AUTOMATIC SMOKE CURTAINS
Smoke Barriers

The function of the smoke barrier is to control the movement of hot smoke and toxic gases within a building by forming a barrier. The functions of active smoke barriers are identical to those of static smoke barriers, except that the active smoke barriers have the ability to be retracted and concealed when not in use.

TYPICAL FUNCTIONS OF SMOKE BARRIERS

1. To create a smoke reservoir by containing and limiting the travel of smoke

2. To channel smoke in controlled manner

3. To prevent smoke entry to another area or void

TYPES OF SMOKE BARRIERS

- Static smoke barriers (SSB)
- Active smoke barriers (ASB)

A wide range of different materials may be used to create smoke barriers. Typical materials used for smoke barriers include:

- fabric
- glass
- fibreglass
- metal
- fire-resisting board
- mineral wool

APPLICATIONS OF SMOKE BARRIERS

A. Smoke reservoir boundaries

B. Channelling screens

C. Void edge screens

As their application becomes more widespread, it is inevitable they will be put to wider variety of uses. Within the scope of its standard, smoke barriers can contain smoke and gases up to 600° C but are not intended to perform the same function as fire barriers, unless they meet additional temperature requirements.
Active Smoke Barrier

GENERAL

The Active Smoke Barrier is an electrically operated automatic smoke curtain used to form a continuous barrier against smoke in the event of a fire.

To ensure that the fire integrity of the smoke curtain is maintained, all critical components such as the head boxes, bearings, bottom bar and roller are manufactured of steel.

The curtain head box is manufactured from 1.2mm galvanised steel, with a standard size of 181.2mm x 150mm for single rollers (maximum width 5m) and 234.4mm x 150mm for multiple rollers (over 5m wide). This enclosure is rated at the same temperature as the curtain fabric.

A steel bottom bar is provided to prevent deflection and it is weighted to ensure correct operation under gravity.

A 24 volt DC motor, a gear box and a sealed heavy duty ball bearing assembly is incorporated in to the steel roller. A motor control unit housed in a steel enclosure is mounted onto the motor end of the head box.

PERFORMANCE

Product tested to EN 12101/A1:2006

Designed to operate for 1000 cycles at normal ambient temperatures up to 600° C for over 120 minutes for once only.

The fabric has a Class 1 surface spread of flame when tested to BS 476 : Part 6 and BS 476 : Part 7. It is therefore rated Class 0 to the UK Building Regulations Approved Document B 1991.

FABRIC

The curtain fabric has a nominal weight of 0.48Kg/m² and is tested to withstand temperatures up to 600° C for a period of 30 minutes.

Note: Options of the curtain fabric to withstand up to 1000° C for 2 hours are also available upon request.

CONTROL SYSTEM

In normal operating conditions the curtain would be held by the motors in the retracted position operating at low voltage.

Upon activation of the smoke detectors, the control panel will remove the supply voltage and the curtain will descend under the power of gravity in a controlled manner. The system must fail safe to the operational position on total loss of primary and auxiliary power.

A dynamic braking system housed in the motor control circuit controls the speed of descent of the curtain, this is to retract the curtain, the motors drive the curtains to the up position. As the bottom bar hits the curtain head box, a current limiting circuit steps back the voltage and current and holds the bottom bar in the retracted position. Limit switches are not to be used to control the upper position of the curtain.

Upon the mains supply failure, the supply is automatically switched to the integral standby battery. The curtain shall remain in the retracted position for 1 hour (fully loaded system).

APPROVED STANDARDS

<table>
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<th>Standard</th>
<th>Description</th>
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<tr>
<td>EN 12101-1:2005+A1:2006 and EN1363-1</td>
<td>Temperature / time resistance</td>
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<td>BS 476 : Part 6 : 1989</td>
<td>Fire propagation test</td>
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<td>BS 476 : Part 7 : 1997, Class 1 rating</td>
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<td>Achieved Class 0 rating</td>
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Single Roller Smoke Curtain
Installation Details

Vertical Cross-Section Diagram

- Soffit
- Hanging Threaded Rod
- Fixed Smoke Barrier (By Others)
- Smoke Curtain Head Box
- Smoke Curtain Fabric

Detail ‘A’

- Soffit
- Hanging Threaded Rod
- Fixed Smoke Barrier (By Others)
- Unistrut
- Roller
- Smoke Curtain Head Box
- Smoke Curtain Fabric

Detail ‘B’

- Smoke Curtain Fabric
- Bottom Bar

Horizontal Cross-Section Diagram

- Smoke Curtain Width (Max. 5060mm)
- Smoke Curtain Head Box
- Unistrut
- Motor
- Hanging Threaded Rod
Double Roller Smoke Curtain
Installation Details

Components of a double roller smoke curtain - 3d exploded view

Vertical Cross-Section Diagram

Detail ‘A’
- Soffit
- Hanging Threaded Rod
- Fixed Smoke Barrier (By Others)
- Smoke Curtain Head Box
- Smokey Curtain Fabric

Detail ‘B’
- Smoke Curtain Fabric
- FFL
- Bottom Bar

Horizontal Cross-Section Diagram

Smoke Curtain Width
- Smoke Curtain Head Box
- Unistrut
- Motor
- Hanging Threaded Rod
- Min. 150mm (Smoke Curtain Fabric Overlapping)
ADDRESSABLE SMOKE CONTROL SYSTEM

Our intelligent control system enables all smoke control equipment to be integrated within a control panel for synchronised activation and status indication.

Schematic diagram of addressable smoke control system
Track Records

Full height drop smoke curtain for smoke containment

ADDITIONAL PROJECT REFERENCES

- Ocean Financial Centre
- National Heart Centre
- Chinatown Point
- Qantas First Lounge at Changi Airport Terminal 1
- CET at Paya Lebar
- Westgate
- Ngee Ann Polytechnic Blk 51, Campus Ext. Phase 7
Glass Solar Shading Systems
Single Bank Ventilation Louvres
Double Bank Rainproof Ventilation Louvres
Triple Bank Stormproof Ventilation Louvres
Structural Glazing
Curtain Wall
Skylight
Canopies
Streetlights
Projection Lights
Flood Lights
Highbay Industrial Lights
High Performance Industrial Lights
Wallwasher Industrial Lights
T8 and T5 LED Tube Lights
Classic Bulbs
Reflector Bulbs
Par Bulbs
RGB Bulbs
Corn Bulbs
Soft Panel LED Lights
Light Fittings
Fixed / Controllable Solar Shading System with Photovoltaic Cells
Solar Powered LED Lighting Systems
Solar Cell Roofing Systems
Automatic Smoke Curtains
Automatic Fire Curtains
Fixed Smoke Barriers
Fire Rated Glass Barriers
Natural / Powered Smoke Exhaust Ventilators
Smoke Exhaust Fans
Smoke Dampers
Smoke Detectors
Smoke Control Systems
Computational Fluid Dynamics Simulation
Structural Glazing
HP LED Streetlights
Photovoltaic Cells
Fire Rated Glass Door

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