

# COOPERS FIRE

## Fire and Smoke Curtains in Modern Building Design

Safety Design in Buildings

Riyadh Conference



April 16, 2018, Holiday Inn Izdihar - Riyadh

Safety Design in Buildings

Jeddah Conference



April 18, 2018, Park Hyatt - Jeddah



# coop<sup>ers</sup>

EST. 1983

Version: 1.0

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LEADING THE WAY IN FIRE PROTECTION

# Learning Objectives

- 1. Understand the challenges of modern architecture*
- 2. Understand Fire protection in modern architecture*
- 3. Understand the applications of Fire and Smoke Curtains in modern building design*



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# COOPERS FIRE LTD

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- Established in 1874 (originally making blinds and shutters)
- Current business established 1983
- Two Factories
  - Havant (UK)
  - Elland (UK)
- Ninety staff

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## The Challenge - OPEN PLAN – Working, Living, Leisure & Learning



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Owners and occupiers want to maximise the internal space of their building, whether for lifestyle or commercial reasons. This can be achieved by modern architectural design, plus building methods and materials, fire and smoke curtains replace traditional smoke and fire rated building materials.



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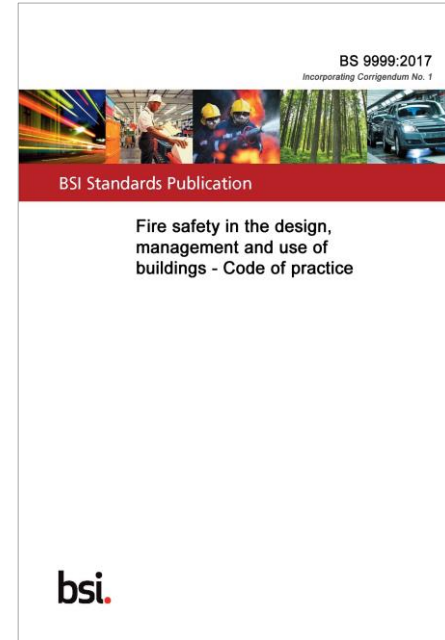
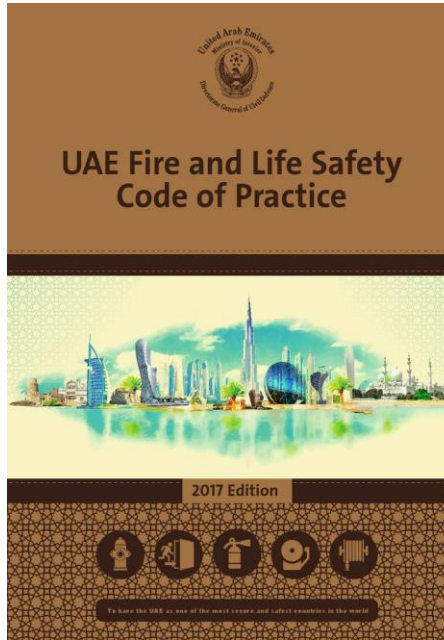
Environment is more important to people than it's even been; attracting people to a building is a high priority for employers and commercial building owners. Achieving improved levels of environment requires new design and materials to support them.



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## Why does Approved Document B need to be reviewed?

The last review of the Approved Document B (ADB) was carried out in 2006. We have witnessed significant changes to building design and construction over the last ten years. It is now out of date, placing businesses and communities all over the UK at, potentially fatal, risk.



# FIRE AND SMOKE CURTAINS

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Typical Fire Curtain



Typical Smoke Curtain

- Like a large electrically operated roller blind
- Typically concealed above a ceiling out of view
- Fire resistant or smoke impermeable fabric
- Side guides may be required on smoke curtains but always required on fire curtains
- Weighted bottom bar
- Activated by an alarm signal

