

Fresh air delivered to new education centre

- **Customer:** Sheffield Botanical Gardens Education Centre
- **Sector:** Education, Leisure
- **Contacts:**
 - » [JSH Consulting](#) – Building Services Engineers
 - » [Watsons Building Services](#) – Specialist commercial and industrial engineering services
- **Location:** Sheffield, Yorkshire
- **Feature Products installed:**
 - » 1 N° Windcatcher X-Air 140 system
 - » 1 N° iNvent 2 Control system

Low carbon ventilation

The Dorothy Fox Education Centre in Sheffield Botanical Gardens was opened in March 2017 by the Duke of Devonshire. The building was completely re-built with the financial support of the Sheffield Botanical Gardens Trust (SBGT) and the Friends of the Botanical Gardens, Sheffield (FOBS) and three major legacy donors – Dorothy Fox, Mildred Rushby and Barbara Holland – and The Sheffield Church Burgesses Trust, The J G Graves Charitable Trust and The Freshgate Trust Foundation. The new centre includes three classrooms and a flexible space that can be used for events at the gardens. The centre runs a variety of educational activities and fun events for children to get to know the gardens such as bear hunts, mini-beast studies and bunting workshops.

Natural ventilation does not use fossil fuelled energy but relies on harnessing wind power and the thermal rise of warm air to be used in a controlled and sophisticated way. Monodraught systems were selected to provide 1 N° Windcatcher X-Air 140 system to one of the classrooms along with 1 N° iNvent 2 Control.

The X-Air system brings a steady supply of fresh air to the classroom, topping up the oxygen level whilst at the same time expelling stale air. Fan noise, often associated with mechanical systems is virtually eliminated. This allows occupants in the room to concentrate on the educational material that is being delivered. The simple, but effective design of the system provides fresh air during the daytime as well as night-time cooling. When coupled with our iNvent control, the system provides CO2 demand controlled ventilation, by means of energy efficient motorised volume



Completed Education Centre - R. Egglestone.

There is an additional wellbeing benefit of controlling CO2 levels during the day. By keeping the air feeling fresh, occupants of the room can maintain concentration levels and focus, rather than experiencing the common “dip” in attention that comes when CO2 levels rise and the air becomes stale.



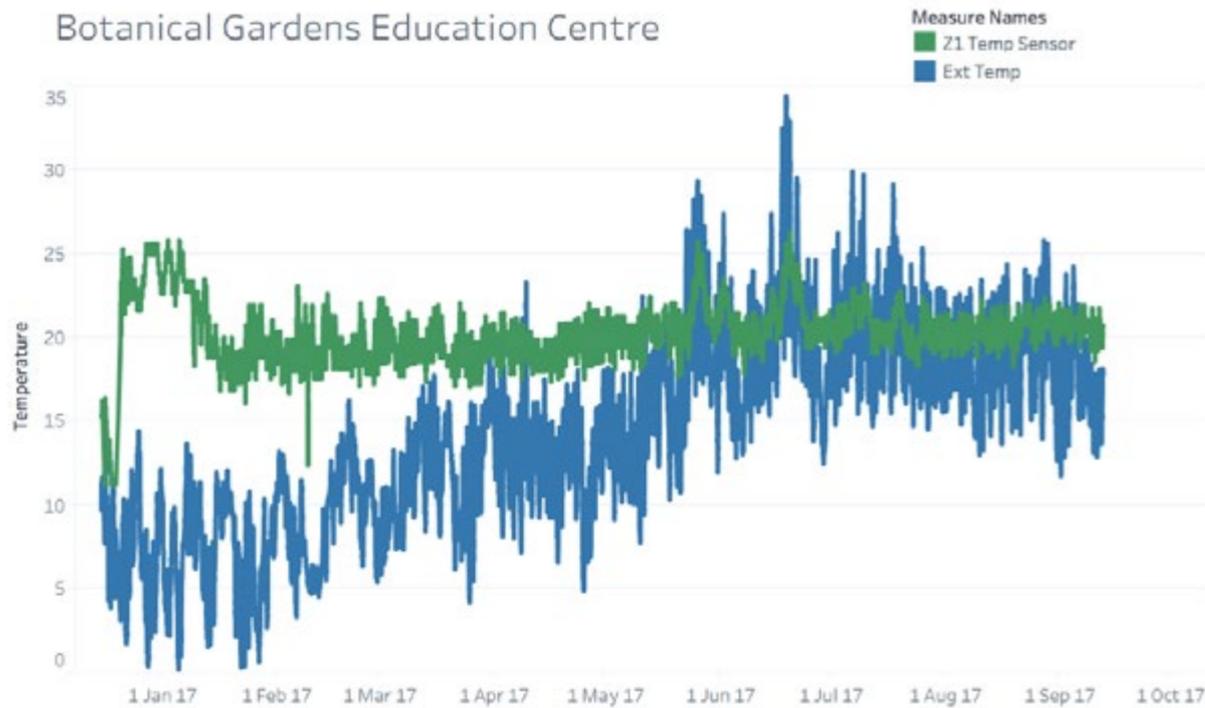
Dicentra Spectabilis (left) - Cactus Show (Right) - R. Egglestone.

Recent monitoring has shown that systems are working as expected and BB101 requirements of average CO2 levels being below 1500ppm during the occupied day are met.

By using natural ventilation, the system also reduces the centre's impact on the environment by using virtually no energy. An added benefit of using natural ventilation is that energy costs are limited. Maintenance is also kept to a minimum as there are very few moving parts compared to a more mechanical system.

To find out more about our full range of natural & hybrid ventilation solutions please visit [product](#) pages.

Table 1



This table shows that internal temperatures have largely remained consistent throughout the year.

Table 2

Zone 1 - Operational Mode by the number of minutes (Mon to Fri 9am to 5pm)

ZoneA Status	January	February	March	April	May	June	July	August	September
FROST	1,869	224							
High CO2 >1500ppm	145	132	234	239	177	22	6		
NORMAL	7,395	8,176	9,322	8,961	9,281	8,715	8,966	10,047	3,298
OVC				1			1		
OVD			2	21					4
RAIN	1,150	1,068	1,482	378	1,581	1,822	1,107	992	366

Monodraught's data monitoring sensors illustrate that CO₂ levels are maintained within BB101 guidelines during occupied hours.

Thanks go to FOBS Sheffield for their permission to use their images.

<http://www.fobssheffield.co.uk/FOBSPhotos.html>