THE LEADING EDGE IN
Smoke & Fire Curtains

- Automatic Smoke Curtains
- Automatic Fire Curtains
- Static Smoke & Fire Curtains
- Ventilation

BLE
MAKING BUILDINGS SAFER

Smoke & Fire Curtains

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www.ble-smokeandfirecurtains.com

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Smoke & Fire Curtainss

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Welcome to BLE Smoke & Fire Curtains

BLE protects millions of people in airports, shopping centres, theatres, businesses and museums around the world, every day. We are proud to be a supplier of highly sophisticated smoke and fire curtains. Our gravity fail-safe curtains have a high level of technical specification and incorporate features that integrate within building management systems, yet offer a cost effective and flexible solution to smoke and fire control.

Why Choose BLE Smoke & Fire Curtains?

BLE designs, manufactures and installs gravity fail-safe smoke and fire curtains that offer the latest in electronic technology and innovation, making our products the prime choice with designers, architects and engineers.

As BLE products are designed to be discreet, robust and simple to operate and maintain; we can find a solution to the most challenging architectural requirement. This is why BLE smoke & fire curtains feature in prestigious refurbishments and ground breaking new buildings across the globe.

Our manufacturing processes and quality control procedures are certified to meet the requirements of BS EN ISO 9001:2008.

Every smoke and fire curtain from BLE is rigorously tested to a range of BS, EN and UL standards allowing their incorporation in designs worldwide.

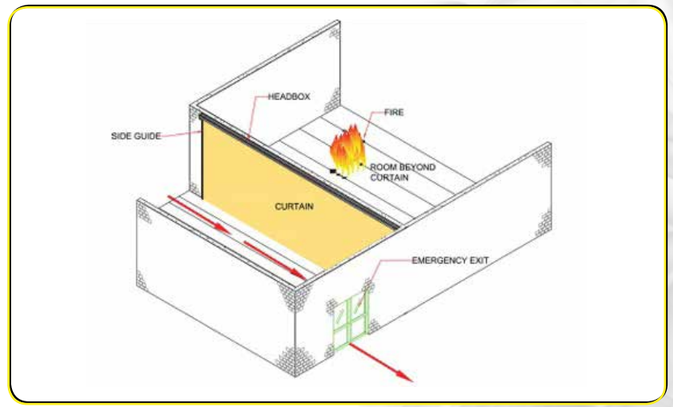
Smoke & Fire Curtains

Simple, effective and cost efficient draft smoke and fire curtains from BLE are invaluable for protecting the occupants within large open buildings from the threat of fire, smoke and hot gases.

An active smoke barrier is manufactured to provide an unobtrusive and aesthetically neutral solution to compartmentation issues throughout the most complex of buildings. We are able to create bespoke smoke barriers for even the most complex smoke control system, regardless of what type of building it is protecting or where it is in the world.

Active fire barriers are similarly discreet in design and are suitable for use in a multitude of fire scenarios which are explained in more detail on pages 4-8. Control systems for BLE require minimal maintenance and are designed to be robust and simple whilst also providing advanced features such as retract buttons, obstruction sensors and audio / visual warnings.

Applications

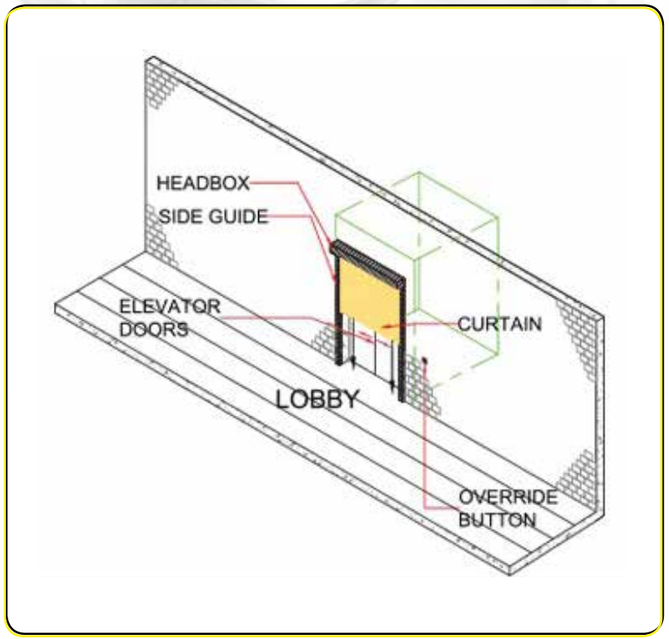


Protected Means of Escape

When considering the placement and provision of a protected means of escape, the management of both smoke and fire are the paramount consideration.
Traditionally a protected means of escape would be along a brick or concrete corridor. However, it may be that the building design does not lend itself to permanent, structural barriers. Using BLE fire curtains it is possible to provide a protected means of escape that, when not in use, is retracted into the ceiling allowing for an unimpeded open area. The length of this escape route is potentially infinite utilising BLE's overlapping roller technology. The reduced irradiance of heat, combined with the reduction in temperature and the prevention of smoke egress enables the curtains to provide a protected escape route.

Elevator Doors

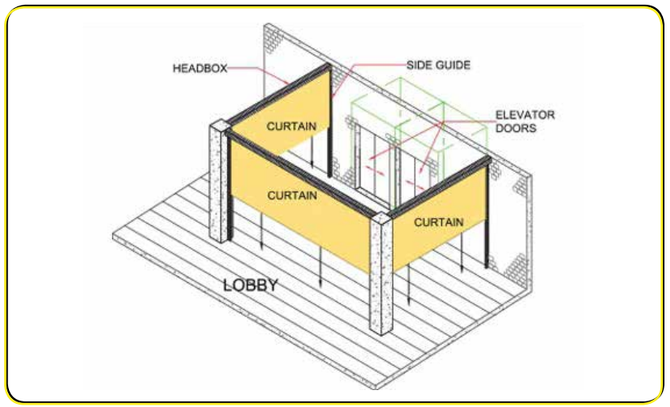
Elevator shafts are a permanent compartment breach with the potential to spread flames and smoke vertically through a building very rapidly. While most, if not all, elevator doors provide a degree of fire integrity, this is not the same for smoke sealing. BLE are able to offer a recognised "Smoke Seal" curtain that can be discreetly installed into the surround facing the elevator door, rendering the curtain invisible when retracted. Once deployed it permits a greatly reduced level of smoke leakage.



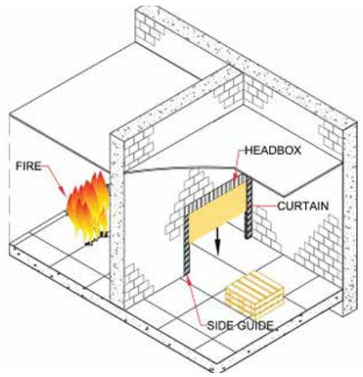
Applications

Elevator Lobbies

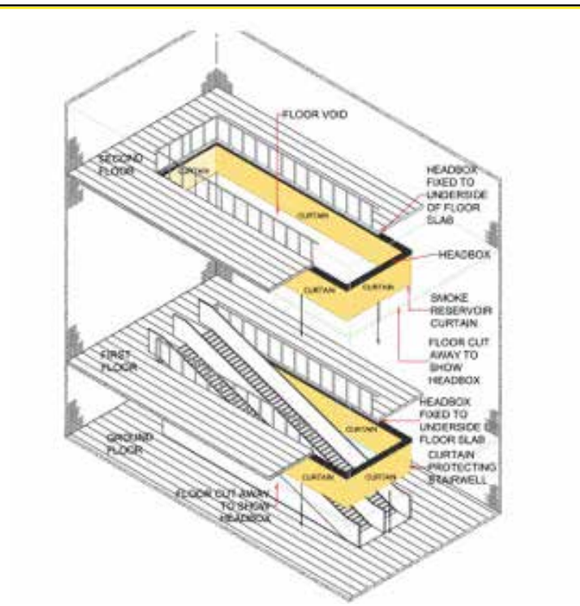
While BLE can offer a smoke sealed curtain for the immediate face of any elevator door, this may not suit the building fire strategy. It may be required to create a protected lobby in front of a bank of elevator doors. Where this would previously have required the construction of a physical smoke and fire rated partition, a three sided lobby can now be produced using curtains. Again, when not in use there is no physical impediment or restriction but once required a full integrity, smoke sealed lobby can be created.



