ASB™

AUTOMATIC SMOKE CURTAINS

bizSAFE STAR

SINGAPORE GREEN BUILDING COUNCIL

Smoke Barriers

Smoke barrier used in fire testing

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

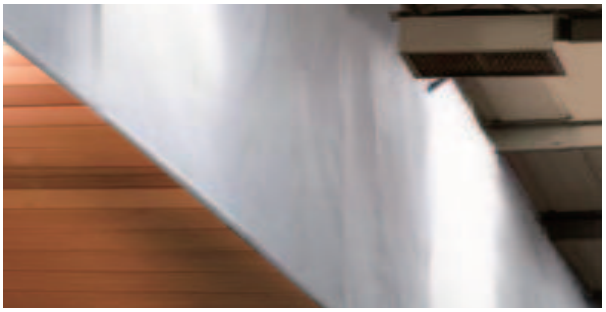
1. To create a smoke reservoir by containing and limiting the travel of smoke
2. To channel smoke in controlled manner
3. To prevent smoke entry to another area or void

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



Static smoke barrier

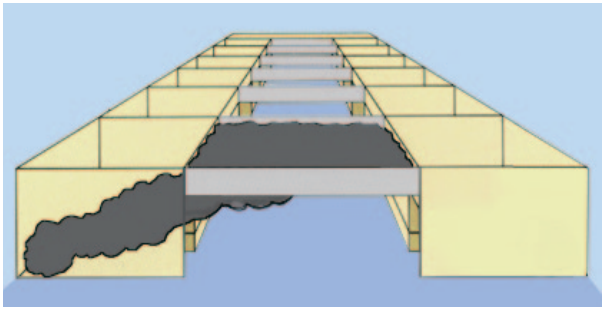
APPLICATIONS OF SMOKE BARRIERS

A. Smoke reservoir boundaries

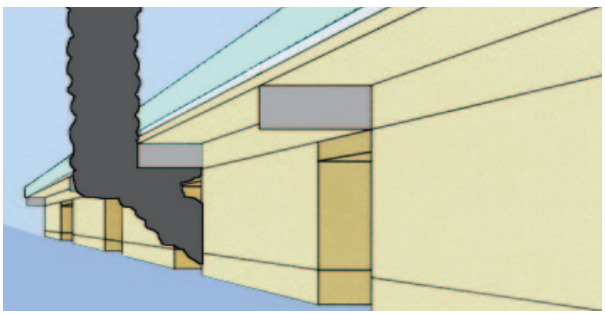
B. Channelling screens

C. Void edge screens

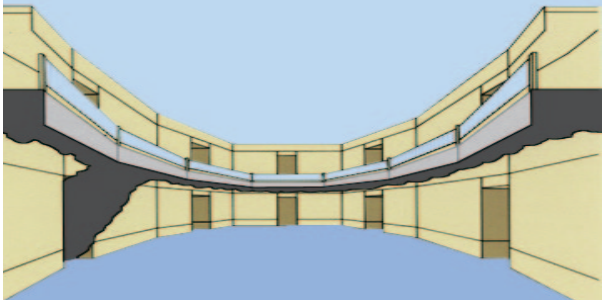
As their application becomes more widespread, it is inevitable they will be put to wider variety of uses. Within the scope of its standard, smoke barriers can contain smoke and gases up to 600° C but are not intended to perform the same function as fire barriers, unless they meet additional temperature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



Smoke reservoir boundaries

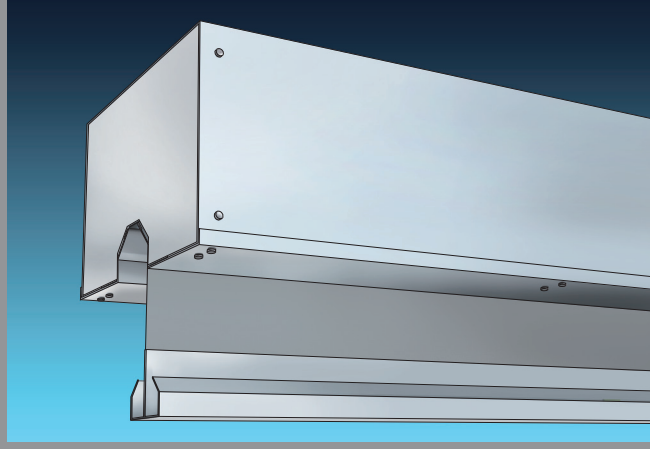


Channelling screens



Void edge screens

Active Smoke Barrier



All critical components of the smoke curtain are made of steel

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/m^2 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.

