

## BRE Global Classification Report

**Kingspan Ltd. BENCHMARK Engineered Façade system - Metallic Hook on Cassette. Classification of fire performance in accordance with BR 135: 2013 Annex B**

**Prepared for:** Kingspan Ltd  
**Date:** 20 October 2014  
**Report Number:** 299571 **Issue:** 1

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## **CLASSIFICATION OF FIRE PERFORMANCE IN ACCORDANCE WITH BR 135:2013 Annex B**

**Sponsor:** Kingspan Limited, Greenfield Business Park No 2.Greenfield, Holywell, Flintshire CH8 7GJ.

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**Product name:** BENCHMARK Engineered Façade system - Metallic Hook on Cassette

**Classification report No.:** 299571

**Issue number:** 1

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## 1 Introduction

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This report presents the classification of the system detailed in section 2. The classification is carried out in accordance with the procedures given in BR 135 – ‘Fire performance of external thermal insulation for walls of multi-storey buildings’, Third edition, Annex B 2013. This classification should be read in conjunction with this document and the associated test reports referenced in section 4.

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## 2 Details of Classified Product

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### 2.1 Description of substrate

The test specimen was installed onto face 4 of the BRE Global External Cladding Test Facility. This is a multi-faced test facility constructed from steel with the cladding system affixed to the steel substructure.

### 2.2 Description of product

Full details of the system specification and installation details have been provided by the client and are summarised in the following section and figures 1 to 7. The system, as built comprised of:

- Single layer of 12 mm wall board.
- 100mm steel frame.
- 100mm BENCHMARK Wall liner panels
- BENCHMARK Aluminium mullions KSHOM
- TENMAT FF102/50 Horizontal Intumescent expanding fire break
- TENMAT VFB Plus 30 x 75mm Intumescent Fire Barrier
- BENCHMARK Aluminium Hook-on Cassette

### 2.3 Installation of cladding System.

#### 2.3.1 Steel substructure and fixings

A sectional steel frame system (SFS) was installed between the simulated floor slabs and floor slab hangers on the main cladding wall 4, with horizontal base and head tracks fixed to the steel substrate. Vertical rails were installed at nominal 600mm centres to form the steel frame. A single layer of 12mm plasterboard was installed on the rear of the SFS. The build-up of the cladding system is shown in Figure 1 to 7.

#### 2.3.2 Cladding system

A single layer of 100mm Kingspan BENCHMARK wall liner panels was attached to the SFS using SFS intec SXC5-L12-5.5 x 133 through fixings with 47 x 6 x 1.0mm temperature control washers. Detail of the panel is shown in Figure 4.

#### 2.3.3 Fire breaks

Horizontal ventilated fire breaks (TENMAT FF 102/50 Intumescent fire barriers) were fixed in a continuous strip and fixed to the simulated slab edge with 7.5 x 72mm concrete frames screws at manufacturer's recommended spacing. Horizontal ventilated barriers (TENMAT VFB Plus 30 x 75mm cavity barrier) were installed at floor levels behind the metallic Cassette system and the front face of the BENCHMARK wall liner panel. Around the hearth opening mineral wool non-combustible insulation was installed between the bottom of the system and head flashings.



#### **2.3.4 Rain screen**

An array of metallic (Aluminium) hook-on cassettes was attached to the BENCHMARK panels using BENCHMARK Vertical mullions KSHOM and BENCHMARK Vertical end mullions KSHOEM, with the cassettes held on BENCHMARK locating clips KSHOLC. The cassettes were mechanically held in place with a SAPHIR JT4 –ZT 4.4, 8 x19 self-drilling stainless steel screws.

#### **2.4 Installation of Specimen**

All test materials were supplied and installed by the sponsor. BRE were not involved in the sample selection process and therefore cannot comment upon the relationship between samples supplied for test and the product supplied to market.