Fire Door Replacement



Fire doors are a necessary but cumbersome item. Although required in a great deal of situations, they are by nature heavy and restrictive to movement as well as being difficult for small children and the elderly or disabled to open. If these vital parts of a buildings fire strategy are wedged open, this breaches compartmentation requirements. A BLE fire curtain can be specified as an alternative, offering the same levels of integrity. The curtain can be recessed within the ceiling and walls, or face fixed depending on customer requirements. It will then remain there hidden, always ready to deploy in a fire situation due to its gravity fail-to-safe method of operation, even when all forms of consumable power are unavailable.

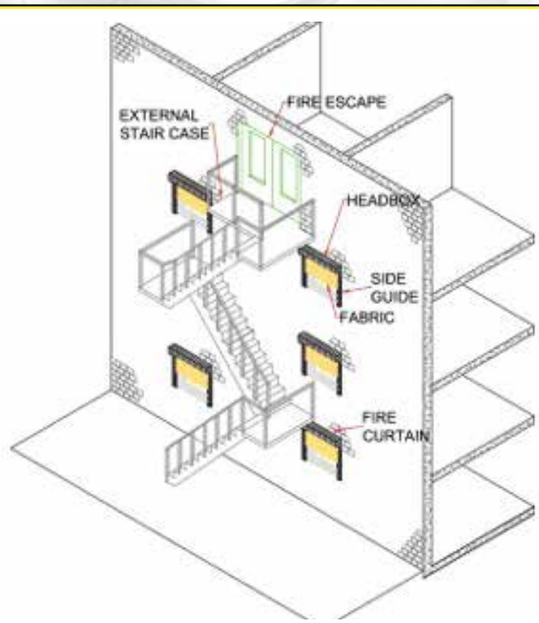


Escalators & Stairs

Both these items create a permanent breach in the compartment between floors. Using BLE curtains this can be tackled in several ways depending on the strategy requirements. There is the option of using smoke curtains around the lower level to create a deeper reservoir depth or fully fledged fire curtains to seal off the escalator or stair well completely.In conjunction with intelligent control systems it can be linked to the escalator operation which, together with retract buttons, provides a tested and well used escape system.

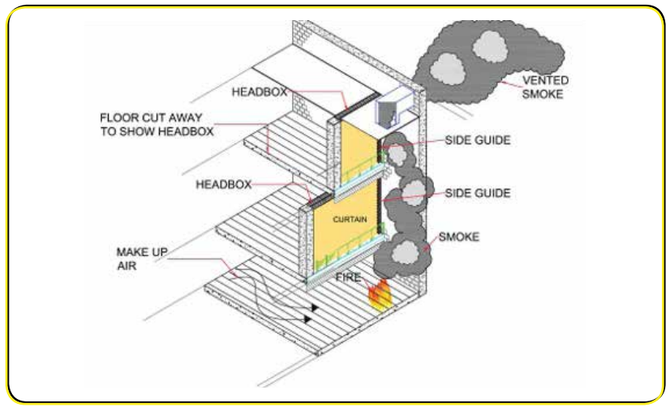
External Fire Escape Protection

A number of buildings still utilise an external staircase to allow escape from each floor. However if the fire is on a lower floor then this means of escape is compromised. In the zone of the external escape route the installation of a BLE curtain with an IP rating provides protection to the stairs from smoke, irradiance of heat and high temperatures as well as naked flames.



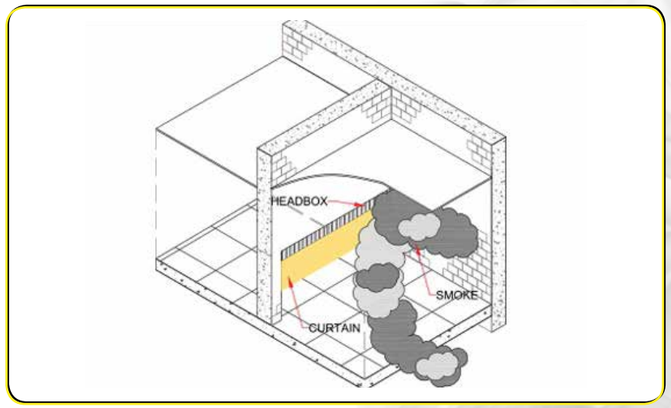
Applications

Atrium Chimney

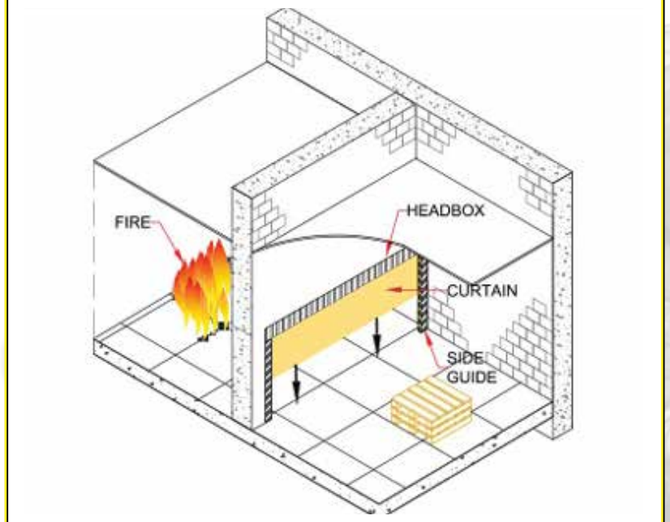


There are numerous office blocks and department stores that have impressive open atria designs spanning over many floors. To prevent the spread of smoke and fire from one floor to another and to facilitate the rapid extraction of smoke, many designs use a roof level ventilation system. These are complemented by an inlet make up of air facility and the deployment of BLE curtains around the edge. IIn reaction to multiple alarm inputs, sophisticated control systems allow for staged and separate deployment, level by level or even curtain by curtain.

Smoke Compartmentation



Often in conjunction with an integrated ventilation system, smoke compartments are formed to prevent smoke spreading throughout a building. They must be impermeable to smoke leakage, within set criteria, but also offer a level of resistance to heat. In particular, protection must be provided to the rapid build up in temperature caused by hot smoke hitting the barrier, a scenario in which some types of glass will shatter. BLE curtains overcome this issue and provide excellent levels of smoke containment as well as heat resistance.



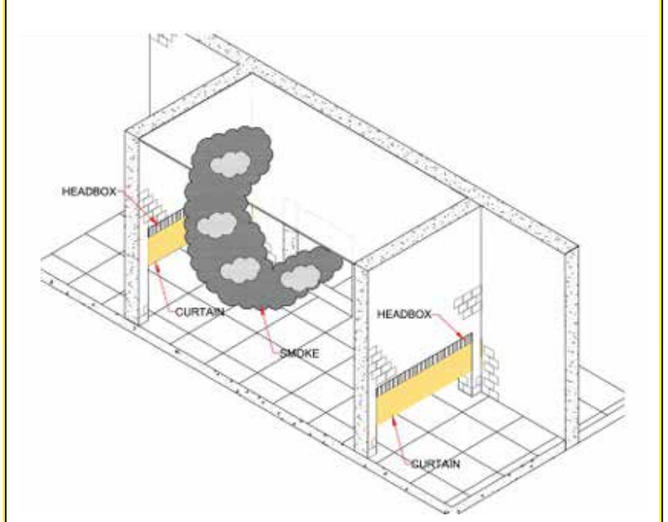
Fire Compartmentation

Forming fire compartments requires a curtain to have good levels of Integrity – the E Classification – and low levels of Irradiance of Heat – the W Classification. Curtains installed to form a compartment must be able to provide a physical barrier to the fire and prevent heat flux transfer of levels sufficient to ignite materials either side of the compartment.

Smoke Channelling

It is often desirable to direct smoke into certain zones for extraction. This is formed using small, rapid drop and often zone controlled banks of curtains. The major requirement for this type of curtain is fast deployment, minimum deflection and a high degree of tolerance to hot smoke.

Smoke channels should be designed with due consideration given to the potentially large extraction units. BLE smoke curtains can be easily combined with ventilation systems to provide an integrated solution.



SC1 (SC60)

Features

Active smoke curtain barrier incorporating X32k fabric.

- 120 minute integrity (E) up to 600°C.
- Excellent compartmentation properties.
- Smoke sealing available.
- Multiple control options.
- Overlapped curtains for large widths.
- Oversized drops available.
- Facetted curtains for curves possible.