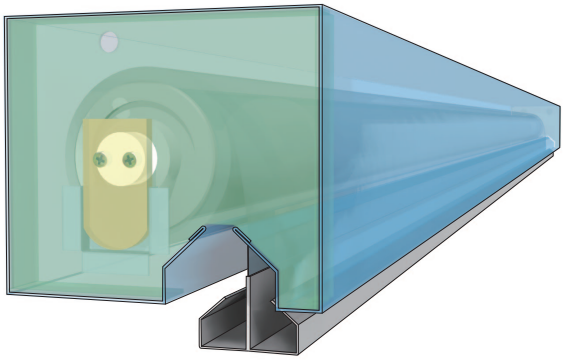
A dynamic braking system housed in the motor control circuit controls the speed of descent of the curtain, this is to retract the curtain,the motors drive the curtains to the up position. As the bottom bar hits the curtain head box, a current limiting circuit steps back the voltage and current and holds 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

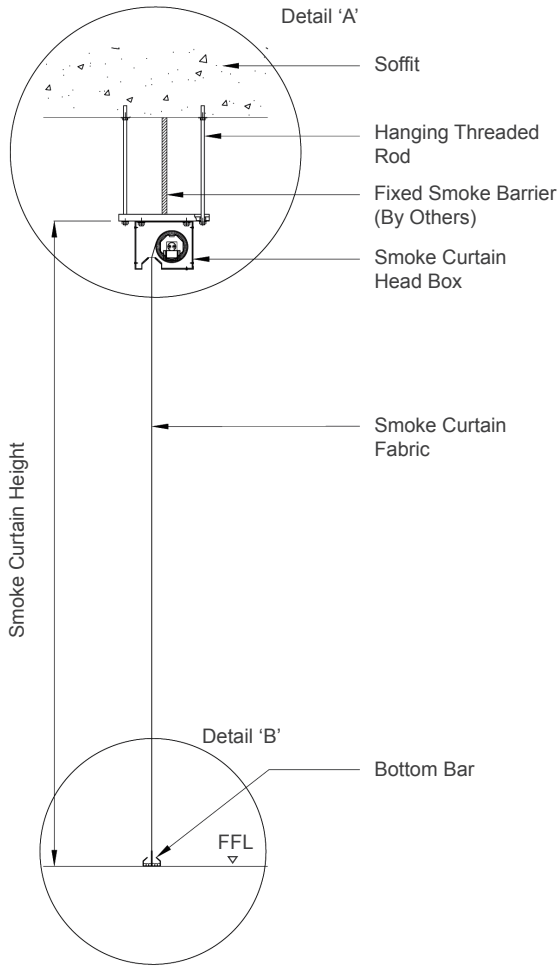
EN 12101-1:2005+A1:2006 and EN1363-1	Temperature / time resistance
EN 12101-1:2005+A1:2006	Reliability and response time
EN 12101-1:2005+A1:2006 and EN1634-3:2004	Permeability of material to smoke
BS 476 : Part 6 : 1989	Fire propagation test
BS 476 : Part 7 : 1997, Class 1 rating	Fire surface spread test
Achieved Class 0 rating	Fabric fire test

