

Reliable[®] controls

the logical choice for
SUSTAINABLE BUILDINGS



*People and technology
you can rely on™*



Triple Bottom Line thinking is a business philosophy that is being adopted by more and more companies each year. Companies are setting objectives to care not only about their profitability but their operational impact on the planet, and the well being of the skilled people who make it all happen. This new level of caring is readily seen in the greening of the global commercial building industry. Building owners and developers around the world are endorsing green building construction as a practical course of action to achieve the objectives of sustainability.

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DELIVERING SUSTAINABILITY

The measurement, verification, and controllability of mechanical and electrical systems are critical aspects in the design and operation of a sustainable building. Reliable Controls is uniquely positioned to deliver long-term solutions to these important requirements.

The hallmarks of the Reliable Controls MACH-System provide long-lasting, forward-thinking solutions that empower building operators and occupants to achieve their operational goals with minimal impact on the environment. The Reliable Controls commitment to quality, service, and honesty is evidenced by an industry-leading, 5-year product warranty, a global network of trained Authorized Dealers, and a broad base of satisfied customers who own and operate sustainable buildings. This brochure highlights a few of those customers, and underscores the products and services that Reliable Controls has developed to support sustainability in the commercial buildings industry.

Visit www.reliablecontrols.com/sales to locate an Authorized Dealer near you.

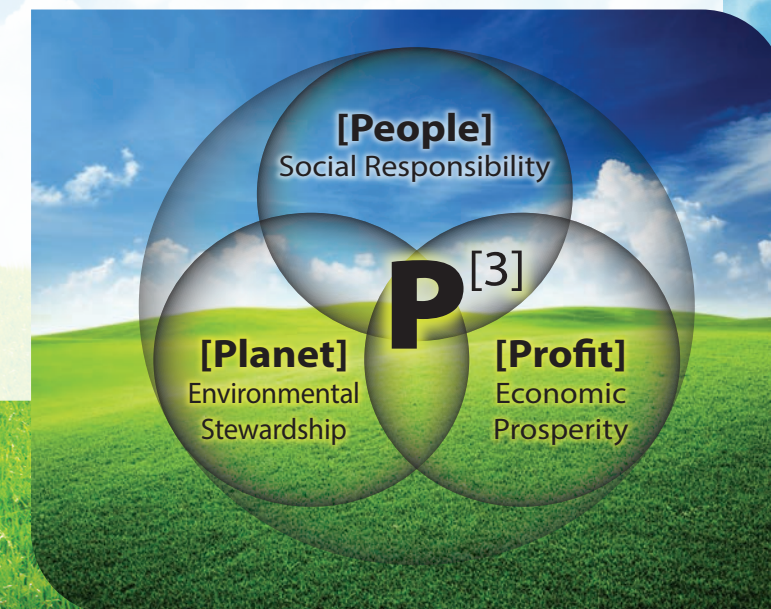
A world-wide network of Authorized Dealers provides engineering, sales, installation, and support services for Reliable Controls. These independently owned and operated contractors are trained and certified by Reliable Controls to provide outstanding customer support.

Reliable Controls designs, manufactures, and services its products under one roof at its ISO9001/14001, LEED Platinum certified headquarters annex, located in Victoria, British Columbia, Canada. The products utilize the industry standard ASHRAE BACnet protocol. Choosing the BACnet protocol for building controls supports sustainable buildings by allowing multiple vendors to co-exist and share data on a common network. This maximizes the usefulness and longevity of the network. Products certified by the BACnet Testing Laboratory (BTL) are declared as "listed", and are able to bear the BTL mark.

To view all current BTL listed products, visit www.bacnetinternational.net/btl.



Front Cover: Atrium and wind tower of Reliable Controls® headquarters annex LEED® Platinum certified facility.



[Controls]
Freely
Programmable

C [3]

[Credibility]
Archiving &
Reporting

[Communications]
Environmental
Quality

Research and Development
Software



FREELY PROGRAMMABLE CONTROLLERS

At the heart of every successful green building are freely programmable controllers that execute a tailored sequence of operation that is as unique as the building design itself.

Freely programmable controllers are ideally suited for green building applications. They permit a fully customized solution to be easily developed, which can address all control aspects required by a high performance building. With the Reliable Controls system, the controller database, sequence of operation, user permissions, and graphical user interface are all entirely programmable. This flexibility allows for the creation of an optimized, energy efficient environment and a comfortable, productive occupant experience. The controllers are BTL listed. This provides independent, third party verification that each controller can share object values and commands with other BACnet protocol devices for lighting, access, elevator, sunshades, and HVAC applications. Additionally, all of the Reliable Controls freely programmable controllers ship with an industry-leading, 5-year warranty and are intended to remain operational, providing value for the life of the building.