### 3 Product Specification

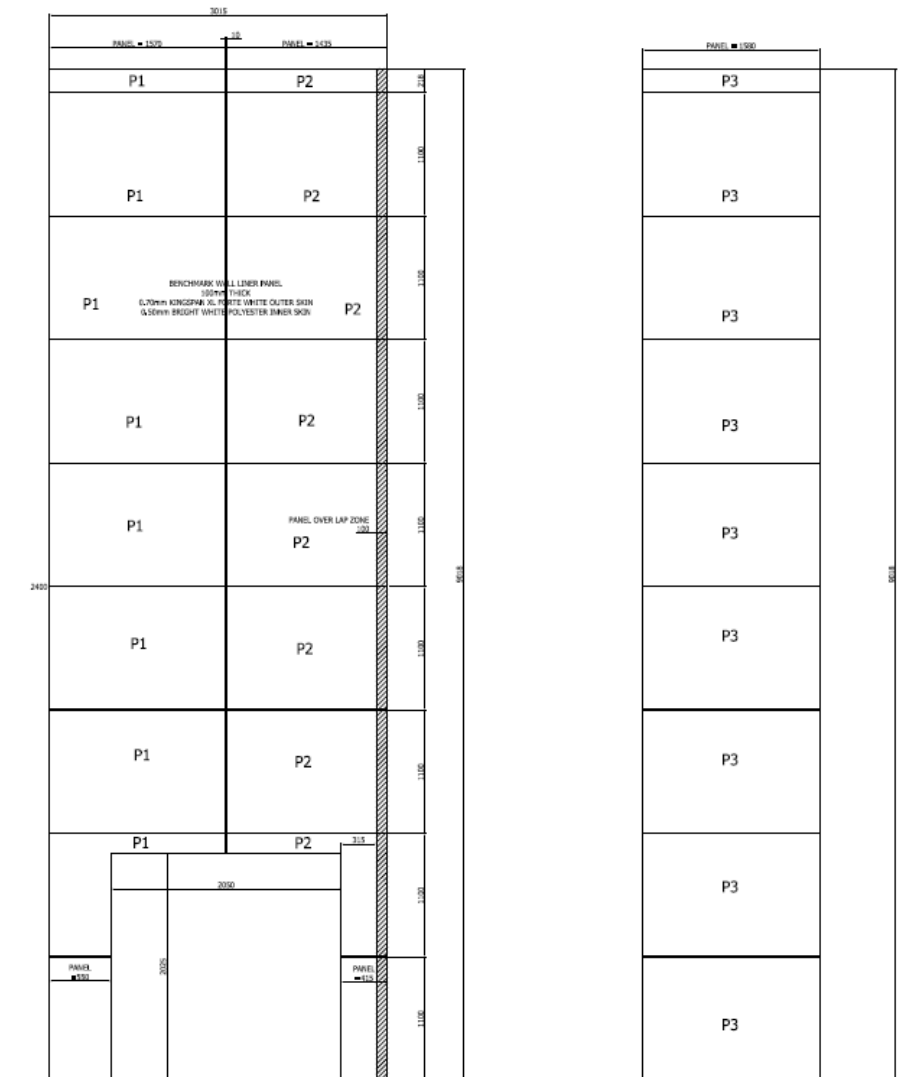