Single Roller Smoke Curtain
Installation Details

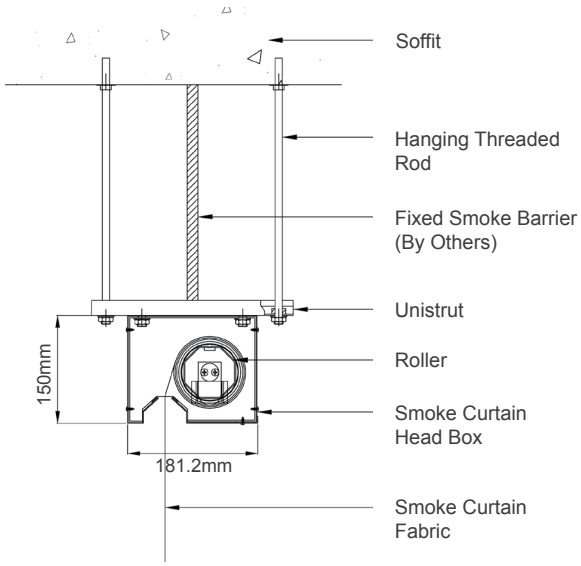


Single Roller Smoke Curtain

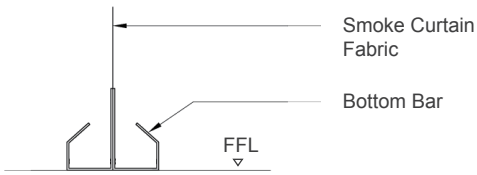
Vertical Cross-Section Diagram



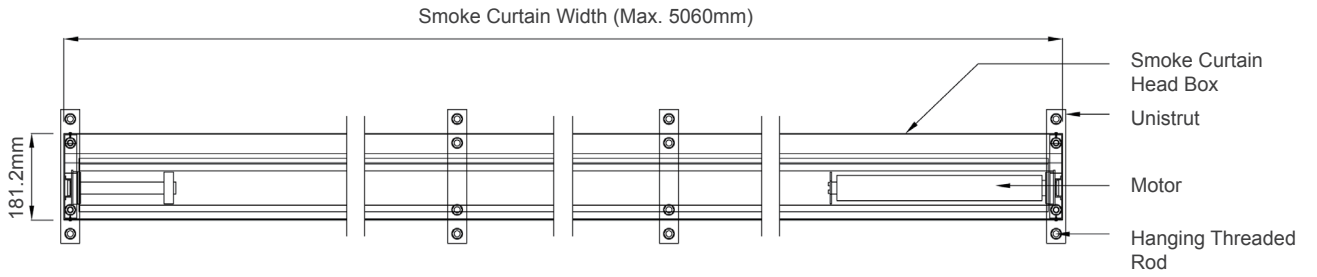
Detail ‘A’



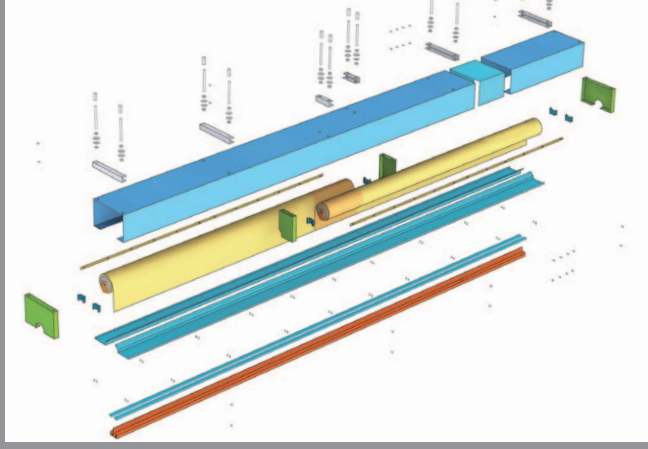
Detail ‘B’



