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BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

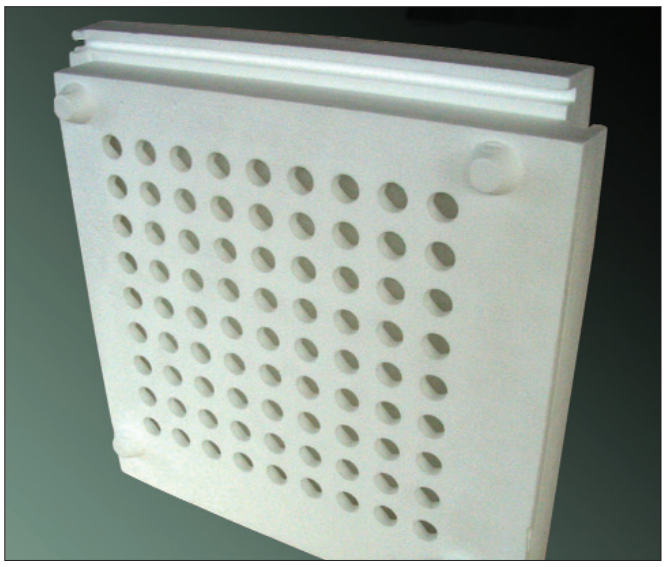
Agrément Certificate
08/4578
Product Sheet 1

THE ENERGYFLO CELL

THE ENERGYFLO CELL FOR USE IN TIMBER-FRAME ELEMENTS

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to The Energy*flo* Cell for use in Timber-frame Elements, a dynamic thermal insulation product used in walls, floors, ceilings and pitched roofs in conjunction with suitable air delivery systems to draw fresh outdoor air into the building through the filter layer.



AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Ventilation — the product is an effective filter of particulate matter and, as part of a continuous low-input mechanical ventilation system, can provide adequate whole-building ventilation. Additional provision must be made for local extract and purge ventilation as appropriate (see section 5).

Conservation of fuel and power — elements incorporating the product can achieve U values, insulation continuity at junctions and airtightness, which will contribute to reducing heat loss and CO_2 emissions. Some heat recovery of conduction heat loss is also achievable with dynamic cells (see section 6).

Condensation risk — elements incorporating the product can adequately limit the risk of surface and interstitial condensation (see section 7).

Durability — the product is constructed from durable materials and, in normal circumstances, the filter media should last for the life of the element into which it is incorporated (see section 11).

The BBA has awarded this Agrément Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 15 August 2008

Chris Hunt
Head of Approvals — Physics

Greg Cooper
Chief Executive

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, The Energy*flo* Cell for use in Timber-frame Elements, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:

The Building Regulations 2000 (as amended) (England and Wales)

Requirement:	C2(c)	Resistance to moisture
Comment:		The product can contribute to minimising the risk of condensation. See sections 7.1, 7.3 and 7.5 of this Certificate.
Requirement:	F1	Means of ventilation
Comment:		Air supply systems incorporating the product can provide adequate whole-building ventilation and will contribute to meeting this Requirement. See section 5.2 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		Elements incorporating the product can contribute to meeting this Requirement. See sections 6.1 to 6.5 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The product is acceptable. See sections 11.1 and 11.2 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The product satisfies the requirements of this Regulation. See sections 10, 11.1 and 11.2 and the *Installation* part of this Certificate.
Regulation:	9	Building Standards — construction
Standard:	3.14	Ventilation
Comment:		Air supply systems incorporating the product can provide adequate whole-building ventilation and will contribute to satisfying this Standard, with reference to clauses 3.14.2[1], 3.14.5[2], 3.14.8[1] and 3.14.10[1]. See section 5.2 of this Certificate.
Standard:	3.15	Condensation
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 3.15.1[1], 3.15.2[1], 3.15.4[1] and 3.15.5[1]. See sections 7.1, 7.4 and 7.5 of this Certificate.
Standard:	6.1	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		Elements incorporating the product can contribute to meeting these Standards, with reference to clauses 6.1.1[1], 6.1.2[2], 6.1.6[1], 6.2.1[1][2], 6.2.3[1] and 6.2.4[2]. See sections 6.1 to 6.5 of this Certificate (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).

