



Cleeve Park School



*Saving energy by managing and optimising the heating, hot water and temperature controls to improve the learning environment.*

*A personal, professional and practical view, outlining the successes and lessons learned, in implementing remote energy management and controls.*

## At the start

Cleeve Park School was given the contact details of a consultant who put us in touch with NESS (National Energy Saving Service) with a view to taking control of our heating costs.

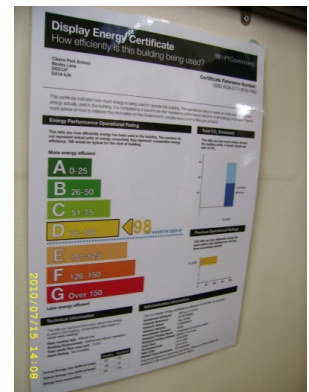
## What did we want?

We were spending vast amounts of money on gas to heat the buildings and we needed to get control of that budget. Like all schools, we had been told we needed to cut CO<sub>2</sub>, but our school had additional issues about the financial costs.

I am the Assistant Head teacher who line manages the site, and while I am fairly practical and hands on, it was not within my capacity to go round with a spanner to adjust radiators during the working day. Though I have been doing just that for a few months prior to the NESS involvement. Much of this is due to a lack of site manager. Our site manager has been off work for some time and so the role has been split between willing helpers on the site team and me.

## What do the school community want?

The staff and students want the teaching rooms to be warm enough and not too hot. Nothing amazing about that but not so easy to achieve given the poor state of the heating system. What we had was a system that left many areas of the school without heating and others where the temperature in rooms and corridors are so high that windows are open in the depth of winter.



## So what did we do?

### Step one.

First we needed to be sure that we really understood the systems we had. In a 1950's school with the usual additions over different decades, this was not as easy as it might sound. We have two boiler rooms, and five different systems being used to heat classrooms, workshops, labs and community spaces.



### Step two.

Make what we have work properly. As a result of under investment in repairs and maintenance over many years, we need to be sure each of the systems was working as best we could. Some forced air systems had seen no maintenance for as long as anyone could remember so we needed to find, clean and replace filters and air ducts.

Water supply to the constant temperature system was poor, and so pumps, belts, piping and valves need to be checked and replaced as required.

This work allowed hot water to reach parts of the system that had been cold for years. In doing so we were then able to move on.



### Step three.

Open up the air flows. The main building has 15 sets of fire doors down each main corridor. These restrict the movement of air and create hot spots. Staff in the warmer areas need to open the windows to get the temperature down so leaving the heating system to heat the planet while in other parts of the school people are left reaching for coats.

We have installed Dorguard openers on the fire doors in one corridor. This has allowed the corridors to equal out the temperatures. By then asking staff to open doors not windows, we can distribute the heat within the building.

### Step four.

Monitor and adjust. Using the Dedicated Engines monitoring system, we are able to identify when the boilers are burning to no benefit, and set boundaries in which the system can work. We have been able to reduce burning times and still have rooms up to working temperature as we wish. We are able to extend the times of the working day for special events while keeping the shut down time at 3:30pm for most days.

By controlling specific areas around the school, we can heat the areas that are needed while not wasting power and money warming the rest of the school.



## Anything else?

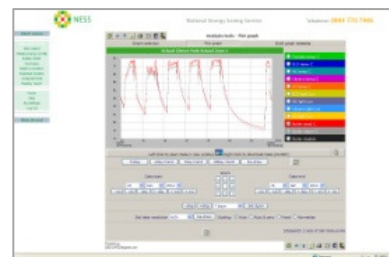
We have a major issue on our site with heat gain during the summer. Vast areas of windows facing east and south, mean that classroom temperature can rise to 30 degrees C at the height of the summer.

Over the summer break we put thermal film on the windows as part of the NESS contract. This has made a slight improvement over the winter as some heat is captured in these rooms. However, the real gain is in the summer as room temperatures are greatly reduced.



Having established the culture of opening doors into the corridor, and allowing air to move around the school freely, we can open windows away from the sun and so cool the building.

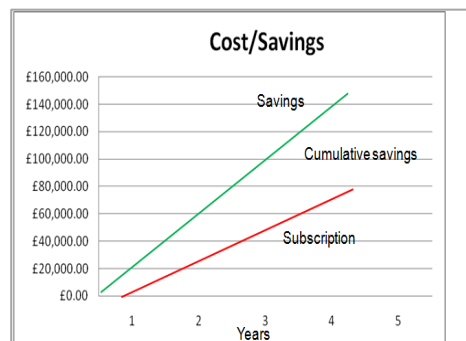
Additional benefits of this way of working are, the reduced wear and damage to fire doors has gone a long way to pay for the Dorguards, and the number of reported injuries due to fire doors hitting people as they move around the school has fallen to almost nil.



## Could we have done this another way?

There is nothing that the NESS system has done that we could not have done ourselves. However, by focussing on the energy use we have been nudged into getting the system into a good state of repair. By having the window film and the use of the monitoring system on a NESS Share™ subscription programme, we weren't faced with capital expenditure and were able to pay out of savings.

