

An integrated [smoke control](#) and [environmental ventilation](#) solution from SE Controls is helping keep residents safe and comfortable at a prestigious 11-storey residential development in Manchester, which also incorporates the company's intelligent temperature monitoring and control system, [SE Evello](#).

Designed by SimpsonHaugh architects, Burlington House comprises 91 luxury private rental apartments with one; two or three bedrooms and is located in the historic Piccadilly Basin area adjacent to the Rochdale Canal and a number of heritage buildings including the Grade II listed Jacksons warehouse.

The building's three-layered design combines the use of brickwork on its six lower levels with aluminium cladding and a glazed [facade](#) system on the upper two geometric structures to reflect the historic surroundings while creating a modern residential space.

As regulations dictate that residential buildings higher than three storeys require a smoke control system to be installed, SE Controls was approached to design an effective solution that ensured escape routes are kept clear of smoke if a fire should occur.

Also, as the building's energy efficient design and use of large glazed areas has the potential for temperatures in corridors and circulation spaces to become elevated during summer months, SE Controls engineered the system to provide integral environmental ventilation and ensure temperatures are maintained at comfortable levels for residents.

To achieve this, the SE Controls solution utilises the system's smoke shafts and two dedicated environmental fans to provide day-to-day corridor and stairwell ventilation, which alleviates any issues with building overheating while preventing the build up of stale air.

The [SE Evello](#) system not only monitors the temperature, but also controls devices such as the ventilation fans and smoke shaft vents with a self-adapting control algorithm, which targets ventilation to the warmest corridors or areas of the building, where the heat increase is greatest, while also reducing ventilation to more temperate zones.

Developed using a combination of extensive building studies, [CFD modelling](#) and data derived from live test sites, SE Evello's algorithms constantly monitor temperature levels and provides predictive control over the opening of corridor ventilation louvres and the extract fan speed to ensure temperatures never reach excessive levels. The other main benefit is that stale air and odours that can build up in static air spaces are removed and replaced with fresh air.

While the environmental system improves comfort, it is the [smoke control](#) system that makes it possible. Burlington House uses two mechanical smoke extraction shafts and one air inlet shaft for make-up air for the lower six floors, while a single smoke shaft is used in the upper five levels with the addition of pressure sensors to prevent over-pressure on the escape door.

Two roof mounted duty and standby SHEVTEC fan sets serve the

smoke shafts, which are actuated as soon as smoke is detected within the building. The smoke control system operates on a floor-by-floor basis to provide protection for corridors and lobbies adjacent to the escape stairs and ensure smoke is removed from the 'fire-floor'.

Once smoke or fire is detected, the environmental ventilation system is over-ridden automatically and smoke is extracted from the activated floor with all other automatic opening vents (AOV) locked out to maintain compartmentalisation. Additional smoke vents at the head of the stairwell and roof remain open until they have been reset by fire-service personnel using the relevant [tamperproof manual control point \(MCP\)](#), which are located on every floor.

In addition to the wide range of specialised equipment installed on the project, including smoke control dampers, SHEVTEC grilles, MCPs and temperature sensors, the system is controlled by three [OS2 SHEVTEC controllers](#) with battery back up.

The system also uses [SECloudlink™](#) to provide round-the-clock smoke control system status information and reporting to enable monitoring and system adjustments to be made remotely, as well as enabling preventive and corrective [maintenance](#) to be performed by maintenance teams.