The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product is acceptable. See sections 11.1 and 11.2 and the *Installation* part of this Certificate.
Regulation:	B3(2)	Suitability of certain materials
Comment:		The product should not require maintenance in normal circumstances. See section 10 of this Certificate.
Regulation:	C5	Condensation
Comment:		The product can contribute to satisfying this Regulation. See sections 7.1 and 7.5 of this Certificate.
Regulation:	F2(a)(i)	Conservation of fuel and power
Regulation:	F3(2)	Target carbon dioxide Emissions Rate
Comment:		Elements incorporating the product can contribute to meeting these Regulations. See sections 6.1 to 6.5 of this Certificate.
Regulation:	K2	Means of ventilation
Comment:		Air supply systems, incorporating the product, can provide adequate whole-building ventilation and will contribute to meeting this Regulation. See section 5.2 of this Certificate.

Construction (Design and Management) Regulations 2007
Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 2 *Delivery and site handling* (2.2) of this Certificate.

Non-regulatory Information

NHBC Standards 2007

NHBC accepts the use of The Energy*flo* Cell for use in Timber-frame Elements, when installed and used in accordance with this Certificate in relation to *NHBC Standards*, Chapters 5.2 *Suspended ground floors*, 6.2 *External timber framed walls* and 7.2 *Pitched roofs*.

Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA, The Energy*flo* Cell for use in Timber-frame Elements, when installed and used in accordance with this Certificate, will satisfy the requirements of the *Zurich Building Guarantee Technical Manual*, Section 4 *Superstructure*, sub sections *External walls – timber frame* and *Pitched roofs*.

General

This Certificate relates to The Energy*flo* Cell for use in Timber-frame Elements in walls (up to 18 m in height and more than 1 m from a relevant boundary), floors, ceilings and pitched roofs of dwellings, residential, office, shop and commercial buildings in accordance with the relevant requirements of BS 5250 : 2002 and:

- BS 5268-6.1 : 1996, BS 5268-6.2 : 2001 and *NHBC Standards*, Chapter 6.2, in between studs in timber-frame walls
- BS 8103-3 : 1996 between joists in suspended timber floors
- BS 5268-3 : 2006 between timber ceiling joists below an unheated loft space
- BS 5268-3 : 2006 and BS 5534 : 2003 between rafters in slated/tiled timber trussed pitched roofs.

The product is used as a conventional and dynamic thermal insulation and as a filtration component in suitable low-input mechanical ventilation air delivery systems (not covered by this Certificate) to provide fresh filtered air for the building occupants.

The product is marketed in the UK by Environmental Building Partnership Ltd (EBP), Westpoint, 4 Redheughs Rigg, Edinburgh EH12 9DQ. Tel: 0131-338 6124, Fax: 0131-338 6700.

Technical Specification

1 Description

1.1 The Energy*flo* Cell is available in a dynamic and a solid format. The former comprises an expanded polystyrene (EPS) shell enclosing a polymeric fibre air filtration layer, and the latter, a solid EPS slab (see Figure 1 and Table 1).

