

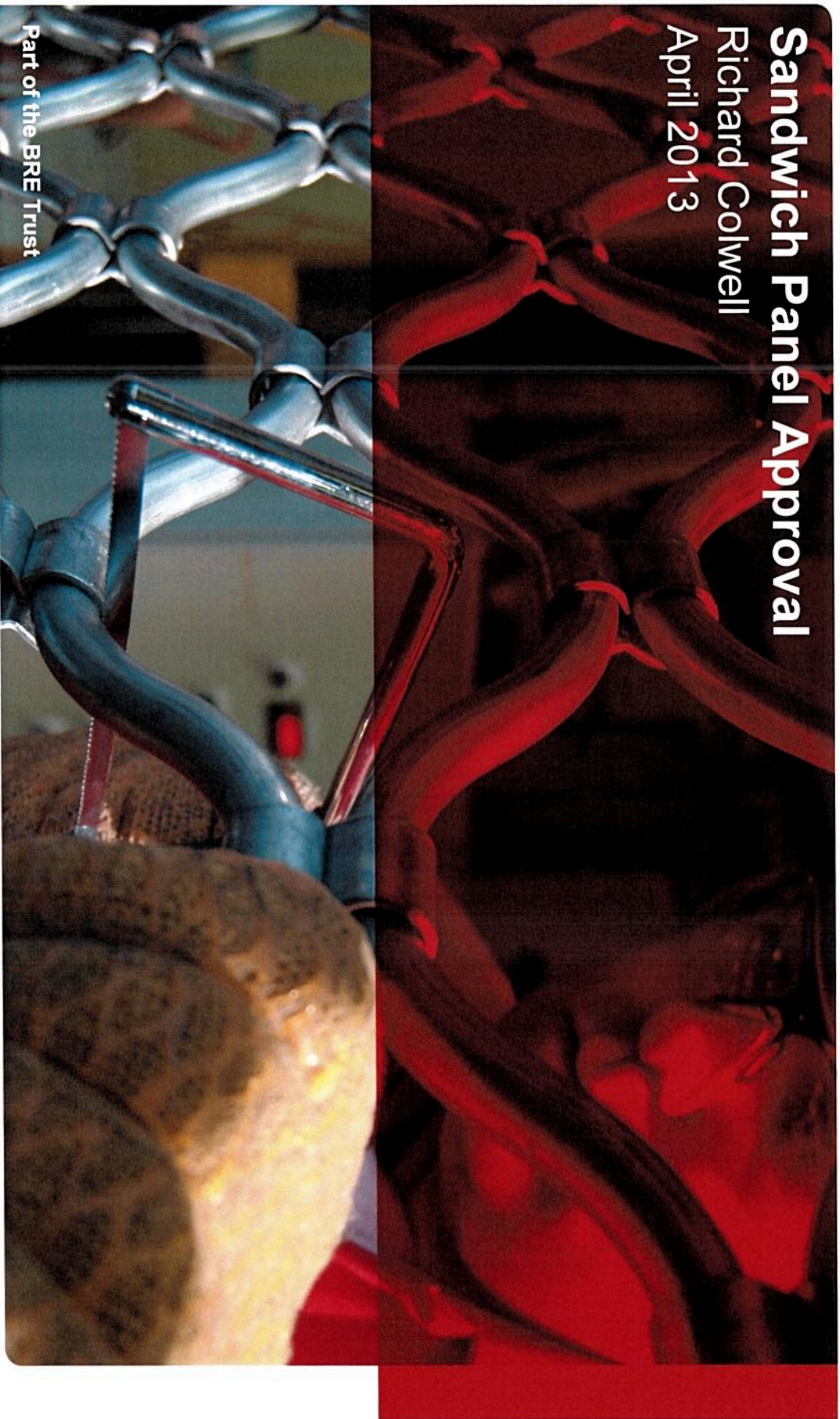
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Protecting People, Property and the Planet

