

Introduction

Stack ventilators, sometimes known as wind catchers, are an extremely efficient way to ventilate spaces without using energy. Properly applied, they are an extremely effective method for maintaining air quality.

However, these devices are often misunderstood and inappropriately applied as cooling devices, and this document sets out to explain the differences between stack ventilators and the Educool system.

The fundamental similarities

Stack ventilators and the Educool system both supply 100% fresh air to the room, avoiding the problems associated with recirculation of dirty air, as used by air conditioning systems. Both systems therefore comply with the requirements of BB101 in terms of air quality.

Both systems are also extremely low energy devices. In fact stack ventilators use no energy at all (other than tiny amounts to operate any automatic controls), while Educool runs from a single phase ten amp power supply, drawing next to nothing when compared with other systems capable of its performance.

The fundamental differences

There are two fundamental differences between stack ventilators and Educool.

Firstly, stack ventilators rely on the speed of the wind to deliver air flow. Some air is moved in still conditions due to the temperature difference between inside and outside, but to deliver enough air to limit the temperature rise in a classroom needs, typically, between 2 and 3 m/s wind speed. 2m/s is equivalent to just over 4.4 mph, while the average wind speed through many summer months in the UK is 3mph or less.

Educool uses a fan to deliver the air to the space, and so operates completely independently of the wind speed.

Secondly, stack ventilators do not cool the air as it enters the room. This means that on a 25 deg C day the air will *enter* the room at 25 deg C, and will then begin to rise in temperature. How much it rises depends on the air flow, which in turn depends on the wind speed, but are typically designed to limit the temperature rise to 5 deg C at between 4.4 and 6.7mph, resulting in a room temperature of 30 deg C.

Educool cools the air as it enters the room if it's hot. In the example above, the air would enter the room at around 18 deg C, so even if the air flow were only the same as a stack ventilator at 4.4mph wind speed, the room temperature would rise to only 23 deg C.

In reality Educool systems are designed to deliver approximately 50% more air than a stack ventilator can, regardless of wind speed, further reducing the temperature rise.

Conclusion

Stack ventilators and Educool are each designed for different applications.

Where air quality (oxygen levels) needs to be improved, *without* the need to reduce the room temperature, stack ventilators are a very good, if expensive, solution, as they require no energy to operate, and will provide some air flow even at zero wind speed.

If the room temperature *is* a concern, then Educool comes into its own, as, at a lower installed cost than a stack ventilator, it is able to cool the fresh air entering the room, and to guarantee that enough of that air is supplied to do the job, regardless of the wind speed. The very small amount of energy used is negligible compared to the benefit, and is a tiny fraction of the amount used by any other cooling technology.