Grenfell and the other factors behind UK sprinkler market growth

Alan Brinson
Safety Expo 2019
Agenda

UK sprinkler organisations

Sprinkler campaigns and successes

The role of standards

Grenfell
UK sprinkler organisations
British Automatic Fire Sprinkler Association

- Members – installers, manufacturers, insurers, fire services
- Participation in standards
- Educational seminars for authorities, fire services and others
- Training programmes for fitters and soon for designers as well
- Presentations at conferences, trade articles
- Accurate cost information
National Fire Sprinkler Network

- Members – every UK fire service, some installers, manufacturers and insurers
- Exchange information about sprinklers
- Promote sprinklers at local level – lobbying local politicians and proposing sprinklers as a solution for specific projects
- Focus on sprinklers for life safety
National Fire Sprinkler Network

- Produced reports on reliability of sprinklers and reductions in injuries in sprinklered buildings.
- Showed sprinklers operated 94% of the time when they should and controlled or extinguished 99% of fires when they operated.
- Also showed a 70% reduction in injuries from fires in sprinklered buildings.
Business Sprinkler Alliance

- Members: BAFSA, EFSN, FM Global, FPA, NFCC, NFSN
- Focus on sprinklers in industrial and commercial buildings
- Funded research reports
Business Sprinkler Alliance

- Members – BAFSA, EFSN, FM Global, FPA, NFCC, NFSN
- Focus on sprinklers in industrial and commercial buildings
- Funded research reports
- Lobbying of national and local government
- Presentations, trade articles
These organisations are often supported by
And this group has been very effective
Sprinkler campaigns and successes
Care homes

- Easy to understand that evacuation will not work
- Make emotional and economic argument for sprinklers
- Some fire services and politicians agreed but no change
- Inevitably, there were tragedies
  - Rosepark care home fire in Glasgow 2004

Ineligible

- Rosepark care home fire in Glasgow 2004
Care homes

- Easy to understand that evacuation will not work
- Make emotional and economic argument for sprinklers
- Some fire services and politicians agreed (one proposed legislation) but no change
- Inevitably, there were tragedies
  - Rosepark care home fire in Glasgow, Scotland in 2004: 14 dead
- A year later, sprinklers required in new Scottish care homes!
Care homes

- 2007: England & Wales required either sprinklers or self-closing fire doors on every care home bedroom (similar cost)
- Some care home owners decided voluntarily to fit sprinklers
- Meanwhile a politician in Wales was pressing for more sprinkler requirements, including in care homes
- 2014: new care homes in Wales must have sprinklers
Schools

- Largest annual source of insurer fire losses: €70 million/year
- No deaths but huge disruption when children have to go to other schools, often far away
Schools

- Largest annual source of insurer fire losses: €70 million/year
- No deaths but huge disruption when children have to go to other schools, often far away
- Supported by insurers, by Fire Chiefs and teachers
- Meetings with Ministers, questions in Parliament
- 2007: guidance for England recommends sprinklers – initially 70% of new schools fitted sprinklers – not enforced by subsequent governments and now only 35%
Schools

- More successful in Scotland, where 31 out of 32 local governments were persuaded to fit sprinklers in new schools
- 2010: Scottish Government passed legislation to require all new schools to have sprinklers
- Soon after, Welsh government made sprinklers a condition of funding for new schools
- The campaign continues in England!
Apartments and houses

- After political pressure, encouraged by Fire Chiefs and others, the British Government funded a three-year research project on residential sprinklers.
- Concluded residential sprinklers save lives.
- Concluded they are cost effective in:
  - Care homes and apartment buildings >30 m
  - And probably in apartment buildings >18 m
Apartments and houses

- After political pressure, encouraged by Fire Chiefs and others, the British Government funded a three-year research project on residential sprinklers.
- Concluded residential sprinklers save lives.
- Concluded they are cost effective in:
  - Care homes and apartment buildings >30 m
  - And probably in apartment buildings >18 m

England 2007
Scotland 2005
Apartments and houses

- Wales had the worst fire safety record in UK
- Ann Jones, a politician who used to be an official in Fire Brigades Union led a campaign for sprinklers in all new Welsh housing
- And Won!
- Since 2016, sprinklers are required in ALL new houses and apartments in Wales
Lakanal House fire

- 3 July 2009: social housing apartment fire in London
- Six dead and 20 injured, none of those who died lived in the apartment where the fire started
- Fire spread up, down and sideways
- Combustible panels and compartmentation failures
- Coroner’s letter to government, “It is recommended that your Department encourage providers of high rise residential buildings... to consider the retro fitting of sprinkler systems.”
The role of standards
The role of standards