Figure 1 The Energyflo Cell EF01 — Dynamic and solid

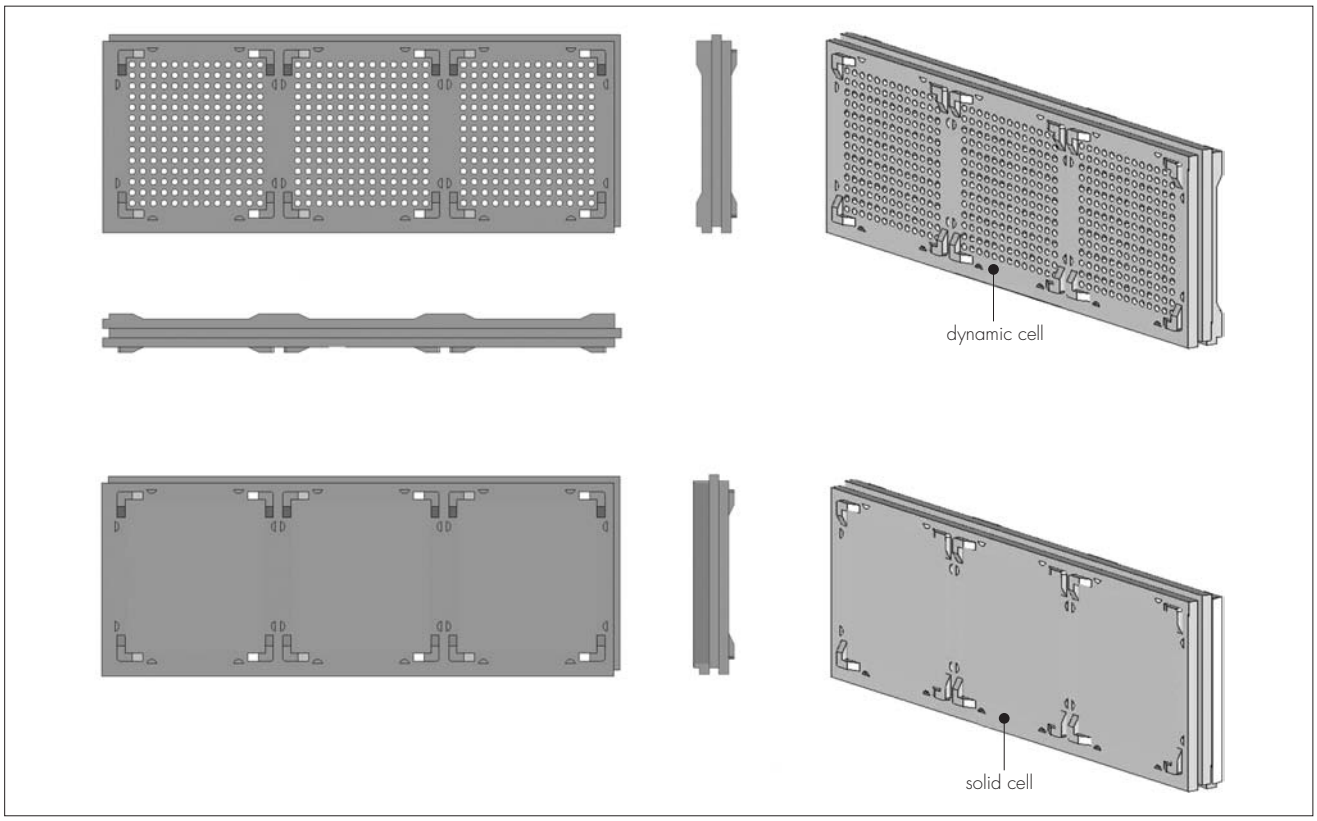


Table 1 The Energyflo Cell – Nominal characteristics

Property	EF01	EF02	EF03	EF04	EF05	EF06
Length[1] (mm)	1200	1200	1200	600	600	600
Width[1] (mm)	450	600	555	600	600	600
Thickness, overall[2] (mm)	90	90	160	140	160	180
Thickness, cavity spacer moulding[2] (mm)	12.5	12.5	15	22.5	22.5	22.5
Thickness, filter layer[3] (mm)	40	40	40	40	60	80
EPS density (kgm^{-3})	25	25	25	25	25	25
EPS thermal conductivity ($Wm^{-1}K^{-1}$)	0.033 (white) or 0.030 (grey[4])					
Design back pressure (Pa)	0 to 10					

(1) Nominal work size (see Figure 1 for rebates); other sizes are available to order.

(2) Includes cavity spacers on each side of the dynamic cell and on the outside of the solid cell.

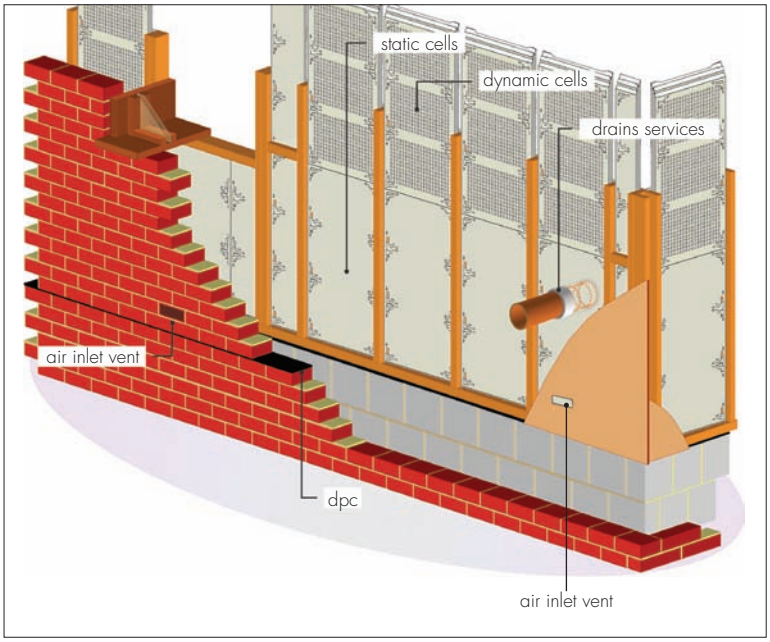
(3) Only for dynamic cells, indicated by a 'd' suffix. Solid cells are indicate by an 's' suffix.

