Building a better world…

Research, innovation, consultancy, testing, certification, training

Working in the built environment, but also transport, manufacturing, electronics, agriculture…
Brands

bre global

Fire and Security Approvals

Construction and Environmental Approvals

Fire, security and electronics testing, research, specialist advice, investigation and training

Environmental assessments, standards and ratings for buildings
Background

• Automatic fire sprinklers have been used in commercial and industrial applications for over 150 years.
• During this period the technology has developed but the basic principles remain to control a small initial fire event and prevent it developing.
Fire Losses

In 2003, Fire losses were estimated at around £7.7 billion.
Application of fire sprinkler systems (1)

- Traditionally seen as a property protection system for industrial and commercial applications
- Since the publication of the latest Building Regulations 2000 (England and Wales) Approved Document B (Fire safety) (AD B) there has also been an uptake in the use of the sprinklers in those building types addressed in the guidance.
Application of fire sprinkler systems (2)

- The increasing use of Fire Engineering designs for buildings is also increasing the use of sprinkler systems to provide life safety and property protection solutions.
  - BS 9999 and BS 7974
- The introduction of the Regulatory Reform (Fire Safety) Order 2005 (RR(FS)O) also has potential to increase use of sprinkler systems.
Developments

• Residential and domestic
• Innovative materials
• Sustainability
• Alternative fire protection options
Critical success factors

• Critical success factors for reliable and effective sprinkler systems include:
  – Good planning and correct specification
  – Correct and appropriate design, installation and commissioning
  – Regular inspections and ongoing maintenance to suitable standards
  – Adequate and available water supplies
  – Sprinkler products that are fit for purpose
  – Consideration of sprinkler system as part of overall package of safety measures in building
System design

• The first sprinkler rules were written in 1886 by the fire insurance industry.
• Today the insurance industry look to the *LPC Rules for automatic sprinkler installations* as the basis for providing sprinkler based fire protection in commercial and industrial applications in the UK and many overseas territories.
Sprinkler Approval’s Heritage

• FOC’s approved equipment list becomes LPCB’s “Red Book” the “List of Approved Fire and Security Products and Services”

• FOC requirements become “Loss Prevention Standards”
Typical schematic of sprinkler system
Design details

• Range of sprinkler heads employed depending upon factors such as:
  – Required speed of response
  – Type of risk
  – Building layout and design
  – Aesthetics
Codes, standards and committees

- Whilst the initial Design and Installation rules were developed by the insurers this is now moved into standards committees:
  - BS - British Standards
  - CEN - European Standards
  - ISO - International Standards
European standards committee structure

CEN/TC191
Fixed firefighting systems

Other WGs:
WG1 Powder, WG2 Foam systems, WG3 Foam media, WG4 Powder systems, WG9 Hydrant and hose reel systems, WG12 Mandate
SC1 Smoke control

WG5 Sprinklers and water systems and components

TG1 Sprinkler components panel
ESFR sub Task Group

TG2 Sprinkler rules panel
Various adhoc homework groups

TG3 Water mist systems and components
Sub Task Group
Water mist components

WG6 Gas systems and components
ISO standards committee structure

ISO/TC21
Equipment for fire protection and fire fighting

SC5
Fixed systems using water

SC8
Gaseous media and firefighting systems using gas

Other SCs including SC6 Foam and powder
CEN/TC191 committee

• Fixed fire-fighting systems – Plenary Committee
• Responsible for European fixed firefighting systems standards (suppression and smoke control)
FSH/18 committee

- Fixed fire-fighting systems
- Responsible for co-ordinating, drafting and maintaining standards for fixed fire fighting systems.
- UK mirror group of ISO/TC 21 and CEN/TC 191
- Responsible for appointing UK delegations
CEN/TC191/WG5 committee

- Sprinklers and water based systems and components
- Responsible to CEN/TC191 for European sprinkler and water mist standards
- To prepare requests to CEN/TC191 and set strategy for Task Groups
- Strategic committee
- WG5 receives progress of Task Groups, approves drafts prior to enquiries, formal votes, requests Work Items, deals with problems, sets timescales
FSH/18/2 committee

