

Wins & Highlights

- Meaningful, easy-to-use energy reporting via the Internet.
- Instant insight into energy waste and inefficiency.
- Independent measurement and verification of project savings:
 - » \$1 million annual cost savings.
 - » Electrical consumption reduced by 7.3 million kilowatt hours.
 - » Natural gas consumption reduced by 238,000 m3.
 - » Carbon dioxide emissions reduced by 3,700 tonnes per year – the equivalent to taking 580 cars off the road!
- Effective insight for managing consumption to budget.



St. Joseph's Healthcare Hamilton makes EnergentET a Vital Part of Operations



Real-time energy monitoring & targeting solution from Energent provides St. Joseph's Healthcare Hamilton with independent verification of guaranteed savings and day-to-day insights for energy efficiencies.

Background

St. Joseph's Healthcare Hamilton (SJHH) is a leading academic health science centre located in Hamilton, Ontario, Canada. It is a multi-site facility serving the 1.2 million residents of metropolitan Hamilton and its surrounding area. Since its founding, SJHH has been committed to enhancing and supporting the community they serve.

In 2005, they began to question whether their facility operations were having a positive ecological impact on the community. There was growing public awareness and acceptance of the causal linkage between large energy consumption, environmental deterioration, and resulting illness and disease – which then had to be treated and cured.

Greening Operations

SJHH set out to become a leader in environmental stewardship. A multi-disciplinary green team, Team Environmental Vision & Action (EVA), was formed to promote sustainable practices at the operational level and in the organization's broader vision. Engaging in green activities would help the environment and would also mitigate the soaring energy prices caused by growing demand and limited world supply.

Bold Objectives to Reduce Consumption

A key component of the environmental program involved reducing facility energy and water use. Chris Chovaz challenged John Duncan, the hospital's chief engineer, to find 30% utility savings for the entire operation. With utility costs close to \$5 million annually, this meant maintaining high standards of patient care with significantly reduced energy and water resources.

While the facilities did not require significant changes there were some obvious areas for improvement. John developed a \$9.3 million dollar retrofit and renewal plan to achieve the targeted savings.

To fund the capital improvements, SJHH entered into a performance contract with an Energy Services Company (ESCO). The ESCO would fund the upfront capital purchases and guarantee \$1 million savings in utility costs each year over the nine-year performance contract. If the \$1M annual savings did not occur, the ESCO would issue SJHH a cheque for the remaining amount.

Key Challenges

This arrangement posed two key challenges for John.

Accurate Verification of Savings

John needed independent measurement and verification (M&V) of the savings achieved to ensure the ESCO delivered the guaranteed savings and/or paid the balance owing.

Initially, the plan was to hire a consultant to manually measure, verify, and report monthly savings. Before starting the upgrades, John wanted the consultant to baseline the facility energy use. Having taken the Ontario Hospital Association (OHA) course on Monitoring and Targeting (M&T), John understood the importance of establishing a baseline before making operational changes – putting a stake in the ground as the starting point for future measurements to compare.

Initial efforts to identify a consultant proved difficult and expensive. Then, while at a utility-sponsored technology symposium, Chris Chovaz attended a presentation by Energent and learned of their EnergentET energy monitoring & targeting solution. EnergentET produces M&T baselines to model expected energy use. Then, real-time energy data for the facility is assessed against these baselines to isolate and quantify waste and to accurately measure savings achieved.

Chris learned the Energent solution would provide the critical measurement and verification they needed. And, it would come at a price tag significantly lower than hiring a consultant.

Insight for Budget Management

Initially, the capability of the Energent system – providing automated, real-time reporting of energy use via the Internet – was not a priority for John. He simply wanted to accurately measure and verify ESCO savings as cheaply as possible.

This changed when budget details emerged. The finance department decided to manage the project by reducing John's \$5 million budget to \$4 million – setting aside the \$1 million future payment to the ESCO.

To maintain operations and stay within the reduced budget, John needed to closely monitor energy consumption and quickly identify when operations were consuming more than budget.

The full capabilities of the Energent system now came into play for John.

What are Baselines?

- A baseline predicts future energy use for a given process and is a powerful benchmark for evaluating actual energy use.
- Baselines leverage historical energy data and incorporate energy drivers such as weather, occupancy, and production volume or facility schedules.
- When actual, real-time energy data is collected and compared against the established baseline, deviations are visible.
- Deviations provide valuable information. They can highlight an occurrence of waste and/or represent energy savings achieved.
- Energent baselines are IPMVP-compliant and produce highly accurate measurement, verification and insight into energy use.

About EnergentET

- Automated reporting of real-time energy use 24/7 via the Internet.
- Intuitive dashboard provides a snapshot of energy use, detailed reports, and analysis tools.
- Baseline modelling for highly accurate verification of savings and ongoing insight into waste and inefficiency.
- Day-to-day system operation and ongoing maintenance fully managed by Energent.
- Data interpretation and support provided from an experienced Energy Analyst to boost results.

EnergentET Deployed at Charlton Campus

St. Joseph's Healthcare Hamilton consists of three sites located throughout the City of Hamilton. The EnergentET solution was deployed at the Charlton Campus in downtown Hamilton.

Energent installed a utility data link (UDL) device to collect and transmit data from existing site electricity and natural gas meters to the Energent data centre for analysis. An account on the Energent web portal was configured to provide John with convenient, 24/7 access to real-time consumption information for the campus.