Better by design™





COMMUNICATING ENVIRONMENTAL QUALITY

Monitoring and displaying the indoor environmental quality of a green building are critical components in achieving occupant comfort and workplace productivity.

Today's green building rating systems place a strong emphasis on monitoring and communicating the many attributes of indoor environmental quality. With the Reliable Controls system, many excellent options exist to achieve this goal. Within a single wall mounted device, the SMART-Sensor™ offers: space temperature, humidity, carbon dioxide, occupancy, setpoint adjust, degrees celsius and fahrenheit selection, back-light display, additional inputs and outputs, and mapping to any other sensor anywhere in the building. For open office designs that need to achieve maximum daylighting and outdoor views, the battery-less and wireless models of the SPACE-Sensor™ are a perfect fit. For lobby and entrance dashboard displays, the Touch Screen Panel (TSP) series is the logical choice.

Better by design™



Touch Screen Panel (TSP)



SMART-Sensor™ EPD
A modern networked-sensor solution



SPACE-Sensor™ EnOcean
Wireless energy harvesting technology



SMART-Sensor™ EnOcean Accesspoint
Wireless integration



CREDIBILITY THROUGH ARCHIVING AND REPORTING

Green building owners and facility managers must continuously record and analyze building performance to demonstrate accountability and credibility.

To achieve these goals, the data gathered by the building automation system must be stored in a long term archive for benchmarking and analysis purposes. Reliable Controls has two server based products designed specifically to meet these important green building needs. RC-Archive® continuously logs data from any BACnet Internet-connected facility, and stores the data in an industry standard SQL database. RC-Reporter® is a web-based server application that allows stakeholders to extract intelligence from archived building data and generate professional performance and diagnostic reports. These fully customizable reports are viewed using standard browsers on any device, and can be easily shared using the automated e-mail scheduling service in RC-Reporter.

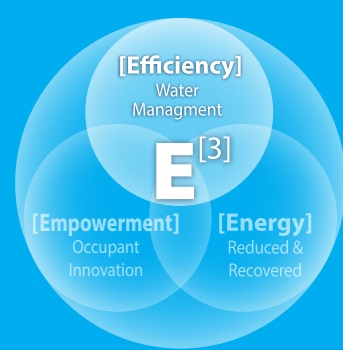
Better by design™

RCReporter® Building Performance Reporting Software



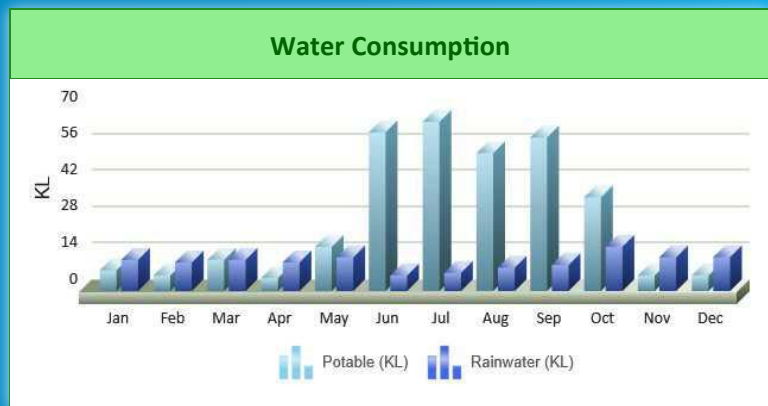
RCArchive® BACnet Data Archiving Software





WATER EFFICIENCY AT RELIABLE CONTROLS

The Leadership in Energy and Environmental Design (LEED) rating system places high importance on water conservation and reduced burden on municipal potable water, sewage, and stormwater conveyance systems. LEED imposes requirements in its Sustainable Sites (SS) category to implement a stormwater management plan that results in a 25 percent decrease of stormwater runoff volume, and treats any runoff by removing 80 percent of the Total Suspended Solids (TSS) and 40 percent of the Total Phosphorus (TP). Additionally, the Water Efficiency (WE) category within LEED imposes requirements to reduce potable water consumption for irrigation by at least 50 percent, reduce potable water consumption for sewage conveyance by at least 50 percent, and reduce overall potable water use (excluding irrigation) by at least 20 percent below a baseline reference building.