• Sprinkler systems
• Responsible to FSH/18 for the preparation of standards for sprinkler systems and components
• Responsible for UK input into CEN/TC191/WG5 and ISO/TC21/SC5
• Includes residential sprinkler systems and components
• Responsible for appointing UK delegations
CEN/TC191/WG5/TG1

- Sprinkler components panel
- Responsible to CEN/TC191/WG5 for European sprinkler components standards
- EN 12259 series
CEN/TC191/WG5/TG2

- Sprinkler rules panel
- Responsible to CEN/TC191/WG5 for European sprinkler systems standard BS EN 12845
- Has various adhoc homework/sub groups
- Recently completed large third amendment draft
- Just started work on first major revision
British standards

• BS EN 12845: 2004
• European standard
• Fixed firefighting systems – Automatic sprinkler systems – Design, installation and maintenance
• In conjunction with
• LPC Rules for automatic sprinkler installations
• incorporating BS EN 12845 and containing Technical Bulletins (TBs) which amplify requirements of BS EN 12845 or cover additional insurers’ requirements
Other standards

- NFPA 13 and NFPA 101
- FM Data sheet 2.0
- Comparison in BR 503 Sprinkler systems explained
Key elements of sprinkler protection

- System design, installation and ongoing maintenance
LPCB Approvals - Installation

- LPCB Third party certification to support:
- **Sprinkler contractors**
  - LPS 1048-1 - Requirements for the approval of sprinkler system contractors in the UK and Eire (commercial systems)
  - LPS 1301 – Requirements for the approval of sprinkler system installers in the UK and Ireland (residential systems)
  - Listed in Red Book Volume 1 Part 3
    [www.redbooklive.com](http://www.redbooklive.com)
Key elements of sprinkler protection

• Component specification and performance
British/European standards

- BS EN 12259 (Series)
- Fixed firefighting systems, Components for sprinkler and water spray systems
- Companion standards to BS EN 12845
  - Part 1 Sprinkler head
  - Part 2 Wet alarm valves
  - Part 3 Dry alarm valves, etc
LPCB Approvals

- Third party certification to support:
  - Sprinkler components
    - CE marking under BS EN 12259 and LPC approval
    - Loss Prevention Standards (LPS) for missing components
    - Various ENs and LPSs
  - Listed in Red Book Volume 1 Part 3
    www.redbooklive.com
LPCB Approvals

• Products include:
  – Sprinkler heads
  – Wet and dry alarm valve assemblies
  – Suction tanks for automatic pumps
  – Direct reading flow meters
  – Multiple jet controls
  – Pipe couplings and fittings
  – Plastic pipes and fittings
  – Fire pumps
  – Check valves and stop valves
  – Flexible drops
  – Pressure switches
  – Pipework supports
  – Vortex inhibitors
  – Water flow alarm switches
  – Water motor alarms
Residential sprinklers

- Sprinklers have been introduced relatively recently into domestic and residential buildings in UK.
British standards

- BS 9251:2005
  - British Standard
  - Recommendations for design, installation, components, water supplies, commissioning, maintenance, testing
  - Designed to protect the whole building
  - Minimum design densities (mm/min) can be applied
- BS 9252 (to be published)
  - British Standard
  - For residential sprinkler heads
  - Recommendations for construction and performance of sprinklers including fire tests
Test slots available at BRE for BS 9252 (due out)

- Formally BS DD 252
- Residential & domestic
LPCB approvals

- Residential sprinkler contractors
- LPS 1301 scheme
  - Requirements for the approval of sprinkler installers in the UK and Ireland for residential and domestic sprinkler systems
  - Aimed at helping clients select companies to design, install and service domestic and residential sprinkler systems to BS 9251
- Residential sprinkler components
- LPS 1037 in draft
  - Requirements and testing methods for residential and domestic automatic sprinklers (heads)
Testing of ‘out-of-standard’ applications
Summary - sprinklers

- Employed for life safety and property protection
- Comprehensive regulations and standards
- Performance is dependent on system components (red book)
- Design installation and maintenance is dependent on contractors (red book)
- New products and “out-of-standard” systems can be tested following developed procedures
For more information, please contact

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