Sandwich Panel Approval

Richard Colwell

April 2013



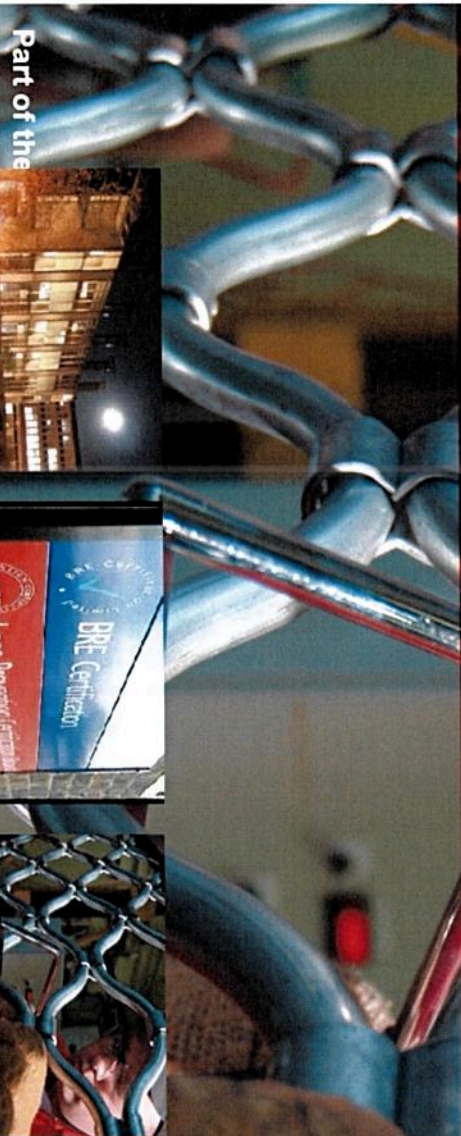
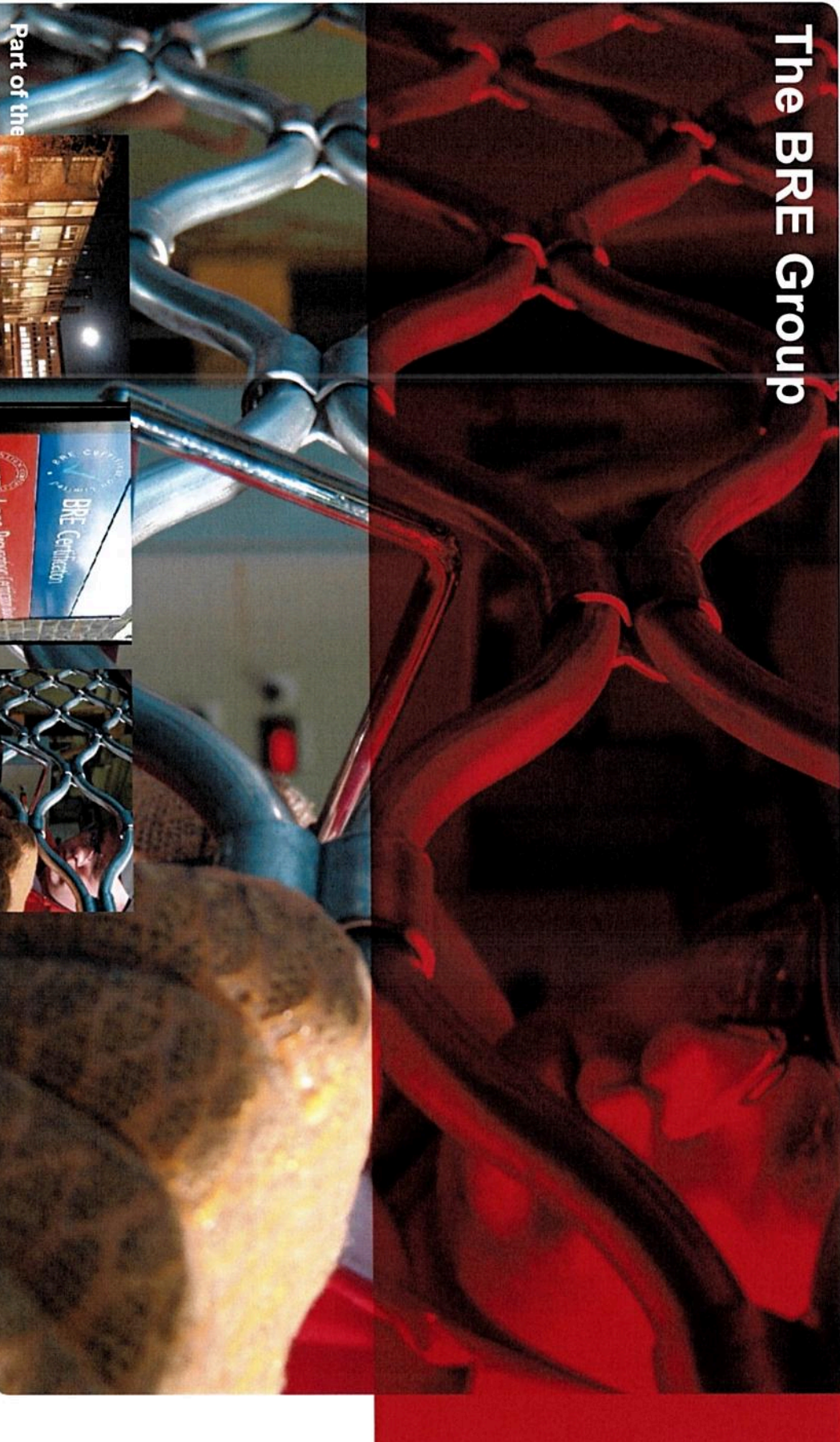
Part of the BRE Trust

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The BRE Group



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LPCB

- Head Office Located in Watford, UK
- Created in 1921
- A research based consulting, testing and approvals organisation
- 700 staff 400+ professionally qualified many National and International experts
- Have customers in over 50 countries worldwide