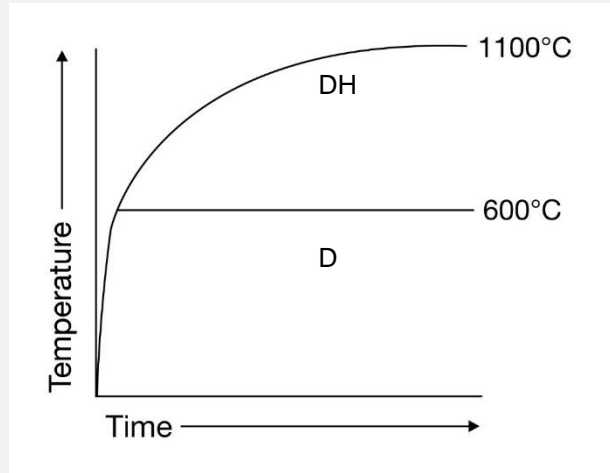


# FIRE AND SMOKE CURTAINS

## WHAT STANDARD?

### SMOKE CURTAINS

- **BS EN 12101-2:2017**



NOTE:

A DH tested smoke curtain IS NOT a fire curtain.

# FIRE AND SMOKE CURTAINS

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## WHAT STANDARD?

### FIRE CURTAINS

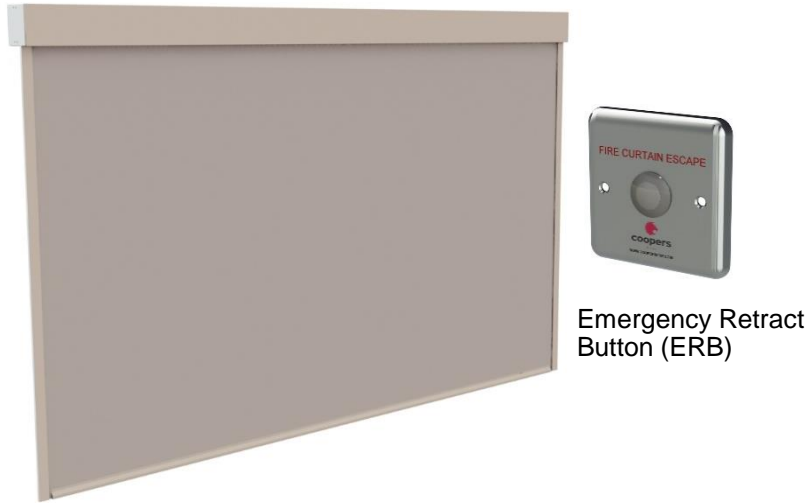
- **BS 8524-1:2013**
- **BS EN 1634-1:2014**
- **UL 10D**