(4) A graphite impregnated EPS.

1.2 The dynamic cell is used with appropriate cavities (plenums) either side, solvent-free sealant, air supply systems (including fan, ducting, grills, fire dampers) and cavity barriers (see Figure 2). These systems and components are not covered by this Certificate.

1.3 The solid cell is used where dynamic cells are not needed and to create the perimeter edge to plenums.

Figure 2 Typical cell arrangement — Timber frame wall



1.4 The solid and dynamic cells can be combined to manage and control the ventilation air flow path through a wall. Perimeter sealing is at the inner lining of the wall when using EF01 and EF02 types and at the base of the wall for EF03, EF04, EF05 and EF06 types. Similar arrangements may be used for floors, ceilings and roofs (see Figure 3).

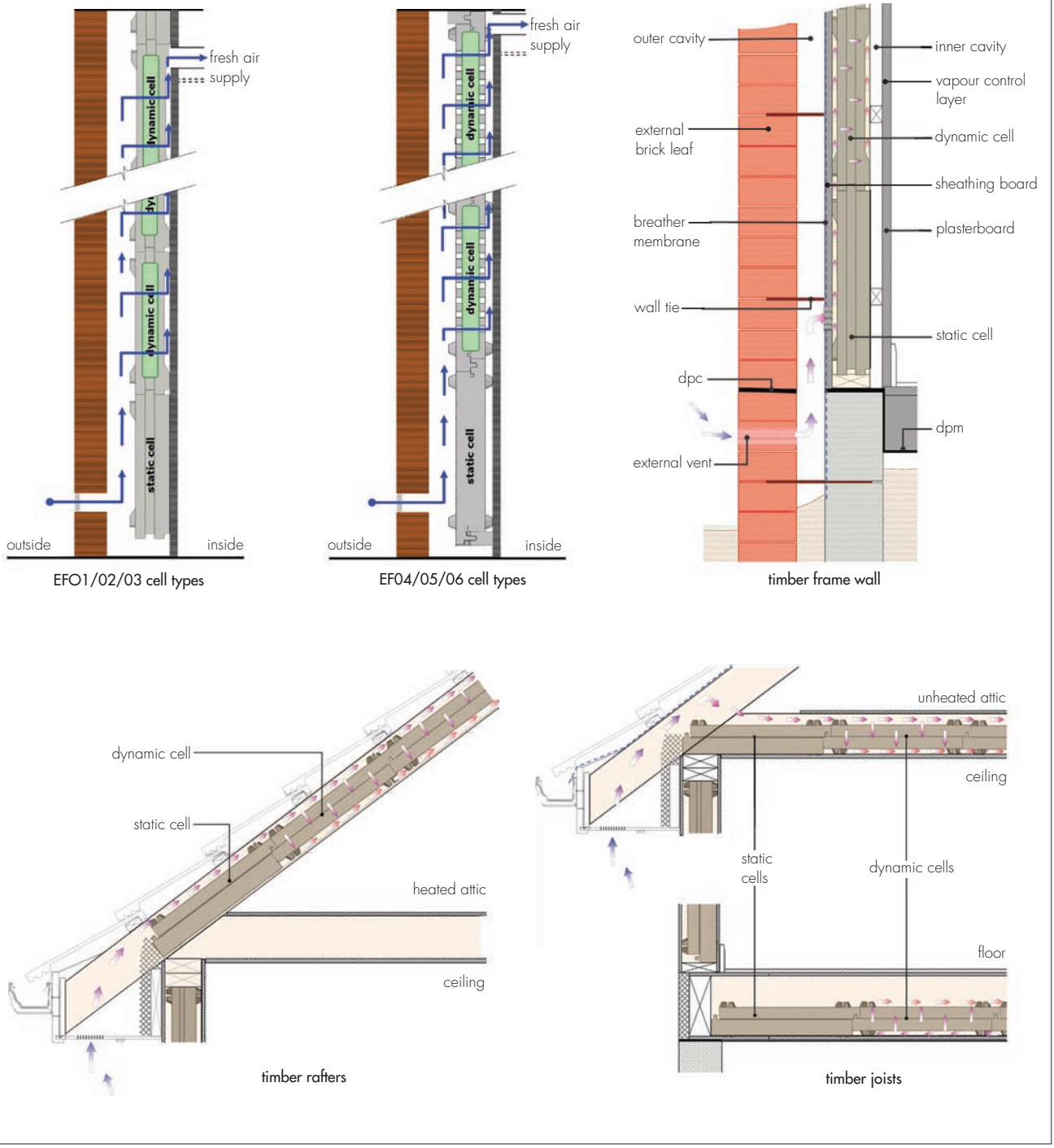
1.5 The cells may be installed in more than one layer, provided sufficient space to accommodate the additional layer is available and the advice of the Certificate holder is sought.

