



## Vencel Resil Limited

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**Agrément  
Certificate  
No 86/1668**  
Fourth issue\*

Designated by Government  
to issue  
European Technical  
Approvals

## JABDEC LAMINATED ROOF INSULATION BOARD

Isolant d'étanchéité  
Warmedämmung des Daches

## Product




• THIS CERTIFICATE REPLACES CERTIFICATE No 85/1518 AND RELATES TO JABDEC LAMINATED ROOF INSULATION BOARD.

- Jabdec board is available with fibreboard, cork (Jabcork) or perlite (Jabperl) bonded to one side or as Jabdec Plus with fibreboard bonded to both sides.
- The product is available in two grades and a number of thicknesses with or without tapering to suit different design requirements.
- The product is for use as a thermal insulation layer on suitably designed concrete, timber or metal structural decks in conjunction with suitable waterproofing systems.
- The product is for use on flat roofs with limited access to pedestrian traffic.
- The product must be used with a suitable vapour control layer.

## Regulations

### 1 The Building Regulations 1991 (as amended) (England and Wales)

 The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of roof insulation with the Building Regulations. In the opinion of the BBA, Jabdec Laminated Roof Insulation Board, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: B4(2)	External fire spread
Comment:	When used in conjunction with appropriate roof decks and roof finishes, the product is unrestricted under this Requirement. See section 10.3 of this Certificate.
Requirement: L1	Conservation of fuel and power
Comment:	The product will enable a roof to meet this Requirement. See sections 11.2 and 11.3 of this Certificate.
Requirement: Regulation 7	Materials and workmanship
Comment:	The product is acceptable. See section 14 of this Certificate.

# Electronic Copy

## 2 The Building Standards (Scotland) Regulations 1990 (as amended)



In the opinion of the BBA, Jabdec Laminated Roof Insulation Board, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Technical Standards as listed below.

Regulation:	10	Fitness of materials
Standard:	B2.1	Selection and use of materials and components
Comment:		The product is acceptable. See section 14 of this Certificate.
Regulation:	12	Structural fire precautions
Standard:	D3.5	Junctions between separating or compartment walls and roofs
Standard:	D6.7	Roofs and rooflights
Comment:		When used in conjunction with appropriate roof decks and roof finishes, the product is unrestricted under these Standards. See section 10.3 of this Certificate.
Regulation:	18	Preparation of sites and resistance to moisture
Standard:	G4.1	Interstitial condensation
Comment:		When used in conjunction with an appropriate vapour control layer, the product will be unrestricted under this Standard. See sections 12.1 and 12.2 of this Certificate.
Regulation:	22	Conservation of fuel and power
Standard:	J2.1	Standards for buildings in purpose group 1
Standard:	J3.1	Standards for buildings in purpose groups 2 to 7
Comment:		The product will enable a roof to satisfy these Standards. See sections 11.2 and 11.3 of this Certificate.

## 3 The Building Regulations (Northern Ireland) 1994 (as amended)



In the opinion of the BBA, Jabdec Laminated Roof Insulation Board, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 14 of this Certificate.
Regulation:	C7	Condensation
Comment:		When used in conjunction with an appropriate vapour control layer, the product will be unrestricted under this Regulation. See sections 12.1 and 12.2 of this Certificate.
Regulation:	E8	External fire spread
Comment:		When used in conjunction with appropriate roof decks and roof finishes, the product is unrestricted under this Regulation. See section 10.3 of this Certificate.
Regulation:	F2	Conservation of fuel and power — Building fabric
Comment:		The product will enable a roof to satisfy the requirements of this Regulation. See sections 11.2 and 11.3 of this Certificate.

## 4 Construction (Design and Management) Regulations 1994

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See section: *6 Delivery, site handling and storage.*

## Technical Specification

### 5 Description

5.1 Jabdec Laminated Roof Insulation Board consists of expanded polystyrene blocks produced by the steam moulding process. Cork, bitumen-impregnated fibreboard or perlite is factory-bonded to the polystyrene upper face by roller, or spray coating with adhesive and pressing together.