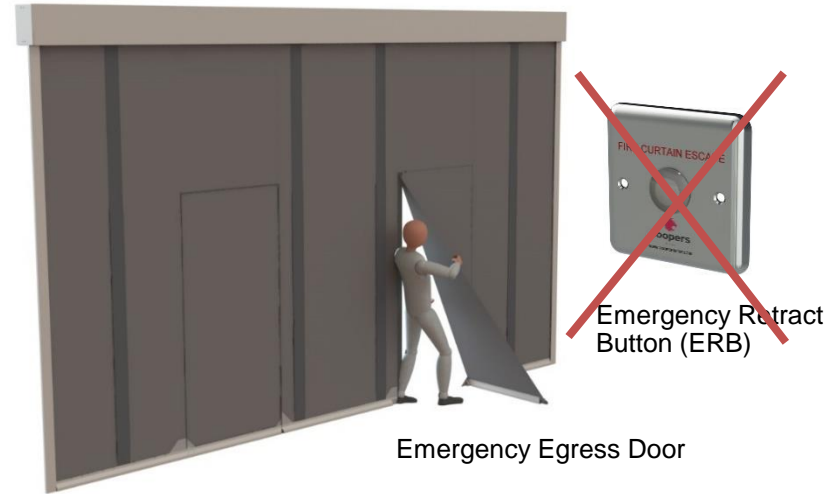
# FIRE AND SMOKE CURTAINS

## WHAT STANDARD

### BS EN



### UL



# DIFFERENT TYPES

## ACTIVE FIRE AND SMOKE CURTAINS

Vertical Fire Curtain



Concertina Multi-Sided Fire Curtain



Concertina Closed Fire Curtain



SmokeStop Smoke Barrier



Concertina Open Fire Curtain

# DIFFERENT TYPES

## ACTIVE FIRE AND SMOKE CURTAINS

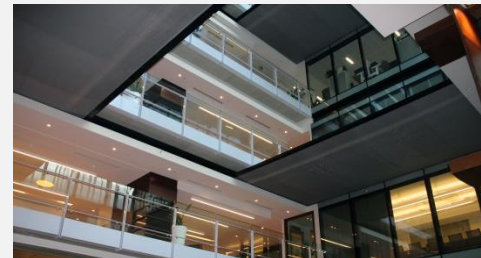
SmokeStop evacU8® Smoke Barrier



FireMaster® Plus<sup>2</sup> Radiation Fire Curtain



FireMaster® Horizontal Active Fire Curtain

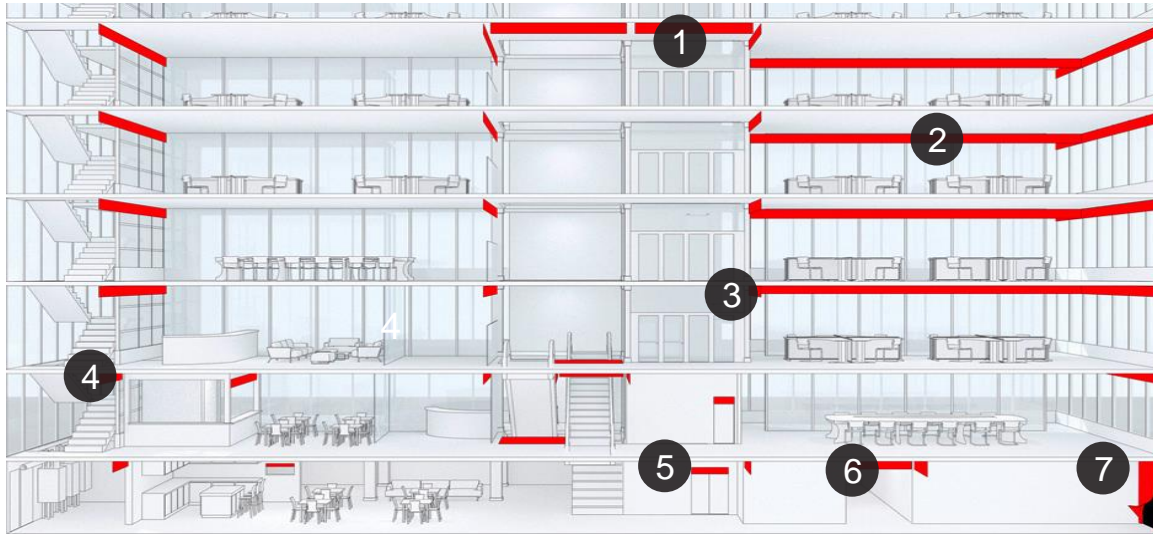


FireMaster® SuperPlus Fire Curtain



FireMaster® Horizontal Active Fire Curtain

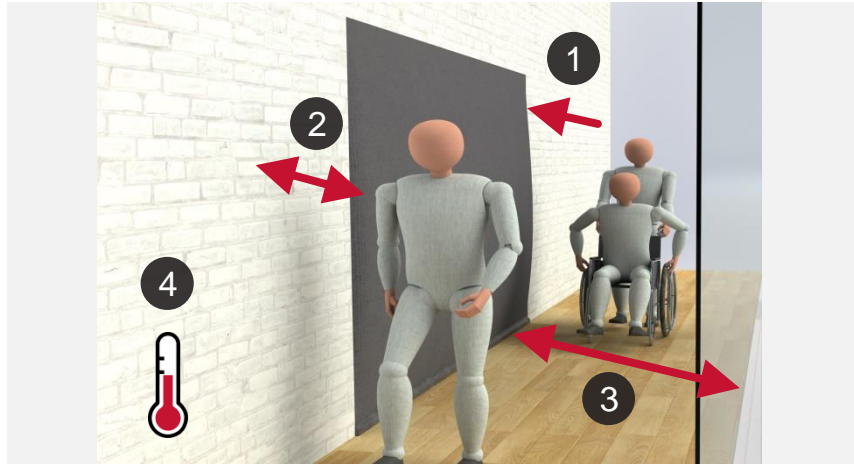
# WHERE THEY CAN BE USED?



