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Agrément Certificate
96/3273
Product Sheet 1

PASSIVENT PASSIVE STACK VENTILATION SYSTEMS

IPSV INTELLIGENT PASSIVE STACK VENTILATION SYSTEM

This Agrément Certificate Product Sheet⁽¹⁾ relates to iPSV⁽²⁾ intelligent Passive Stack Ventilation System, a range of composite components used to provide background extract ventilation in new or existing dwellings.

- (1) Hereinafter referred to as 'Certificate'.
(2) iPSV is a registered trademark.

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

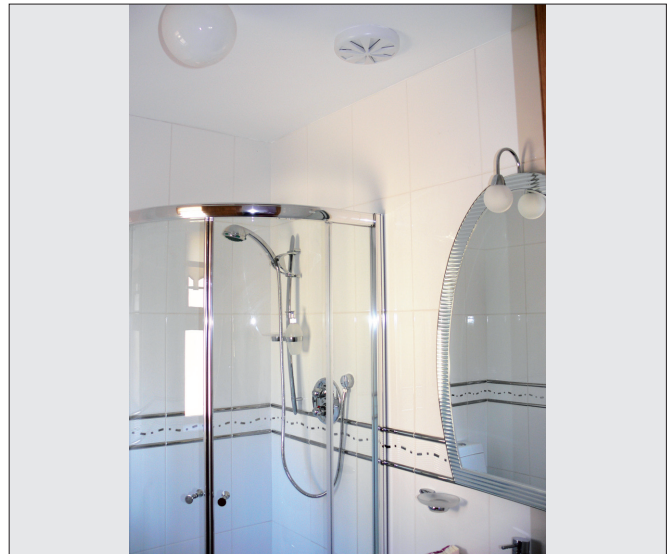
Ventilation — the system can provide adequate background ventilation (see section 6).

Condensation — the system will contribute to limiting the risk of surface condensation (see section 7).

Behaviour in relation to fire — the system will not significantly affect fire spread (see section 8).

Weathertightness — the system will resist the ingress of precipitation (see section 11).

Durability — the system will have a life equal to that of the building in which it is installed (see section 13).



The BBA has awarded this Certificate to the company named above for the system described herein. This system 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: 24 March 2015

John Albon — Head of Approvals

Originally certificated on 19 September 1996

Construction Products

Claire Curtis-Thomas
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, *iPSV* intelligent Passive Stack Ventilation System, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement: C2(b)	Resistance to moisture
Comment:	The system can resist the ingress of precipitation. See section 11 of this Certificate.
Requirement: C2(c)	Resistance to moisture
Comment:	The system can contribute to limiting the risk of condensation. See section 7.1 of this Certificate.
Requirement: F1(1)	Means of ventilation
Comment:	The system can contribute to providing adequate background ventilation. See section 6 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The components are acceptable. See section 13.1 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)	Durability, workmanship and fitness of materials
Comment:	The system can contribute to a construction satisfying this Regulation. See section 13.1 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards applicable to construction
Standard: 3.10	Precipitation
Comment:	The system will resist the ingress of precipitation, with reference to clause 3.10.1 ⁽¹⁾ See section 11 of this Certificate.
Standard: 3.14	Ventilation
Comment:	The system can contribute to providing adequate background ventilation, with reference to clauses 3.14.5 ⁽¹⁾ and 3.14.6 ⁽¹⁾ . See section 6 of this Certificate.
Standard: 3.15	Condensation
Comment:	The system will contribute to minimising the risk of condensation with reference to clauses 3.15.1 ⁽¹⁾ and 3.15.2 ⁽¹⁾ . See section 7.1 of this Certificate.
Standard: 7.1(a)	Statement of sustainability
Comment:	The system can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze or Bronze Active level of sustainability as defined in this Standard.
Regulation: 12	Building standards applicable to conversions
Comment:	All comments given for this system under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾ and Schedule 6 ⁽¹⁾ . (1) Technical Handbook (Domestic).



The Building Regulations (Northern Ireland) 2012

Regulation: 23	Fitness of materials and workmanship
Comment:	The system is acceptable. See section 13.1 and the <i>Installation</i> part of this Certificate.
Regulation: 29	Condensation
Comment:	The system will contribute to minimising the risk of condensation. See sections 7.1 of this Certificate.
Regulation: 65(1)	Means of ventilation
Comment:	The system can contribute to providing adequate background ventilation. See section 6 of this Certificate.
Regulation: 28(b)	Resistance to moisture and weather
Comment:	The system will resist the ingress of precipitation. See section 11 of this Certificate.

Construction (Design and Management) Regulations 2007

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

In the opinion of the BBA, this Certificate does not include any content which relates to the obligations of the client, CDM co-ordinator, designer and contractors under these Regulations.

