

Halton Catholic District School Board Delivers on Energy Efficiency Mission

By Margaret Manetta, CARMA Industries Inc.



Inside one of the classrooms at the newly constructed Queen of Heaven Catholic Elementary School in Milton which uses LED lighting to help conserve energy.

In 2009, the Halton Catholic District School Board entered into the next phase of its environmental stewardship policy, which called for a commitment to promoting environmental literacy for all students and staff, as well as integrating sustainability into the board's operational services.

While the board had always conducted monthly utility bill monitoring, the next logical step included the implementation of real-time utility monitoring to address

issues more proactively and become as energy efficient as possible.

"We were very interested in examining the long-term results of our energy conservation programs in our Board," says Alex Duffield, Senior Administrator of Facility Management Services, Halton Catholic District School Board. "With utility bill analysis you are always two or three months behind; real-time information provides immediate feedback on what is happening in our schools."

To help achieve this, the board's Facility Management Services department turned to Carma Industries, which had extensive experience and expertise in metering other school boards in Ontario. The board installed metering equipment for the main electricity and gas meters. In addition, schools have TV monitors installed, which display graphic profiles for both electricity and gas that students, staff and visitors can view. Carma also coordinated the installation and maintenance



Declan, student at one of the board's Oakville Catholic Elementary Schools and winner of the "Tacky Sweater Award" on National Sweater Day, February 6, 2014. Sweater Day promotes energy conservation and a proactive approach to environmental sustainability.

of the systems, working with a variety of departments within the board, as well as the local gas company to gain access to the main gas meter.

The load profiles and data are contained within CARMASmart-Metering (CSM), Carma's own energy monitoring and benchmarking software, which allows facilities staff to view the profiles and rank their schools against one another for energy efficiency.

Currently, the Carma system is being used by the board for energy tracking and to identify when the HVAC equipment is not running as per the time-of-day schedule. On the operations side, Facility Management Services staff uses weekly comparison profiles to identify any abnormal patterns or blips in energy usage. "The graphic profiles tell us a lot," says Anthony Rocco, P. Eng., Facility Management Services Consultant at Halton Catholic District School Board. "We can overlay one week on top of another to see if a change was due to a holiday or if we need to seek out further information for a potential issue."

The metering system can also assist in analyzing whether or not building automation system overrides and control problems are

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present. For example, a fan system in a school can be running 24 hours, 7 days per week in hand-operation mode. Real-time data enables staff to spot the issue and take corrective action immediately.

All pulses are pushed to the Carma metering system, rather than the building automation system which provides the board's Facility Management Services staff with more user-friendly graphic data and more accurate information. Overall, the metering information has highlighted the need for better and tighter controls, such as occupancy sensors and limiting run times to match occupancy levels.

Of major importance to the board is occupant behavioural change through energy education. The recent introduction of electricity and gas dashboards for all schools means that teachers and students can access the energy data and profiles for their schools. For special events, such as Earth Hour and Sweater Days, the profiles provide a graphic illustration to students of the difference their energy conservation efforts have. As well, the energy information can be accessed by students and teachers through the TV monitors located in each school, as well as on the board's online portal, where historical energy usage can be viewed. An environmental link is also on the board's public website.

With close to 4 million square feet of total facility space to look after, the future looks bright for Halton Catholic's energy efficiency program. As they work on specific goals for their Energy Conservation and Demand Management Plan for the province, they are piloting a new LED lighting and lighting controls initiative to monitor best lighting practices for existing and future school construction. As well, with the help of the Carma system, the Facilities Management Services department will target the lower energy performing schools, with an aim of recommissioning and retrofitting equipment where appropriate.

Achieving, Believing and Belonging – these words are the motto of the board's commitment to students and staff for reaching their full potential. For Facility Management Services, they are achieving the board's vision of being environmental stewards for future generations to come. ▀