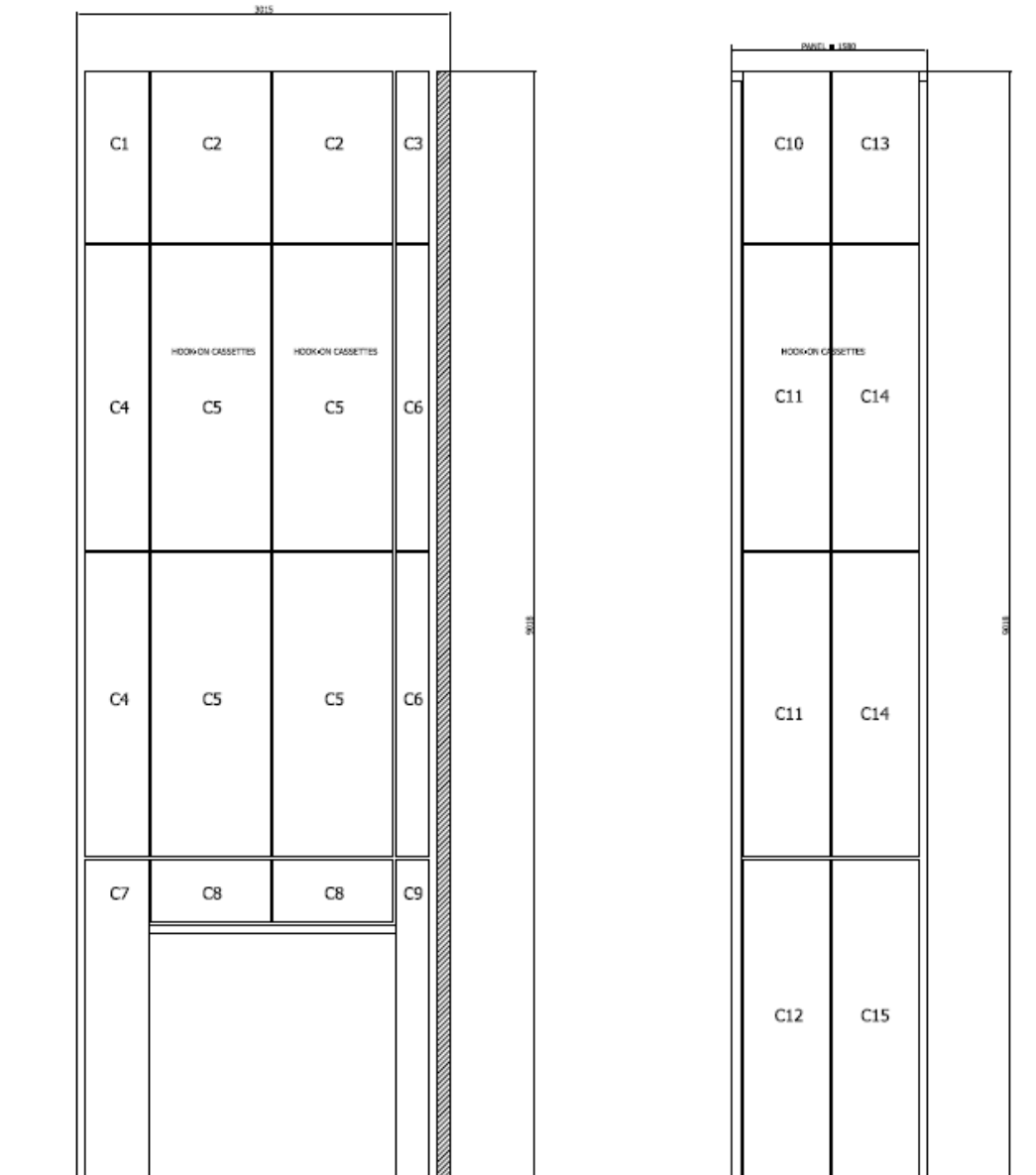


