

Smart monitoring reduces utility costs for schools



The Informed Executive investigates how Fairfield's School has been applying remote data monitoring

Selecting the sample to take part in an opinion poll ahead of an election is an exact science – or at least it should be if the analysis is to have any value as a guide to voting intentions for the country as a whole. Pollsters worth their salt will have constructed their samples to represent accurately the real-life spectrum of economic and social parameters in the population. But who are the people selected to express their views as representatives of the nation? Has anyone every met one of the 1006 voters in a recent poll conducted by a national newspaper, for example?

When Hertfordshire County Council launched a pilot scheme back in September 2007 for monitoring energy consumption as part of its commitment to climate change management, Fairfield's Junior and Nursery School, in Cheshunt, found itself among the sample selected to take part in the scheme. Wholly typical of the larger junior schools in the County, Fairfield's operates a two-form entry to cater for its community catchment in South East Herts. Its own 'population' spans the 3 to 5

year olds in the Nursery, through the 5 to 7 year olds at Key Stage 1, to the broader band of 7 to 11 year olds at Key Stage 2.

Head teacher Martin Tuck noted that there were other factors which made his school an appropriate testing ground for the Optimal Remote Data Monitoring system. Fairfield's, for example, had been built in 1974 with single form entry in a metal-walled building that was typical of new school buildings of the day. Expansion of the school to twice that level of intake in 1999 required a major extension to the premises.

Architecturally sympathetic with the original building, and integrated with it, the new building is different in that it has a sloping roof and more efficient insulation.

Independent boilers

The extension has its own heating system, with distinct gas and electricity supplies. (The original unit has had its boilers upgraded in

Above: Fairfield's Junior and Nursery School in Cheshunt was one of the pilot applications of the Optimal ISX Monitoring System

Pilot scheme for **smart monitoring** of energy demonstrates viability in schools and prompts **county-wide adoption**

the meantime.) To the extent that there are different 'environments' on a single site helped increase the relevance of Fairfields to the pilot programme.

With sensors at key points across the two independently controlled areas of the combined building, Mr Tuck and his school caretaker have been able to track the detailed energy and water consumption changes in each part of the complex. Their vehicle for tracking is a web page which displays the energy consumption data, down to five-minute intervals, extracted from the sensors around the site.

Speaking with the County's Director of Property Services, Tony Comer (page 16), it was apparent that the data monitoring system would have an important role in communicating an awareness of energy consumption to all of the stakeholders in the school – the teaching staff, parents, governors and even the children. How far had the data from the Optimal monitoring system reached that wider audience?

Property management phase

Martin Tuck acknowledged that his school has been in the first phase of the implementation, where the system is being used as an aid to property management. "It has already produced some remarkable results. Working within a building that is well insulated and carefully zoned for heating meant that we found the monitoring system reporting few additional opportunities for energy saving.

"But when we examined the reports from the monitors around the water network in the school, we discovered that between 120 and 150 litres of water an hour were being lost over weekends and holidays when water usage should have been nil.

The continual loss had not been picked up; in part because reading the

"Being able to observe the consumption of water, gas and electricity had immediately highlighted waste of water and the school's funds. What is particularly interesting about the Optimal monitoring system is that it is set up with alarms so that it can send a text message to the caretaker if problems are detected. Fortunately, no further problems have been flagged up, but the facility gives everyone involved peace of mind."

water company's meter at regular intervals would have been difficult as the device was located under a heavy cover near the school gates. "Seeing the water loss being reported on the screen, however, prompted us to investigate the possible causes of the wastage. Were we losing it from leaky pipes, for example? Eliminating cracked pipes as a possible cause, Tuck and the school caretaker set about examining every other possible reason for wastage.

"The problem lay in the water cistern serving one bank of boys' toilets. Because the flow control system had been left accidentally in test mode by the installers, the flushing system was not switching on as it should have done, in response to demand.

"What helped to conceal the problem was that the water being lost was running straight down an overflow into the ground outside."

Savings start at £1000 a year

Being able to isolate and correct that problem has saved the school £1000 a year, which is a remarkable amount for what appears at first glance to be quite a trivial problem. "Being able to observe the consumption of water, gas and electricity had immediately highlighted waste of water and the school's funds. What is particularly interesting about the Optimal monitoring system is that it is set up with alarms so that it can send a

text message to the caretaker if problems are detected. Fortunately, no further problems have been flagged up, but the facility gives everyone involved peace of mind."

Phase 1 of the implementation at Fairfields has therefore been logistical, helping the school identify problems and contain its expenditure.

The next stage gives Martin Tuck and his colleagues the chance to introduce the remote data monitoring system in the curriculum, given its role in promoting sustainability. "We have established a group of children called the Ecoteam who, with members of staff and governors, will look out for opportunities to save under the Eco-School programme.

"Tracking daily electricity consumption in the school, for example, will help identify lighting and equipment that has been left on unnecessarily. The Ecoteam will be reporting regularly in Assembly to the rest of the school using the information that the Optimal system generates.

Application in curriculum

The graphs that it produces will be used in maths teaching and help them appreciate the true value of the water and energy being wasted, in terms of other benefits to the school. We are confident that the children will take the principles they have learnt at school back home with them – and start transferring their new-found culture to their families and community." §