Horizontal Cross-Section Diagram

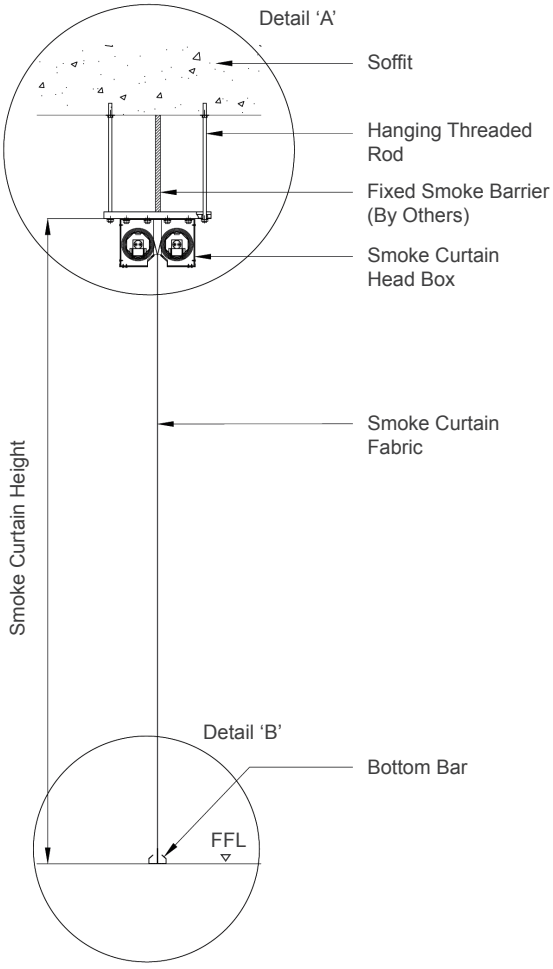


Double Roller Smoke Curtain
Installation Details



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

Vertical Cross-Section Diagram



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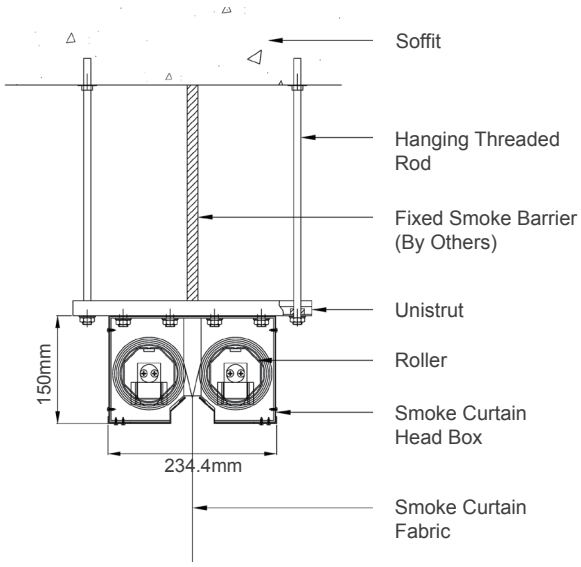
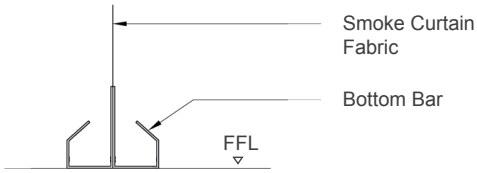
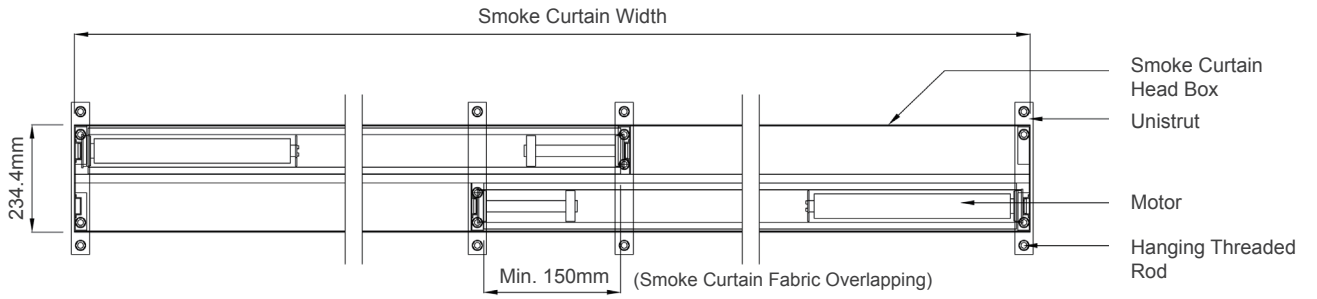


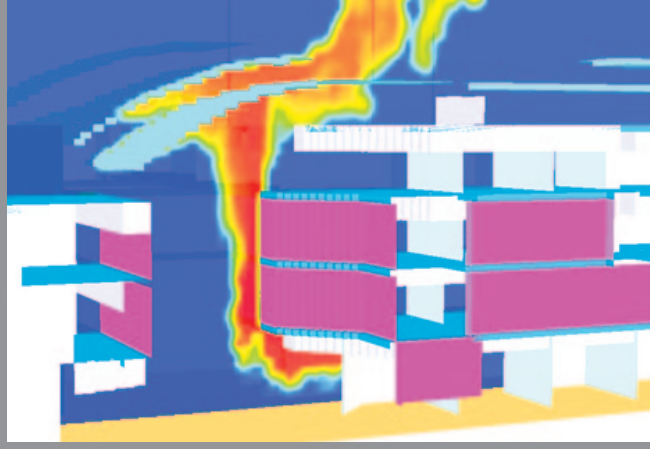
Detail ‘B’



