Warrington Collegiate: Green ICT initiative reduces 4009,000kW of electricity consumption a year through technology

Summary

Warrington Collegiate has always been cutting edge when it comes to technology but its first major environmental project started in 2007 with its new rebuild. Since then it has been continually improving its energy efficiency through the use of technology. At current levels they are measuring an overall saving of 409,000kW of energy per year. This is equal to cutting back 221 tons of CO₂ emissions and removing 48 cars off the road per year - or planting over 10,000 trees.

About Warrington Collegiate

Warrington Collegiate provides highly relevant vocational education and training which adds value to a client making a life, business or career transition and provides the opportunity for a stimulating and social experience.

The College has a broad and integrated range of vocational curriculum from introductory to higher education level to ensure all learners can select their individual programmes and progress according to needs and aspirations. Learning is dispersed throughout the Warrington area via local learning centres and local learning facilitators. The college is a leading contributor to the economic and social development of the Warrington area by providing a range of services to communities and businesses.

The challenge

The College made a conscious effort to reduce its carbon footprint for environmental reasons and because it makes good business sense. This scheme was overseen by Facilities and IT services and involved implementing many different practices.

Initially it did mean an investment in new and often more expensive equipment but they were also more cost effective long term.

For example LED lighting has replaced all halogen lights, they are more expensive but they last much longer and save on power.
All the ageing HP printers were replaced with Samsung which had green credentials - using 40% less energy when printing. But after experiencing reliability faults these were replaced with Kyocera printers last year, which also save a lot of energy (around 12 kWh in classrooms per year).

The printers were also connected to a charging system for students as a lot of paper was wasted when printing was free. This scheme has seen student printing cut by a massive 60%.

**The activity**

As well as the printing and lighting improvements Nick Smeltzer, Director of IT and Bridget Floyd, Director of Facilities summarised the other green initiatives they implemented.

"Renewable Energy and Building Management Systems"

Solar panels were installed at our town centre site to heat the hot water used in the toilet areas and has made a 23% saving on our energy bill.

Building Management Systems were installed at our main campus to monitor gas, electricity, water and air conditioning units, shutting down systems automatically and recycling energy where possible.

**Data Centre**

The College invested in 6 VMWare ESX servers and so far have virtualised over 60 servers, removing 42 physical servers from our server room. This infrastructure will easily support all our planned virtualisations.

A new (virtual) server can be commissioned in minutes rather than acquiring a physical server, racking, installing and running it from then on. On average we are saving 2604kWh per week (135,408kWh per year).

We also reduced our reliance on air conditioning by installing a managed fresh air ducting system that removes heat from the server room and draws cold air from outside. Air conditioning is now only really required on warm days.

**Desktop Infrastructure: Powersave, shutdown and poweroff**

We purchased Faronics Powersave and installed it on all college PCs, configured to blank monitors after 30 minutes and shutdown after 1 hour of inactivity. Besides power saving and lengthening the computer life, we have reduced the fire risk of students’ machines being left on between classes or nights/weekends. So far there’s an average saving of 1445kWh per week.

This scheme was improved by replacing the shutdown option with our own “Shutdown and Power-off" button and changing the machine shutdown options so there’s no restarting or logging off. The change was rolled out initially to students and more recently to staff.
Now no PC is left on between classes but Powersave will still shut it down after an hour if a computer is left logged in.

The new Shutdown and Power-off button saved a further 20kWh per week (807kWh per year) with no monetary or time cost to implement.

**Desktop Infrastructure: Virtualisation**

We have now completed the first phase of our desktop virtualisation project. We have installed a 400 seat system of VMware View which allows us to re-use our existing desktop infrastructure for longer and there is no need to annually replace machines.

**Mains Optimisation**

On the incoming mains feed we reduced the voltage from 230 to 220 using PowerPerfector, consuming 9% less energy per appliance.

---

**Building Management Systems**

**Electricity usage by block (red is total)**

---

www.jiscrsc.ac.uk/case-studies
The outcomes

One of the major users of energy is IT and the introduction of virtual servers has had huge business and financial benefits.

Nick Smeltzer explains: "For one, having over 60 servers is a nightmare to maintain so the virtualisation has saved time. It also means that our virtualised desktops can run from a server and old computers don’t need to do the processing so we don’t have to keep replacing them as often.

We also utilise a VMWare app so students can connect to the College systems and use all our software whether it’s an iPad or iPhone or if it is a really old computer they use.

We have sustainability days and fair trade events to involve staff and students as well and to offer energy efficient tips such as to not leave things charging and turned on unnecessarily."
The College’s environmental approach has been embedded into the curriculum so students are taught about things like solar instalments in plumbing and have an energy efficient section in the IT course.

**The impact**

The College was able to work out the power and electricity it has saved through the initiatives they implemented:

- Mains Optimisation: Electricity saved: over 130,300kW
• Lighting: Electricity saved: over 78,500kW
• Renewable Energy and Building Management Systems: Energy saved: over 8,000 kW
• Server Virtualisation: Electricity saved: over 135,400kW
• Powersave: Electricity saved: over 57,800kW
• Shutdown and Power Off: Electricity saved: over 800kW
• Green Printing: Saved 60% consumable and an un-measurable amount of energy.

The College has won a number of awards for its Green ICT activity including:

Winners:

• UK Public Sector Digital Awards 2011: Best Sustainability Initiative.
• Times Education Supplement FE Awards: Outstanding Practice in Sustainability November 2011
• TechWorld 2011: Energy Efficient Project
• Jisc RSC Northwest 2011: Recognition of Innovation Award

Highly Commended:

• Green Gown Awards 2010: Green ICT

Finalists:

• Northwest Business Environment Awards – Best Practice 2010

**The lessons learned**

The IT and facilities departments have continually looked at new ways to reduce the energy consumption of the college and have adapted practices as they’ve learnt from the different schemes.

The Building Management System (BMS) has individual temperature monitoring of rooms and over 100 time programmes in place so all the buildings are energy efficient in terms of heating, hot water cooling and lighting. A lot was learned by this about where energy savings could be made and one outcome was to shut the College on a Monday night so that money was saved on gas, electricity, teachers, receptionists and security by having a more concentrated time table. The BMS also
means that energy is not wasted when the College is shut or if a classroom isn’t in use.

Nick Smeltzer tells us: "It’s been morally achievable for a long time to put these green initiatives in action but now its business effective as well and businesses are doing it to save money.

Because we are at the forefront of what we are doing its becoming harder to find more cost savings now the economy is tight but the next step could be to get rid of PC terminals and use low energy terminals."

**Useful links**

- Jisc RSC Northwest
- Warrington Collegiate

**Disclaimer**

Disclaimer: Jisc Regional Support Centres work with more than 2,000 UK learning providers helping them to improve performance and efficiency through the use of technology. Case studies may refer to specific products, processes or services. Such references are examples and are not endorsements or recommendations and should not be used for product endorsement purposes.