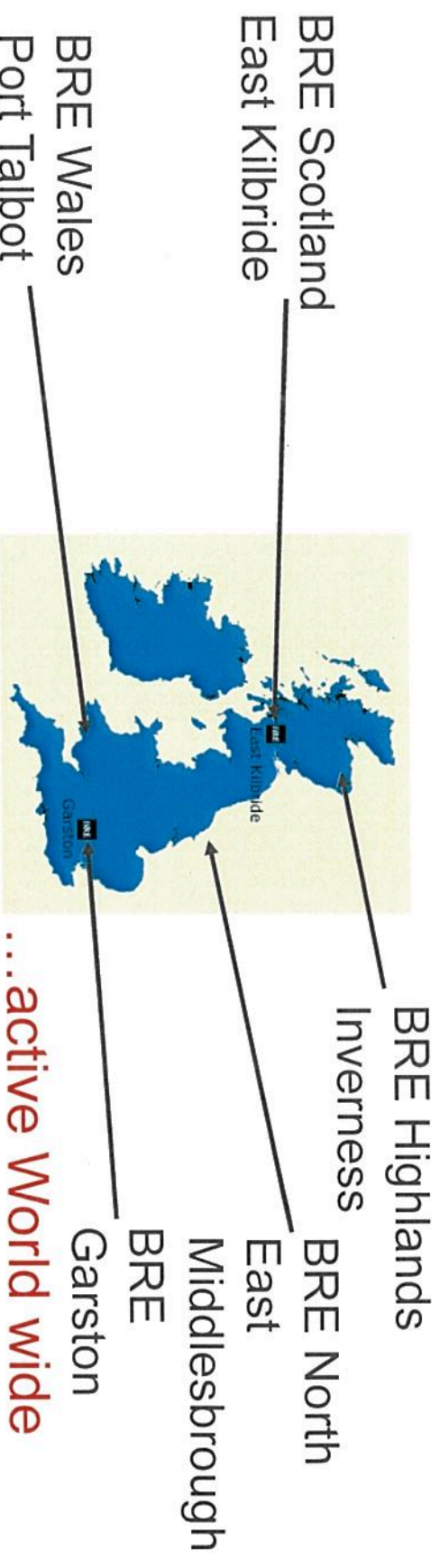
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BRE's development

- The Building Research Establishment - BRE was formerly a UK Government research and test facility - **Privatised in 1997**
- BRE Global Ltd. (formerly BRE Certification) was initiated in 1998
 - to enable manufacturers to obtain technical approval of materials and systems; obtain CE and other European directive marking and for management system certification
- The Loss Prevention Certification Board - **LPCB joined BRE Global in 2000**
 - formerly owned by UK's Association of British Insurers (ABI)
 - LPCB is one of a few premier world leading Approvals bodies specialising in fire and security systems and services

LPCEB

- 5 locations in the United Kingdom
- Office in Canada
- Office in Beijing
- Representative in India, office opening soon



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BRE Services

Commissioned research

“Green” housing - BRE Innovation Park

Construction - methods, materials etc.

Structural performance and integrity

Thermal

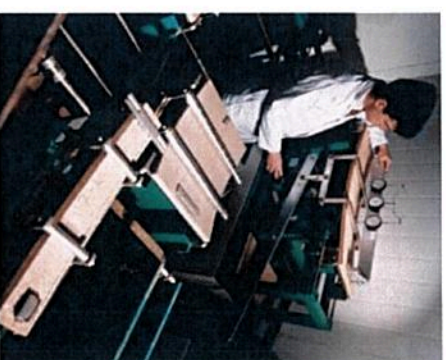
Durability/Weathertightness

Acoustics

Wind-loading – 5 wind tunnels

Publications, and training

www.bre.co.uk



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What areas do BRE Global cover?

- Fire/Security Approvals –
- Construction Products - Approvals
- Environmental approvals
- Innovative products
- Notified body: CPD (CPR), PED, TPED, MED, EMC, LVD
- Management systems:
 - Quality - **ISO 9001: 2008**
 - Environmental - **ISO 14001:2004**
 - health and safety - **OHSAS 18001:1999**