Horizontal Cross-Section Diagram



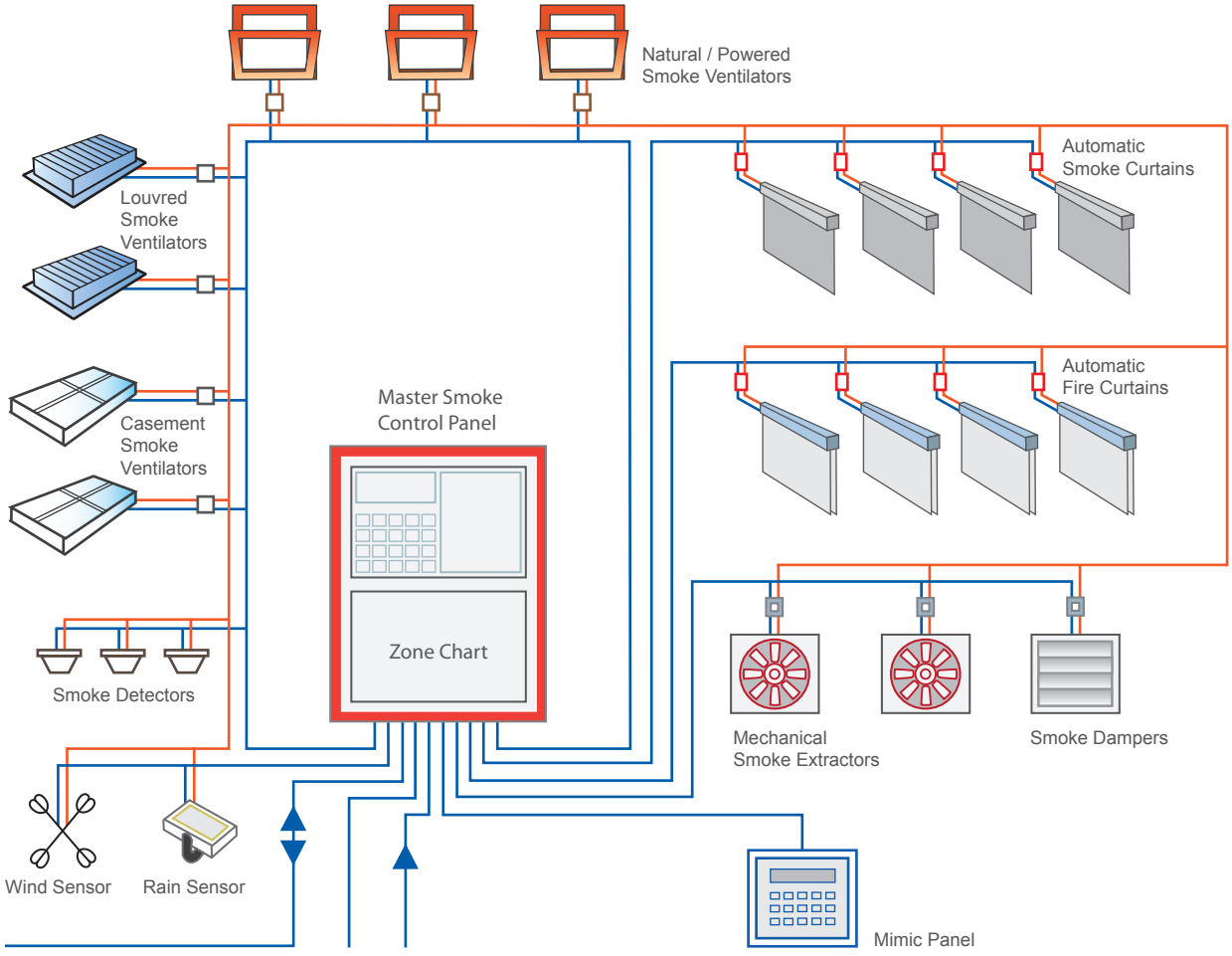
Smoke Control System



CFD simulation of smoke curtain in the event of a fire

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

Smoke control system - Singapore Expo

Smoke control system - Ten Mile Junction

Smoke control system - Marina Bay Financial Centre

Smoke control system - Zhong Shan Park

Fire curtains - Singapore Expo

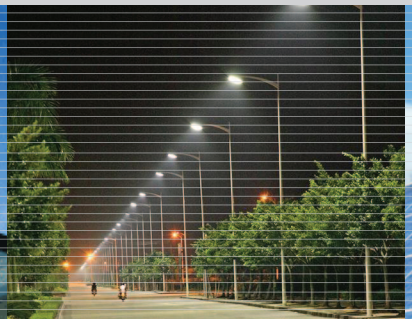
Smoke control system - Chinatown Point

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

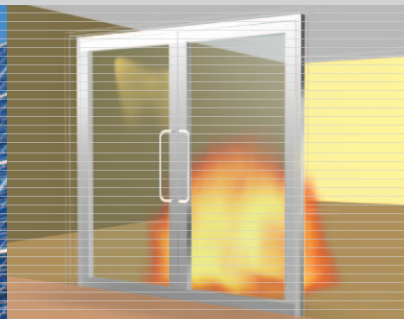
Structural Glazing