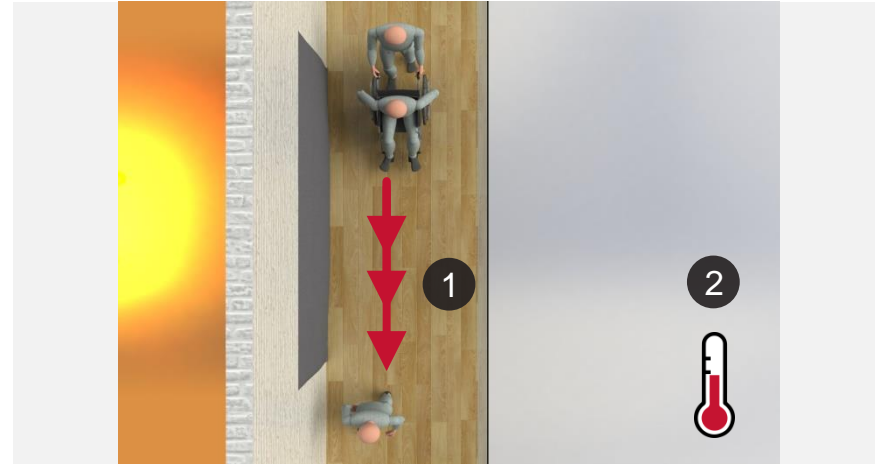
- 1 Atrium
- 2 Boundary Protection
- 3 Compartmentation
- 4 Stairwell and escalators
- 5 Cross corridor separation
- 6 Elevator openings and lobbies
- 7 Protecting escape routes whilst allowing egress

# REALISTIC SCENARIO – Fire Curtain

## FIRE CURTAIN INTEGRITY AND RADIATION



- 1 Speed
- 2 Distance
- 3 Width
- 4 Temperature



- 1 Speed
- 2 Temperature

# REALISTIC SCENARIO – Smoke Curtain

## CONTROLLED SMOKE TESTING



- 1 Smoke Layer
- 2 Smoke Barrier
- 3 Clear Layer
- 4 Tenable Conditions



# WHY ARE THEY USED?

Smoke Curtain



Smoke should not be allowed to descend to a height of less than 3m above any floor level.

(BS 9999:2008)

Smoke barrier used as channeling screens beneath a balcony or gases from a room opening to the spill edge.