Tested to

BS EN 12101-1+A1:2006	Smoke & Heat Controls for Smoke Barriers
BS476-Part 6:1989+A1:2009	Fire Tests on Building Materials & Structures. Fire Propagation
BS476-Part 7:1997	Fire Tests on Building Materials & Structures. Surface Spread of Flame
BS EN 1634-3:2004	Smoke Control Test for Door & Shutter Assemblies
BS EN 13501-4:2007+A1:2009	Fire Classification of Construction Products & Building Elements
BS EN 1363-1:1999	Fire Resistance Tests
CE Marked	Automatic Smoke Barrier
UL 10D	Fire Protective Curtains Classification
UL 10D S	Fire Protective Curtains Classification, Smoke Designation
UL 864	Control Units & Accessories for Fire Alarm Systems
UL 723:2008	Test for Surface Burning Characteristics of Building Materials
UL 1784:2009	Air Leakage Tests of Door Assemblies
Fabric Testing	DIN EN 53855, 53851, 53855T1, 53830, 53857T1, 52273, 1049.

Control System

Group Control Panel. Single Control Panel. Motor Control Card.

Options

Audio Visual Units.
Emergency Retract Button.
Split Drop Delay.
Smoke / Heat Detectors.
Manual Override Switch.
Delayed Descent.
Building Management Connection.
Curtain Decals.

SC2 (D120)

Also designated as:-
Draft Curtains.
Static Barriers.
Fixed Curtains.

Features

Static draft curtain incorporating X32k fabric

- Time / temperature classification D120 to provide smoke control in industrial and commercial locations.
- 120 minute integrity (E) up to 600°C.
- Unlimited width and drop.
- Manufactured to suit almost any shape and size.
- Pocket hem for conduit to increase rigidity.
- Bespoke fixing methods available to suit most requirements.

Tested to

BS EN 12101-1+A1:2006	Smoke & Heat Controls for Smoke Barriers
BS476-Part 4	Non-Combustibility Test for Materials
BS476-Part 6:1989+A1:2009	Fire Tests on Building Materials & Structures. Fire Propagation
BS476-Part 7:1997	Fire Tests on Building Materials & Structures. Surface Spread of Flame
CE Marked	Fixed Smoke Barrier
NFPA 409 6.1.1(i)	Draft Curtains for Aircraft Hangars
Fabric Testing	DIN EN 53855, 53851, 53855T1, 53830, 53857T1, 52273, 1049.

FC1 (FC60)

Features

60 minute fire integrity curtain incorporating X32k fabric.

- 60 minute integrity up to 1000°C.
- Multiple control options.
- Provision of fire compartments and refuges.
- Excellent replacement for fire doors.

Tested to

BS476-Part 6:1989+A1:2009	Fire Tests on Building Materials & Structures. Fire Propagation
BS476-Part 7:1997	Fire Tests on Building Materials & Structures. Surface Spread of Flame
BS476-Part 22: 1987	Fire Tests on Building Materials & Structures
BS EN 1634-1: 2008	Fire Resistance Tests for Doors, Shutters & Openable Windows
BS EN 1634-3:2004	Smoke Control Test for Door & Shutter Assemblies
BS EN 13501-2:2007+A1:2009	Fire Classification of Construction Products & Building Elements
BS EN 1363-1:1999	Fire Resistance Tests
BS EN 1363-2:1999	Fire Resistance Tests
UL 10D	Fire Protective Curtains Classification
UL 10D S	Fire Protective Curtains Classification, Smoke Designation
UL 864	Control Units & Accessories for Fire Alarm Systems
UL 723:2008	Test for Surface Burning Characteristics of Building Materials
UL 1784:2009	Air Leakage Tests of Door Assemblies
Fabric Testing	DIN EN 53855, 53851, 53855T1, 53830, 53857T1, 52273, 1049.

Control System

Group Control Panel. Single Control Panel. Motor Control Card.

Options

Audio Visual Units. Smoke / Heat Detectors. Building Management Connection.
Emergency Retract Button. Manual Override Switch. Curtain Decals.
Split Drop Delay. Delayed Descent.

FC2 (FC240)

Features

240 minute fire integrity curtain incorporating C41000WK fabric.

- 240 minute integrity up to 1000°C (E).
- Provision of "Insulating Zone" for means of escape requirements.
- Increased resistance to the irradiance of heat (W).
- Compliance with impact resistance standards.
- Multiple control options.
- Provision of fire compartments and refuges.
- Excellent replacement for fire doors.
- Provision of a protected means of escape.

Tested to

BS476-Part 6:1989+A1:2009	Fire Tests on Building Materials & Structures. Fire Propagation
BS476-Part 7:1997	Fire Tests on Building Materials & Structures. Surface Spread of Flame
BS476-Part 22: 1987	Fire Tests on Building Materials & Structures
BS EN 1634-1: 2008	Fire Resistance Tests for Doors, Shutters & Openable Windows
BS EN 1634-3:2004	Smoke Control Test for Door & Shutter Assemblies
BS EN 13501-2:2007+A1:2009	Fire Classification of Construction Products & Building Elements
BS EN 1363-1:1999	Fire Resistance Tests
BS EN 1363-2:1999	Fire Resistance Tests
BS EN 949	Soft & Heavy Body Impact – doors
BS EN 5234-2:1992	Partitions. Requirements for Strength & Robustness
UL 10D	Fire Protective Curtains Classification
UL 10D S	Fire Protective Curtains Classification, Smoke Designation
UL 864	Control Units & Accessories for Fire Alarm Systems
UL 723:2008	Test for Surface Burning Characteristics of Building Materials
UL 1784:2009	Air Leakage Tests of Door Assemblies
GB 14102	Integrity Test of a Fire Curtain Assembly
Fabric Testing	DIN EN 53855, 53851, 53855T1, 53830, 53857T1, 52273, 1049.

Control System

Group Control Panel. Single Control Panel. Motor Control Card.

Options

Audio Visual Units. Smoke / Heat Detectors. Building Management Connection.
Emergency Retract Button. Manual Override Switch. Curtain Decals.
Split Drop Delay. Delayed Descent.

FC3(EWBI)

Features

240 minute fire integrity curtain incorporating EW-BI fabric.

- 240 minute integrity up to 1000°C (E).
- 90 minutes of irradiance heat flux protection (W).
- Compact installation for high performance.
- Multiple control options.
- Provision of fire compartments and refuges.
- Excellent replacement for fire doors.
- Provision of a protected means of escape.

Tested to

BS EN 1634-1: 2008	Fire Resistance Tests for Doors, Shutters & Openable Windows
BS EN 13501-2:2007+A1:2009	Fire Classification of Construction Products & Building Elements
BS EN 1363-1:1999	Fire Resistance Tests
BS EN 1363-2:1999	Fire Resistance Tests
BS 8524-1:2013 Annex D	Active Fire Curtain Barrier Assemblies
Fabric Testing	DIN EN 12654, 12127, DIN ISO 9354, 4603/E & 4606

Control System

Group Control Panel. Single Control Panel. Motor Control Card.

Options

Audio Visual Units.
Emergency Retract Button.
Split Drop Delay.
Smoke / Heat Detectors.
Manual Override Switch..
Delayed Descent.
Building Management Connection
Curtain Decals.

FC4(V4A)

Features

120 minute fire integrity curtain incorporating V4A fabric.

- 120 minute integrity up to 1000°C (E).
- 120 minutes of irradiance heat flux protection (W).
- Compact installation for high performance.
- Multiple control options.
- Provision of fire compartments and refuges.
- Excellent replacement for fire doors.
- Provision of a protected means of escape.

Tested to

BS EN 1634-1: 2008	Fire Resistance Tests for Doors, Shutters & Openable Windows
BS EN 13501-2:2007+A1:2009	Fire Classification of Construction Products & Building Elements
BS EN 1363-1:1999	Fire Resistance Tests
BS EN 1363-2:1999	Fire Resistance Tests
BS 8524-1:2013 Annex D	Active Fire Curtain Barrier Assemblies
Fabric Testing	DIN EN 12127, 1773, 1049-2, DIN ISO 9354, 5084, 13934-1

Control System

Group Control Panel. Single Control Panel. Motor Control Card.

Options

Audio Visual Units.
Emergency Retract Button.
Delayed Descent.
Smoke / Heat Detectors.
Manual Override Switch.
Building Management Connection.
Split Drop Delay.

AC1 (SD240A)

Also designated as:-
Accordion Curtains.

Features:

180 minute fire integrity curtain (both corner and lateral) incorporating C41000WK fabric

- 180 minute integrity up to 1000°C in masonry.
- 120 minute integrity up to 1000°C in gypsum.
- Eliminates the use of corner posts / columns.
- Provision of fire compartmentation and refuges.
- Multiple control systems.

