



The Royal Canadian Mint: Improving Energy Performance

1 Background

The Royal Canadian Mint is the Crown corporation responsible for minting and distributing Canada's circulation coins. It also designs and manufactures collector, commemorative, and gold bullion coins, as well as customized medals and tokens for customers across Canada and around the world.



Figure 1. The Royal Canadian Mint.

With headquarters in Ottawa, Ontario, where it designs the coins, and a production facility in Winnipeg, Manitoba, the Mint employs over 450 people in all aspects of coin design, production and marketing.

In the fall of 2003, the Mint recognized an opportunity to improve the energy performance of its historic building on Sussex Drive in Ottawa, which it has occupied since its founding in 1908. It concluded that, by using energy and water more efficiently, it could substantially reduce operating costs and lower greenhouse gas (GHG) emissions that contribute to climate change.

In addition, by introducing energy-efficient design elements, including new systems and equipment, the retrofit would improve the building's air quality, creating a healthier and more comfortable work environment for employees.

In January 2004, the Mint issued a Request for Proposal for energy efficiency improvements to its facility. By March of that year, representatives of the Mint began to evaluate proposals from four energy service companies (ESCOs), which were pre-qualified under the Federal Buildings Initiative (FBI).

2 The Project

The project was underway in the fall of 2003 when the Mint began working with the FBI to develop an energy efficiency opportunity assessment. An opportunity assessment considers the age and maintenance characteristics of buildings, provides an overview of their energy systems and reviews energy and water consumption. Like an energy audit, the assessment offers clients technical data and analyses, possible energy-savings opportunities and preliminary savings estimates.

A critical first step, the opportunity assessment helped the Mint to determine whether an energy performance contract (EPC) would be beneficial. It also ensured that the project would be of market value to the pre-qualified ESCO.



Once the Mint was identified as a candidate for an EPC, the project team, which would work closely with the ESCO, began outlining some of the energy efficiency goals and objectives of the retrofit. This early planning allowed the project team to identify the issues facing the Mint, including inefficiencies in water and energy use and high operating costs. It also laid some of the groundwork that would later help in selecting the ESCO for the project.

The project team identified the following goals for the project:

- improve energy efficiency in the facility
- reduce the facility's operating and maintenance costs
- reduce GHG emissions
- create a healthier, more comfortable workenvironment for employees.



Figure 2. Coin inspection at the Royal Canadian Mint.

Careful planning and preparation before selecting an ESCO can make the difference between choosing a “good” ESCO and the “right” ESCO for the job. As a long-term partner, the ESCO must work closely with the organization to plan the project, implement the recommended measures and monitor the resulting changes in energy and water use. After carefully reviewing proposals from the four ESCOs, the Mint selected Siemens Building Technologies Ltd. to implement the project. Siemens was chosen because its scope of work was innovative and dealt extensively with converting costly maintenance improvements into significant savings. As Dr. Albert Maringer, President and CEO of Siemens Canada Ltd., explained, “It was our goal to provide the most innovative solutions to reduce future energy costs and provide a new infrastructure program that will reduce overall maintenance requirements at the Mint.”

Once the ESCO was selected, the process of preparing a detailed feasibility study and negotiating the final contract was underway. On March 24, 2005, the Mint and Siemens Building Technologies Ltd. finalized and signed the EPC.

3 Project Scope and Implementation

The proposed total costs of the energy efficiency improvements at the Mint are estimated at \$8 million. Potential cost savings are estimated to reach as high as \$1 million annually. The project's design integrates a variety of systems, technologies, practices and programs, including the following energy efficiency measures:

- Installation of new chillers and boilers in response to the rising cost of purchasing steam from an outside supplier. The feasibility study conducted by Siemens concluded that the installation of new chillers and boilers in the facility would be the most economical solution for the Mint.



- Replacement of aging air compressors with new energy-efficient ones to increase the reliability of operations and lower maintenance costs.
- Installation of two new supply air units with variable air volume (VAV) terminal boxes to replace old fan coils. The VAV system varies the amount of air delivered to ensure workspace conditions are maintained. The system also substantially lowers energy and maintenance costs.
- Modernization of the filtration unit in the Mint's process operation to increase water filtration capacity and reduce energy use.



Figure 3. Coin stamp operation at the Royal Canadian Mint.

Work to implement the energy efficiency improvements began in January 2005. During the construction period, the Mint and Siemens worked together to ensure that all project components were implemented seamlessly and that the Mint would benefit from the energy management solutions being integrated. Because of the Mint's manufacturing environment, care was taken to avoid shutting down the production process.