

CASE STUDY

Optimizing Hospital Systems for Long-Term Efficiency Without Compromising Care

GDI Ainsworth's ECM-driven HVAC improvements deliver cost savings and operational stability at Menno Hospital



Project Details

Location

Abbotsford, Canada

Number of Buildings

1 - 72,988 ft² hospital facility

System Implemented

HVAC optimization, energy conservation measures (ECMs), upgraded controls, VFD integration, CO₂ sensing, and energy metering

Project Goal

Reduce gas and electricity consumption while minimizing unscheduled HVAC maintenance in a fully occupied long-term care

Project Duration

Performance measured over the first five months post-implementation, with annualized savings projections

Impact at a Glance

- ✓ Achieved annual projected utility savings of over \$29,000 in gas and electricity
- ✓ Reduced energy consumption by approximately 825 GJ of gas and 68,000 kWh of electricity
- ✓ Eliminated unscheduled HVAC maintenance and reduced equipment failures
- ✓ Improved system reliability in a 24/7 residential care environment

Challenge

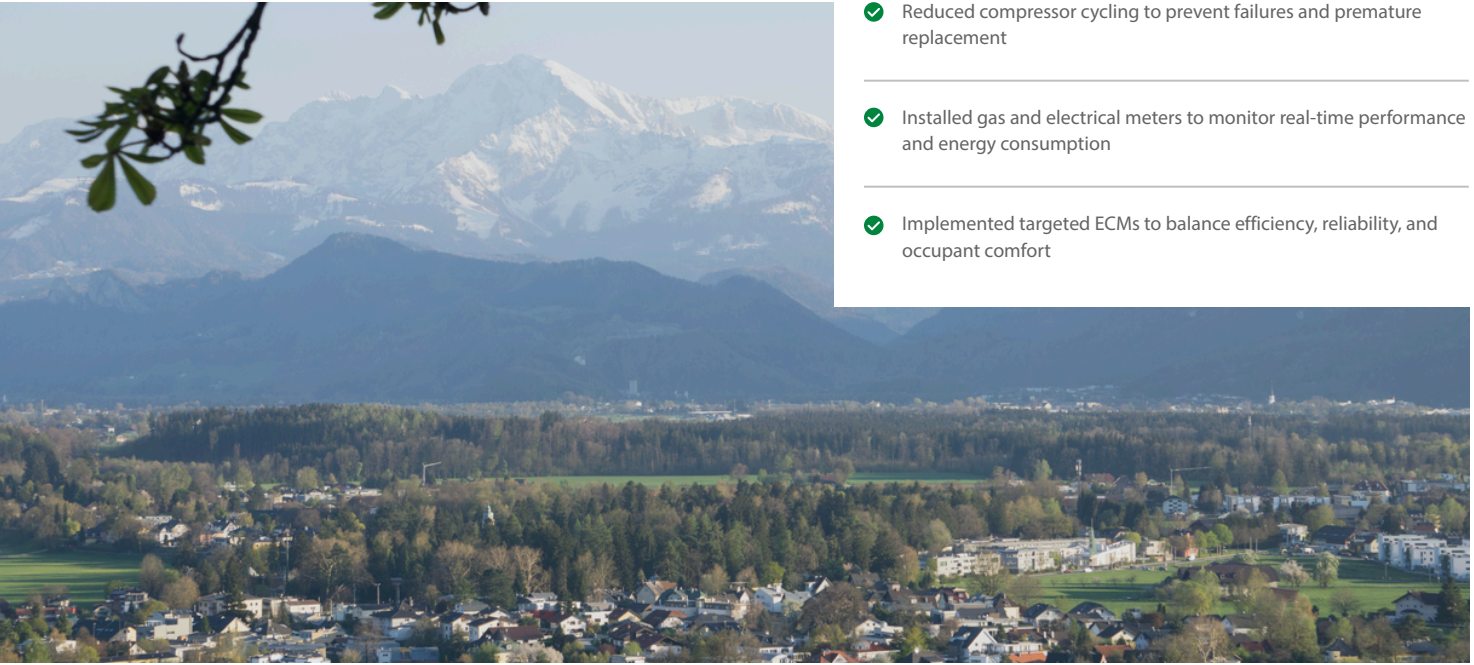
Menno Hospital's existing HVAC system relied on three main air handlers operating continuously at constant speed, serving the entire facility.

Inefficient control sequences caused heating and cooling overshoot, excessive cycling of compressors, and frequent equipment failures.

As a result, energy consumption was significantly higher than comparable facilities, and unscheduled maintenance was common—an unsustainable situation for a hospital providing around-the-clock resident care.

Solution

- ✓ Retrofitted boilers with dual-stage controls to improve turndown during low and medium loads
- ✓ Installed CO₂ sensors on all three air handling units
- ✓ Added smart VFD controls to both supply and return fans
- ✓ Optimized preheating valve control and main heating valve sequences
- ✓ Reduced compressor cycling to prevent failures and premature replacement
- ✓ Installed gas and electrical meters to monitor real-time performance and energy consumption
- ✓ Implemented targeted ECMs to balance efficiency, reliability, and occupant comfort



Methodology

Assessed existing HVAC performance and control sequences to identify inefficiencies

Collaborated with operations staff to understand equipment usage patterns and peak demand periods

Prioritized ECMs that could deliver energy savings without disrupting resident comfort

Focused on reducing equipment cycling to extend asset life and improve reliability

Implemented performance tracking to validate results and support continuous optimization

The Ripple Effect

- ✓ Lower operating costs free up resources for patient and resident care
- ✓ Reduced equipment stress extends HVAC asset lifespan
- ✓ Improved reliability supports uninterrupted care in a 24/7 healthcare environment
- ✓ Data-driven monitoring enables ongoing performance optimization