

Simple, innovative solution improves school building ventilation

- **Building:** Hessle High School
- **Sector:** Education
- **Architects:** [DLA Design](#)
- **Contractor:** [Galliford Try Building Ltd](#)
- **Location:** Hull, Yorkshire
- **Feature Products installed (2015):**
 - » 67 N° HTM® systems install throughout the school
 - » 7 N° iNVent Control panels
 - » 13 N° WINDCATCHER X-Air 200 systems with axial mixing fans
 - » 2 N° WINDCATCHER X-Air 170 systems with solar powered LED architectural lighting system

Ventilation for improved school buildings

It is important to make sure that education spaces are well ventilated, ensuring that air quality within the classroom is appropriate for staff and students. This provides healthy and comfortable spaces to study or relax. Hybrid ventilation offers an energy-efficient way to provide outdoor air ventilation to buildings.

Following the release of the Facilities Output Specification for the Priority Schools Building Programme, Monodraught utilised our extensive knowledge, product testing, and building simulation skills to develop low energy ventilation systems which meet the requirements in a cost efficient manner. Hybrid ventilation or HTM provides a solution to meet the requirements of projects that fall under the second phase of PSBP.

Hybrid ventilation operates effectively throughout the year. Hybrid ventilation provides a greater level of occupant satisfaction because of the increased ability to exercise control over the ventilation provided. During winter months, it can continue to maintain good CO₂ levels while mixing outdoor air and recirculated room air to ensure air is supplied at a moderate temperature.

Hessle High School - flagship PSBP School

Monodraught were specified as the hybrid and natural ventilation solution for Hessle High School in 2015. The flagship school for the PSBP scheme, and one of the first to be built, is the £18.6 million Hessle High School and Sixth Form College in East Yorkshire.



The school, designed by DLA Architecture Ltd and constructed by Galliford Try, created a combined, fit-for-purpose school that operates from just one site, with new science labs, ICT and teaching areas and sports facilities.

Monodraught's HTM systems were installed throughout the school in classrooms, halls and corridors. This was complemented by natural ventilation in the form of Monodraught's Windcatcher systems in larger spaces such as the sports, drama, main halls and the dining rooms. Two of these units were further enhanced with our solar powered LED architectural lighting system. This can provide a striking view of the school in the night sky.

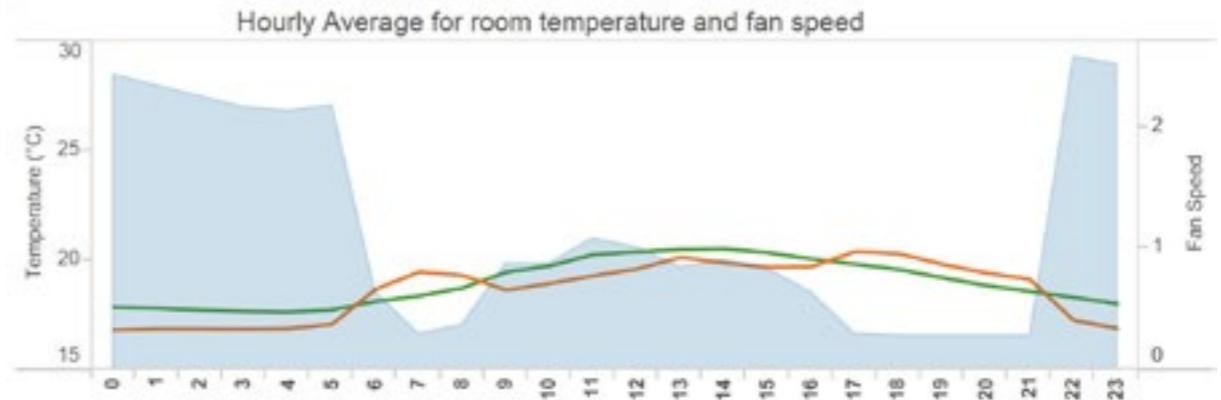
Performance of HTM systems Jan 2016-August 2017

The systems have been in place for some time now and we have been able to glean some useful data for the optimum running of the school.

Nick Hopper, Technical Director at Monodraught said *"Monodraught are unique in providing a cradle-to-grave service. We take a solution from design through to installation, service and maintenance. We were delighted to work with our partners to monitor the systems as Hessle High School for a 12 month period. In this way we can validate our performance commitments to the school and our contractors and also provide a feedback loop for product improvements."*

Average temperatures have been maintained at between 19 - 23°C during occupied hours, sustaining ideal thermal comfort for staff and students. Total power consumption has been measured at approximately £7.49 per unit. Average air quality has been measured at 776 ppm which is well within the BB101 guideline of an average of less than 1,000 ppm.