5.2 Jabdec Plus is produced in the same manner but includes a fibreboard layer on both faces for added rigidity and strength.

5.3 The expanded polystyrene is available in two grades, HD (high duty) or EHD (extra high duty),

and each grade is available in either Type N (normal) or Type A [flame-retardant additive in accordance with BS 3837 : Part 1 1986 (1996)].

5.4 Jabdec and Jabdec Plus boards are available in flat or tapered form, with plain edges. The grade of polystyrene is identified on the boards by marking with a coloured 10 mm wide stripe. In addition, the flame retardant type has a red stripe, thus:

Grade HD, Type N	—	black
Grade EHD, Type N	—	green
Grade HD, Type A	—	black and red
Grade EHD, Type A	—	green and red.

5.5 The boards are available in various sizes (see Table 1).

Table 1 Available sizes

Component	Flat Board			Tapered Board		
	Length (mm)	Width (mm)	Thickness (mm)	Length (mm)	Width (mm)	Thickness (mm)
cork	1000	500	>20	1000	500	>20
fibreboard	1200	900	12.5	1200	900	12.5
				600	900	12.5
perlite(s)	1200	600	15	1200	600	15
perlite (standard)	1200	600	13, 20	1200	600	13, 20
polystyrene	as required		>20 <sup>(1)</sup>	as required		>20

(1) Rising in 5 mm increments.

5.6 The characteristics of the expanded polystyrene (EPS) are given in Table 2.

Table 2 Characteristics of EPS

Characteristic	Grade HD	Grade EHD
Nominal density (kgm <sup>-3</sup> )	20	25
Minimum compressive strength at 10% compression (kNm <sup>-2</sup> )	110	150
Thermal conductivity ( $\lambda$ value) (Wm <sup>-1</sup> K <sup>-1</sup> )	0.034	0.033
Water vapour resistivity [MNs (gm <sup>-1</sup> )]	200	238

## 6 Delivery, site handling and storage

6.1 Boards are delivered to site suitably wrapped in polythene. Each board bears the manufacturer's name, grade, type markings, and the BBA identification mark incorporating the number of this Certificate.

6.2 Boards must be protected from prolonged exposure to sunlight and should be stored under cover or protected with light-coloured opaque polyethylene.

6.3 Care must be taken to avoid contact with solvents or materials containing volatile organic components such as coal tar, pitch or timber newly treated with creosote.

6.4 Boards must be stored flat, off the ground, on a clean, level surface and under cover to protect them from precipitation and high winds. They must not be exposed to open flame or other ignition sources.

## Design Data

### 7 General

7.1 Jabdec Laminated Roof Insulation Board is for use as a thermal insulation layer on limited access or lightly trafficked flat roofs with concrete, timber or metal structural decks.

7.2 Decks should be designed in accordance with the relevant clauses of BS 8217 : 1994, BS 8218 : 1998, BS 6229 : 1982 and, where appropriate, NHBC Standards, Chapter 7.1, and Zurich Building Guarantees Technical Standards, Section 6.11.

7.3 The roofs should incorporate an effective vapour control layer.

7.4 Boards are for use with one of the following waterproofing specifications:

(a) Built-up bitumen felt to BS 747 : 1994 laid in accordance with BS 8217 : 1994.

(b) Mastic asphalt laid in accordance with BS 8218 : 1998.

(c) Vencel Resil Limited to advise on other waterproofing systems.

7.5 Limited access roofs are defined for the purpose of this Certificate as those roofs subject only to pedestrian traffic for maintenance of the roof covering and cleaning of gutters, etc. Where traffic in excess of this is envisaged, special precautions, such as the use of Grade EHD and additional protection to the waterproofing membrane, must be taken.

7.6 Flat roofs are defined for the purpose of this Certificate as those roofs having a minimum finished fall of 1:80.

7.7 For design purposes on flat roofs, twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available, including overall and local deflection, direction of falls, etc.