### Compartmentation - Shopping Centre or Mall for Smoke Compartment



## Atrium - Faceted / Segmented Atrium Void – SmokeStop Smoke Curtains



### Atrium - Faceted / Segmented Atrium Void – SmokeStop Smoke Curtains



# APPLICATIONS

## SMOKE CURTAINS

### Means of Escape – evacU8® Smoke Curtains



# APPLICATIONS

## FIRE CURTAINS

Atrium - FireMaster Fire Curtains, Fortnum & Mason, London



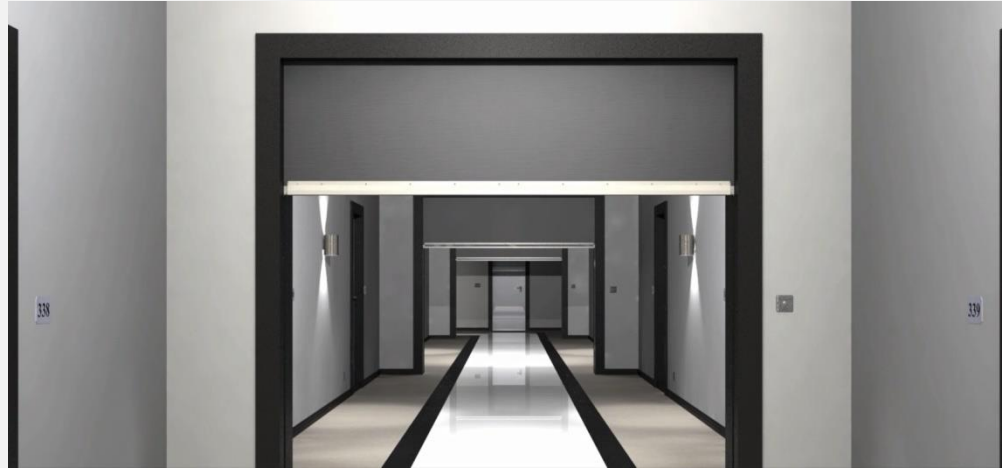
### Compartmentation - Serving and Kitchen Hatches – FireMaster Fire Curtain



# APPLICATIONS

## FIRE CURTAINS

### Corridor Separation - Sub-Dividing Hotel Corridors





# APPLICATIONS

## FIRE CURTAINS

### Protected Means of Escape - FireMaster Concertina Fire Curtain



# APPLICATIONS

## FIRE CURTAINS

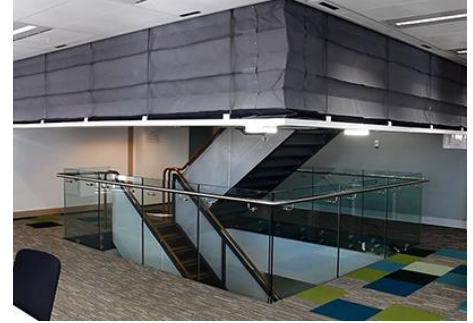
### Protected Means of Escape - FireMaster Concertina Fire Curtain



# APPLICATIONS

## FIRE CURTAINS

### Stairwells - Multi-sided (L & U Shaped) Concertina Fire Curtains



# APPLICATIONS

## FIRE CURTAINS

### Boundary Protection - Offices



# APPLICATIONS

## FIRE CURTAINS WITH SMOKE CONTROL

### Fire Curtains with Smoke Control for Lifts and Lift Lobbies



# APPLICATIONS

## DOMESTIC FIRE CURTAINS

### Openings In Walls - An Alternative To A Wall (NLB) And Door



# APPLICATIONS

## FIRE CURTAINS WITH A SPRINKLER SYSTEM

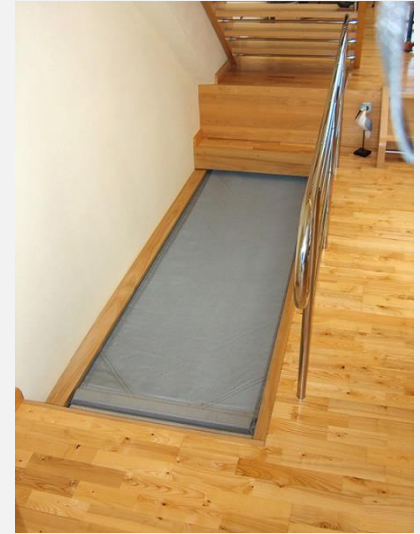
### Protected Means of Escape – FireMaster SuperPlus Fire Curtain



# APPLICATIONS

## DOMESTIC FIRE CURTAINS

### Compartmentation – FireMaster NVS Horizontal Fire Curtains Protecting Opening Between Floors





### Means of Escape - ViiFire iZone Fire Curtain (Loft Conversion)



# CASE STUDIES

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## Blavatnik School of Government University of Oxford, UK

Due to the circular shapes that make up the building design, bespoke products were designed and capping details engineered in order to subtly compliment the choice of finished materials.

Coopers internal R & D department were heavily involved with this project in order to fulfil the architect's design, ensuring our products operated as intended whilst remaining inconspicuous.



# CASE STUDIES

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Blavatnik School of Government  
University of Oxford, UK



# CASE STUDIES

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## Louvre Museum Abu Dhabi, UAE

Coopers Fire worked closely with BuroHappold to offer innovative fire protection using horizontal and vertical fire curtains offering fire compartmentation.