Size and design limitations apply. Please refer to the website for more information or call to discuss feasibility

Tested to

UL10D	Fire Protective Curtain Classification
UL864	Control Units & Accessories for Fire Alarm Systems
Fabric Testing	DIN EN 53855, 53851, 53855T1, 53830, 53857T1, 52273, 1049

Control System

Group Control Panel.

Motor Control Card.

Options

Audio Visual Units.
Manual Override Switch.

Smoke / Heat Detectors.
Curtain Decals.

Building Management Connection.
Delayed Descent.

HC1 (Horizontal)

Also designated as:-
Horizontal Curtains.

Features:

180 minutes fire integrity curtain incorporating C41000WK fabric.

- 180 minutes integrity up to 1000°C (E).
- 20 minutes of irradiance heat flux protection (W).
- Provides horizontal closure for stairwells and skylights.
- Provision for the use of a dual power supply.

Size and design limitations apply. Please refer to the website for more information or call to discuss feasibility.

Tested to

BS EN 1634-1:2008	Fire Resistance Tests for Doors, Shutters & Openable Windows
BS EN 1363-1:1999	Fire Resistance Tests
BS EN 1363-1:1999	Fire Resistance Tests
Fabric Testing	DIN EN 53855, 53851, 53855T1, 53830, 53857T1, 52273, 1049

Control System

Group Control Panel.

Motor Control Card (Dual).

Options

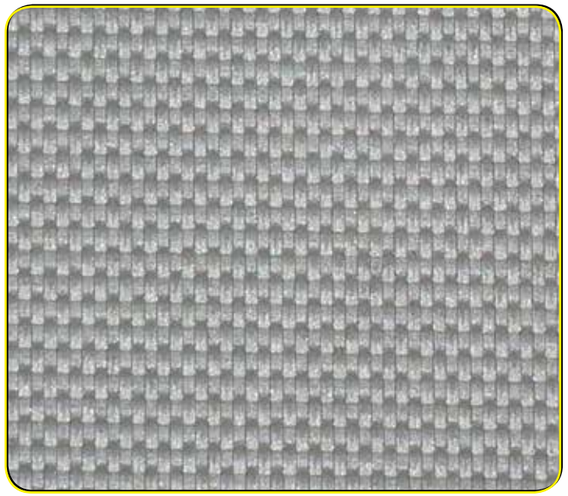
Audio Visual Units.
Manual Override Switch.

Smoke / Heat Detectors.

Building Management Connections.

Fabric

X32K



SC1 & FC1 active curtain barriers are manufactured from glass cloth with a micronized aluminium polymer coating on each side of the fabric. This fabric is manufactured & tested to withstand up to 1000° centigrade for a period of 60 minutes.

All fabrics used in the manufacture of BLE active smoke barriers are manufactured from a unique "Panama" weave which offers a more even surface and allows a tighter interfacing of the fabric edges. The tensile strength of "Panama" weave fabric is 10% greater than other similar fabrics due to a constant tension on the threads.

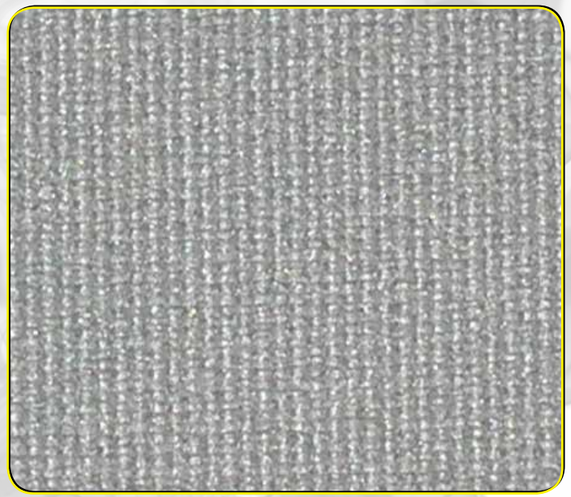
The fabric is grey in colour, alternative RAL colours can be supplied although a minimum order quantity of 1000 linear metres will apply.

Each curtain will be supplied with top and side hems, these shall be sewn using stainless steel thread. The stainless steel thread shall also be used to form the joining seams in larger curtains.

Fabric Code: X32K		**Rating : 1000°C / 60 Minutes**		
Fabric Weight	g/m²	440	± 5%	DIN EN12127
Coating Weight	g/m²	20		2 sided coating on polyurethane base with functional filler
Thickness	Mm	0,40	± 5%	DIN EN ISO 50584
Width	Mm	2000,00	± 1%	DIN EN 1773
Weave	Panama 2/2			ISO 9354

Fabric

C41000WK



FC2, AC1 & HC1 active curtain barriers are manufactured from stainless steel, wire reinforced, woven glass fibre fabric coated on each side with silver polyurethane.

C41000WK fabric is rated up to 1000° Centigrade for a period of 270 minutes.

The fabric is grey in colour, alternative RAL colours can be supplied although a minimum order quantity of 1000 linear metres will apply.

Each curtain will be supplied with top and side hems, these shall be sewn using stainless steel thread. The stainless steel thread shall also be used to form the joining seams in larger curtains..

Fabric Code: C41000WK		**Rating : 1000°C / 270 Minutes**		
Fabric Weight	g/m²	590	± 5%	DIN EN12127
Coating Weight	g/m²	40		2 sided aluminium foil
Thickness	Mm	0,50	± 5%	DIN EN ISO 50584
Width	Mm	1200,00	± 1%	DIN EN 1773
Weave	Plain			ISO 9354

Fabric

EW-BI

FC3 active curtain barriers are manufactured from stainless steel, wire reinforced glass fabric with a specially formulated intumescent fire retardant silicone graphite elastomer. EW-BI fabric is rated up to 1000° centigrade for 240 minutes with an enhanced resistance to the irradiance of heat. The fabric is black in colour.

The EW-BI fabric does not generate toxic emissions and has a good resistance to hydrolysis whilst still having a flexible handle. When exposed to temperatures in excess of 140° centigrade the coating system will form an expanding intumescent char that provides a thermally insulating barrier. The stainless steel reinforced glass fibre fabric retains its physical integrity.

Fabric Code: EW-BI			**Rating : 1000°C / 240 minutes**	
Fabric Weight	g/m²	470	± 5%	DIN EN12127
Coating Weight	g/m²	1030	± 5%	2 sided intumescent fire retardant silicone elastomer
Thickness	Mm	0,58	± 10%	DIN EN ISO 4603/E
Width	Mm	1000,00	± 1%	DIN EN 1773
Weave	2x2 Broken Twill			ISO 9354

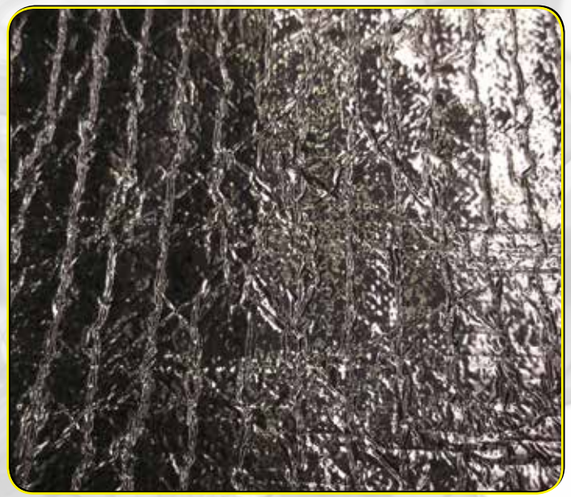
Fabric

V4A

FC4 active curtain barriers are manufactured from composite fabric built up of two layers of wire reinforced glass fabric with aluminium foil laminated to the outer sides.

V4A fabric is rated up to 1000° centigrade for 120 minutes with an enhanced resistance to the irradiance of heat.

The fabric is silver and reflective in colour.