2 Delivery and site handling

2.1 The product is supplied in polyethylene wrapped packs, each bearing the cell type, dimensions, number of cells and the BBA identification mark incorporating the number of this Certificate.

2.2 The product should be protected from precipitation, ground moisture, high winds, ignition sources, solvents and prolonged exposure to sunlight.

Figure 3 Ventilation air flow paths



Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on The Energy*flo* Cell for use in Timber-frame Elements.

Design Considerations

3 General

3.1 The products will be effective in reducing the U value (thermal transmittance) of walls, floors and roofs.

3.2 The dynamic product will provide an effective filter layer in an overall air delivery system that is designed and installed with appropriate care to:

- effectively seal the innermost plenum and avoid air flow paths which short circuit the filter media
- arrange air ingress and draw-off to engage the full installed area of the dynamic cells

- accommodate the pressure drop imparted by the filter layer, together with the plenums either side and all other ducting and grill components used
- include cavity barriers and fire dampers as appropriate to preserve the integrity of fire resisting layers/elements and inhibit the unseen spread of smoke and fire
- ensure that electrical components, and their installation, fully comply with the relevant electrical safety requirements.

3.3 Care must also be taken in the overall design and construction of elements incorporating the products to ensure appropriate:

- sheathing or bracing for timber-frame elements. The products must not be relied upon to provide any structural contribution, eg racking strength
- fire resistance, for both elements and junctions
- cavity barriers and fire dampers
- resistance to the ingress of precipitation, moisture and dangerous gases from the ground
- resistance to sound transmission when flanking separating walls and floors.

3.4 When specifying very wide cavities or deep timber frames, non-standard products and detailing solutions may need to be considered.

3.5 Where buildings need to comply with *NHBC Standards 2007* or *Zurich Building Guarantee Technical Manual 2007* designers should observe the relevant requirements.

3.6 Roof designs incorporating dynamic cells should take into account the risk of solar overheating.

3.7 The product is installed between timber joists, studs or rafters with a sealed plenum either side of the dynamic cells and a perimeter of solid cells.

3.8 The product may be used with other types of wall construction, such as rainscreen, curtainwall. The circumstances of application for these types are not within the scope of this Certificate and other requirements may apply.

4 Practicability of installation

Conventional installation techniques are suitable for the static and dynamic products, although particular care is required to install the dynamic product without air paths short circuiting the filter media, to maintain a reasonably airtight plenum on the warm side and to arrange air draw-off to engage equally the full installed area.

5 Ventilation

5.1 As a component in a low-input continuous mechanical ventilation system, the filter layer is effective in filtering out over 90% of fine to nano particulates (PM <1 μm).

5.2 For design purposes, a nominal pressure drop of around 0.2 Pa to 1 Pa can be taken for each dynamic cell, depending on type, ventilation rate and building plan. The size, number and mix of dynamic and solid cells required for each building will depend on the ventilation requirements and available envelope area and should be determined on a case-by-case basis by the Certificate holder. Example 'approximate' requirements for area of dynamic cells are shown in Table 2, for typical air speeds in the filter media of from 1 mms^{-1} to 2 mms^{-1}.

Table 2 Example 'approximate' requirements for installed area of dynamic cells in buildings

Building type and size	Required air supply rate (ls^{-1})	Dynamic cell area (m^2)
Three-bedroom dwelling	21	50 to 25
Office building (for 50 staff)	10 (per person)	400 to 200

5.3 Further guidance on ventilation for buildings can be found in:

England and Wales — Approved Document F, Table 1.1b and Section 2

Scotland — CIBSE Guide B2 : 2001 and BS 5720 : 1979

Northern Ireland — Technical Booklet K.

5.4 Provision must also be made for local extract and purge ventilation in wet rooms and rooms where significant amounts of pollutants are generated, for example kitchens and bathrooms, or in offices where equipment emits significant amounts of total volatile organic compounds (TVOCs) and ozone.