7.8 Tapered boards may be used where appropriate to achieve the minimum finished falls required.

## 8 Adhesion

When bitumen bonded, adhesion between the insulation boards and the vapour control layer and between the boards and overlay is adequate to resist the effects of wind suction and thermal cycling likely to be experienced under normal conditions. Metal deck profiles should give a bonding area of at least 33% of the total projected surface area. In areas where high wind speeds can be expected, mechanical fixing should be considered, and the advice of the Certificate holder should be sought on the method of fixing. Reference should be made to BS 6399 : Part 2 : 1997 where a calculation is required for a specific building project.

## 9 Resistance to loading

Grade HD boards have adequate resistance to the loads associated with light maintenance traffic on felted roofs and minimal pedestrian traffic on protected felt or asphalt roofs. If there is a likelihood of more severe traffic, then the use of Grade EHD should be considered.

## 10 Properties in relation to fire

10.1 The fire rating of any roof containing the boards will depend heavily on the type and nature of deck, and on the roof waterproofing layer and/or the surface finish used.

10.2 The polystyrene component of the boards melts when exposed to excessive heat. The boards

are classified Type A or N in accordance with BS 3837 : Part 1 : 1986(1996). Where it is considered that a fire hazard may exist during installation, Type A should be used.



10.3 The designation of the roof covering containing the boards must meet or satisfy the requirements of the national Building Regulations, thus:

### **England and Wales**

Approved Document B, Section 14. Notional designations of some common roof coverings are given in Appendix A, Table A5 of the Approved Document

### **Scotland**

Provisions deemed to satisfy the Technical Standards D3.5 and D6.7 and Appendix to Part D

### **Northern Ireland**

Technical Booklet E, Regulation E8. If on flat roofs, the waterproof covering is protected by one of the surface finishes defined in Part IV of Table 4.6 of Technical Booklet E, the roof is deemed to be of designation AA.

10.4 The designation of other specifications should be confirmed by test or assessment.

## **11 Thermal insulation**

11.1 For the purpose of U value calculations to determine if the requirements of the Building (or other statutory) Regulations are met, the thermal conductivity ( $\lambda$  value) of the foam boards components (measured in  $Wm^{-1}K^{-1}$ ) may be taken as:

Grade HD EPS	0.034
Grade EHD EPS	0.033
cork	0.042
fibreboard	0.057
perlite	0.055.



11.2 The requirement for limiting heat loss through the building fabric can be satisfied if the U values of the building elements (including thermal bridging) do not exceed the maximum values in the relevant Elemental Method given in the national Building Regulations thus:

### **England and Wales**

Approved Document L

### **Scotland**

Technical Standards, Part J

### **Northern Ireland**

Technical Booklet F.

11.3 These documents also give guidance on selecting the thickness of insulation required to enable a roof to achieve the desired U value. Alternative approaches to the Elemental Method are described which allow for some flexibility in design of U values for individual constructional elements.

## **12 Condensation risk**



12.1 Boards used in conjunction with an effective vapour control layer are unlikely to be affected by interstitial condensation.

12.2 Where an effective vapour control layer is difficult to ensure (eg where the boards have additional mechanical fixings), the risk of condensation should be assessed in accordance with Appendix A of BS 6229 : 1982.

## **13 Maintenance**

Maintenance of the insulation layer will not be required provided the roof waterproof covering remains intact.

## **14 Durability**



The boards are rot-resistant and durable, and will have a life at least as long as the roof waterproof covering.

## **Installation**

## **15 General**

15.1 Jabdec Laminated Roof Insulation Board must be installed in accordance with Vencil Resil Limited's instructions and BS 8217 : 1994, BS 8218 : 1998, BS 6229 : 1982, or the relevant BBA Certificate, depending on the waterproofing to be applied. Bitumen bonding may be augmented by mechanical fixing where appropriate (see section 8 of this Certificate).