- If residential sprinklers are to be used, regulators need standards:
  - BS 9251 for residential sprinkler systems (superseded by EN 16925)
  - BS 9252 for residential sprinklers (to be superseded)
- BS 9991 fire safety in the design, management and use of residential buildings – Code of practice
- First edition 2011, introduced many sprinkler incentives
  - Open-plan apartments
  - Longer travel distances
  - Restricted fire service access
The role of standards

- BS 9999 fire safety in the design, management and use of buildings – Code of practice
  - First edition 2008, introduced many sprinkler incentives
    - Longer travel distances
    - Less wide stairs
    - Reduced fire resistance
    - Restricted fire service access and facilities
- Coming soon: BS 9992 railway buildings
  - Reduced fire resistance in underground buildings

- Office 50 m x 50 m
- Height 24 m
- Separation distances
- Glazed façade
- 4 staircases
- Impact of sprinklers on FR façade
## Impact of sprinklers on fire protection measures for an office

<table>
<thead>
<tr>
<th>OFFICE</th>
<th>WITHOUT SPRINKLERS</th>
<th>WITH SPRINKLERS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fire-rated façade area required</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern side (17%) = 204 m²</td>
<td>Northern side (0%) = 0 m²</td>
<td></td>
</tr>
<tr>
<td>Southern side (67%) = 804 m²</td>
<td>Southern side (34%) = 408 m²</td>
<td></td>
</tr>
<tr>
<td>Eastern side (67%) = 804 m²</td>
<td>Eastern side (34%) = 408 m²</td>
<td></td>
</tr>
<tr>
<td>Western side (80%) = 960 m²</td>
<td>Western side (60%) = 720 m²</td>
<td></td>
</tr>
<tr>
<td><strong>Stairs minimum width</strong></td>
<td>1276 mm</td>
<td>1120 mm</td>
</tr>
<tr>
<td></td>
<td>Stairs area 61.25m² per floor</td>
<td>Stairs area 53.75m² per floor</td>
</tr>
<tr>
<td><strong>Structural fire protection rating</strong></td>
<td>90 minutes</td>
<td>60 minutes</td>
</tr>
<tr>
<td><strong>Dry risers</strong></td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
# Cost analysis of incorporating sprinklers in office A

<table>
<thead>
<tr>
<th>OFFICE A</th>
<th>WITHOUT SPRINKLERS</th>
<th>WITH SPRINKLERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprinkler cost</td>
<td>-</td>
<td>£328,750</td>
</tr>
<tr>
<td>Façade cost</td>
<td>Non FR façade = 2,028m² x £600/m² = £1,216,800</td>
<td>Non FR façade= 3,264m² x £600/m² = £1,958,400</td>
</tr>
<tr>
<td></td>
<td>90min-FR= 2,772m² x £2,200/m² = £6,098,400</td>
<td>60min-FR = 1536m² x £1,700/m² = £2,611,200</td>
</tr>
<tr>
<td></td>
<td>Total = £7,315,200</td>
<td>Total = £4,569,600</td>
</tr>
<tr>
<td>Structural fire</td>
<td>90min-FR = 15,000m² x £44.38/m² = £665,700</td>
<td>60min-FR = 15,000m² x £21.57/m² = £323,550</td>
</tr>
<tr>
<td>protection cost</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Rental yield from</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>increased net</td>
<td>45m² x £650/m²/yr = £29,250/yr</td>
<td></td>
</tr>
<tr>
<td>internal area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry risers costs</td>
<td>3 x £1,500/landing x 6 floors = £27,000</td>
<td>2 x £1,500/landing x 6 floors = £18,000</td>
</tr>
<tr>
<td>Total costs</td>
<td>£8,007,900</td>
<td>£5,239,900 - £29,250/yr</td>
</tr>
<tr>
<td>Total cost impact</td>
<td>Capital cost impact = £2,768,000 saved by including sprinklers</td>
<td></td>
</tr>
<tr>
<td>of sprinklers</td>
<td>Rental yield = £29,250/yr greater income by including sprinklers</td>
<td></td>
</tr>
</tbody>
</table>
Grenfell
Talking can achieve a lot…
We had laid the groundwork

- Sprinklers required since 2007 in new high-rise apartments
- Lakanal House fire 2009 revealed problems, led to sprinkler retrofit recommendation – some local authorities were retrofitting sprinklers
- After Grenfell this became a deluge:
  - Over 1,000 buildings to be retrofitted (hundreds already done)
  - Developers voluntarily fitting sprinklers in all new apartments
  - Public refusing to buy new apartments without sprinklers
  - Mortgages refused without sprinklers
Still to come

- 2021: Scotland will require sprinklers in all new apartments and all new social housing (including single-family houses)
- Review of English regulations is under way – this would not have happened without Grenfell
  - Widespread assumption there will be more sprinkler requirements
  - But the details are still unclear
Thank you!

6-7 May 2020

Alan Brinson

European Fire Sprinkler Network

Fire Sprinkler Europe

Roma, 23 Marzo 2021