



Royal Canadian Mounted Police Training Academy

Regina, Saskatchewan

Campuswide Energy and Water Efficiency Upgrades and Greenhouse Gas Emission Reduction

Problem

The Royal Canadian Mounted Police (RCMP) Depot Division in Regina, Saskatchewan, is the main Training Academy for the RCMP. Also located on the site is “F” Division Headquarters, which provides policing services for the province. With historic associations dating back to its legendary frontier days, the Depot Division is truly the “home” of the force.

The RCMP sought energy and water efficiency improvements at the Training Academy as part of a savings-financing arrangement under the Federal Buildings Initiative (FBI). An energy performance contract (EPC) was drafted by Optimira to design, manage, construct, finance and guarantee the results of their energy efficiency retrofit.

Resolution

The 10-year, \$4.6-million EPC was signed in August 2003. As the RCMP’s largest energy consumer, the Training Academy offered a significant opportunity for reducing energy and water consumption and greenhouse gas (GHG) emissions. Of the 49 buildings at the site, 35 have been included in the EPC. Several types of buildings were refurbished – garage, laboratory, medical, mess, office, pool, residence and recreational. Each one presented a different energy use intensity, pattern and savings opportunity.

According to Karen Dupuis, Manager of Sustainable Development at the RCMP, Northwest Region, Optimira was “very responsive to our needs. They had an opportunity to consult with knowledgeable staff. This consultation not only helped in initiating an inclusive relationship but really lent to buy-in from staff who [would be] directly affected by any proposed changes.”



Project Description

After extensive analysis, Optimira identified several savings opportunities, including:

- ▶ Replacing standard efficiency motors with new, high-efficiency electric motors
- ▶ Installing carbon monoxide sensors to modulate garage exhaust fan systems
- ▶ Insulating all steam valves to reduce heat dissipation
- ▶ Updating the lighting system, resulting in a 35 percent reduction in energy use while improving light quality and occupant comfort
- ▶ Installing an override system for a paint shop ventilation system so occupants can adjust the exhaust system according to their hour-by-hour needs
- ▶ Installing a variable frequency drive on the swimming pool circulation pump to reduce electrical consumption during off hours



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Beyond these traditional energy conservation methods, Optimira applied several emerging technologies to this project:

- ▶ **Solar walls** provide heated ventilation air for buildings. They operate by drawing air through a cavity formed by the solar wall. Because the wall is metal, it can absorb a significant amount of heat from the sun. This heat, in turn, is transferred to the cool makeup air passing through the metal chamber, preheating the air prior to introduction to the ventilation unit.
- ▶ To reduce gas consumption at the firing range, Optimira installed a **glycol coil** in the makeup air unit to allow for heat recovery. Energy from the warm exhaust air is applied to the cold makeup air, preheating the air so that supplemental heat used to raise the air to room temperature is reduced. In addition, an occupancy sensor was installed to ensure that the system only operates when the area is occupied. Due to these measures, gas consumption at the firing range has been halved.
- ▶ Water in the City of Regina is an especially valuable resource and as such is very costly. All wall-mounted urinals were replaced with new **waterless urinals**. This fixture functions touch-free, has no moving parts, is odorless, and has been found to be very acceptable to clients. Faucets were equipped with anti-drip, antisiphon, low-flow aerators. Existing shower heads were replaced with low-flow units.



End Result

Direct annual energy and water savings have reached an estimated \$460,000 and GHG emissions have been reduced by about 7,800 tons of CO₂ equivalents per year. Natural gas consumption has been cut by 1.5 million m³ per year. Purchased electricity has decreased by an annual 4.3 million kWh. Water conservation measures have led to a drop in water consumption of 37,000 m³ per year. Due to infrastructure renewal and the installation of new technologies, maintenance costs have also decreased considerably.

Source: <http://oee.nrcan.gc.ca/fbi>