6 Conservation of fuel and power

6.1 Calculations of the thermal transmittance (U value) of specific wall, floor and roof constructions should be carried out in accordance with BS EN ISO 6946 : 1997, BS EN ISO 13370 : 1998 and BRE Report (BR 443) *Conventions for U-value calculations*, using the product resistance values shown in Table 3. U values of typical constructions incorporating the dynamic cell are shown in Table 4 (see also section 3.4).

Table 3 Thermal resistance values (including air cavities)

Product	Thickness (mm)	R value ($m^2K^{-1}W^{-1}$)			
		white (solid)	grey (solid)	white (dynamic)	grey (dynamic)
EF01	90	2.546	2.769	1.888	1.974
EF02	90	2.568	2.793	1.972	2.079
EF03	160	4.299	4.693	3.885	4.183
EF04	140	3.721	4.077	2.699	2.876
EF05	160	4.327	4.744	3.167	3.363
EF06	180	4.933	5.410	3.636	3.850

Table 4 Typical element U values (grey dynamic cells only)

Cell	Thickness (mm)	U value ($Wm^{-2}K^{-1}$)[1]			
		Timber wall[2]	Floor[3]	Ceiling[4]	Pitched roof[5]
EF01-d	90	0.44	0.30–0.36	0.45	0.51
EF02-d	90	0.42	0.29–0.35	0.44	0.49
EF03-d	160	0.25	0.20–0.22	0.24	0.27
EF04-d	140	0.32	0.24–0.28	0.33	0.36
EF05-d	160	0.29	0.22–0.25	0.29	0.32
EF06-d	180	0.26	0.20–0.23	0.26	0.28

(1) U values vary by 'approximately' the following amounts for:
- white dynamic cells: +3 to +5%
- white static cells: −10 to −20%
- grey static cells: −13 to −25%.

(2) Plasterboard, 15% timber stud, OSB, cavity and brick outer leaf.

(3) Chipboard deck, 11% timber joists, ventilated sub-floor void and P/A ratio from 0.4 to 0.9.

(4) Plasterboard, 9% timber joists and unheated loft space over.

(5) Plasterboard, 12.5% timber rafters and slates/tiles over an underlay.

6.2 For the purposes of estimating overall building heat loss, ventilation losses are separate from U values, regardless of the unconventional path taken by the supply air in this instance (see also section 6.6).

6.3 Walls, floors and roofs incorporating the appropriate product type or thickness can achieve, or contribute to achieving, the design U values shown in Table 5.

Table 5 Design U values ($Wm^{-2}K^{-1}$)

Wall	Floor	Roof	Notes
England and Wales, and Northern Ireland			
0.35	0.25	0.25	required for 'notional' buildings in SAP and SBEM calculations — Approved Document L1A, Table 2, and Approved Document L2A, Table 4; Technical Booklet F1, Table 2.2, and Technical Booklet F2, Table 2.4
0.70	0.70	0.35	limit for an individual element – Approved Document L1A, Table 2, and Approved Document L2A, Table 4; Technical Booklet F1, Table 2.2, and Technical Booklet F2, Table 2.4.
Scotland			
n/a	n/a	0.16	simplified approach, notional dwellings using any fuel package (clause 6.1.6)
0.20	0.20	0.16	simplified approach, notional dwellings using fuel package 6 (clause 6.1.6)
0.25	0.20	0.16	simplified approach, notional dwellings using fuel package 3 (clause 6.1.6)
0.25	0.22	0.16	simplified approach, notional dwellings using fuel packages 1, 2, 4 and 5 (clause 6.1.6)
0.30	0.25	0.20	limit average (clause 6.2.1)
0.70	0.70	0.35	limit for an individual element (clause 6.2.1)
0.30	0.25	0.16	required for 'notional' buildings in SBEM calculations (clause 6.1.3)

6.4 Where a proposed wall, floor or roof U value is not better than the relevant 'notional' value in Table 5, additional energy saving measures will be required in the building envelope and/or services to achieve the required overall carbon dioxide emissions rate reduction of about 20% in dwellings (18% to 25% in Scotland) and 23% to 28% in buildings other than dwellings.

6.5 The solid cells can contribute to maintaining continuity of thermal insulation at junctions between elements and around openings. Guidance in this respect, and on limiting heat loss by air infiltration, can be found in:

England and Wales — *Limiting thermal bridging and air leakage: Robust constructions details for dwellings and similar buildings* TSO 2002 or Accredited Construction Details (version 1.0)

Scotland — Accredited Construction Details (Scotland)

Northern Ireland — Accredited Construction Details (version 1.0).