15.2 The deck surface to which the vapour control layer is to be applied must be level, clean, dry, sound, and free from dust, grease and other defects which may prevent adhesion, all joints should be taped and the deck primed, where necessary.

15.3 A vapour control layer of minimum type 3B roofing felt to BS 747 : 1994 weighing not less than  $1.4 \text{ kgm}^{-2}$  must be bonded to the deck using sealed laps not less than 50 mm wide. Care should be taken to ensure continuity at joints, upstands and roof penetrations.

15.4 To prevent condensation, the boards should be applied only when the ambient temperature is above  $5^{\circ}\text{C}$ .

15.5 Boards cut and handle easily and provide surfaces suitable for hot bitumen bonding provided the precautions given in this Certificate are observed.

15.6 Flat boards should be laid in parallel courses, with staggered longitudinal joints (ie broken bond). All boards should be tightly butted and joints taped to avoid gaps.

15.7 It is important to seal any exposed edges of the polystyrene boards, for example, at roof vents

and upstands, with waterproofing or bituminous felt laid in hot bitumen in accordance with normal practice as defined in BS 8217 : 1994.

15.8 The boards will not be damaged by hot bitumen used in the application of subsequent roof finishes, but the expanded polystyrene will melt on contact with high temperature heat sources, eg bitumen boilers, droplets of hot bitumen, etc. Installation of the roof covering demands care in this respect.

15.9 The boards must be kept dry at all times, and those accidentally wetted must be replaced or allowed to dry fully before application of the waterproof layer.

15.10 The roof waterproofing layer should be applied as soon as possible after the insulation has been laid to prevent moisture entrapment on or in the insulation. If work is interrupted, eg overnight, the exposed product should be covered.

15.11 Where mechanical fixings are required, the fixing rate and pattern should be predetermined in accordance with the manufacturer's instructions and the relevant clauses of BS 6399 : Part 2 : 1997.

15.12 On tall buildings or in areas subject to high wind loads, additional mechanical fixings at the ratio per board specified by the Certificate holder and membrane manufacturer's instructions may be required.

15.13 Once installed, access to the roof should be restricted in accordance with section 9 of this Certificate.

## Tapered boards

15.14 Pre-cut boards tapered to required falls are pre-labelled to the requirements of specific buildings on the Certificate holder's roof layout drawing.

15.15 If tapered boards are to be effective in providing a uniform fall, it is essential that the structural deck is true and even. Imperfections, such as hollows, depressions, backfalls, found in the roof deck must be rectified prior to laying the insulation.

15.16 Boards are laid sequentially in accordance with the position code number on the detailed layout supplied. Laying for the main area should commence at the apex line(s) of the roof. It is advisable to check the correct location by temporarily positioning each board prior to bonding.

## 16 Procedure

**Timber decks** (eg tongue-and-groove boards, plywood)

16.1 The vapour control layer is either nailed to the deck with the nail heads blanked out with hot bitumen, or bonded to the deck using the appropriate grade of bitumen in accordance with BS 8217 : 1994 or BS 8218 : 1998.

16.2 When the vapour control layer is to be bitumen bonded to the substrate, the deck and deck joints must be coated with bitumen primer to BS 3416 : 1991. Care must be taken to ensure continuity at joints, upstands and roof penetrations.

16.3 Hot bitumen adhesive is mopped over the vapour control layer and allowed to cool until tacky before the roofing boards are fully bedded onto it. At perimeters, the vapour control layer must overlap at the edges of the insulation boards and be finished in accordance with the respective waterproofing requirements (see Figure 1 and 2). Only sufficient boards should be laid that can be waterproofed in the same working period .