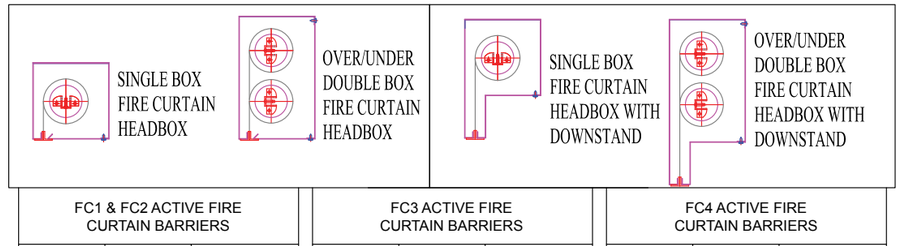


Fabric Code: V4A			**Rating: 1000°C / 120 minutes**	
Fabric Weight	g/m²	610	± 5%	DIN EN12127
Coating Weight	g/m²	190		2 sided coating on polyurethane base with functional filler
Thickness	Mm	1,20	± 10%	DIN EN ISO 50584 (laboratory conditions)
Width	Mm	1000,00	± 1%	DIN EN 1773
Weave	Plain			ISO 9354

Components

Headboxes

BLE offer a range of steel fabrications to house the rollers that are intended to keep the profile as low as possible while minimising the effects of deflection and providing a secure and tested part of the fire line. Boxing for fire curtains can be as small as 180mm x 180mm up to 210mm x 390mm for extremely long runs of overlapping barrels. Smoke curtain boxing can be reduced still further to 150mm x 150mm for the smaller sizes and, on the longer runs, have the option of having the rollers over and under or in a side by side configuration.



FC1 & FC2 ACTIVE FIRE CURTAIN BARRIERS		
CURTAIN DROP	SINGLE BOX SIZE (W x H)	DOUBLE BOX Over / Under SIZE (W x H)
UP TO 3M	180 X 180	180 X 290
OVER 3M TO 8M	210 X 210	210 X 390
OVER 8M TO 12M	250 X 250	250 X 440
MAXIMUM RECOMMENDED DOWNSTAND 100MM		

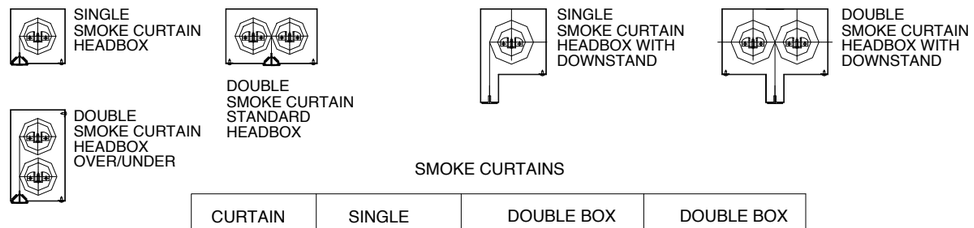
FC3 ACTIVE FIRE CURTAIN BARRIERS		
CURTAIN DROP	SINGLE BOX SIZE (W x H)	DOUBLE BOX Over / Under SIZE (W x H)
UP TO 3M	235 X 260	PROJECT SPECIFIC SUBJECT TO TEST
OVER 3M TO 8M	275 X 300	
OVER 8M TO 12M	300 X 325	
MAXIMUM RECOMMENDED DOWNSTAND 100MM		

FC4 ACTIVE FIRE CURTAIN BARRIERS		
CURTAIN DROP	SINGLE BOX SIZE (W x H)	DOUBLE BOX Over / Under SIZE (W x H)
UP TO 3M	180 X 180	180 X 320
OVER 3M TO 8M	250 X 250	250 X 420
OVER 8M TO 12M	280 X 280	280 X 480
MAXIMUM RECOMMENDED DOWNSTAND 100MM		

SIDE x SIDE BOX OPTIONS AVAILABLE

Headboxes

Headboxes can be installed to suit a number of required finishes. They can be installed above the ceiling and hidden from view; in line with the ceiling or installed into a slight recess. Whilst it is always desirable to minimise the visual impact of curtain systems it must be considered that they are life safety systems and are required to be easily operable and easy to maintain.



SMOKE CURTAINS

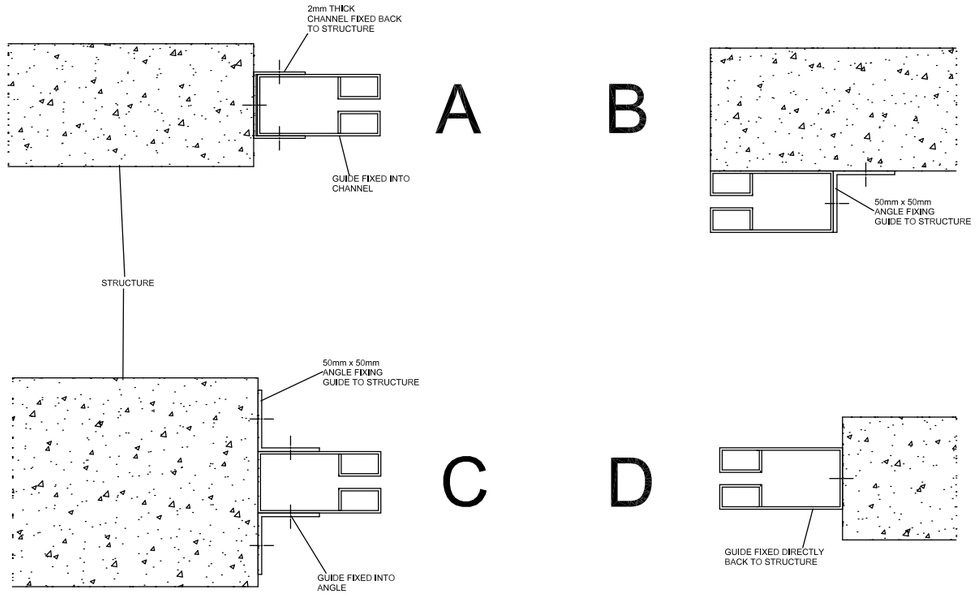
CURTAIN DROP	SINGLE BOX SIZE (W x H)	DOUBLE BOX Standard SIZE (W x H)	DOUBLE BOX Over / Under SIZE (W x H)
UP TO 3m	150 x 150	250 x 150	150 x 250
OVER 3m TO 8m	180 x 180	310 x 180	210 x 350
OVER 8m TO 12m	210 x 210	350 x 210	230 x 390
	MAXIMUM RECOMMENDED SIZE OF DOWNSTAND 100mm		

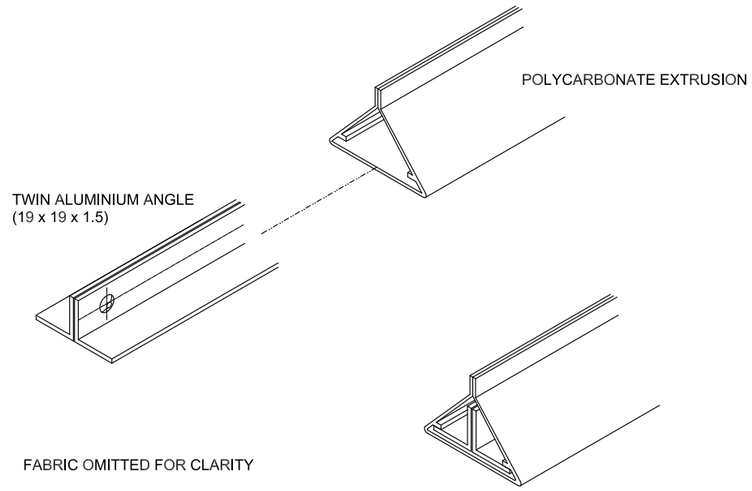
Components

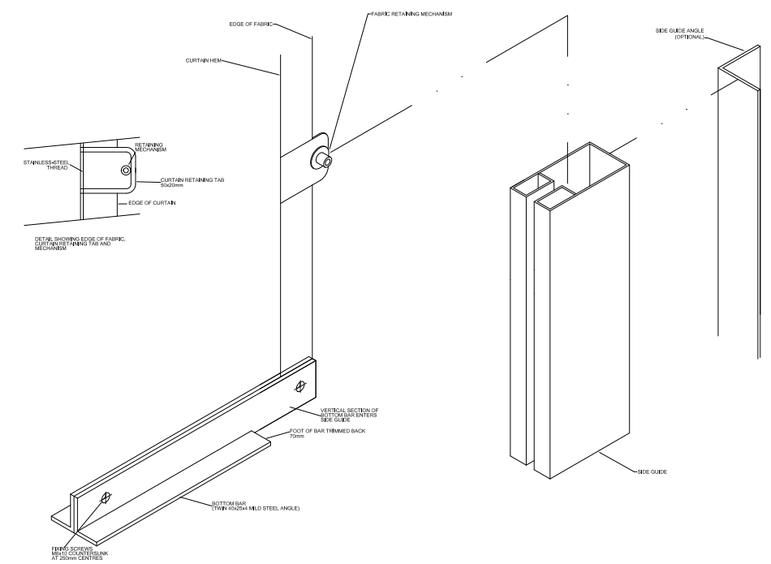
Side Guides

All fire curtains require the use of a retaining mechanism at the edges to prevent excessive deflection under the pressures from a fire and to minimise smoke leakage. BLE utilise a low profile guide that is tested with the rest of the system to form an integral part of the fire line. The fabric incorporates a durable tabbed mechanism that locks the curtain into the guide to enhance this deflection resistance and improve the resistance to impact. Further enhancements such as brush strips to the guide and interior of the headbox can further seal the installation from leakage.