Dynamic insulation

6.6 It should be noted that ventilation air drawn through the dynamic cells will recover some of the heat which would otherwise be lost by conduction[1].

(1) At the time of issue of this Certificate, a formal codified method for quantifying or using 'dynamic U-values' is not available, but the Certificate holder is currently undergoing such an assessment, in accordance with SAP 2005, Appendix Q, to enable this mechanism of heat recovery to be formalised and used in heat-loss calculations.

7 Condensation risk

General

7.1 Air supply systems incorporating the dynamic product can reduce internal relative humidities and thereby contribute to minimising the risk of condensation.

Surface condensation

7.2 Internal room surfaces adjacent to dynamic cells may be cooled slightly by the incoming filtered air, but this should not lead to problems unless high air flow rates and high indoor/outdoor temperature differences persist for long periods. Where such conditions are anticipated, the advice of the Certificate holder should be sought at the design stage.

7.3 Walls, floors and roofs will adequately limit the risk of surface condensation where the thermal transmittance (U value) does not exceed 0.7 $Wm^{-2}K^{-1}$ and, for roofs, 0.35 $Wm^{-2}K^{-1}$, at any point, and openings and junctions with other elements are designed in accordance with the relevant guidance referred to in section 6.5.

7.4 Walls, floors and roofs will adequately limit the risk of surface condensation where the thermal transmittance (U value) does not exceed 1.2 $Wm^{-2}K^{-1}$ at any point and the design is in accordance with the relevant requirements of BS 5250 : 2002, Section 8. Openings and junctions with other elements designed in accordance with the relevant guidance referred to in section 6.5 are acceptable.

Interstitial condensation

7.5 Elements incorporating the product can adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2002, Annex D and the relevant guidance. The ingress of cooler (lower humidity) air and measures taken to preserve the integrity of the warm-side plenum will limit the opportunities for moisture vapour ingress and condensation. A vapour control layer should be used.

8 Behaviour in relation to fire

8.1 The product is classified as 'combustible'.

8.2 When installed, the product will be contained by a suitable lining (eg 12.5 mm thick, Type F plasterboard), with all joints fully sealed and supported by timber rafters/studs/joists. Therefore, it will not contribute to the development stages of a fire or present a smoke or toxic hazard until the lining is compromised.

8.3 The use of the products in pitched roofs will not affect the external fire rating of a slated or tiled roof when evaluated by assessment or test to BS 476-3 : 2004. The products must not be carried over junctions between those roofs and walls required to provide a minimum period of fire resistance.

General

8.4 External walls incorporating the product must be designed and constructed to achieve the relevant minimum period of fire resistance specified by the national Building Regulations.

8.5 Elements incorporating the products which flank a fire resisting element must be suitably designed to ensure that the junction has a period of fire resistance not less than that of the fire resisting element.

8.6 Cavities must incorporate cavity barriers at edges, around openings, at junctions with fire resisting elements and in extensive cavities (>10 m) in accordance with the relevant provisions of the national Building Regulations and relevant purpose group. The design and installation of cavity barriers must take into account any anticipated differential movement.

8.7 Ducting for air delivery systems must incorporate fire dampers as required to maintain the fire resistance of any element they pass through, in accordance with the relevant provisions of the national Building Regulations.

9 Proximity of flues and appliances

When installing the products in close proximity to certain flue pipes and/or heat-producing appliances, the following provisions to the national Building Regulations are acceptable:

England and Wales — Approved Document J

Scotland — Mandatory Standard 3.19

Northern Ireland — Technical Booklet L.