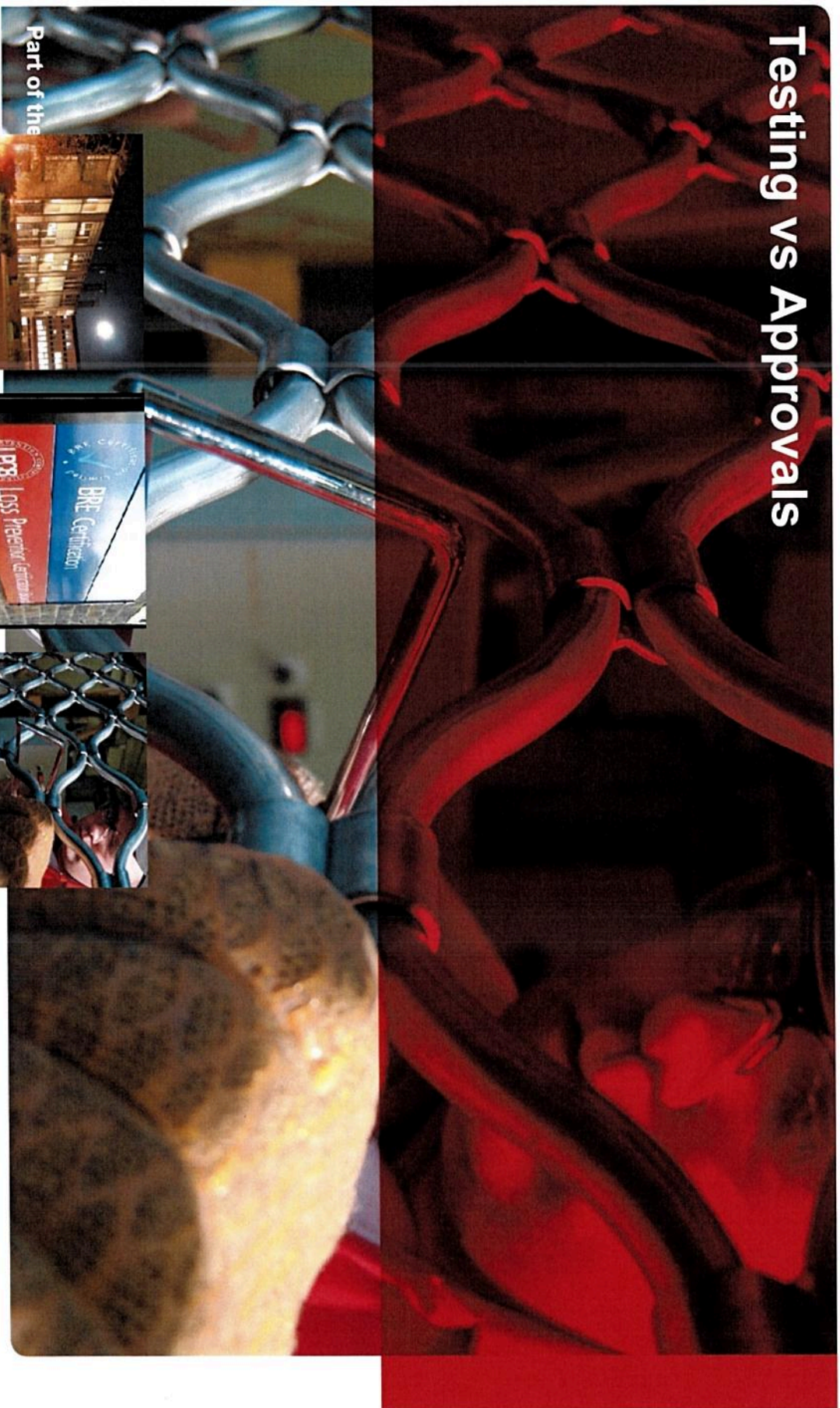


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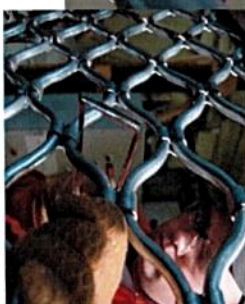
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Testing vs Approvals



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Type testing - often called a test certificate

- Performance of a sample to a specific standard at the time the product was tested.
- Its relevance to products subsequently purchased depends on numerous factors including:
 - Whether the samples tested were representative of current production
 - Size, hardware, fixings and other options can all affect performance
 - Whether designs, components or manufacturing processes have subsequently changed



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Approval

Independent third party confirmation that a product or service complies and continues to comply with a specific standard through:

- independent assessment of : **manufacturing facility and/or processes**
- independent and competent : **testing and/or assessment of service**
- independent review : **of test results against a technical standard**
- ongoing : **surveillance of production and assessment of management systems**
- ongoing : **audit sampling and testing where appropriate**

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LPCB Approval

- LPCB Approval normally based on Loss Prevention Standards (LPS) which have been written by LPCB with input from the key stakeholders;
 - Industry
 - Insurers
 - Regulators
 - Users
- LPS requirements generally go beyond that of regulatory requirements

Loss Prevention Standards

LPS standards cover

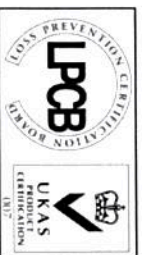
- All aspects of loss prevention
- Issues that are not addressed by national/international standards
- Risks that require higher standards than those published by national/international bodies
- Issues faced by specific specifier groups requiring tailored solutions to the risks they face

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The Red Books



- All approved fire and security products and services are listed in the 'LPCB Red Book'
- Volume 1 Fire and Security products and services
- Volume 2 Companies, Construction Products and Environmental Profiles and Assessments
- Available on-line at www.redbooklive.com



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www.redbooklive.com

On-line searchable database

The screenshot shows the Red Book Live website interface. At the top, there is a navigation menu with the following items: Home, About us, News, Get certified, CE Marking & EU Directives, Loss prevention standards, Contact us, A - Z, Professional development, Latest jobs, Register now, and Search the Red Books. Below the navigation menu, there is a header section with the text "Red Book Live: a specifiers guide" and "Friday September 29 2006 | login | search" followed by a search input field and a "Go >" button. The main content area is divided into several sections: "LPCB / BRE Certification approved products and services", "Search the Red Books", "about us" (with an image of a person), "fire protection" (with an image of flames), "environment & buildings" (with an image of a sunflower), "security protection" (with an image of a security camera), and "business management systems" (with an image of a building). A "News" section is also present, featuring the article "Securing Your Hotel - An Essential Guide for Hotel Owners and Managers read more > Multifire approved to LPS 1014 read more > see all news >". At the bottom, there are several logos and banners, including "bre", "BREbookings.com", "Need a fire risk assessment? Call us today 01923 664100", and "bretrust".

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Benefits of approval

- Reduces liability for specifier
- Demonstrates competent reliable engineering
- Improves client confidence leading to repeat business
- Enables cross check of manufacturers claims of performance
- Limitations of use can be evaluated
- Standard used at testing – issue status
- Properly installed/maintained suppression/detection equipment will help to reduce false alarms

CE marking

- CE marking – even at attestation level 1 provides only performance against essential requirements – **it is not a quality mark.**
- CE marking
 - a declaration of conformity
- Differs from third party certification schemes in relation to
 - on going certification and market support for products against both life safety and property protection performance criteria.

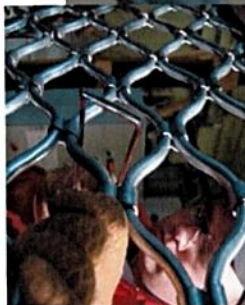
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LPS 1181 and 1208



Part of the



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LPS 1181: Part 1

- LPS 1181: Part 1 specifically for cladding systems for the external envelope of the building – supported by an internal frame system

- Part One: Requirements and Tests for Built-up Cladding and Sandwich panel Systems for Use as the External Envelope of Buildings

Loss Prevention Standard



LPS 1181: PART 1: ISSUE 1.1

Series of Fire Growth Tests for LPCB Approval and Listing of Construction Product Systems

Part One: Requirements and Tests for Built-up Cladding and Sandwich Panel Systems for Use as the External Envelope of Buildings

This document stipulates the test, performance and installation/set-up requirements for composite cladding products including sandwich panels and built-up systems for compliance with the LFC Design Guide for the Fire Protection of Buildings. It is appropriate for the claddings (built up systems or sandwich panels) used for the external envelope of all types of industrial buildings.