Figure 1. Construction of the System showing the layout of BENCHMARK wall liner panels.



**Figure 2. Construction of the System showing the Hook-on Cassette layout.**



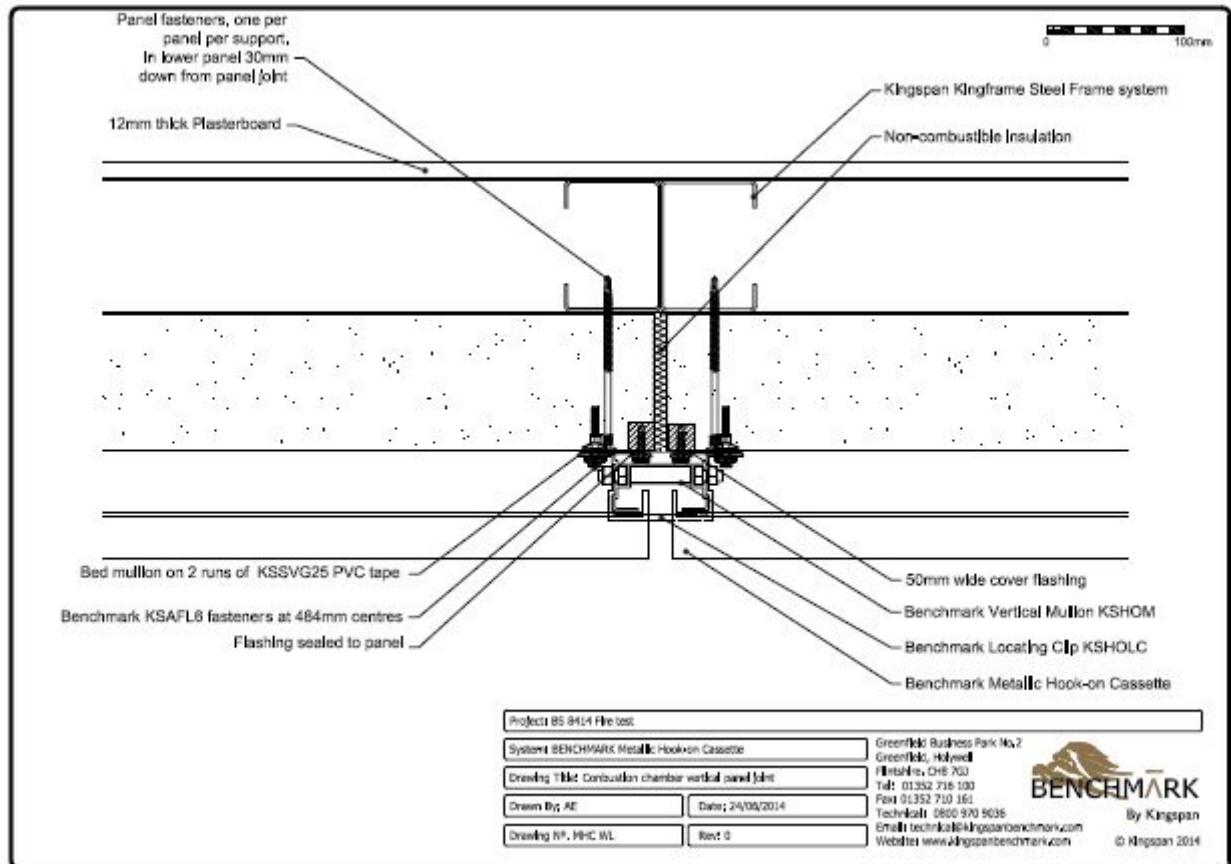


Figure 3. Construction of the System showing the vertical joints at the combustion chamber.