16.4 All board joints should be sealed by tape to avoid the ingress of hot bitumen.

Figure 1 Built-up bitumen felt system

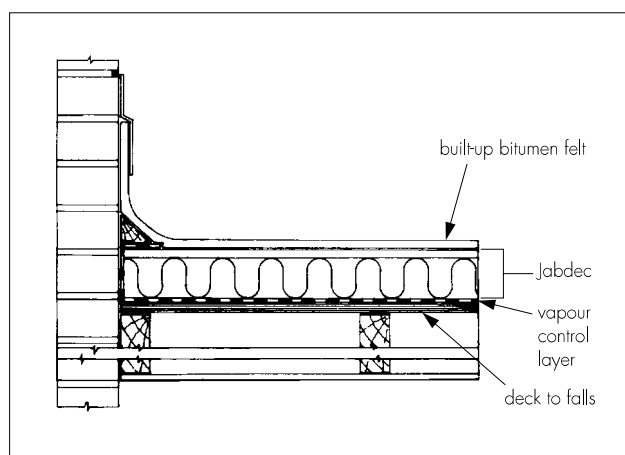
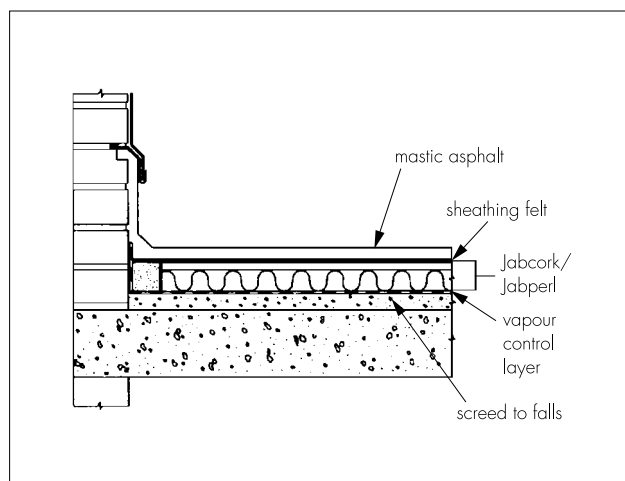


Figure 2 Mastic asphalt finish



16.5 The roof waterproofing layer is then applied using one of the following methods:

- Built-up bitumen felt to BS 747 : 1994 laid fully bonded directly on the roofing boards with the edge of the vapour control layer turned down and bonded to the overlay in accordance with BS 8217 : 1994 (see Figure 1). Three layers of bitumen felt are applied and finished in accordance with BS 8217 : 1994.
- Torch-applied built-up felt waterproofing membrane on Perlite S.

- With mastic asphalt finish (use cork or perlite overlays only), the boards should be installed in accordance with sections 15.1 to 15.9. The cork or perlite boards must be at least 20 mm thick. The edge of the vapour control layer is left vertical at the perimeter upstand to be bonded into the mastic asphalt weatherproofing, and the void between the upstand and the boards filled with a rigid material, eg dry sand/cement mix (see Figure 2). The entire surface is then covered with black sheathing felt of type 4A or 4B to BS 747 : 1994 laid loose as an isolating membrane, followed by two layers of mastic asphalt laid and finished in accordance with BS 8218 : 1998. The number of coats should be appropriate to the waterproofing requirements and traffic conditions of the roof.
- Waterproofing system laid in accordance with the Certificate holder's instructions.

16.6 Precautions must be taken during installation to avoid heat damage to the boards resulting from contact with high temperature heat sources, such as bitumen containers, droplets of hot bitumen or mastic asphalt.

### Concrete and screeded concrete decks

16.7 An appropriate levelling screed should be applied if necessary.

16.8 The deck should be treated with a suitable bitumen primer at a coverage rate of 0.4 kgm<sup>-2</sup>.

16.9 Once the primer coat is completely dry, the vapour control layer and insulation boards are both fully bonded with hot bitumen poured onto the substrate at a coverage rate of 4 kgm<sup>-2</sup>. Care should be taken to ensure that the hot bitumen is pressed

into the joints to give a good vapours seal. It is then waterproofed as described in section 16.5.