Smoke curtains do not always require guides however in certain situations they are utilised to better seal the compartment or to further minimise deflection.







Components

Motors

Overview

The motors are permanent magnet DC motors. Their modest size yet powerful capacity mean that these motors are particularly suitable for semi-industrial applications such as rolling curtains or automatic doors.
Our motors are designed to give a long, maintenance-free service life. The careful selection of the appropriate components ensures a longer working life at the desired operating speeds.

Features:

Standard Motor

- 24v nominal voltage
- 3100rpm nominal speed
- Permanent magnet DC motors
- Back EMF controlled speed of descent, separate brake units are not required to assist
- Synchronised speed of descent approx. 130mm/s

Brake Motor

- Integral brake unit available to provide a 2 Stage Descent facility if required

Standard Gear Box

- 1400 NCM continuous torque
- 0.70 efficiency
- 100.00 ratio
- Axial shaft load capacity 150N
- Radial shaft load capacity 250N
- Equipped with a lubrication system with a high viscosity
- High torque gear transmission
- Resistance to large radial and axial forces due to the application of symettrical force distribution

Components

Standard Motor Control Circuit (MCC)

Overview

The BLE powertrain comprises a 24v motor & motor control circuit. A control circuit enables each motor to lift a weight of 20 Kg whilst still being capable of meeting the cycle tests as required by BS 7346, EN12101, EN1634 and Annexe D of BS8524.

The motor control circuit is housed in a remote enclosure to aid maintenance engineers. Access is readily available to the control circuit, eradicating the need to extract the motor from the curtain roller.

Up to 6 MCC's can be connected to the Group Control Panel. Motors for 127mm OS (OverSized) tube consume more current, and therefore maximum of 3 can be connected to a GCP.

Features:

- MCC Dimensions: 145 mm H x 250 mm L x 50 mm D
- Current limiting device incorporated, motor limit switches are not required
- Synchronised motor control circuitry, variable speed control is not required
- Back EMF controlled speed of descent, separate brake units are not required
- Battery low voltage cut off facility, the curtains descend in a controlled manner

Components

Group Control Panel

Overview

Operation of the BLE automatic curtains is carried out via the Group Control Panel. Each GCP is capable of controlling up to 6 BLE 24v motor assemblies (3 when using oversize Curtains).
In normal operating conditions, the GCP will provide a 24v AC supply to the curtain motors, and the curtains will be in the retracted condition. Should the curtain be activated, the fire alarm contact in the GCP will be opened by the fire alarm control system, the GCP will remove the 24v supply to the curtain motors and the curtains will descend under the force of gravity in a controlled manner.

As soon as the fire alarm system is reset the GCP will reinstate the 24v supply to the curtain motors and the curtains will retract, current limiting circuits will detect the curtain has fully retracted and the supply voltage to the motor will step down to a holding voltage.

Each GCP will be supplied with 2 24v 7aph batteries. This will enable full control of the system should the mains power fail. When the battery voltage is depleted the curtains will deploy under gravity at a controlled speed.

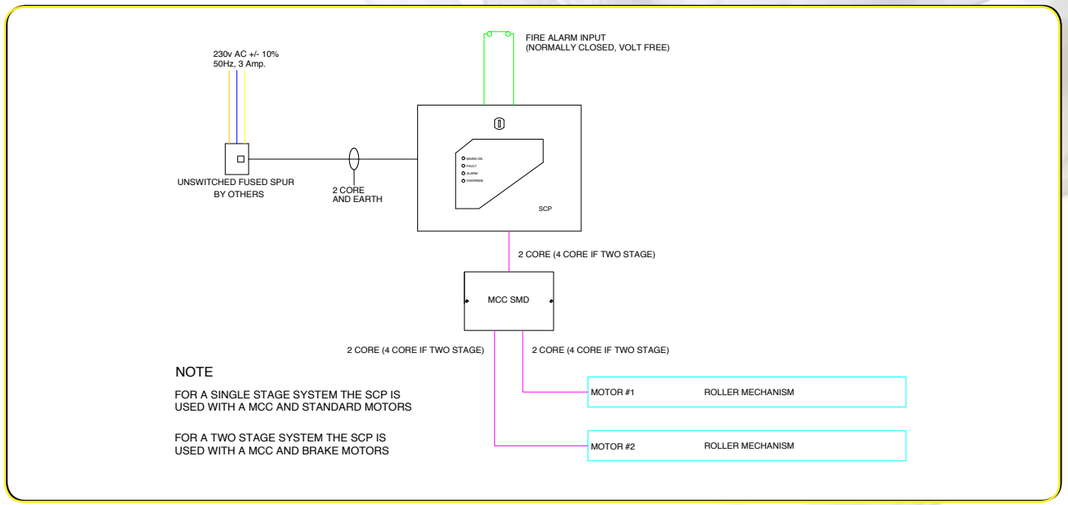
Standard Features:

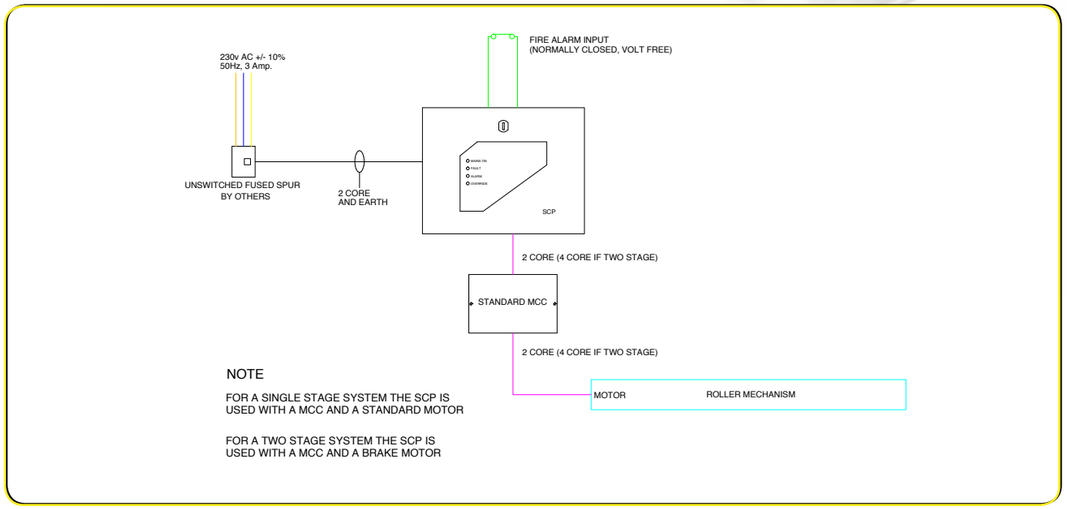
- Power Supply 230v 50Hz or 120-130v 60Hz AC
- Battery 3 Hours, 2 x 7aph rechargeable sealed lead acid cells
- Configured to operate from a normally closed signal, gravity fail to safe
- Key switch test facility
- Multiple LED indicators
- Panel Size 396mm h x 334mm w x 105mm d

Schematic

Single Curtain Schematic

The Single Curtain Control Panel is a variant of the GCP designed to operate a single curtain with up to 2 motors, or 2 single-motor curtains located in the same area of a building. The SCC panel provides maximum cost efficiency for smaller projects whilst also including a provision for the most common additional options – 2 Stage Descent, Manual Override, and an Audio-Visual facility.