The Energent dashboard is an easy-to-use, fully configurable reporting and visualization interface that provides a real-time snapshot of facility energy use. With the system operational and data flowing, John organized his dashboard to display electricity consumption and cumulative savings as well as natural gas consumption and cumulative savings (shown below).

New Insights; New Routine

Every morning after checking his email, John began checking his Energent dashboard. He would scan for reports of unusual electricity or natural gas consumption.

When required, he would access underlying reports such as the CUSUM or energy control chart to investigate events further. These reports highlight single instances of unexpected consumption as well as trends.



Expert Advice and Assistance

John also began regular interactions with an Energy Analyst from Energent assigned to the SJHH account. The Energy Analyst supported John by remotely monitoring account data, notifying him of unusual occurrences, and helping him with any required data interpretation. With EnergentET each customer has access to the services and support of a dedicated Energy Analyst to help them successfully achieve their energy management goals and boost their ROI.

Results Achieved

After 18 months, the energy retrofit project was completed and project success accurately verified via the Energent solution.

- » \$1 million annual cost savings achieved.
- » Electrical consumption reduced by 7.3 million kilowatt hours and natural gas consumption reduced by 238, 000 m3.
- » Carbon dioxide emissions reduced by 3,700 tonnes per year – the equivalent to taking 580 cars off the road!
- » Consumption effectively managed to achieve the reduced utility budget.

Energent Becomes a Vital Part of Operations

The EnergentET solution has helped John achieve his primary objective – gaining impartial verification of savings achieved by the ESCO. But, it has also delivered many additional benefits that were not initially envisioned.

The real-time, automated nature of the Energent solution has proven invaluable for managing day-to-day operations at the Charlton facility.

“Our primary goal for engaging Energent was independent, cost-effective measurement and verification of the savings guaranteed by our Energy Services Company (ESCO). Energent has provided this verification of savings and much more.

Today, Energent information has become vital for managing our day-to-day operations. In particular, the monitoring of real-time consumption against baselines gives us valuable insight for controlling our energy consumption and managing our budget.

Before, it was hard to detect energy waste and quantify accumulating costs. Now, we have specific and meaningful information about our energy use. When operations are “out of whack” insight is instantaneous. Staff can take action then immediately see the impact on savings. This real-time feedback makes the Energent system a valuable tool for gaining and sustaining energy efficiencies.”

John Duncan

*Facilities and Building Services Specialist
St Joseph's Healthcare Hamilton*



Instant Insight for Averting Unplanned Costs

According to John, the instantaneous nature of information has proven extremely valuable for isolating waste and averting costs. “The Energent system instantly shows us when something is “out of whack”. It gives us immediate information so we can act before costs accumulate and quickly evaluate whether our changes were effective.” says Duncan.

He cites two examples:

- » In one instance, the system demonstrated initial savings from a new furnace control strategy only to show the savings erode. The operations team investigated to find that an exterior wall, modified as part of the project, was poorly repaired. Savings returned when the wall was properly repaired.
- » In another example, John cites how the process for managing the chiller – as outlined in the manual – was very inefficient. The Energent system helped them measure and quantify the waste, giving them useful ammunition to make an operating change.

A Culture of Accountability

To achieve his reduced energy budget, John needed plant staff to pursue and diligently maintain new operational efficiencies. The Energent dashboard enables staff to see how their actions directly impact savings. It also gives John the ammunition he needs to keep his staff accountable.

One Monday morning, John logged into the system and discovered a chiller was left running all weekend. He printed a report showing the cost incurred and took the report to plant staff. “Our staff members are really supportive. They know operational efficiencies make sense not only for financial reasons, but because they improve the health and well-being of our community”, says Duncan.

Accurate and Dependable Reporting

Energent uses a sophisticated modelling engine to produce highly accurate results that comply with the IPMVP international standard for measurement and verification. This means results that are extremely dependable and reliable. Information reported through the Energent reporting system has proven so accurate and easily accessible it has become the primary source for reporting energy savings within the SJHH organization and to its Board of Directors.

Hassle-Free System Operation & Maintenance

John has long understood the value of accurate information and the power of M&T to baseline and accurately measure results. Prior to Energent, however, the challenge had been finding the time and resources to collect and produce the information he needed. Many energy management systems place high demands on end-users to install the system in-house; to collect, analyze, and archive the data; and to maintain the hardware over time.

With Energent, John receives the information he needs through an Internet-hosted solution that conveniently manages all these costly and time-consuming activities for him.

“Our staff members are really supportive. They know operational efficiencies make sense not only for financial reasons, but because they improve the health and well-being of our community.”

*John Duncan
St Joseph's Healthcare Hamilton*



Going Forward

Over the remaining life of the nine-year performance contract, John and his staff must verify that the \$1 million annual savings for the Charlton Campus continue. They know they can depend on Energent to accurately measure and verify results.

John will be joined by Rick Miles as they extend their assault on energy waste to other parts of the organization – relying on Energent information for critical insight into daily operations. Plans include integrating Energent with the building automation system, sub-metering the Diagnostic Imaging department, and expanding the system to include the King Campus. In addition, plans are underway to deploy Energent on the ground level of their new LEED-certified West 5th Campus.

St. Joseph's Healthcare Hamilton has proven to be a leader in environmental stewardship. They have significantly reduced their energy use, utility costs, and carbon emissions. While continuing to provide the highest quality care, they now provide patients and staff with an increasingly safe and comfortable work environment.