Lifelong learning, for buildings, too.

LANGARA'S ONGOING COMMITMENT TO SAVING ENERGY

From innovative energy upgrades in existing buildings to industry-leading construction projects, Langara College is building a sustainable campus.

Optimizing the existing heating, ventilation, air conditioning, and lighting systems was no small task, given the variety of equipment and controls at Langara. To tackle the challenge, Langara joined BC Hydro's Continuous Optimization program (COp) in 2009, which has helped to identify issues and implement projects that improve building energy efficiency. The program consists of two integrated components - building recommissioning, and the development of an Energy Management Information System (EMIS).

Now almost five years into the program, COp has been implemented in 86% of building area on campus, including the installation of real-time metering to track energy use, and conducting multiple controls optimization studies. This has led to substantial energy savings -- over $110,000 in avoided costs from three buildings (L, A, and B) after the first year of implementing energy reduction measures. Energy-saving measures combined for each site had a less than two-year simple payback, and funding to investigate measures was provided by BC Hydro. Considering Langara's utility bill has been nearly a million dollars per year, these are significant savings.

"Once we took a detailed look at the operation of the heating, cooling, and lighting systems at Langara, even in new buildings like the Library, it was possible to find measures to achieve further energy savings," says Patricia Baker, Langara's Energy Manager. "From correcting the scheduling of heating and cooling systems, to the identification and replacement of faulty sensors, we have come a long way towards getting our house in good energy-efficient order."

With the support of BC Hydro, an initial review by Enersolv Consulting, and implementation by Prism Engineering, COp has proven to be an energy-saving success story for Langara College – and it is far from over. COp is now being implemented in the Student Union Building and Building C for Fiscal 2013/2014. Langara has also taken energy savings measures beyond COp to capital improvement projects, realizing further savings.

"COp implementation has provided us with the tools we need for continuous monitoring and control strategy adjustment," says Baker. "Together with our energy management team, our building operators now have what they need to maintain a proactive approach to continuous energy savings and improvement."

Learn more.
www.langara.bc.ca/sustainability

SUSTAINABILITY

Langara is committed to sustainability and optimizing energy use on campus as a way to limit greenhouse gas emissions.

ENERGY SAVING

Participating in the COp program is just one of the ways that we are achieving our energy reduction goal.

In 2009, Langara set the goal of reducing campus energy use of existing buildings by 15% (from 2009/10 levels). Over the last five years, we have implemented numerous energy saving projects and in 2014, we met and exceeded our target.

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CONTINUOUS OPTIMIZATION MEASURES

TOTAL SAVINGS FOLLOWING THE FIRST YEAR OF COP IMPLEMENTATION

L BUILDING | SAMPLE MEASURE: EXHAUST FAN COMMISSIONING

Built in 2007, the LEED Gold Certified Library building has captured both national and international attention for its environmentally-progressive features and unique energy-efficient design. Exhaust fans in the parking lot underneath the building are controlled by CO_2 sensors. The retrocomissioning report revealed that the fans were continuously operating at 100% speed due to improper commissioning and faulty wiring of CO_2 sensors. To fix the issue, the CO_2 sensors were re-wired and the exhaust fans now run only when needed.

L BUILDING
45% ELECTRICITY SAVINGS
$60,000 AVOIDED COSTS

A BUILDING | SAMPLE MEASURE: START-UP MODE

The retrocommissioning report for A Building identified that the start-up modes for the HVAC (heating and cooling) systems were not commissioned correctly. Every morning, cold outdoor air was being introduced into the building as heating equipment worked to bring the building up to a comfortable temperature. A simple re-programming fix now ensures that the outdoor air dampers remain closed for 30 minutes after heating begins, to ensure that the building reaches the desired temperature without the extra work of heating cold outdoor air.

A BUILDING
6% ELECTRICITY SAVINGS
$30,000 AVOIDED COSTS

B BUILDING | SAMPLE MEASURE: AHU-5 VALVE REPLACEMENT

A closer look at the energy data revealed that an Air Handling Unit (AHU) in B Building was wasting energy due to a faulty cooling coil control valve. Essentially, too much chilled water was being introduced into the system, which was working extra hard to bring air up to the required temperature. Once the valve was replaced, this extra energy use was eliminated.

B BUILDING
22% ELECTRICITY SAVINGS
$27,500 AVOIDED COSTS

KEY COP MEASURES

- Optimized DDC (Direct Digital Control) system equipment schedules
- Upgraded DDC graphic interface for increased usability for operators and facility managers
- Calibrated and replaced faulty CO_2 & temperature sensors for optimization of equipment control
- Optimized equipment ventilation rates to ensure airflow rate slows down when not required
- Recommissioned VAV (Variable Air Volume) flow rate and optimized controls for more individual programming and schedules
- Installed new VAV controls hardware
- Replaced faulty heating valves on equipment
- Commissioned controls system to improve point functionality and communication