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LPS 1181: Part 2

- LPS 1181: Part 2 specifically developed for internal cladding systems such as compartmented food factories etc. these are self-supporting wall systems, external roof support can be provided where necessary
- Part Two: Requirements and tests for sandwich panels and built-up systems for use as internal constructions in buildings

Loss Prevention Standard



LPS 1181: PART 2: ISSUE 2.0

Series of Fire Growth Tests for LPCB Approval and Listing of Construction Product Systems

Part Two: Requirements and tests for sandwich panels and built-up systems for use as internal constructions in buildings

This document stipulates the test, performance and installation/set-up requirements for composite cladding products including sandwich panels and built-up systems for compliance with the LPC Design Guide for the Fire Protection of Buildings. It is appropriate for sandwich panels and built-up systems used for internal constructions.

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LPS 1181

- Test method originally developed in the early 1980's at the request of the insurance industry due to some significant property losses.
- 1st published as LPS in 1986.



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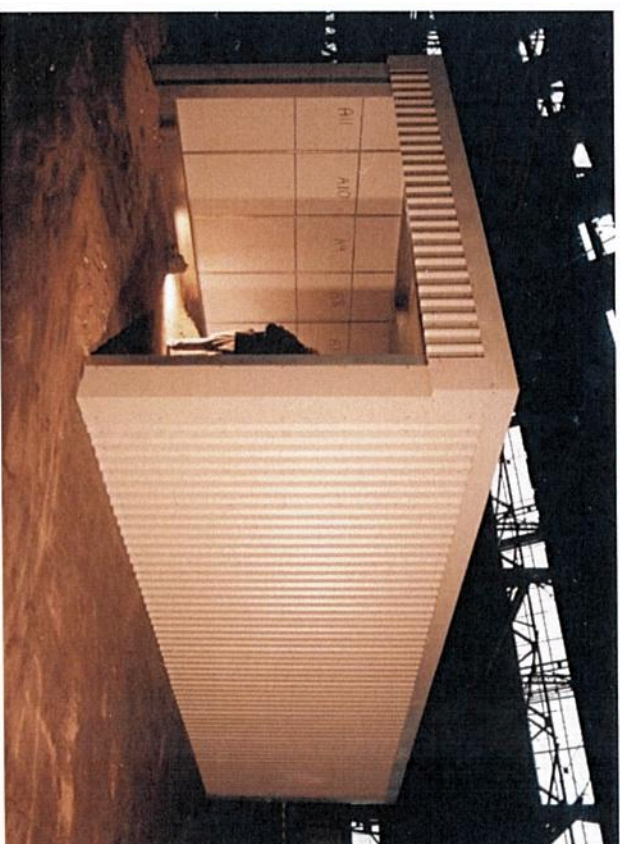
LPS 1181 - what does it tell us

- The LPS 1181 tests are designed to identify the system performance including;
- Core material performance,
- Surface lining,
- Panel joints,
- Interaction between wall and ceiling joints,
- Stability (LPS 1181: Part 2)

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LPS 1181 – Test setup

- LPS 1181 – Generically termed as the Wall and Ceiling lining test
- Large scale test 4.5m x 10m x 3m test rig



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LPS 1181 – Test setup

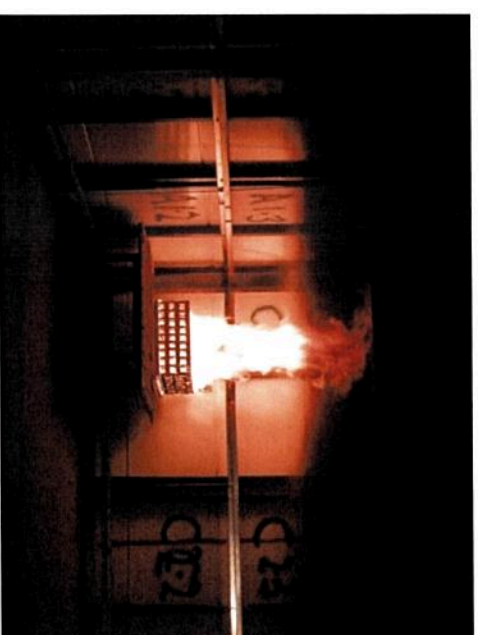
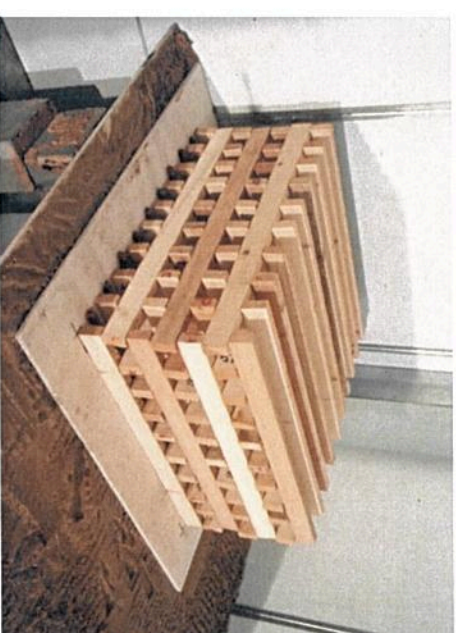


