

# PURRMETRIX CASE STUDY

## BALANCING ENERGY EFFICIENCY AND VENTILATION IN SCHOOLS

PROTECTING STAFF AND PUPIL HEALTH WITHOUT BUSTING THE ENERGY BUDGET



### **HOW CAN A SCHOOL WITH A WIDE RANGE OF BUILDING TYPES AND HEATING SYSTEMS IMPROVE THEIR LEARNING ENVIRONMENT? AND CAN IT BE DONE WITHOUT COMPROMISING THE SCHOOL'S COMMITMENT TO ENERGY EFFICIENCY?**

Richard Brent is bursar at St Faith's, an independent day school in Cambridge. The school is deeply committed to reducing energy waste, and was the first independent school to win the Ashen School Award in 2014 as a result.

#### **FIGHTING HEATING CONTROL DRIFT**

For several years now Richard has used metering data to drive reductions and engage staff and children in energy reduction campaigns, and he was keen to add an extra dimension by looking what he gets from his energy. 'Heating the school is a huge part of our energy bill, but it is very difficult to get an accurate understanding of how well that energy is being spent, room by room. We wanted to know that the heating controls were actually working at the right time and getting the right results.' Like most large school estates, St Faith's has a lot of different building types and heating systems, and to keep the controls well maintained and co-ordinated with the school's operations is a constant challenge. Over time, TRVs can stick, run times not match the schools timetable, circuits can be mislabelled or controls installed in the wrong place: all of these things result in a bad environment, wasted energy, or both.

#### **USING WIRELESS SENSORS TO MAKE SENSE OF SCHOOL ENVIRONMENT.**

Initially Richard wanted real time monitoring to help him with the hundreds of heating assets that he had to manage. Using Purrmatrix provided easy to fit wireless sensors which are discreet and accurate and which send data in real time back to a powerful range of analytical tools in the Purrmatrix dashboard.



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The first installation took a couple of hours and was providing actionable data immediately. Richard and his team were able to use heat maps, graphs and other visualisation tools to check the run times on heating systems and to look at how quickly they were heating the spaces, taking into account different outside temperatures, different building types and different uses for the rooms. By examining the behaviour when the heating turned off they were also able to understand more about which spaces would benefit from better insulation.

*'What surprised me was the range of insights we could get from the data. I had hoped to verify how heating controls were running and how well they were doing in actually heating the space – could we change any of the settings on our heating to reduce run time and save energy? We also wanted to investigate which buildings might need additional insulation both to make them more comfortable and save energy in heating the space. As soon as we started looking into the data we could see much more: for example we could see the impact of one radiator being hidden behind a bookcase, and in one of our modern blocks we could experiment to work out how best to run the underfloor heating.'*

## EXTENDING THE SYSTEM TO PROTECT CLASS ROOM ENVIRONMENTS

Re-opening classrooms post lockdown has produced a new range of challenges. How to identify classrooms and facilities that need better ventilation? Are there other ways to reduce COVID risk beyond opening windows and doors?

Purrrmetrix CO<sub>2</sub> monitoring in St Faiths classrooms has helped to measure the rates of ventilation under different conditions. Adding CO<sub>2</sub> sensors for each classroom allowed the school to take a balanced view of performance overall and identify those areas where additional ventilation might be helpful, without asking busy teachers to take responsibility for monitoring.

Measuring the overall rate of air changes, as well as peaks in CO<sub>2</sub>, meant that the school could choose the right strategy: whether to temporarily ventilate a space with an open window / door, improve artificial ventilation or change the number of pupils and duration of lessons in an environment. For example, St Faiths were able to identify choir practise as a particularly high risk event and ensure it only took place in spaces where adequate ventilation was available.

Better CO<sub>2</sub> levels not only reduce the spread of infectious diseases (and COVID is not the only risk here – flu, measles and chickenpox all spread in poor ventilation) but also improve concentration levels and the ability to learn. With data on ventilation, heating performance and energy input, St Faiths is now fully in control of their estate and able to fine tune it to meet their needs.

**Want to know more about Purrrmetrix in schools? Contact us on [info@purrrmetrix.com](mailto:info@purrrmetrix.com) for a demo. Or call 01223 967301**