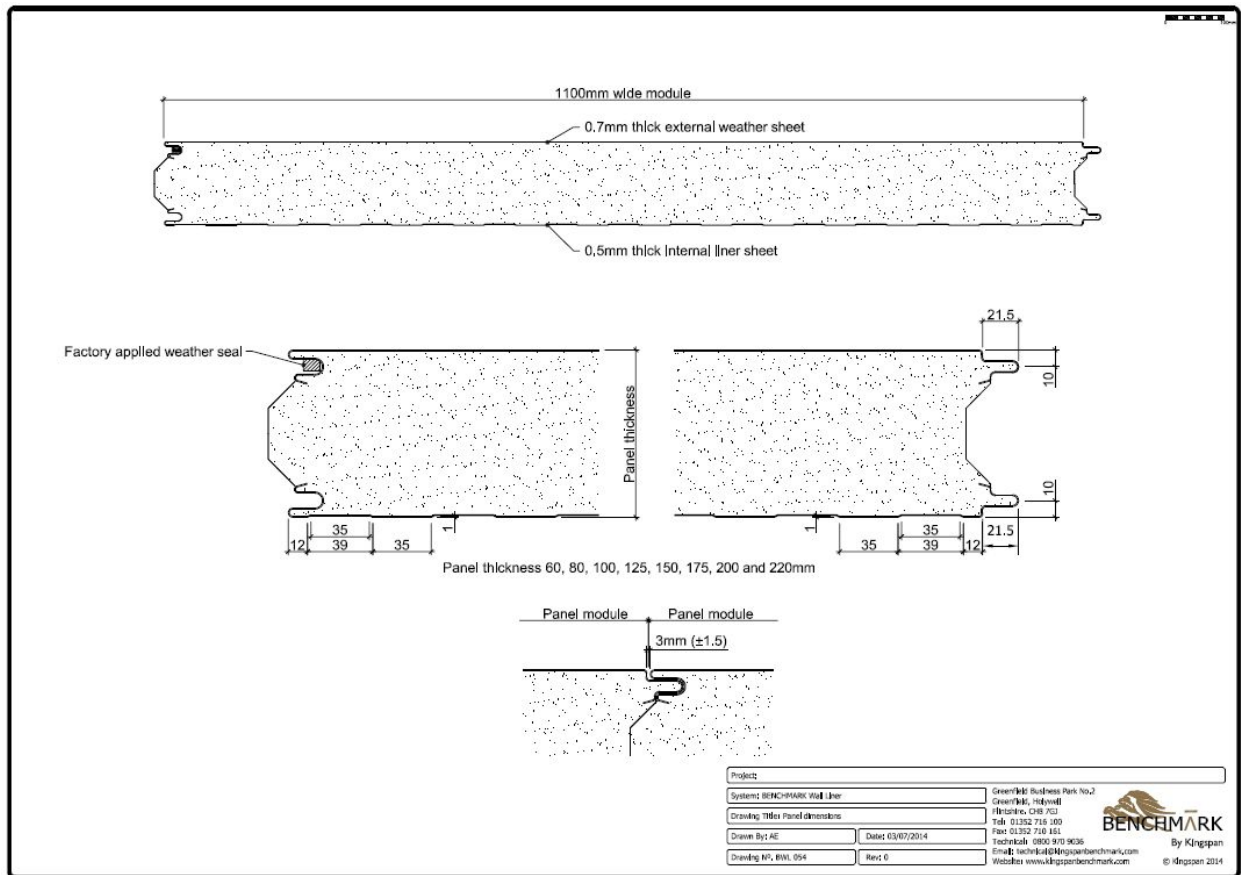


Figure 4. Construction of the System showing the key dimensions of the BENCHMARK wall liner panel.