HARVESTING RAINWATER

The water consumption comparison above shows the amount of potable water purchased monthly from the municipality for washing and showering, and the amount of rainwater used for flushing toilets and landscape irrigation.

POTABLE WATER EFFICIENCY

Two 7.5 m³ water storage tanks collect rainwater from the roofs of Reliable Controls. One tank is dedicated to storing filtered rainwater for irrigating the landscape of the building site. The other tank is dedicated to storing filtered water for flushing toilets. As a result, the amount of municipal potable water used for wastewater conveyance is reduced by 82 percent. Overall, the building consumes 61 percent less potable water than a standard commercial building with regular water-conserving measures.



GREEN ROOF

The green roof at Reliable Controls covers part of the parkade Level P1 with drought resistant native plants. In doing so, the negative effects of absorbed solar radiation (heat island effect) are removed from this portion of the building site and are replaced with a natural system that reduces stormwater runoff, provides open space for pleasant views, and restores habitat for indigenous plants and animals.

Courtyard water feature

Outlook place bioswale

Hallowell Road rain garden

STORMWATER RETENTION SYSTEM

The stormwater retention system at Reliable Controls slows stormwater runoff and provides sufficient time for water to be naturally absorbed by the plants and soils within it. Beginning with a courtyard water feature, the stormwater retention system helps to reduce the runoff rate while cleaning the water by removing TSS and TP. The Outlook Place bioswale provides a connective path from the courtyard water feature to the Hallowell Road rain garden - the final component of the stormwater retention system. The overall result reduces the runoff rate by 54 percent, thereby reducing the demand placed on the municipal stormwater infrastructure. Sediment and oils from the roadway are filtered out of the runoff before entering the municipally stormwater system.

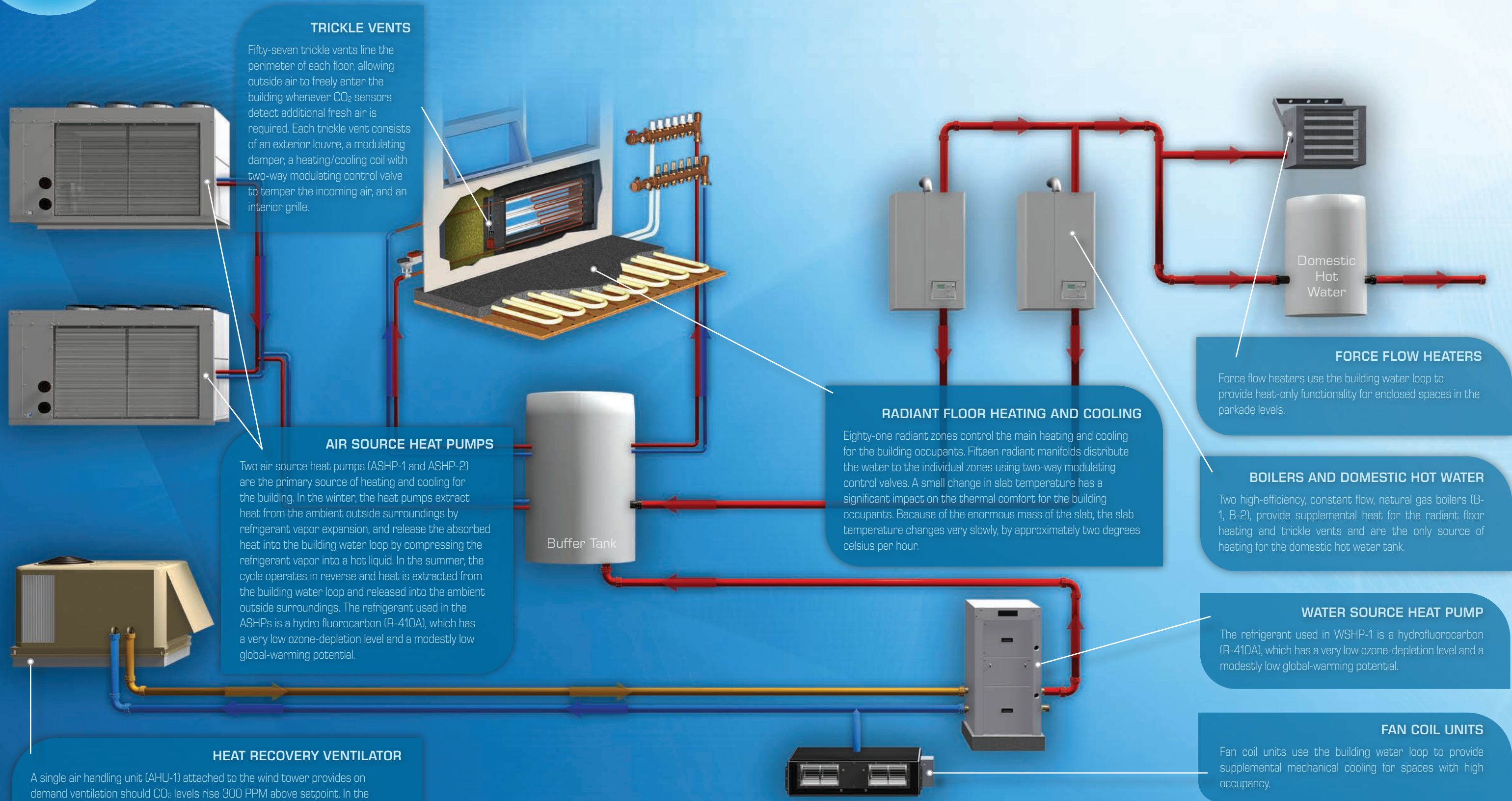
Visit reliablecontrols.com/corporate/facility to learn more.





