

**How We Monitor/Measure Energy Consumption**

With 1,100 residential units and a goal of achieving LEED Gold certification, energy management for the Olympic Village had to be taken very seriously. Enerpro was responsible for a solution that involved coordinating meters, communications strings and data for 5,500 related meter points. Installed in each suite is a visual display meter developed by Energy Aware, that will show consumption of heating energy (BTUs), cooling energy (BTUs), domestic hot water consumption (US gal), domestic cold water consumption (US gal) and electricity (kWh)\* use for that unit only.

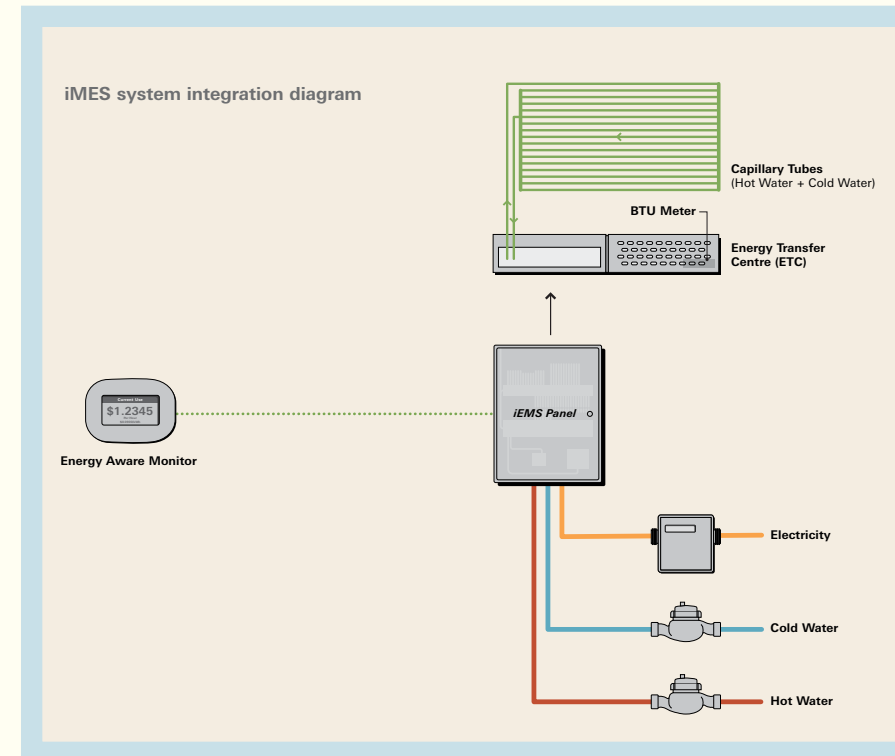
Nick Farina, the president of Enerpro, recognized that understanding the entire system and the relationships between a variety of people would be critical from the very start. “Our model put Millennium Water in the middle and assembled stakeholders such as project managers, mechanical engineers, financial specialists, post-construction advisors, and property managers,” he says. As a team they selected the tools that would integrate the consumption, measurement and purchasing of all types of energy and water. Enerpro’s experience guided the team towards an integrated solution, which included in-suite display monitors.

Awareness is a central element in making smart energy choices – for developers, owners and occupants. The efficiencies for new construction and infrastructure upgrades in retrofitted buildings speak for themselves. Whether a project consists of a 5 million square foot shopping centre or a 500 square foot condo, knowing what quantities of water, gas or electricity are consumed is important for cost-effective management (quite different from simply paying a flat cost each month, or never knowing how much of a resource was used). Enerpro’s results show the national water use average of 344 L/day can be cut in half as a result of behavioural change driven by awareness.

Enerpro’s iEMS brings together technology, knowledge and people in an integrated energy management system designed for each project, explains Farina. Technology from all over the world combines for effective energy management by measuring energy consumption, water volumes, air quality,

temperature and occupancy in buildings, and providing ongoing real-time monitoring and adjustments that maximize efficiencies. This supports the sustainable use of energy and preservation of natural resources, and reduces building operating costs too.

League Assets Corporation, a private Real Estate Investment Trust, has established a sustainable energy fund providing financing for the capital costs of the energy management system. There is a ten-year lease for the infrastructure and equipment, after which Millennium Water strata will own it and their ongoing costs will drop.



**The Commissioning of Mechanical and Lighting Control Systems**

Commissioning is a process that adds an additional perspective to the design and construction of building systems, and provides guidance to the operation phase such that proper maintenance is assured. It’s a step performed by an independent group that helps assure quality in building design and construction, and is encouraged by the LEED certification program.

During the design phase of a project, commissioning input is provided that affects system selection, as well as other integrated design aspects such as envelope, shading and orientation choices that play a role in minimizing heating and cooling loads and in making sure that mechanical systems are more efficient and durable in the long run.

During construction, commissioning ensures that systems are performing optimally and as intended, and that problems are caught that would affect the longevity of the system. In the post-construction phase, commissioning ensures that building operators are trained and documentation is provided so that the commissioned systems can be properly maintained in the commissioned state.

“KD Engineering has a couple of hats on the [Olympic Village] job as the mechanical commissioning agent and as the LEED commissioning authority,” says Chris

Leaming of KD. The LEED commissioning authority completes the LEED EA (Energy and Atmosphere) pre-requisite 1: Fundamental Building Systems Commissioning, as well as LEED EA Credit 3: Best Practice Commissioning, worth one point in the LEED system. This role joins the design team before the design is finalized, to contribute to the design process focusing on the mechanical systems and some aspects of the lighting system, create a commissioning plan included in the project specifications, oversee the commissioning process, orchestrate a “near-warranty-end” review and produce a final LEED commissioning report. Under the Mechanical Commissioning Agent hat, KD performs the hands-on testing that verifies the proper functionality of the mechanical systems.

Leaming says commissioning was an important process for the Olympic Village project. “This is not a standard residential tower project,” he says. “It has more sophisticated mechanical systems, and it will be LEED certified. As such, a full commissioning process makes sense. As well, the Energy Transfer Cabinets that control the heating and cooling to the capillary mat zones in the suites are a new product in this part of the world, and therefore required extra commissioning attention.”

**PROFILE**

**Nick Farina**

President of Enerpro Systems Corp.

Nick Farina, the co-founder of Enerpro, designs his systems with the future in mind. “When I look at my 4-year-old granddaughter,” he says, “I ask myself if we are moving forward fast enough. How do we collectively stop wasting our resources?”

Farina’s awareness of environmental issues, combined with his construction background led him to the world of energy management. Since 1996, Enerpro has offered full-service, customizable, energy management solutions. Enerpro’s programs maximize efficiencies in energy and water use, reduce consumption and provide numerous economic benefits for a diverse portfolio of new construction and infrastructure upgrades in retrofitted buildings.

Enerpro brings all the fragmented steps of energy management together in one centralized iEMS (Integrated Energy Management System) that supports the on-demand characteristics and complexities of energy and water management.

Enerpro Systems Corporation is a North American market leader in intelligent energy management of both traditional energy systems as well as new technologies such as geo-thermal, solar, wind and fuel cell. For Millennium Water, Enerpro has supplied energy management technology for 1,100 residential suites that will allow occupants to monitor their own energy and water use from an in-suite display.

Farina concludes, “When I see the results from our Energy Management programs, I know that we’re on the right track. There are tremendous opportunities ahead.”

**CHALLENGE**

To policy-makers and municipal authorities: to require comprehensive building commissioning for all new construction to ensure optimum energy efficiency and systems performance.