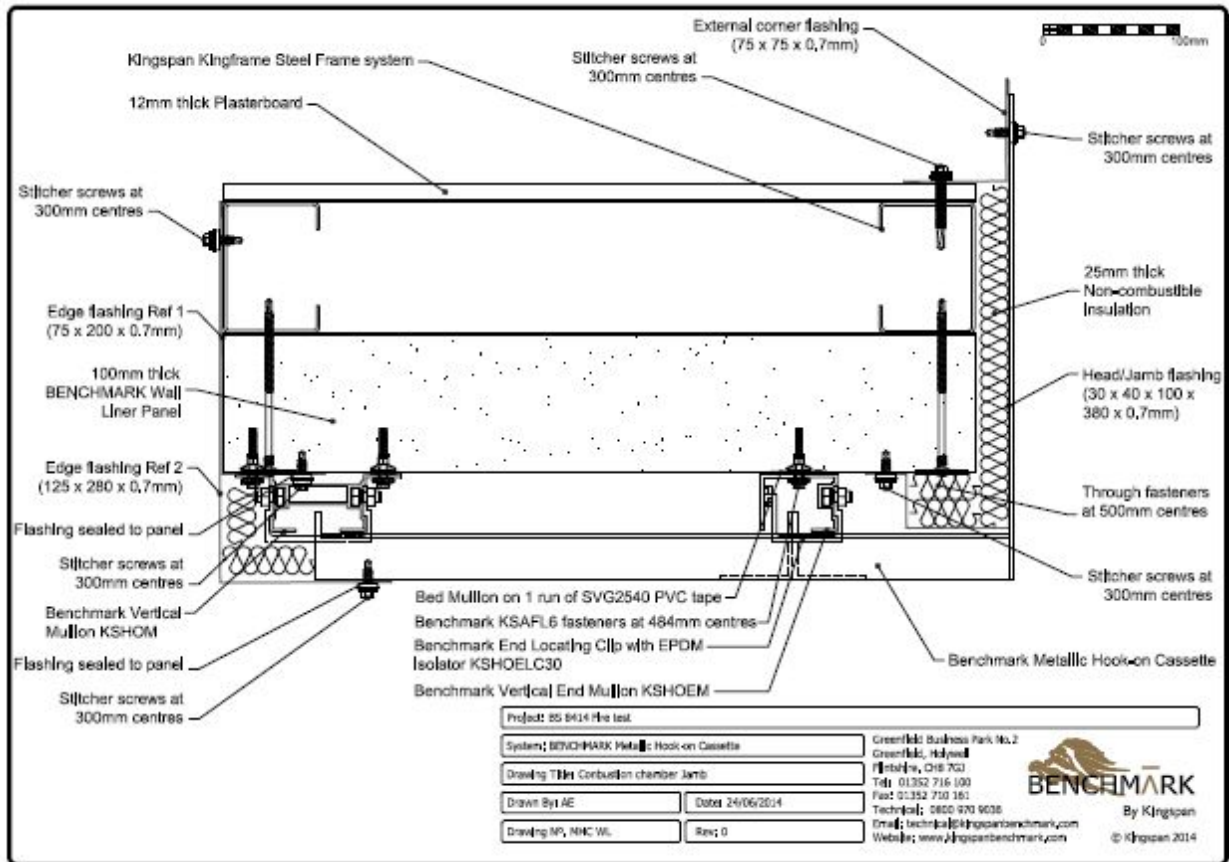


Figure 5. Construction of the System showing the combustion chamber jamb.