1 Description

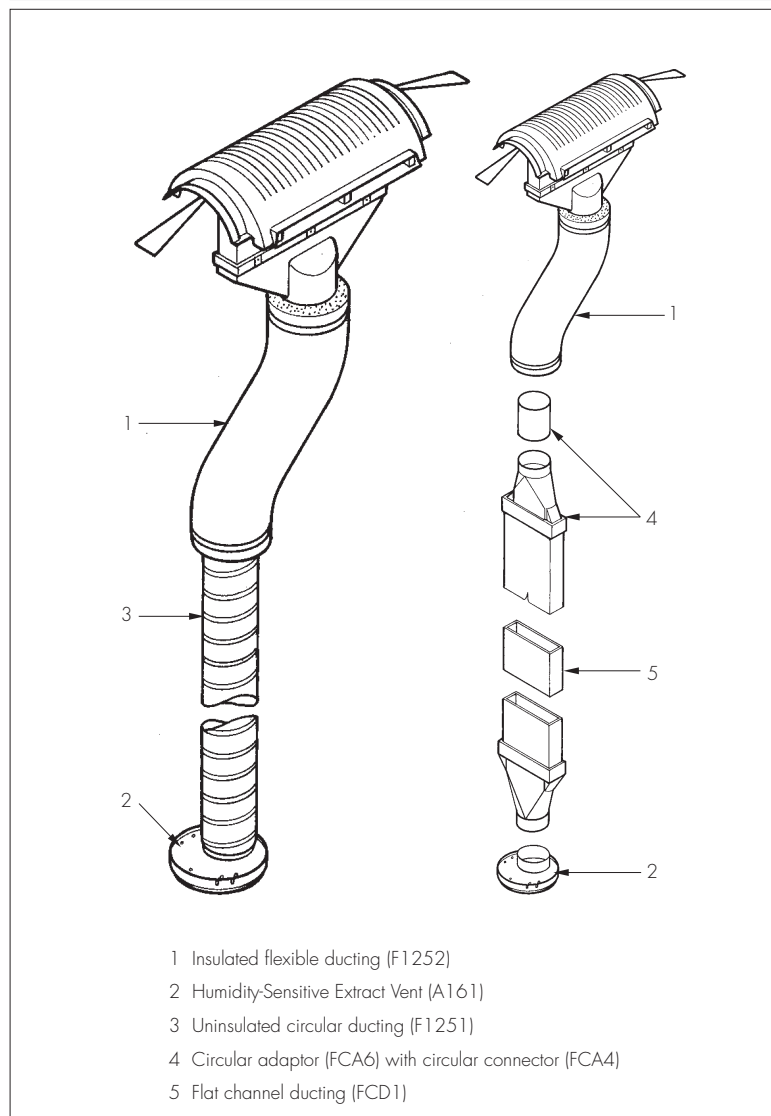
1.1 The *i*PSV intelligent Passive Stack Ventilation System relies on the stack effect and the passage of air passing over the roof to vent air from utility/wet rooms (such as kitchens and bathrooms) to the outside. The vented air is replaced by air from dry rooms within the building.

1.2 The system comprises:

Air extract

- Humidity-sensitive extract vent (A161) — a plastic body incorporating a humidity-sensitive component. Fitted to the base of the duct connecting utility/wet rooms to the outside.

Figure 1 Components — example



Ducting

- Flexible circular ducting (F1251) — with an internal diameter of 125 mm
- insulated flexible ducting (F1252) with an internal diameter of 125 mm and 25 mm of insulation (thermal conductivity $\leq 0.04 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) — for use in unheated parts of the building. The flexible circular ducting can be connected to the insulated ducting using a sleeve coupling (MC01) secured with a speed clamp (X332). The speed clamp is also used to secure the flexible circular ducting to the humidity-sensitive extract vent
- flat channel ducting (FCD1), 204 mm by 60 mm — can be accommodated within a stud wall. It can be connected to other parts of the system using a flat channel straight connector (FCA3); flat channel circular connector (FCA4); and/or a flat channel circular adaptor (FCA6).

Roof terminals

- ridge terminals (PRT) — fits a range of profiles
- slate/tile terminal vent (TT9) — fits a range of profiles. Used only at high level, a maximum of 0.5 m down from the ridge.

Accessories

1.3 Duct tape can accompany the range but specific tapes are outside the scope of this Certificate.

2 Manufacture

2.1 The ridge and slate/tile terminals are formulated with some recycled content.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials and components
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Passivent Limited has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by LRQA (Certificate LRQ 4002540/A2).

2.4 The environmental management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 14001 : 2004 by LRQA (Certificate LRQ 4002540/B).

