

## ***What Price a Life***

***“Pressurisation systems prevent the smoke getting into the protected space on all floors.”***

***“A further key consideration is the reliability of the smoke control systems’. A pressurisation will provide ambient air protection to escapees and the fire service personnel for the full duration of the fire service operation”.***



A fan assembly is lowered to the roof of the multi-storey building

It is commonly accepted that pressurisation is the most suitable system of smoke control in tall buildings. Indeed, in the draft revision of BS9991 it states that a pressurisation system should be used in all new single stair residential buildings greater than 18m in height.

However, the most common excuse for not adopting pressurisation systems is that the systems, on a like for like performance criteria, are more costly and difficult to commission; this could not be more wrong.

### ***Why Pressurisation?***

It has been common practice to design a depressurisation smoke extract system based on a single fire on a single level. Recent experience of fires in multi-storey apartment buildings clearly demonstrates that fires in such buildings do not often respect this assumption.

A pressurisation system on the other hand creates a positive pressure within the protected spaces, stopping smoke from entering the protected space in the first place, and are

designed to cater for changes that will inevitably occur as occupants escape from the building and the fire service enter.

A key consideration in the design of a smoke control system must be the reliability of the smoke control systems' performance and its sustainability, that is whether it can continue to provide protection to escapees and the fire service personnel for the full duration of the fire and fire service operations. A depressurisation extract fan is designed to function at an elevated temperature and heavy smoke mass for up to two hours, whereas a pressurisation system handles cold air and will operate for however long the smoke control system is required.



Fire rated ductwork passing through the building

### ***Modern Control Technology***

Pressurisation systems employing modern control technology are neither more expensive nor difficult to commission than depressurisation systems when working to the same performance requirements. The most likely real reason for such excuses is that the designers find the calculations more complex than those required to design a depressurisation system.

Using a simple door monitoring system to control the airflow of a pressurisation system, as opposed to using pressure relief terminals or pressure sensors for controlling the airflow, makes significant savings in the time taken in commissioning.



Fire rated dampers to each discharge

Using a laptop to set the airflow to each level of the building on the door monitoring sensors is often far more accurate and quicker at commissioning than trying to balance each level through dampers and/or pressure sensors.

It is worth adding that the reliability of the digital control system, and its response time to changing conditions, is far superior to the older form of system control. This is also the case for maintenance of the system.

### **Conclusion**

With the more reliable and sustainable option of the pressurisation system and its ability to control the level of smoke migration into the primary escape route of the stairwell providing a constant supply of fresh air for extended periods of time, this has to be the system of choice.

But what is most important is the question that must be asked: “what price a life?”