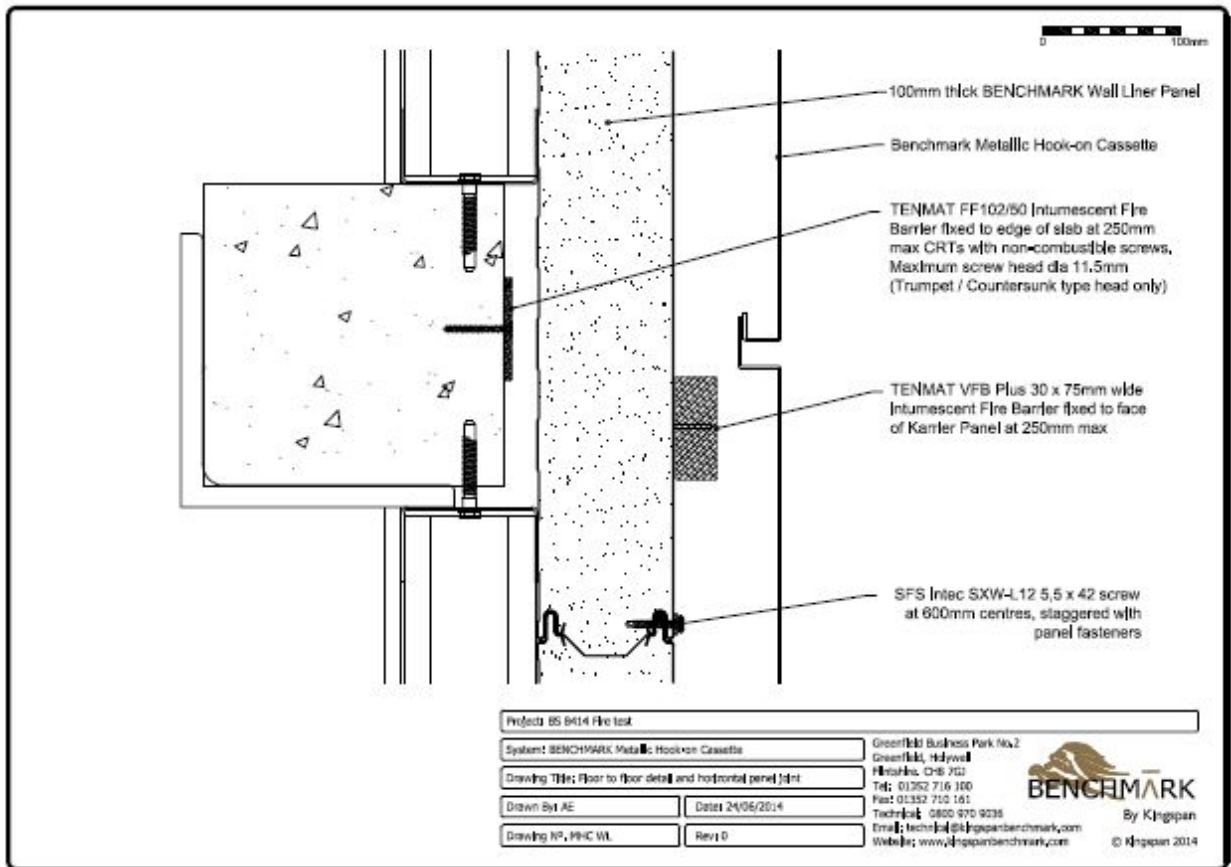


Figure 6. Construction of the System showing the layout of the fire barriers.