- Room 10 x 4.5 x 3 m high
- Surface thermocouples fixed to walls and ceilings
- Air thermocouples fixed 100 mm below ceiling
- Ignition source either
 - 1 MW output timber crib (pt 1, standard pt2)
 - Gas burner
- 30 minute test duration

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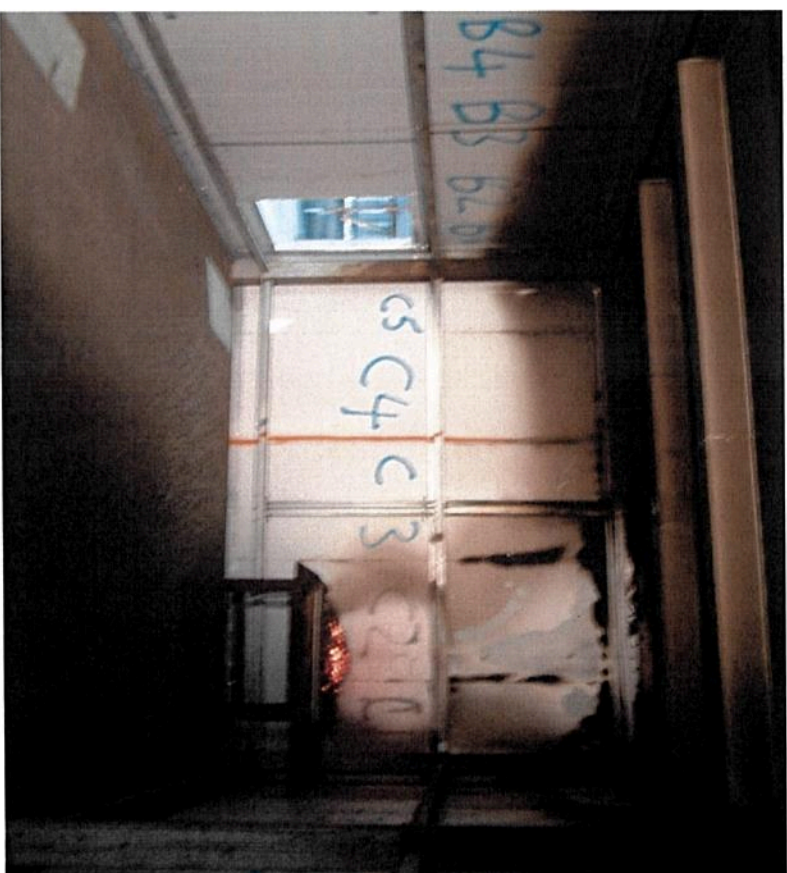
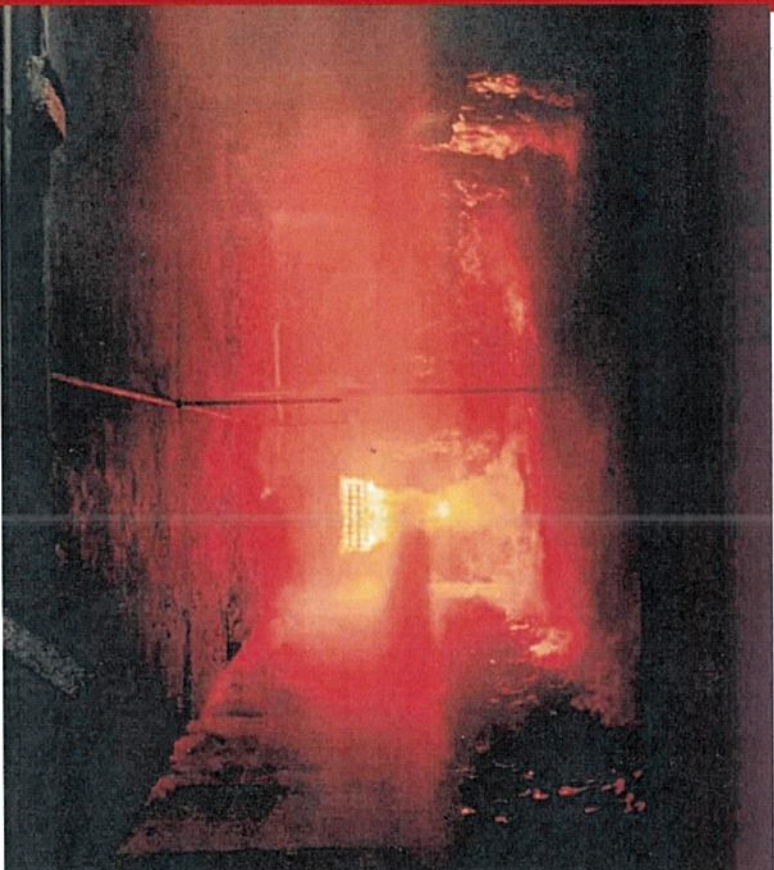
LPS 1181 – Ignition source

- Standard test is based on ignition of timber crib generating a fire load of 1Mw placed in the rear corner of test rig.
- Crib is precisely defined in terms of wood type, stick size, crib density and moisture content