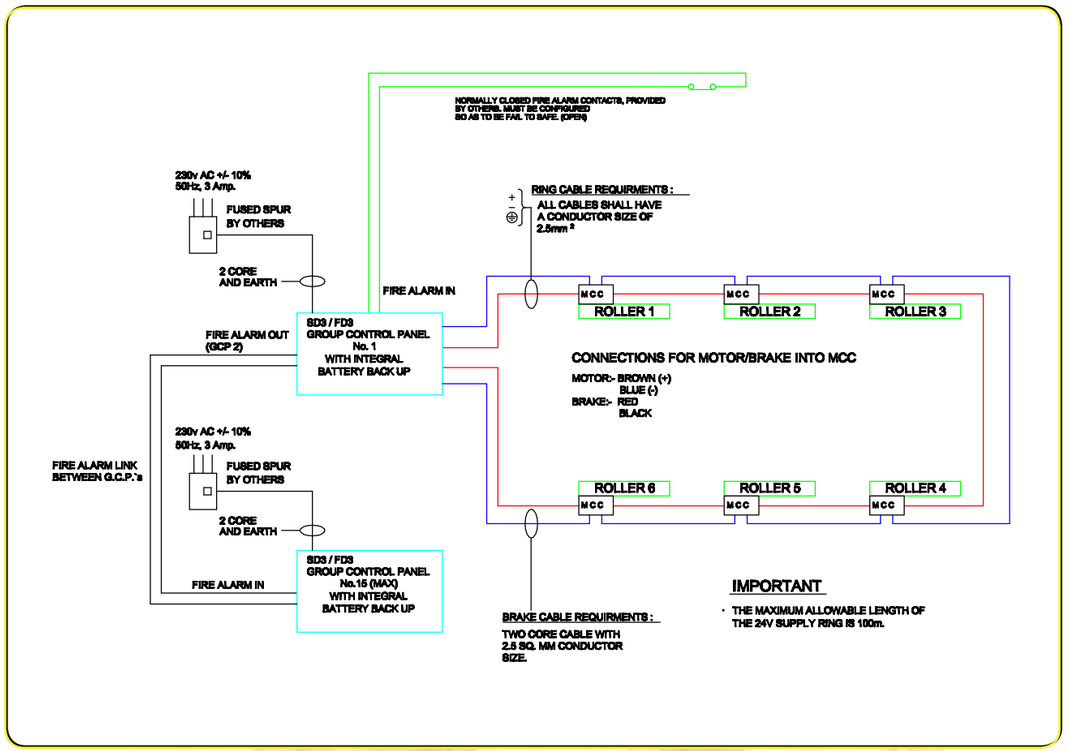




Schematic

Multiple Curtain Schematic

Utilising BLE's standard Group Control Panel, up to 6 motors can be controlled, linked by a 24V supply ring wired in 4.0 sq. mm (or greater, depending on required loop length) 2 core FP 200 cable.
The control panel is powered via a 230V AC +/- 10% 50Hz 3 Amp unswitched fused spur, and receives a fire alarm signal via a pair of normally-closed, volt-free fire alarm contacts. When the fire alarm activates these contacts switch to 'open', causing the control panel to cut off the power supply to the curtain motors. This in turn results in the curtains deploying under the force of gravity (fail-to-safe) without relying on any consumable power supply.
A secondary brake cable can be added (as shown) if a 2 Stage Descent facility is required.
Group Control Panels can also be linked together (as shown) if the total number of motors exceeds 6, with one of the GCPs acting as the 'master' panel. This avoids the need for each control panel to have its own fire alarm signal and ensures that all curtains drop simultaneously.



Installations

Doha International Airport, Qatar

Called upon to supply and supervise the installation of draft curtains (SC2) to protect the vast new A380 Airbus maintenance hangars, BLE rose to the challenge, coming in on time and within budget. In this project the sky was quite literally the limit, with the curtains installed at 30m above ground level. The project demanded thousands of square metres of draft curtains, so to provide them BLE installed an additional curtain cutting and sewing floor within our purpose-built factory in Sheffield.

MIT Brain and Cognitive Sciences Building

When the MIT Brain & Cognitive Sciences Complex was commissioned, Turner Construction worked with the US distributor, CYSA Developments and ultimately BLE, to design the smoke curtain system for the challenging architecture. BLE curtains were used to create smoke zones and protected means of escape throughout the complex.

Installations

Southmead Hospital

BLE assisted from an early stage with BDP architects with the challenging smoke and fire control requirements. In particular the central atrium or "Street" required high specification components to meet the Warrington fire engineer's strategy.

The "Street" was surrounded on both sides by high level curtain walling with periodic openings in the form of shallow balconies. These openings were required to provide the same level of smoke and fire control in a fire situation as the curtain walling , and in addition the glazing itself needed a simple solution to increase its own integrity.

Beneath this in the main concourse full smoke protection was required to prevent the atrium becoming a chimney, except in locations designated as such and utilising powered extract.

Harrods, London

BLE curtains have been specified and installed throughout this famous department store on an on-going basis to provide solutions for smoke and fire compartmentalisation. This provides protected means of escape and to seal off high-risk areas such as escalators and lift lobbies. BLE systems have been designed to be efficient and unobtrusive, seamlessly integrating into the walls and ceiling to maintain the aesthetic appeal of Harrods' iconic luxury shopping departments.

Marina Bay Sands

This astounding marvel of architecture has been protected by BLE curtains from the day it opened in 2010. Holding the record at the time as the most expensive hotel ever built, no expense was spared in ensuring that it was outfitted with the very best in smoke and fire protection. BLE worked closely with Ferco Shutters & Seating Systems Pte Ltd, our distributors in Singapore, to protect the spectacular central atrium with huge 12.5m drop smoke curtains.

Jabal Omar

This huge investment in Mecca consists of 40 residential towers to accommodate 160,000 Islamic pilgrims, and a prayer area for 200,000 worshippers.

More than 600 properties have been approved for the project, which involves constructing two five-star hotels with 935 rooms, and six three-star hotels comprising 1,255 rooms, across an area spanning 244,800 sq m. The complex includes residential buildings reaching 20 storeys to accommodate 100,000 people, 520 restaurants and 1,360 commercial and retail units.

The development has been designed to provide air conditioned plazas for 100,000 worshippers, open courtyards for 120,000 people and a car park that can accommodate 10,000 vehicles.

BLE in conjunction with our local partners from Energy International were asked to supply and install fire curtains to be discrete yet provide protection to the buildings and within the requirements of international standards.

Installations

Delhi Airport Metro, India

When Delhi Airport Metro Express Private Limited (DAMEPL) were looking for fire protection, they came to Sheffield-based BLE. Working in association with our distributor Transcend Exim Pvt Ltd, the smoke and fire barriers have been used to protect and compartmentalise the metro's operational and retail areas.

Ferrari World, Abu Dhabi

BLE once again worked in partnership with our regional distributor Energy International to provide fire curtain protection for Ferrari World, the largest indoor theme park in the world. When it came to specifying fire curtains for this prestigious attraction, BLE were the obvious choice. As the first and only manufacturer in the world able to offer fully tested and UL listed fire curtains, Ferrari could be sure that they were on to yet another winner with BLE.

Sports Hub

The Singapore Sports Hub has been designed as a fully integrated sports and lifestyle hub for everyone in Singapore.

As a unique cluster development of integrated world-class sports facilities within the city, it plays a critical role in accelerating the development of sports industry, excellence and participation in Singapore.

BLE in conjunction with our local partners from Ferco were tasked to supply and install fire curtains to deploy by gravity at an angle and within the requirements of international standards.

KAFD, Riyadh

The King Abdullah Financial District (KAFD) master plan was designed and overseen by Danish Architects Henning Larsen.

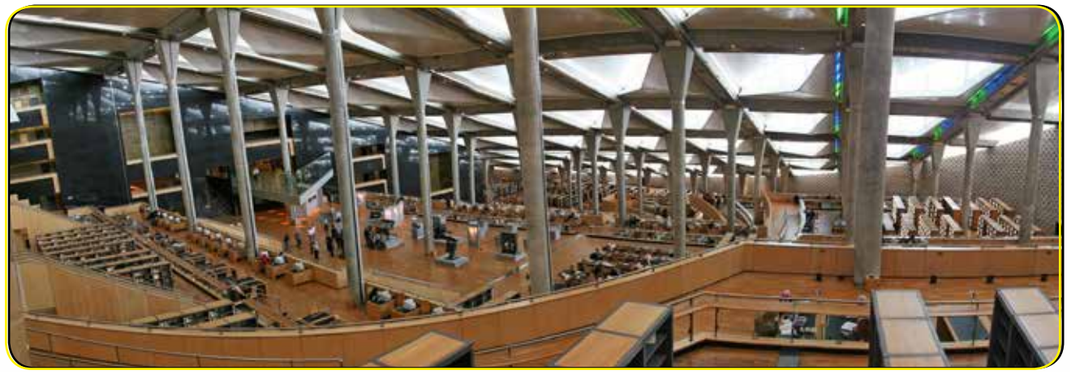
BLE have worked with engineers from Buro Happold to help with the design of suitable compartmentation and, with the assistance of our local partners Energy International, have successfully installed curtains in several of the towers.