A total of 20 FireMaster Horizontal fire curtains and 110 FireMaster and FireMaster Plus fire curtains have been installed in the museum by Coopers Fire UAE partners, Dosteen Doors and Shutters LLC and Eliotec LLC.



# CASE STUDIES

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Louvre Museum  
Abu Dhabi, UAE



# CASE STUDIES

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## Westquay Watermark Southampton, UK

The WestQuay Watermark building is a new leisure complex in Southampton, UK that offers restaurants, cinemas and retail. The £85 million build was completed early 2017 and was constructed by the main contractor Sir Robert McAlpine.

The striking building is based on a design of a ship. Due to the open plan design of the building, the requirement for lifts and the linking of floors with escalators, fire curtains were required in order to satisfy the fire regulations.



# CASE STUDIES

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Westquay Watermark  
Southampton, UK



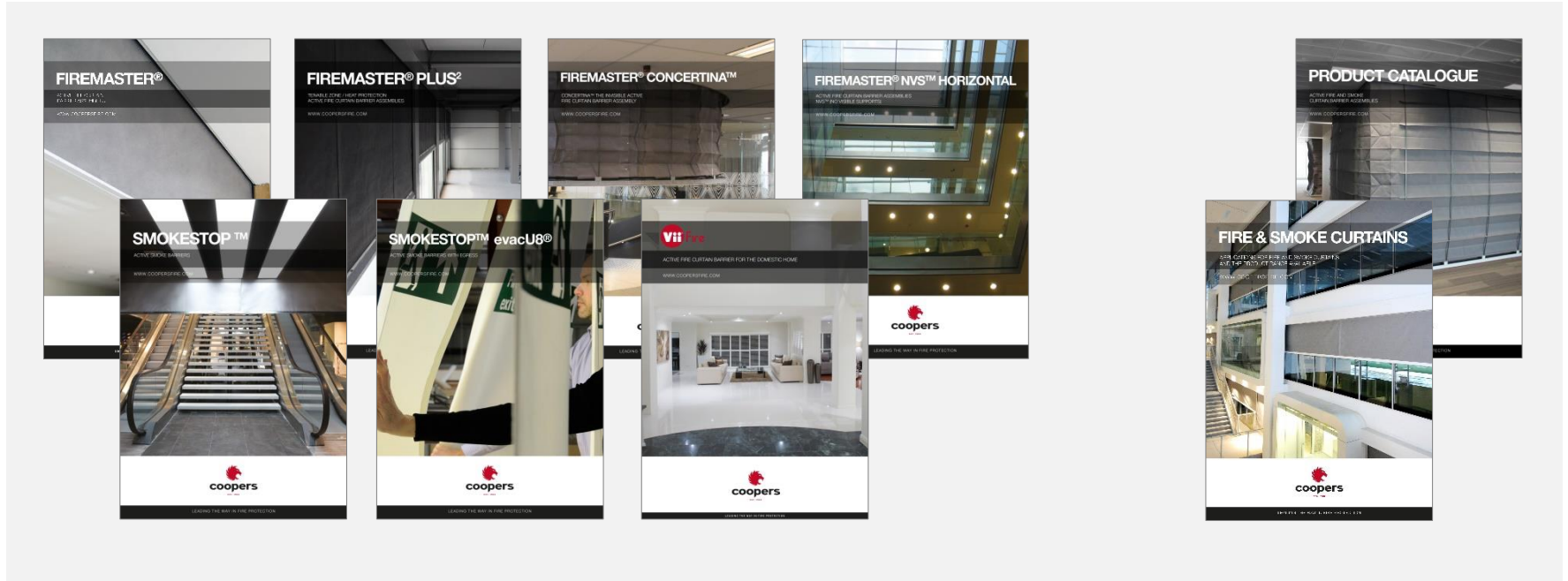
# PRESTIGIOUS PROJECTS

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# CORPORATE LITERATURE



# THANK YOU

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