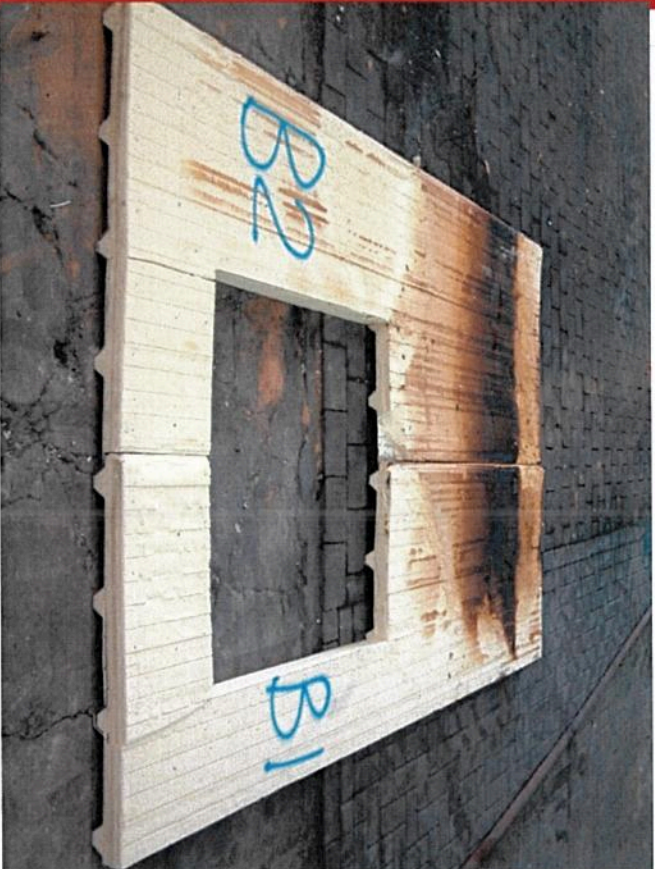
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LPS 1181 – Comparative testing



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LPS 1181 – Post test



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LPS 1181 – Pass criteria

- No flashover at the ceiling. Average temperature of hot gas layer < 600° C
- No internal flaming (visible flaming of more than 60 seconds duration) outside of the crib area
- No external flaming (visible flaming of more than 60 seconds duration)
- No burning brands to fall outside crib area
- Damage to core outside of crib area not to exceed 13 m²
 - Ceiling 8 m²
 - Walls 5 m²

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Reaction to Fire V's Fire Resistance

- LPS 1181 originally designed purely to determine to reaction to fire specifically with regard to the potential of spread of flame (surface or internal core), propagation and contribution to fire growth
- Original LPS 1181 criteria did not relate to integrity and insulation in terms of Fire Resistance

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Reaction to Fire V's Fire Resistance

- Industry requested that a fire resistance grading was also included in LPS 1181 to cover application where a fire resistant element was required in a protected zone
- LPS 1181 standards revised to include fire resistance grading element when required
- Fire resistance determined by furnace based test as defined in LPS 1208 - LPCB Fire resistance requirements for elements of construction used to provide compartmentation

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LPS 1208

- LPS 1208 defines the methods of test and performance requirements in order to satisfy the fire resistance requirements for construction elements used for compartmentation in the following applications;
 - Internal walls (load bearing and non load-bearing)
 - Partitions including insulated panels
 - External walls
 - Curtain walls
 - Roofs
 - Floors

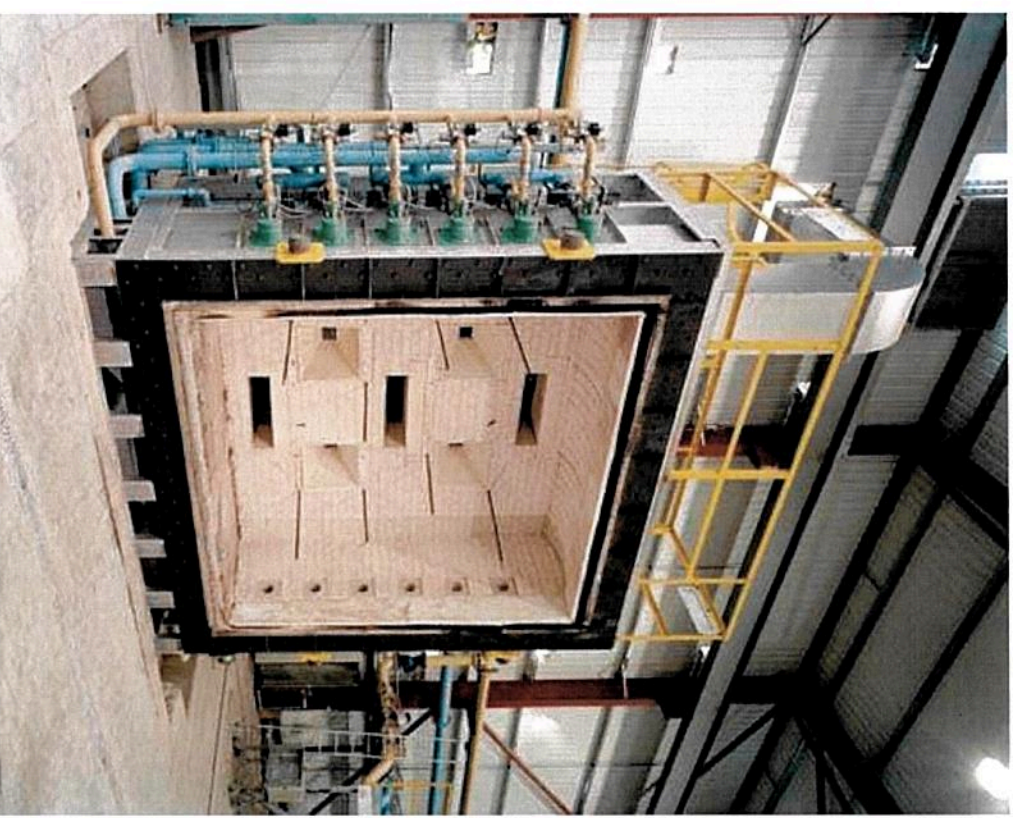
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LPS 1208