With the monitoring system in place, I can easily look at how the energy is being used and so drill into the data to assess what is really going on. By cross referencing the timetable and the working practices of the school, I can see how room use can be maximised to make better use of heating. I will be informing the timetable writer of 'Tweaks' that can be put in place to avoid waste.



The overall mantra must be, 'Keep it simple, Keep it easy and we can use it'. If a system of monitoring is hard to use – it won't be used. The DE system is easy to access and gives up to date information.



## Next steps

We have a number of actions that might be taken over the next few months in order to move the programme forward.

- Train up the site staff. It is my intention to train the new Premises Manager once they are appointed, as well as the other members of the site team so that they can monitor the systems as part of their duties. I would like to see the monitoring screen become the default image on their PC
- Refine the heating system rules. I am sure that we can improve the rule the system works to in order to allow even tighter control and better use of the system we have.
- Train the staff. Once I have established that the system is working at its best, I want to train the staff to improve their own environment by careful use of windows, doors and fans. E.g., when it is hot, open the door and use one fan pointing towards the door to create a through draft rather than have a fan oscillating which just stirs up the hot air.
- Train the students. The best drivers of new systems in a school are the students. If they are on board, they will push staff to do the right thing. Through the student council and by displaying the data in a public forum, I want to involve the student body.
- Data in lessons. The A level Maths students will use the data from the system as part of their work on data handling. This will allow them to have live data, which they can really identify with as so help learning.
- I would like to develop a 'Split Screen' display to put in reception showing the two zones' data. If this becomes part of the culture we are more likely to get it embedded in the minds of the whole school community.
- Last year comparison. Once we have a full year of data, I want to put up the comparison last month and this time last year, as the bills comes in. Nothing pushes folks into saving as fast as seeing how you are doing.
- Electrical Monitoring. I would like to develop the monitoring system to include the electricity supply. While the costs are not great, the savings may not be as easy to achieve. We may do better 'Reminding' people to take care with power use. It will prove to be a good comparison with the gas use – data against common sense.

## What could we have done better?

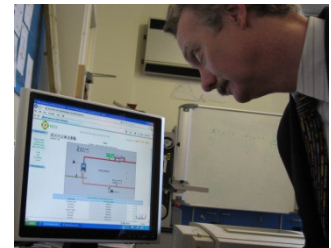
With any new system, installation or process, there is always a time to evaluate how it is going and how we could do things better. The aim is not to point the finger or throw rocks, but to learn and improve.

- Location of the monitors. We put one of the monitors in a room with a forced air system. When the teacher went in to teach, she switched on the blowers which raised the temperature in the room. This then meant that the monitoring system had a false reading for that room.
- More Zones. With a school of this type, we have two zones which are not able to really differentiate between the areas of the school. We need to add monitors and zones so we can better control the heating from one area to another. This of course will cost more, but the benefits could be worth it.
- Coordination between the systems. We set up the monitoring system with times of operation but did not coordinate the existing timers to allow override into the evening. While this was a simple thing to put right, it should have been done at the start and needs to be part of the set up process.
- Clear plans for set up and running. We should have an 'Idiot's' guide' to the setting up and running of the system. It would reduce the 'help' phone calls and promote confidence. Perhaps it is a teacher's thing, but it is better to include the client rather than 'do the system to them'.
- Better selling around the school at the start. If I had done a better job in explaining what was going on, the staff and students may have been faster in coming on board. Having said that, it is hard to 'Sell' something that is not in place.
- Easier log in access from the DE site. If you 'Google' Dedicated Engines and get to their site, there is no Log In box for us to access the system. Given staff who might use the monitoring system move around the network, it would have been easier for me to show people what is going on if I could show them from their own PCs, without having to remember an IP address.

## Would I do it again?

I am a sceptical person who does not jump at new toys easily. Despite the issues raised in this report, I am confident that the school has made the right choice and that the NESS/DE/Cleeve partnership will show real benefits for energy reduction, costs of heating, community cohesion ( an OfSTED measure), teaching and learning and above all; improvements to the working environment for the staff and students.

*Don Blaylock, Assistant Head, Cleeve Park School  
March 2011*



### Cleeve Park School

Cleeve Park School is a progressive secondary modern school in Sidcup in the London Borough of Bexley, Kent. It is an Engineering College, with industrial support from Balfour Beatty. The school's engineering status allows pupils to study additional engineering GCSE subjects. W: [www.cleevepark.org](http://www.cleevepark.org)

### NESS

The installation was recommended by and organised through NESS, National Energy Saving Service, which makes energy management products and services available on subscription to both Public and Private sectors, paid for out of achievable savings. W: [www.ness.uk.net](http://www.ness.uk.net)

### DEDICATEDengines

DEDICATEDengines is a leading provider of energy management and control hardware and software. Elsewhere in the education sector DEDICATEDengines energy management and carbon reduction systems are being used in a number of establishments from universities, colleges, high schools and junior schools.

W: [www.dedicatedengines.com](http://www.dedicatedengines.com)