3 Delivery and site handling

The products are delivered to site in boxes. These are shrink-wrapped after being stacked on a pallet.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the iPSV intelligent Passive Stack Ventilation System

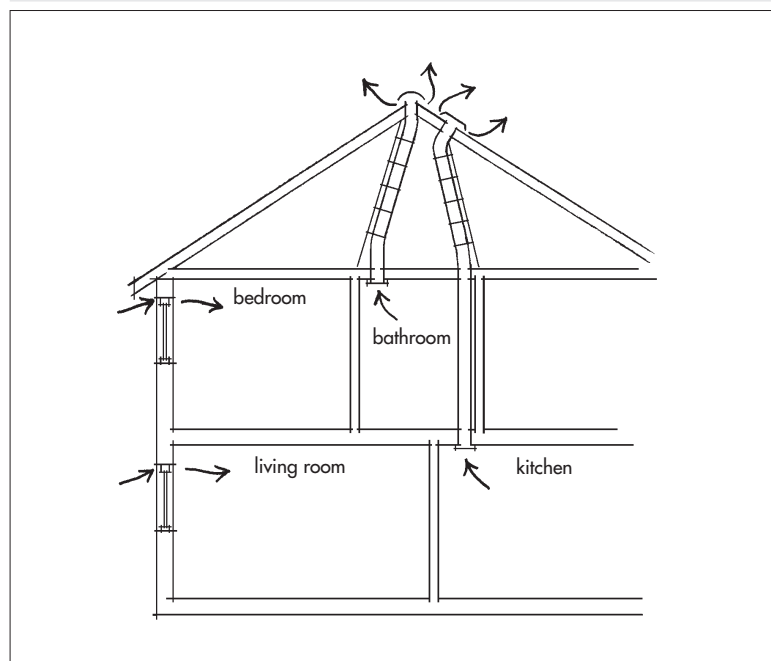
Design Considerations

4 General

4.1 The iPSV intelligent Passive Stack Ventilation System is used to provide extract ventilation in new or existing dwellings up to three storeys. It is essential that the system is installed and used in accordance with the Certificate holder's instructions and the provisions of this Certificate.

4.2 The system comprises separate ducts taken from the ceilings of wet rooms to separate terminals on the roof (see Figure 2). The extract grille on the lower end of each duct includes a humidity-controlled louvre which modulates the level of extraction depending on the level of humidity. A wall- or window-mounted background ventilator is provided in each of the remaining (dry/habitable) rooms and, where necessary, internal grilles or undercutting of the internal doors can be used to aid airflow from these rooms to replace the air extracted from the wet rooms.

Figure 2 Typical layout



4.3 The system is designed to satisfy the principles of ventilation described in BRE Information Paper IP 13/94 *Passive stack ventilation systems : design and installation*, including:

- separate ducting and outlets for each utility/wet room to avoid crossflow
- ducting outlets designed and installed to minimise the risk of adverse airflow due to prevailing wind speed and direction
- vertical, or near vertical, ducting to minimise resistance to airflow.

5 Practicability of installation

Construction of the system is recommended to be carried out by Passivent Mastercare installers, in accordance with the Certificate holder's installation manual.

6 Ventilation



6.1 The system can provide adequate means of background ventilation, in accordance with the national Building Regulations:

England and Wales — Approved Document F, Table 5.2b

Scotland — Mandatory Standard 3.14, clauses 3.14.1⁽¹⁾ and 3.14.6⁽¹⁾

(1) Technical Handbook (Domestic).

Northern Ireland — Technical Booklet K, Note (1) to Table 3.2.

6.2 Ventilation performance is calculated in accordance with the design principles of CIBSE Guide A : *Environmental design*. The pressure driving the airflow is the sum of the wind- and stack-induced pressure, which exceeds the sum of the duct loss and extract vents and roof terminals. The Certificate holder provides equipment kits that are designed to meet these requirements and a design service for each building to determine the requirements for each room. The system design takes into account the following parameters:

- internal/external temperature difference
- average wind velocity at roof terminal height
- pressure loss coefficients for ducts, and outlet and extract grilles
- degree of shelter
- orientation of façade elements
- air leakage through gaps in building elements
- air inlet area through vents.

7 Condensation



7.1 The use of the system will contribute to satisfying the requirements for limiting the risk of condensation.

7.2 The risk of condensation is greatest when a building is drying out after construction. Guidance on preventing condensation from this, and other sources, is given in BRE Digest 369 and in BRE Report BR 262 : 2002.

8 Behaviour in relation to fire

8.1 Extract vents mounted on a ceiling need not be taken into account when considering the classification of the lining's resistance-to-fire spread.

8.2 The introduction of slate or ridge vents in a traditional roof construction does not affect the fire rating of such a construction.

