compared to existing housing.

Consultancy and certification | In Europe more than 4000 dwellings, with a wide variety of designs, have been built according to [PassivHaus principles](#).

Forum

Contact

Links

FINANCED BY bre | SUPPORTED BY energy saving trust | IEEA

10th INTERNATIONAL PASSIVE HOUSE CONFERENCE
Hannover, 19 and 20 May 2006 [click here...](#)



Thank you... and remember

- No matter which approach you take to zero-carbon housing always remember
 - Energy efficiency **BEFORE** renewables and
 - Don't design in problems...