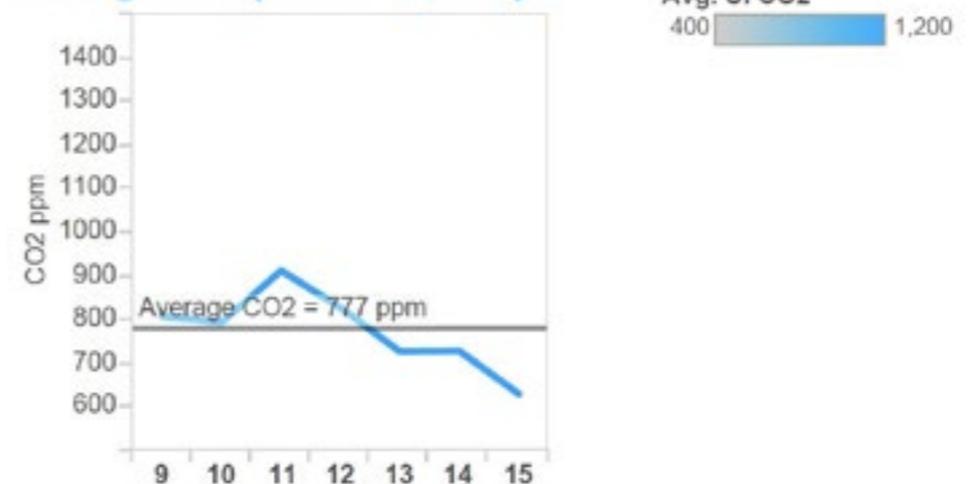
This data shows that the systems are performing strongly with low running costs and good air quality.



Average Air Quality (CO2 ppm) shown on an hourly basis

Month of Date &..	9	10	11	12	13	14	15	16
January	951	969	1,131	1,028	931	942	790	638
February	992	1,004	1,106	1,006	873	876	775	646
March	779	779	757	721	604	640	586	490
April	775	795	845	765	661	660	589	529
May	730	751	881	813	628	650	567	487
June	783	721	913	826	646	664	571	491
July	581	598	785	758	554	536	471	435
August	429	425	421	417	415	412	411	409
September	717	659	817	699	681	632	528	456
October	810	720	794	713	712	714	580	483
November	964	930	1,054	887	872	868	772	630
December	649	667	786	746	698	684	606	540

Average Occupied Air Quality



Overview

Average External Temp (°C)	14.3	Total Power Consumption (kWh)	74.87
Average Mixed Supply Temp (°C)	18.7	Total Power Consumption cost in £ @ 10p per kWh	7.49
Average Room Air Quality (CO2 ppm)	776.9		
Average Room Temperature (°C)	21.7		

Average Recirculation Air Temperature shown on an hourly basis

Month of Date &..	9	10	11	12	13	14	15
February	22.621	22.558	22.799	22.696	22.787	22.920	22.542
March	22.759	22.699	22.930	22.788	22.814	22.970	22.629
April	22.258	22.225	22.466	22.396	22.425	22.699	22.346
May	21.298	21.473	21.801	21.888	22.004	22.383	22.023
June	19.063	19.413	19.555	19.743	19.857	19.906	19.962

Average Room Temperature shown on an hourly basis

Month of Date &..	9	10	11	12	13	14	15	16
January	20.7	20.7	21.4	21.1	21.5	21.1	20.9	20.9
February	21.3	21.6	22.4	22.4	22.5	22.3	22.0	21.5
March	23.7	23.8	24.1	24.1	24.0	24.0	23.8	23.4
April	22.0	22.3	23.0	23.0	23.0	23.3	23.1	23.0
May	22.4	22.8	23.1	23.3	23.4	23.5	23.4	23.3
June	21.0	21.3	21.9	22.0	22.3	23.0	22.6	23.0
July	22.3	22.8	23.1	23.4	24.2	24.3	24.2	24.2
August					23.1	23.3	23.3	23.1
September	22.3	22.7	23.3	23.4	23.9	24.1	23.9	24.0
October	22.0	22.0	22.9	23.1	23.5	23.2	22.9	22.2
November	19.3	19.7	20.3	20.2	20.3	20.2	20.0	19.7
December	18.7	18.9	19.4	19.4	19.7	19.4	19.1	18.9