8.3 A single house is a single fire compartment; however, for services penetrating an element of construction, care should be taken to ensure that the edges of an opening in the floor are adequately constructed to ensure that the integrity of the remainder of the floor is maintained. In three-storey houses, care should be taken not to prejudice escape routes (for example, by encasing ductwork in half-hour fire-resistant boarding).

9 Noise

In some circumstances, noise entering through external vents can be intrusive (for example, if a building is situated close to busy roads or near airports); therefore, the use of sound-attenuating ductwork should be considered at the design stage, in accordance with BS 5925 : 1991. Additional information can be found in CIBSE Guide B : 2005 *Heating, Ventilating, Air Conditioning, Refrigeration*, Sections 2, 3 and 12.

10 Combustion appliances

When ventilating a room containing a combustion appliance, care should be taken to ensure there are sufficient permanent openings in the room, to permit the safe and efficient operation of the appliance. Guidance may be found in the following documents:

England and Wales — Approved Documents J and F1.

Scotland — Mandatory Standards 3.17 and 3.21.

Northern Ireland — Technical Booklet L.

11 Weathertightness



The ridge and slate terminal vents will adequately resist the ingress of precipitation.

12 Maintenance

In general, no maintenance will be required. However, periodic cleaning of the extract vents is recommended. The humidity-controlled lever which operates the grille flap orientation is factory-pre-set and should not require adjustment.

13 Durability



13.1 The components are made of durable materials and should have a life equal to that of the building in which they are installed.

13.2 During the lifetime of externally-mounted products, some fading should be expected due to UV degradation, but this will not affect the performance.

Installation

14 General

14.1 Installation of the *i*PSV intelligent Passive Stack Ventilation System must comply with the provisions of this Certificate and the Certificate holder's instructions and is recommended to be carried out by a Passivent Mastercare trained installer holding a current certificate.

14.2 The Certificate holder provides a design service and layout plans for each project.

15 Procedure

15.1 Ducts must be installed with one stack per extract vent, with a maximum of two bends not exceeding 45°. Insulated ducting must be used in unheated spaces. Ridge terminals should be installed on the top of the roof, although slate/tile terminals are also available, but these must be installed no more than 0.5 m from the ridge and away from prevailing wind. All ductwork should be firmly secured, take the shortest path and be as near vertical as possible. All ducting must be pulled taut.

15.2 The extract vents should be placed in a suitable location to enable extraction of air. In kitchens they should be near, but not directly over, a cooker.

15.3 The base unit of the extract vent can be fitted to the ceiling using the screws provided. Once the notch and arm are aligned, the location of the facia over the base plate allows the components to click together.

15.4 To install the extract vent to flat channel ducting, the flat channel circular adaptor is connected onto the spigot on the rear of the pre-installed extract vent and pushed firmly together to ensure a tight seal. The flat channel ducting is connected to the adaptor.

Connecting ducting

- Two lengths of flexible ducting can be connected using the sleeve coupling, secured with speed clamps and tightened into position.
- Two lengths of flat channel ducting can be connected using the flat channel straight connector, and taping the joints created from the connections.
- Flat channel adaptors are used to connect flat channel ducting with either flexible circular ducting or insulated ducting as relevant, and taping the joints created from the connections. For insulated ducting, a speed clamp is used over the insulated end.

15.5 The terminal is connected to insulated ducting using the spigot of the terminal pipe adaptor, secured with a speed clamp. The ridge terminal or tile terminal is used at the other end of the adaptor.

15.6 In order to install ridge and slate/tile terminals, refer to the manufacturer's installation guide for detailed information on the *i*PSV components and fixing requirements.

Technical Investigations

16 Investigations

16.1 An examination was made of data relating to:

- airflow characteristics
- resistance to rain ingress
- effect of UV and heat ageing
- resistance to impact
- acoustic performance.

16.2 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

16.3 Visits to sites were conducted and the practicability of installation assessed.

16.4 A survey of users of the system was conducted.

16.5 The effect of the installation of the system on security against intrusion was assessed.

Bibliography

BS 5925 : 1991 *Code of practice for ventilation principles and designing for natural ventilation*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

BS EN ISO 14001 : 2004 *Environmental management systems — Requirements with guidance for use*

BRE Digest 369 *Interstitial condensation and fabric degradation*

BRE Information Paper IP 13/94 *Passive stack ventilation systems : design and installation*

BRE Report (BR 262 : 2002) *Thermal insulation : Avoiding risks*

CIBSE Guide A : 1999 *Environmental Design*

CIBSE Guide B : 2005 *Heating, Ventilating, Air Conditioning, Refrigeration*

17 Conditions

17.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- 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.

17.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

17.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and 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.

17.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

17.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- 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
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

17.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal 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, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue 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.