GDI AINSWORTH

CASE STUDY

Defence Construction Canada - Canadian Forces Base Borden

Defence Construction Canada (DCC)



Project Details

Location
Borden, Ontario

Number of Buildings
Approximately 100 buildings (thermal power plant + steam network)

Area
Military base covering >21,000 hectares

Impact at a Glance

- GHG reduction: **2,095** tons of CO2/year (12% of emissions)
- Économies d'énergie : $429,043 /year

Challenge

Canadian Forces Base Borden (CFB Borden), located approximately 100 km north of Toronto, is a major military training base spanning over 21,000 hectares. It houses numerous buildings dedicated to aviation activities: aircraft hangars, mechanical workshops, and a thermal power plant supplying steam to approximately 50 buildings via a steam network.

The energy efficiency project involved approximately 100 buildings in a secure environment subject to strict security standards specific to the military sector. Operational challenges included:

- Operations in an aviation environment with secure access restrictions and military standards,
- Ensuring uninterrupted heating operations during construction,
- Aging equipment at the thermal power plant requiring urgent upgrades,
- Coordinating diverse measures across a large building portfolio.

Methodology

Conducting a detailed energy audit covering the entire portfolio of approximately 100 buildings.

Identification of inefficiencies related to outdated lighting, obsolete control systems, and heat loss in large spaces.

Assessment of the thermal power plant and the steam distribution network.

Design of efficiency measures tailored to military security and operational constraints.

Phased implementation approach to ensure operational continuity.

Solution

- Complete modernization of lighting to LED, including the replacement of fixtures in aircraft hangars.
- Recommissioning and addition of control points in 8 buildings to re-optimize system operation.
- Installation of destratification fans in aircraft hangars to reduce heat loss at higher levels.
- Upgrade of the heating plant: installation of two new 25,000 MBH steam boilers.
- Installation of a heat recovery unit with multiple recovery coils.
- Project financing by GDI Ainsworth, with guarantees on costs, savings, and subsidies.

The Ripple Effect

- **Financial benefit:** Estimated energy savings of $429,043/year with a 7-year payback period, in addition to $406,495 in grants obtained
- **Environmental benefit:** Reduction of 2,095 tons of CO_2 per year (12% of the base's emissions), contributing to the federal government's decarbonization goals
- **Operational benefit:** Replacement of end-of-life equipment (thermal power plant, lighting), improved reliability and safety of facilities
- **Strategic benefit:** Pilot project demonstrating the feasibility of energy efficiency programs in a secure military environment, replicable at other Canadian Forces bases



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