Welcome to the Hilti Firestop Seminar
Agenda

1. Passive Fire Protection
   a) The Importance of Firestop
   b) What are the Regulations
   c) Test Criteria

2. Industry Myths
3. Common Applications
4. Specifying Firestop
5 minute fire
The Importance of Passive Fire Protection

Facts about Fire

Worldwide, a fire breaks out every 7 seconds.

Annual UK Statistics:

- Cause of 700 deaths
- Business Disruption £1.3bn (£3.4m a day)
- Annual costs of Arson: £2.4bn
- Government Reports Overall £7bn Cost to the UK Economy
- Fire makes up 44% of all insurance claims

Source: Aviva Insurance in 2012

Source: Aviva Insurance in 2012
The Importance of Passive Fire Protection

Facts about Smoke

- Smoke travels at between 15 and 90 metres per minute
- 67% of fire related deaths are through smoke inhalation
- 44% of deaths are people who were not in the room of origin
- 47% of survivors could not see more than 3.5 metres.
FIRE STOPPING SYSTEMS

Fire Detection & Alert

Fire Escape Routes

Fire Suppression

Fire Compartmentation
Compartmentation
(Fire Compartments)

Fire walls

FW = Fire walls

Fire floors

FF = Fire floors
Compartmentation-breaches

Fire Rated Wall or Floor
Compartment breaches
Cable Trays & Trunking
Compartment breaches

Around Fire Dampers & Ductwork
Compartment breaches

High Voltage Bus Bars
Compartment breaches

Mechanical Floor Risers

NB: structural implications!
Compartment breaches

Waste Water Pipes
Compartment breaches
Head of walls and Linear gaps

E40/K10

F30/P12
Compartment breaches

Fire Doors & Frames
Compartment breaches
Below Raised Access Flooring
Compartment breaches
Slab edge curtain walling
Compartment breaches

Rainscreen Cladding Systems
Electrical Socket Boxes & Light Switches
In Drywall & Timberframe Construction

K10/P12
Building Regulations

Smoke and flame
Products tested to do the job

“every joint or imperfection of fit .. should be adequately protected by sealing or Firestopping”  ADB 11.2

specification or design which has been shown by test to be capable of meeting that performance or have been assessed

“The building shall be designed .. so that the unseen spread of fire and smoke .. is inhibited”  ADB B3-4

confidence that the .. products ... actually supplied are provided to the same specification or design as that was tested/assessed”  0.20

Minimising liability while maximising life safety: third party tested product with third party accredited installation.
Insurance Industry Body:

Smoke and flame

Products tested to do the job

Products used same as tested

Professional Installation

**Principle 5**

As a minimum, all fire protection products shall be third party certified to an appropriate product or performance based standard (attestation level 1 for CE marking).

**Principle 6**

All fire protection products/systems shall be installed by adequately trained specialist installers.
About Fire Safety Law in the UK

- RRO (FSO) Regulatory Reform Order; Fire Safety Order 2005
- The Fire (Scotland) Act 2005 (Fire Safety (Scotland) Regulations 2006)

Summary>Building owner to have full fire risk assessment

The enforcers can visit premises without notice and ask to see a fire risk assessment and enforce necessary works, fines and prosecution, if they feel there is a breach any areas of fire safety.
Breaching fire separation (Appendix B)

‘To ensure effective protection against fire, walls and floors providing fire separation must form a complete barrier, with an equivalent level of fire resistance provided to any openings such as doors, ventilation ducts, pipe passages or refuse chutes.

The passing of services such as heating pipes or electrical cables through fire-resisting partitions leaves gaps through which fire and smoke may spread. This should be rectified by suitable fire stopping and there are many proprietary products available to suit particular types of construction. Such products should be installed by competent contractors.’
11.14 Proprietary fire-stopping and sealing systems, (including those designed for service penetrations) which have been shown by test to maintain the fire resistance of the wall or other element, are available and may be used.

Other fire-stopping materials include:

- cement mortar,
- gypsum based plaster,
- cement or gypsum based vermiculite/perlite mixes,
- glass fibre, crushed rock, blast furnace slag or ceramic based products (with or without resin binders), and
- intumescent mastic.

These may be used in situations appropriate to the particular material. Not all of them will be suitable in every situation.
Firestop Systems are Tested on the Following Criteria

Load bearing Capacity*
Measures the structural stability of the product in fire

Integrity*
Measures the ability of a product to prevent gas & flame to pass through it in a fire

Insulation*
Measures the ability of an element to insulate, i.e. how long it takes for the non-fire side of the element to reach 180°C

Additional testing...

- Cyclic testing
- 30 year age testing
- Acoustics
- Load bearing capacity
- Seismic
- Water resistance
- Explosion resistance
- Fixing suitability
- Air sealing
- Movement capabilities
- Mold resistance

*All three criteria are measured in hours and minutes.
Hilti CP 670 test
ANother test
Building Regulations – what happens if the fire test doesn’t cover the application

- From Appendix ‘A’ 1A a qualified fire engineer can make a judgement based on test results: “or assessed from test evidence against appropriate standards”

- This judgment **cannot** be in the form of a fax or letter from the supplier

- It must include a detailed drawing and/or description of the application

- There must be a reference to more onerous testing.

Hilti can provide that engineering judgement
Myths

“...rock wool is fire rated..”
Misconceptions

Stone Wool
- 1200°C
- 1000°C

Glass Wool
- 650°C
- 500°C

ISO Temperature Curve
Is it mineral wool?
Myths

“...it’s fire rated foam...”

“Fire foam”

“Intumescent foam”

“Fire resistant foam’
How not to.........................
How to..........................
CP 670 Coated Board (P12)
CP 601S Flexible Sealant (P12)
CP 638 Loadbearing Compound (P12)
CP 660 Intumescent foam (P12)
CP 653 Speedsleeve (P12)
So, does it work?
Case Study: ICI: Wilton Site
Case Study: ICI: Wilton Site
Case Study: ICI: Wilton Site
Case Study: ICI: Wilton Site
3rd Party Accreditation

Products-

- LPCB
- ETA
- CE
- FM Global
3rd Party Accreditation

Contractors-

- FIRAS
- LPCB
- Hilti Accredited Firestop Contractor
Specification: P12 Fire Stopping Systems

General and the product specific prewritten NBS specification clauses (CAWS compliant) available - NBS Plus

- Hilti website (Firestop Spec Binder)

The sections of CAWS that are referenced in the Firestop Binder are:

- **Section P12 Fire Stopping Systems**
- **Section E40 Designed Joints In-Situ Concrete**
- **Section E42 Accessories Cast Into In Situ Concrete**
- **Section F30 Accessories / Sundry Items for Brick / Block / Stone Walling**
- **Section H11 Curtain Wall**
- **Section H92 Rainscreen**
- **Section K10 Plasterboard Drylinings / Partitions / Ceilings**

* Firestop binder sections free to download from our website: www.hilti.co.uk/technical
Summary

Firestop
- compliance with regulations
- part of fire protection strategy
- saves lives
- limits asset damage

1 Products to be appropriately tested
2 Alternative solutions by qualified fire engineer (judgements)

Third Party Accreditation
- products
- installers

- ensuring designed performance
- limiting liability