LPS 1208 utilises furnace based test methods defined in;

- BS 476: Parts 21 and 22
- EN 1364: Parts 1 and 2
- EN 1365: Parts 1 and 2

Minimum 30 minutes integrity and insulation required



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LPS 1181 Grading

- LPS 1181: Part 1
 - Grade EXT-B for standard approval without FR
 - Grade EXT-Axx for approval inclusive of fire resistance – xx denotes rating in minutes e.g. A15, A30 etc. (minimum requirement of 30 minutes integrity and 15 minutes insulation)

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LPS 1181 Grading

- LPS 1181: Part 2
 - Grade INT-3, standard approval without fire resistance
 - Grade INT-2, approval with minimum 30 minutes integrity and insulation
 - Grade INT-1, approval with minimum 60 minutes integrity and insulation
- INT-2 and INT-3 utilise the standard crib, INT-1 utilises the gas burner

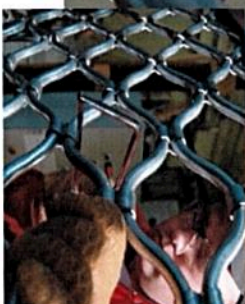
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The Approval Process



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The Approval process

- The LPCB approval process can be split into 4 steps;
 - Application and quotation
 - Test
 - Factory Production Control (FPC)
 - Documentation and specification review

The Approval process - application

- On receipt of application for approval to LPCB a formal proposal and quotation will be issued
- Quotation will cover all required elements including;
 - Details of tests required
 - FPC requirements
 - Certification review
 - Terms & conditions

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The Approval process - test

- A full test programme will be defined;
- Wall and ceiling lining test
- Fire resistance test
- Cone calorimeter test on core material for auditing purposes

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The Approval process - test

- Historical test data may be accepted at the discretion of LPCB
- All tests must be conducted by an accredited test body
- Documentary evidence to prove test samples were representative of current production

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The Approval process - FPC

- Factory Production Control
- Manufacturer to hold ISO 9001:2000 certification with accredited certification body
- Initial FPC inspection by LPCB conducted to requirements of BRE/LPCB document PN1111 to ensure consistency of;
 - Source and control of raw materials and components
 - Production process
 - Inspection routines
 - Design control
- Ongoing regular audits by LPCB

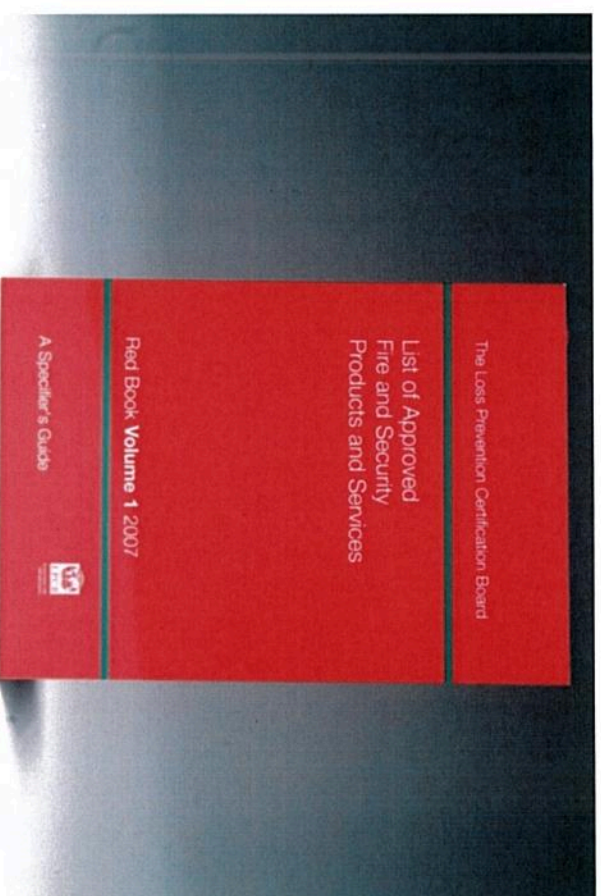
The Approval process

- Documentation and specification review to ensure;
- Satisfactory test and assessment results,
- Manufacturing drawings and specifications match products tested,
- Installation instructions are available and adequate,
- Scope of approval is directly related to the products tested and the results of the tests conducted taking account of direct field of application and extended field of application where appropriate.

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The Approval process - Certification

- On completion of satisfactory approval process an LPCB Certificate is issued and product is listed in The LPCB list of Approved Fire and Security products and Services – The RED BOOK!



The Approval process - Certification

- Once the LPCB certificate and listing is published we don't just walk away!
- LPCB Approval is an ongoing process
- A product Specification file is produced
- Regular (yearly) quality and product audits are conducted
- Yearly cone calorimeter test on core material for auditing purposes
- Product modifications are assessed which could be a 'desk top' review for minor modification through to full retest for a significant modification.

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Thank - you

for listening.....

Questions ?