

CASE STUDY

Modernizing a National Landmark to a World-Class, Multi-Purpose Venue

How GDI Ainsworth building system upgrades enhanced both operations and the guest experience at BC Place



Project Details

Location

Vancouver, Canada

Number of Buildings

1 - 460,000 ft² stadium

System Implemented

Complete HVAC and DDC redesign, centralized BMS, lighting retrofit, exhaust systems, heat pumps, radiant panels, infrared field temperature monitoring, and natural ventilation controls

Project Goal

Upgrade and modernize BC Place's outdated control systems to support Olympic operations, improve environmental control, and revitalize the stadium for long-term use

Project Timeline

Major renovation period leading up to the 2010 Winter Olympics

Impact at a Glance

- ✓ Delivered a full HVAC and BMS overhaul for a 24-year-old stadium preparing to host the 2010 Winter Olympics
- ✓ Enabled targeted, zone-based environmental control across the entire venue
- ✓ Centralized monitoring and scheduling of previously isolated building systems
- ✓ Enhanced guest comfort and operational efficiency for large-scale events

Challenge

BC Place required a complete modernization of its outdated building control systems to meet the demands of hosting the 2010 Winter Olympics.

The transformation fundamentally changed the building's operating design—from a positively pressurized, air-supported dome to a more traditional structure—necessitating a full redesign of the HVAC and DDC systems.

The scale of the venue, complexity of the systems, and visibility of the project left no room for failure.

Methodology

Conducted a comprehensive redesign of HVAC and DDC systems to support the stadium's structural transformation

Replaced legacy systems with a centralized, integrated BMS platform

Coordinated large-scale retrofits across common areas, concessions, field systems, and seating areas

Integrated third-party BACnet controllers to unify diverse equipment under one control interface

Implemented advanced sensing and control strategies to balance performance, efficiency, and comfort

Solution

- ✓ Complete overhaul of HVAC and DDC systems across the stadium
- ✓ Installation of a new exhaust system for common areas and concessions
- ✓ Full lighting retrofit to modernize venue operations
- ✓ Deployment of dozens of new heat pumps and hundreds of radiant panels
- ✓ Installation of an infrared field temperature monitoring system with zone-based heater staging
- ✓ Integration of 4,600+ DDC points across 303 DDC panels
- ✓ Centralized control of previously isolated systems through a single BMS interface
- ✓ Implementation of targeted scheduling and independent control for all stadium zones
- ✓ Installation of natural ventilation controls using automated roof louvres
- ✓ Integration of real-time weather sensors measuring wind speed, direction, and rain detection

The Ripple Effect

- ✓ Elevated BC Place into a premier venue capable of hosting world-class sporting and entertainment events
- ✓ Improved energy efficiency through natural ventilation and targeted control strategies
- ✓ Enhanced guest experience through consistent, responsive environmental conditions