Installations

Bibliotheca Alexandria

Housing priceless manuscripts and scrolls, and a vast collection of books and artefacts, the new Bibliotheca is vast. The library has space for eight million books, with the main reading room covering 70,000 m² on eleven cascading levels. The complex also houses a conference centre, specialized libraries for the blind, for young people, and for children. There are three museums, four art galleries, a planetarium, and a manuscript restoration laboratory.

Engineers from BLE worked alongside architects and building contractors to design, manufacture and fit automatic smoke curtains in the cavernous building. These curtains created three separate smoke zones all linked to the central fire system, ensuring maximum protection for the treasures of ancient Egypt.



Victoria Hospital, Edinburgh

The Victoria Hospital Edinburgh is a brand new hospital designed by Keppie Design built on the site of the Western General Hospital.

The challenge for BLE was that all the wards were built in modules, including the walls, electronic loops and wiring, which were made offsite and then transported in their entirety to the construction site. In addition, the sophisticated fire control system had to allow staff to over-ride individual wards so that they could evacuate patients in an emergency. BLE were able to create a protected area plus a protected means of escape in every ward, with automatic fire curtains used throughout plus additional static curtains above to close off the ceiling void.

National Museum, Edinburgh

On Friday 29th July 2011, visitors to the newly opened National Museum of Scotland could take their first look at the stunning redevelopments which have transformed the Royal Museum. The building, which had previously been voted the 'best-loved' Edinburgh building of the last 150 years by the Edinburgh Architectural Association, stands proud in the hearts of Scots, so a positive reception to the new design was critical.

BLE worked closely with Buro Happold to develop the fire strategy. It was a challenging environment because of the age of the building, the fact that it was Grade 1 listed and the short time frame available. The engineers at BLE installed all automatic smoke and fire curtains, many of which were hidden behind the arches to retain the aesthetics of the building.

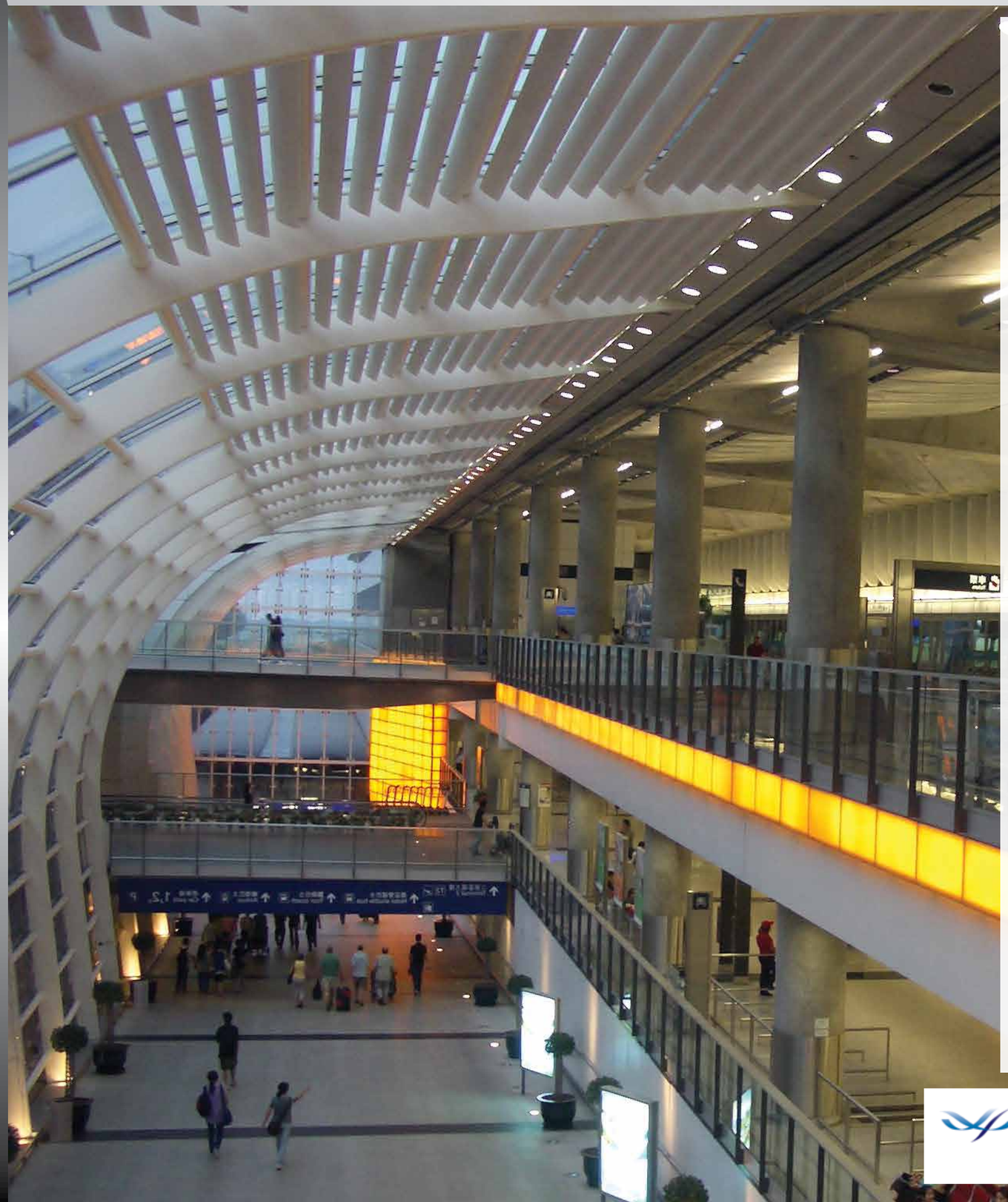
Heydar Aliyev International, Baku

Heydar Aliyev International Airport in Baku is the principal airport of Azerbaijan, and potentially a major hub for the whole of the Caucasus region. The terminal is designed to meet a projected demand of 3m passengers per year. The design provided by Arup includes a tapered façade which gives the building a unique appearance.

BLE's Turkish partners from Istanbul, Protek, worked alongside MAPA on site..

Curtains were required to prevent the spread of smoke through the large light wells in the upper floor and also along the angled glazing to the façade.

Curtains were also provided on the upper level and central areas to provide refuge areas in the concourse and complete the smoke compartmentation strategy.



List of Test Reports

Refer to individual product specification sheets for applicability.

Test Name	Test Parameter
EN 1364-1	Fire Resistance test for non-load bearing elements
EN 1364–2	Fire Resistance test for non-load bearing elements
EN 1363–1	Fire Resistance tests
EN 1363–2	Fire Resistance tests - additional
EN 1634–1	Fire Resistance tests – door & shutters
EN 1634–3	Smoke Control tests – doors & shutters
EN 949 & BS 5234-2	Soft & Heavy Body Impact – doors
EN 55024	Declaration of conformity for electrical components
EN 12101-1 Part C	Smoke & Heat Controls for Smoke Barriers Pressurised Air Leakage Test
EN 12101-1Part D	Smoke & Heat Controls for Smoke Barriers 120 minutes FR & Integrity Test
EN 12101-1Part B	Smoke & Heat Controls for Smoke Barriers Reliability& Response Time Test
BS 8524-1	Specification for Active Fire Curtain Assemblies
BS 476: Part 22	Fire Resistance tests for non-load bearing elements
BS 476: Part 6	Fire Propagation of Building Products
BS 476: Part 7	Surface Spread of Flame
BS 7346-3	Tests on Components for Smoke & Heat Control Inc Deflection, Oversize & Overlap
AS1530.4	Fire Resistance test to 125 minutes
UL 10 D	Fire Tests of Fire Protective Curtain Assemblies 120 minutes FR & Integrity
UL 10 D S	Fire Tests of Fire Protective Curtain Assemblies with Smoke Sealing 120 minutes FR & Integrity
UL 1784	Air Leakage Tests for Door Assemblies
UL864	Control Units & Releasing Devices
ICC ACC77	Smoke Containment System in conjunction with Fire Resistant Elevator Doors
ASTM E84	Surface Burning Characteristics
ASTM E662	Optical Density of Smoke generated.
ASTM E136	Base Substrate performance in a Vertical Furnace
NFPA 701	Flame Propagation Test of Textiles & Films
GB 14102	Integrity Test of a Fire Curtain Assembly
GB 14102-B	Test Method of Fire Curtain Controller
GB 602	Test Method of Fire Curtain Motor
GB 8624	Test Method for Spread of Flame (Fabric Curtain)

BLE is a leading provider of safety and security systems.

The BLE Group provides a diverse range of integrated safety and security solutions to protect or enhance the building environment.

BLE
MAKING BUILDINGS SAFER

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