### Metal decks

16.10 The deck should be treated with a suitable bitumen primer at an average rate of 0.15 kgm<sup>-2</sup>.

16.11 A reinforced vapour control layer complying with BS 747 : 1994, Type 1F (minimum) is fully hot bitumen bonded over the metal deck and the laps are sealed. Boards are laid staggered butt-joint with the long axis at right angles to the corrugations and are bonded with hot bitumen. The trough width able to be spanned depends on the make-up of the board and its overall thickness (see Table 3). Board ends must be cut so that they are supported along the crown line of the steel profile decking. The bonding area is 100% of the total projected area available.

Table 3 Board thickness span

Board type	Minimum board thickness (mm)			
	Maximum span (mm)			
	75	110	125	210
Jabcork	45	60	70	85
Jabdec	38	53	63	78
Jabperl S	40	55	65	80
Jabperl standard (13 mm)	38	53	63	78
Jabdec Plus	45	50	60	75

16.12 For tall buildings or buildings subject to high wind loads, additional mechanical fixings at the ratio per board specified by the insulation and membrane manufacturers may be required.

16.13 The roof waterproofing is then applied as described in section 16.5.

## Technical Investigations

The following is a summary of the technical investigations carried out on Jabdec Laminated Roof Insulation Board.

### 17 Tests

A series of tests was carried out for Certificate No 85/1518 to ensure maintenance of properties and included checks on:

dimensions  
squareness  
weight  
compressive strength  
density  
bond strength between the expanded polystyrene and the fibreboard.

### 18 Other investigations

18.1 A re-examination was made of the data on which Certificate No 82/935 was based. The conclusions drawn from those data remain valid.

18.2 A survey of known users was carried out to evaluate performance in use.

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

18.4 Independent data relating to thermal conductivity and vapour permeability were examined.

18.5 No failure of the product in use was reported to the BBA during the validity of previous Certificates Nos 82/935 and 85/1518.

## Bibliography

BS 747 : 1994 *Specification for roofing felts*

BS 3416 : 1991 *Specification for bitumen-based coatings for cold application, suitable for use in contact with potable water*

BS 3837 *Expanded polystyrene boards*  
Part 1 : 1986(1996) *Specification for boards manufactured from expandable beads*

BS 6203 : 1991(1996) *Guide to fire characteristics and fire performance of expanded polystyrene materials used in building applications*

BS 6229 : 1982 *Code of practice for flat roofs with continuously supported coverings*

BS 6399 *Loading for buildings*  
Part 2 : 1997 *Code of practice for wind loads*

BS 8217 : 1994 *Code of practice for built-up felt roofing*

BS 8218 : 1998 *Code of practice for mastic asphalt roofing*

BS EN ISO 9002 : 1994 *Quality Systems. Model for quality assurance in production, installation and servicing*

### 19 Conditions

19.1 This Certificate:

- (a) relates only to the product that is described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) has to be read, considered and used as a whole document, as it may be misleading and/or incomplete to be selective;
- (d) is copyright of the BBA.

19.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, shall be construed as references to such publication in the form in which it was current at the date of this Certificate.

19.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabricating process(es) thereof:

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;

(b) continue to be checked by the BBA or its agents; and

(c) are reviewed by the BBA as and when it considers appropriate.

19.4 In granting this Certificate, the BBA makes no representation as to:

- (a) the presence or absence of any patent or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the nature of individual installations of the product, including methods and workmanship.

19.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do 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 or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future 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 installation and use of this product.



In the opinion of the British Board of Agrément, Jabdec Laminated Roof Insulation Board is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 86/1668 is accordingly awarded to Vencel Resil Limited.

On behalf of the British Board of Agrément

A handwritten signature in black ink, appearing to read 'P. Q. Newson', is written over a white background.

Date of Fourth issue: 14th February 2000

Chief Executive

*\*Original Certificate issued 9th July 1986 with Second and Third issues following. This revised version includes reference to the revised national Building Regulations and associated text, the addition of the CDM Regulations, change to the Certificate title, additional information regarding the product and installation procedures, an increased product range, new Conditions of Certification, and a change of the Certificate holder's address and telephone and facsimile numbers.*