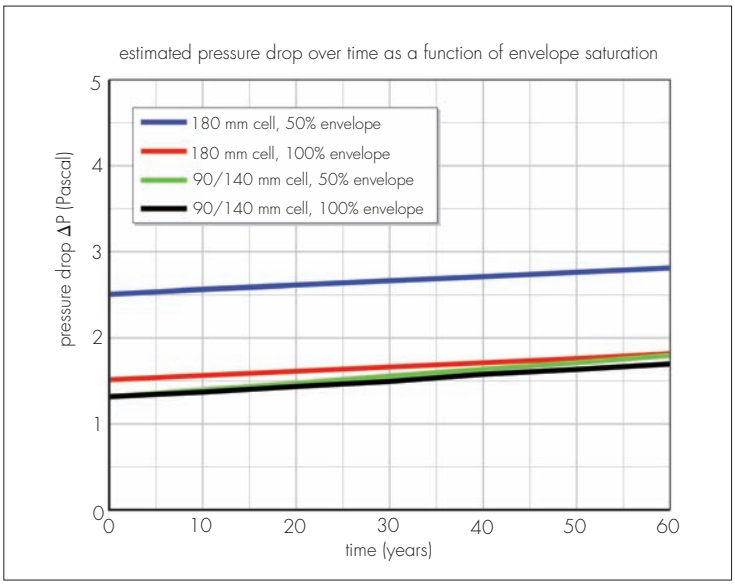
10 Maintenance

The product does not require maintenance.

11 Durability

11.1 Unlike conventional air filters, the much larger area of the filter media in the dynamic product means that air speeds are typically 100 times slower and, consequently, the dominant capture method for particulate matter is the more efficient diffusion, rather than impact. The continuing efficacy of the filtration layer will depend upon the level of external pollution, the amount of filter layer and the building ventilation rate. The pressure drop associated with time for different product thicknesses and areas at street level in central London is shown in Figure 4. It is recommended that designs allow for a maximum pressure drop of around 10 Pa for fan-size rating.

Figure 4 Effect of façade area on filter layer pressure drop



11.2 The EPS component of the product is rot-proof, dimensionally stable and durable and will remain effective as an insulant for the life of the building in which it is installed.

Installation

12 General

12.1 Installation of The Energy*flo* Cell should be in accordance with the manufacturer's instructions and this Certificate (see also the *General* section on pages 5 and 6 of this Certificate).

12.2 The Certificate holder, or approved supplier, will advise on the required mix and location of solid and dynamic cells at the design stage.

12.3 Conventional construction techniques may be used, but with particular care to establish the integrity of the required air flow paths through dynamic cells and the overall design requirements described in section 3.

12.4 Solid cells are used at element junctions, openings and plenum perimeters as required.

13 Procedure

Plenums

13.1 It is essential to arrange air inlets, plenums and ducting to utilise the full area of the dynamic cells.

13.2 It is essential that joints between dynamic cells are firmly butted and the junction between solid cells and the abutting plasterboard is effectively sealed with a durable solvent-free sealant, to ensure that air drawn from the plenum is replaced by air drawn through the filter media and not from any other source.

13.3 The cell spacers maintain the required minimum air cavity.

Finishing

13.4 Conventional finishing techniques may be used, but with particular care to maintain:

- vapour check and air barrier continuity
- fire resistance, cavity barrier and fire stopping integrity
- plenum airtightness integrity.

Services

13.5 Services should not be incorporated into the warm side air plenum unless materials, skills and build supervision are available to robustly maintain the integrity for the life of the building.

Technical Investigations

14 Investigations

14.1 An examination was made of data in respect of:

- filter layer efficacy and longevity
- EPS properties
- thermal transmittance (U values) of completed constructions incorporating the product
- risk of condensation.

14.2 The circumstances of manufacture were examined and found to be satisfactory.

14.3 The installation process and its practicability were observed.

Bibliography

BS 476-3 : 2004 *Fire tests on building materials and structures — Classification and method of test for external fire exposure to roofs*

BS 5250 : 2002 *Code of practice for control of condensation in buildings*

BS 5268-3 : 2006 *Structural use of timber — Code of practice for trussed rafter roofs*

BS 5268-6.1 : 1996 *Structural use of timber — Code of practice for timber frame walls — Dwellings not exceeding four storeys*

BS 5268-6.2 : 2001 *Structural use of timber — Code of practice for timber frame walls — Buildings other than dwellings not exceeding four storeys*

BS 5534 : 2003 *Code of practice for slating and tiling (including shingles)*

BS 5720 : 1979 *Code of practice for mechanical ventilation and air conditioning in buildings*

BS 8103-3 : 1996 *Structural design of low-rise buildings — Code of practice for timber floors and roofs for housing*

BS EN ISO 6946 : 1997 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

BS EN ISO 13370 : 1998 *Thermal performance of buildings — Heat transfer via the ground — Calculation methods*

15 Conditions

15.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English law.

15.2 References in this Certificate to any Act of Parliament, Statutory Instrument, Directive or Regulation of the European Union, British, European or International Standard, Code of Practice, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

15.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

15.4 In granting this Certificate, the BBA is not responsible for:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

15.5 Any information relating to the manufacture, supply, installation, use and maintenance of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.

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