HPLED Streetlights



Photovoltaic Cells

Fire Rated Glass Door

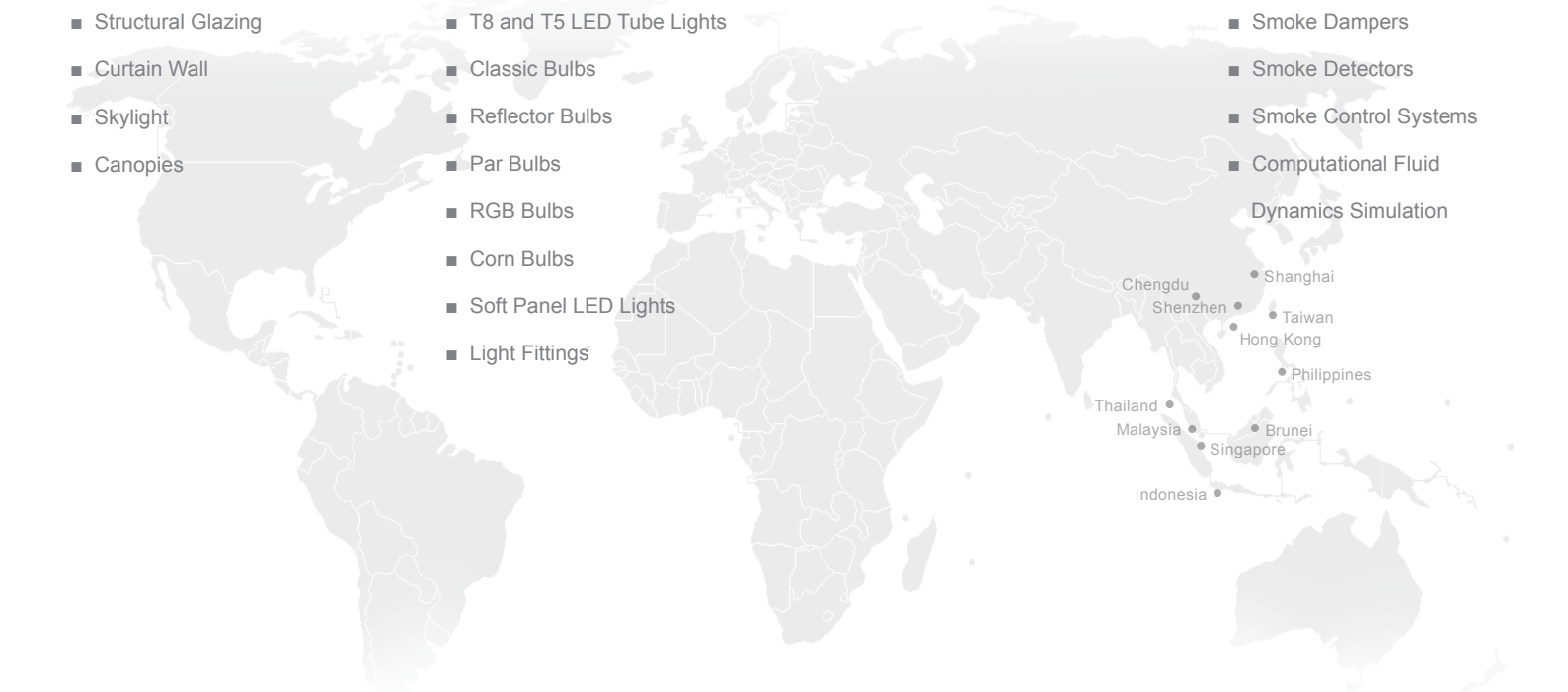


- Glass Solar Shading Systems
- Single Bank Ventilation Louvres
- Double Bank Rainproof Ventilation Louvres
- Triple Bank Stormproof Ventilation Louvres
- Structural Glazing
- Curtain Wall
- Skylight
- Canopies

- 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 Doors
- Natural / Powered Smoke Exhaust Ventilators
- Smoke Exhaust Fans
- Smoke Dampers
- Smoke Detectors
- Smoke Control Systems
- Computational Fluid Dynamics Simulation



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