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photo credit: Tom Arban and Montgomery Sisam

The Fifth Town Artisan Cheese Company and the Toronto Region Conservation Authority Restoration Services – both LEED Platinum certified – were commissioned by Enermodal to ensure optimum energy performance.

Commissioning: delivering buildings that live up to their potential

Arguably the most important step in delivering the energy and systems performance expected by a building owner is a thorough building commissioning (Cx) program. Conventional Cx is usually little more than basic equipment start-up and does not verify full equipment functionality or whole systems interoperability (how all the mechanical equipment and controls operate together). Commissioning, done properly, uncovers the functional anomalies that may go undetected until occupant complaints or excessive energy bills brings problems to light.

Recognizing the value of proper commissioning, the LEED® (Leadership in Energy and Environmental Design) green building rating system makes "Fundamental Commissioning" mandatory and awards an additional credit for "Best Practice Commissioning."

Fundamental Cx first verifies proper equipment installation and full operational start-up. More importantly, Fundamental Cx comprises extensive functional testing of all mechanical systems and their interoperability, detailed staff training, and an extensive review of the operations and maintenance manuals. Best Practice Commissioning includes invaluable additional steps before and after construction. Working with the design team, a commissioning agent identifies cost effective options for performance improvements. In addition, throughout the first year, the commissioning agent identifies and resolves any ongoing concerns or warranty issues that arise.

For existing building projects re-commissioning offers similarly valuable opportunities for low (or no) cost building energy and comfort improvements.

John Kokko, vice president of Enermodal and head of its Commissioning Division, has commissioned over 100 buildings during the last 20 years.

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Museum of Contemporary Art Denver painted Gold

MCAD is a prominent feature in the Denver skyline as over 50% of the building's exterior wall area is a double skin façade, consisting of an insulating tinted curtain wall and an interior layer of Monopan® (a translucent, honeycomb patterned material) that causes the building to "glow" at night. The museum recently achieved LEED Gold and 38% energy savings over ASHRAE 90.1. Enermodal Denver provided LEED consulting and energy modeling services.

Recent Enermodal awards:

Green Toronto Awards
Leadership Award

**International Association
of Business Communicators
Toronto Ovation Award of
Merit** for Enermodal's Signature
Green Education Kiosks

To Mr. Kokko, some of the most frequent energy efficiency issues discovered – and corrected – during commissioning include the following:

- systems that are operating when they are supposed to be off
- system designs that do not take proper advantage of heat recovery opportunities
- equipment setpoints that are specified as worst case defaults rather than measured and optimized on site
- systems that first cool and then heat air before the air is delivered to the building
- sensors that are not properly calibrated

Healthy Green: long-term care and healthcare facilities

Sustainable design is particularly relevant for long-term care and healthcare facilities because the quality of the indoor environment and operating costs are of prime importance. However, these types of facilities also offer unique challenges for building designers looking to go green.

The restrictive and conservative nature of healthcare codes can limit innovation in building design and operation. By working with code officials and regulatory agencies, Enermodal has been successful in introducing innovations in green healthcare design such as the use of collected rainwater for flushing toilets and urinals, green housekeeping programs, and eliminating recirculated air systems for improved infection control.

For building designers in Ontario, the Ministry of Health and Long-Term Care has made LEED certification a requirement in order for a building project to receive financial assistance. Additional funds are available for achieving LEED Silver.

Many residents and patients in long-term care and healthcare facilities are sensitive to room temperature and cold drafts. Troy Greene, the Enermodal LEED consultant on the Upper River Valley Hospital (the first LEED certified full-service hospital in Canada), says, "We have found that the superior thermal comfort normally provided in these facilities can be achieved in an energy-efficient manner by incorporating radiant heating and cooling through in-floor piping or radiant ceiling panels."

Indoor air quality, always an issue in healthcare, can be improved through a variety of strategies, such as the use of low off-gassing materials and furnishings and building flush-outs before occupancy. And by combining 100% outdoor air systems with ventilation heat recovery, infection control can be improved and energy costs reduced—a win-win for designers and building operators.

Many innovative strategies were put in place at URVH in New Brunswick, such as MERV 15 filters on all air handling systems, heat recovery ventilation, on-site wastewater treatment, native landscaping along with a healing garden, and improved indoor air quality through a building flush-out for four months after completion of construction. As a result, the facility achieved a predicted 34% energy savings and 56% water savings compared with a conventional building.



photo credit: New Brunswick Department of Supplies and Services

Upper River Valley Hospital
Waterville, New Brunswick
LEED-NC Gold Certified



photo credit: Sheppard Case Architects Inc.

Corner Brook Long Term Care
Corner Brook, Newfoundland
LEED-NC Gold Candidate



photo credit: Kuch Stephenson Gibson Malo Architects & Engineer

Sister Margaret Smith Centre
Thunder Bay, Ontario
LEED-NC Gold Candidate



photo credit: Salter Pilon Architects Inc.

Georgian Village
Penetanguishene, Ontario
LEED-NC Silver Candidate

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