



# a new PERSPECTIVE on glass smoke curtains

**Mike Fawcett**, sales and marketing director of C3S Securiglass, advocates the benefits of using fire resisting glass to contain smoke and channel it to extractor fans.

**S**mokestream is a product which comprises of fire resistant safety glass panels that are joined together to form a continuous clear glass screen as a means to channel the smoke to the extractor fans. The characteristics of this system ensure that it retains all the fire resistant capabilities of a traditional smoke curtain system, without the problems that an active system may give.

#### Fabric smoke curtains

Traditionally, fabric smoke curtains have been used to contain smoke in the event of a fire. When the fabric smoke curtain is

activated, it drops down below the ceiling line to contain any rising smoke in a particular area, at the same time, channelling the smoke towards extractor fans.

Although this method is tried and tested, there are, in the authors opinion, a number of failings.

Firstly, fabric curtains form part of an active fire protection system, and as such, require regular testing in order to ensure that in the event of a real fire they perform in line with expectations.

Secondly, being manufactured in fabric, they have a tendency to gather dust. During testing, it is possible that this dust



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can be deposited on the area below. Usually, areas to be tested are cleared prior to releasing the smoke curtain.

Finally, fabric smoke curtains operate on an electric roller and control mechanism that has to be triggered by the action of an alarm, or in the case of a power failure. This can create unnecessary inconvenience in a false alarm or a power cut that is not as a direct result of a fire. Some models of active smoke curtains also require manual re-setting after testing. These factors undoubtedly lead to costs in time and money.

#### Smokestream

Manufactured in Pyrocel fire resistant glass, a high quality non-wired fire resistant glazing material, Smokestream offers unobtrusive passive protection that requires no testing and little maintenance other than periodic cleaning.

Pyrocel has been available for a number of years and its performance has been tested on many occasions to BS 476 Part 22: 1987, a method for determining fire resistant performance of non-load bearing elements of construction. Test using this standard show that, up to 90 minutes stability/integrity can be achieved by Pyrocel in a steel frame. Whichever direction the fire or smoke comes, the performance of the glass is not affected.

The Pyrocel forms a clear barrier that is permanently suspended below the ceiling level. This barrier will eliminate the spread of smoke and the effect of fire, whilst at the same time ducting it to the fan extraction points.

As part of the design and development of Smokestream glazed smoke curtains, the system has also been tested to BS 7346 Part 3: 1990: Specification of Smoke Curtains. As a result of this standard, Smokestream can be supplied in either framed or frameless versions, depending on the specifier's requirements.

Smokestream frameless smoke curtains were created so that continuous lengths of glazing could be installed without the need for intermediate transoms or mullions. It is available to combat problems created in

particular circumstances, where an unobtrusive, frameless screen is required.

The system of glass and retaining brackets can be fixed either below or through the suspended ceiling line, or directly into the structural soffit. All smoke curtains below a suspended ceiling are fixed through to a structural support by means of unistrut channels and threaded rods.

The fixing mechanism is designed to only affect the top edge of the glass of the smoke curtain so that an aesthetic, pleasing appearance is achieved.

The frameless system can be used with panels of Pyrocel butt jointed and with each panel up to 2m in length with a maximum drop of 600mm. A small gap is permissible between each panel during installation to allow for expansion created by the generation of heat in a fire. This has no detrimental effect on the performance of the system during a fire whatsoever.

#### Applications

The flexibility and attractive appearance of Smokestream's frameless system, makes it a good choice for specifiers that require a fire resistant glass that will not only meet the requirements of the fire resistant standard, but which can act also as an unobtrusive smoke curtain for public buildings.

Shopping Centres in particular are places where this type of smoke curtain is very suitable; because it in no way detracts from shop displays, as would permanent downstands.

A number of shopping centres such as the Merry Hill Centre in Dudley, West Midlands and the White Rose Centre in Leeds have used Smokestream. The White Rose Centre opted to use the frameless system in a number of areas throughout the complex.

An increasing number of individual multiple retail outlets are beginning to choose Smokestream as an alternative to their normal method of smoke protection. Key areas for installing the system in these outlets, have been around escalators and stairwells as a means of protecting upper

floors of the complex in case of fire.

The alternative framed version of Smokestream is also attached to the structural soffit and hangs below the suspended ceiling line.

A steel frame is used where large panels of smoke curtains are required, and an appropriate steel frame with minimum dimensions is used in order to achieve a pleasing visual effect.

The frame itself is available in a range of finishes, such as stainless steel or metallic finish as well as conventional powder coating.

The Smokestream framed version can offer individual panels of up to a surface area of 4.2m<sup>2</sup> and is invariably used where the ceiling height dictates the use of deeper panels.

Gatwick Airport chose the Smokestream framed system after realising that conventional smoke curtains were creating certain problems.

Open 24 hours a day, 7 days a week, it was difficult for the curtains to be tested without passengers being present. Sections of the airport, therefore, had to be sealed off for testing, otherwise passengers would be inconvenienced with the possible fall out of dust. The time and money spent on such operations was substantial and needed to be minimised. Smokestream framed resulted in a reduction in costs and there was no longer a necessity to periodically test the smoke curtains to ensure they remained active. The system is unobtrusive and most passengers will travel through the departure halls without even realising they exist.

Increasingly, Smokestream is becoming popular in the Far East, particularly Hong Kong where both framed and frameless versions have been used extensively in shopping precincts and underground transit stations. C3S Securiglass supplied the system to be installed at Hung Hom Station and a grey tinted version was installed at West Rail Tuen Min Station.

#### Installation developments

As with all fire resistant and smoke installations, the capability of the glass in a fire has a tendency to reflect the quality level of the installation. The same can be said for glazed smoke curtains and, to ensure that Smokestream is installed correctly to provide the required level of protection, C3S Securiglass provides a full design support service. This includes site survey, system design and installation.

All C3S Securiglass employees involved in providing this service are trained to the FIRAS (Fire Accreditation Scheme) standards.

#### Conclusions

Glass smoke curtains provide many advantages, in addition to controlling the movement of smoke. They can be designed to blend in with modern or traditional architectural schemes and they have low maintenance and installation costs.