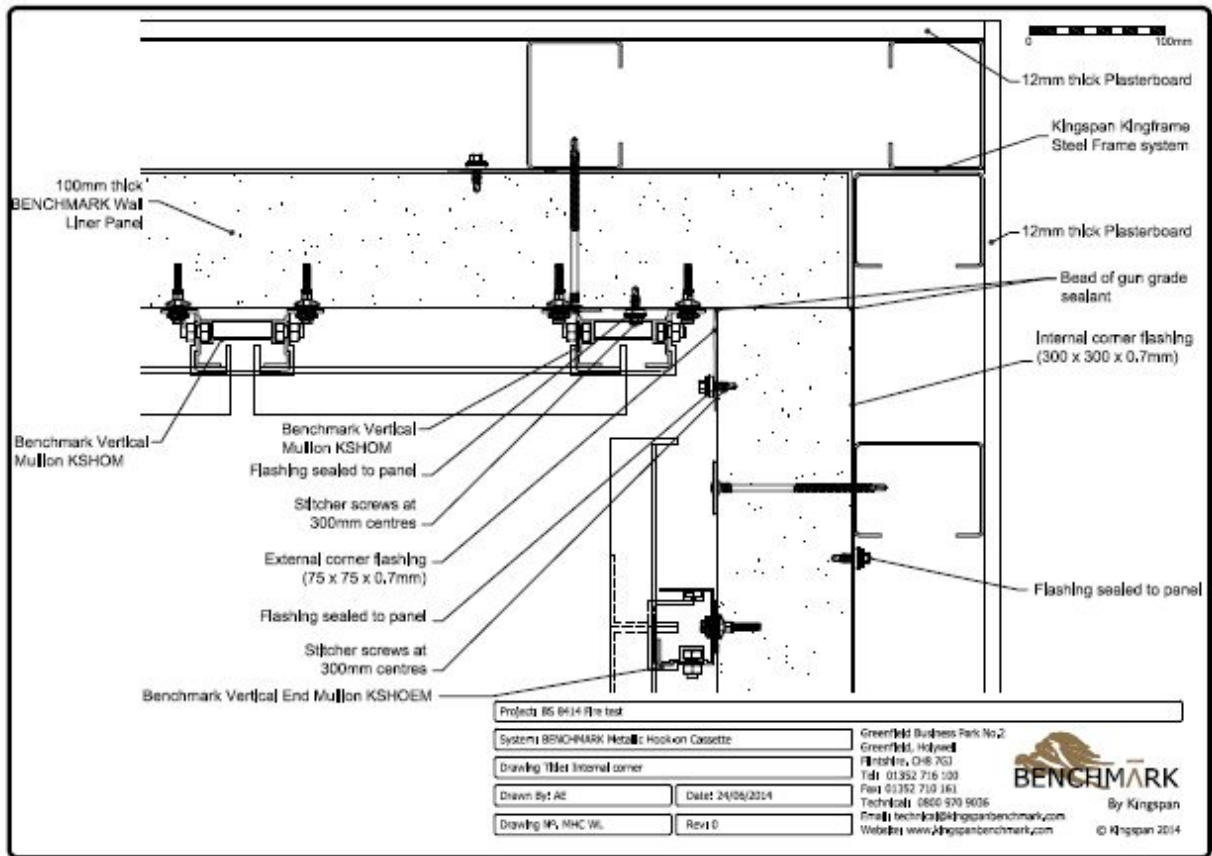


Figure 7. Construction of the System showing the internal corner details.



## 4 Supporting Evidence

### 4.1 Test reports

Name of Laboratory	Name of sponsor	Test reports/extended application report Nos.	Test method / extended application rules & date
BRE Global, BRE	Kingspan Ltd	Test report 297804 dated 3 <sup>rd</sup> October 2014	BS 8414-2: 2005

### 4.2 Test results

Test method & test number	Parameter	No. tests	Results	
			Fire spread test result time, $t_s$ (min)	Compliance with parameters in Annex B BR135:2013
BS 8414-2: 2005	External fire spread	1	>15 minutes	Compliant
	Internal fire spread. Insulation layer. Internal fire spread cavity 1. Internal fire spread cavity 2.		>15 minutes	Compliant
	Internal fire spread Burn through		>15 minutes	Compliant



#### **4.3 On-going system combustion**

All visible flaming had ceased by 43:45(mins:secs) after the ignition of the timber crib and flaming did not extend above the top of the test rig. There was no indication of concealed internal combustion.

#### **4.4 Mechanical Performance**

There was partial collapse of rain screen metallic sheets up to 4 m on the cladding wall main face.



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## **5 Classification and field of application**

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### **5.1 Reference of classification**

This classification has been carried out in accordance with Annex B of BR 135 – ‘Fire performance of external thermal insulation for walls of multi-storey buildings.’ Third Edition 2013.

### **5.2 Classification**

The system described in this classification report has been tested and met the performance criteria set in Annex B of BR 135:2013.

### **5.3 Field of application**

This classification is valid only for the system as installed and detailed in Section 2 of this classification report and the associated details found in the related test reports, referenced in Section 4.





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## 6 Limitations

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This classification document does not represent type approval or certification of the product.

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons, it is recommended that the relevance of test and classification reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test or classification to ensure that they are consistent with current practices, and if required may endorse the report.

SIGNED

APPROVED

A handwritten signature in blue ink, appearing to read 'S J Howard', is written over a dotted line.

A handwritten signature in blue ink, appearing to read 'T Baker', is written over a dotted line.

S J Howard

T Baker

Principal Consultant

Principal Consultant

For and on behalf of BRE Global Ltd

For and on behalf of BRE Global Ltd

Date: 20<sup>th</sup> October 2014.

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