The naturally vented building design at Reliable Controls HQ annex relies on trickle vents and hydronic heating and cooling to keep the occupants thermally comfortable and the overall energy consumption low. The facility is designed to use 50 percent less energy compared to ASHRAE/IESNA standard 90.1-1999.

ENERGY MANAGEMENT AT RELIABLE CONTROLS



TRICKLE VENTS

Fifty-seven trickle vents line the perimeter of each floor, allowing outside air to freely enter the building whenever CO₂ sensors detect additional fresh air is required. Each trickle vent consists of an exterior louvre, a modulating damper, a heating/cooling coil with two-way modulating control valve to temper the incoming air, and an interior grille.

AIR SOURCE HEAT PUMPS

Two air source heat pumps (ASHP-1 and ASHP-2) are the primary source of heating and cooling for the building. In the winter, the heat pumps extract heat from the ambient outside surroundings by refrigerant vapor expansion, and release the absorbed heat into the building water loop by compressing the refrigerant vapor into a hot liquid. In the summer, the cycle operates in reverse and heat is extracted from the building water loop and released into the ambient outside surroundings. The refrigerant used in the ASHPs is a hydro fluorocarbon (R-410A), which has a very low ozone-depletion level and a modestly low global-warming potential.

RADIANT FLOOR HEATING AND COOLING

Eighty-one radiant zones control the main heating and cooling for the building occupants. Fifteen radiant manifolds distribute the water to the individual zones using two-way modulating control valves. A small change in slab temperature has a significant impact on the thermal comfort for the building occupants. Because of the enormous mass of the slab, the slab temperature changes very slowly, by approximately two degrees celsius per hour.

FORCE FLOW HEATERS

Force flow heaters use the building water loop to provide heat-only functionality for enclosed spaces in the parkade levels.

BOILERS AND DOMESTIC HOT WATER

Two high-efficiency, constant flow, natural gas boilers (B-1, B-2), provide supplemental heat for the radiant floor heating and trickle vents and are the only source of heating for the domestic hot water tank.

WATER SOURCE HEAT PUMP

The refrigerant used in WSHP-1 is a hydrofluorocarbon (R-410A), which has a very low ozone-depletion level and a modestly low global-warming potential.

FAN COIL UNITS

Fan coil units use the building water loop to provide supplemental mechanical cooling for spaces with high occupancy.

HEAT RECOVERY VENTILATOR

A single air handling unit (AHU-1) attached to the wind tower provides on demand ventilation should CO₂ levels rise 300 PPM above setpoint. In the winter when it is too cold to open the wind tower dampers, AHU-1 will operate to ventilate the building and recover any exhausted heat and discharge the heat back into the building water loop via the water source heat pump (WSHP-1).



OCCUPANT EMPOWERMENT AT RELIABLE CONTROLS

The myControl® user interface provides individual personal control for occupants at Reliable Controls. By using a mobile device or PC, occupants have access to settings for occupancy, temperature, lighting, ventilation, and exterior sunshades. Having personal access offers user empowerment and accountability, as well as the potential for additional energy savings.

myControl®

OCCUPANCY

At Reliable Controls headquarters annex, each individual zone automatically switches to occupied mode when the occupant of that zone swipes their security card in the morning. Whenever the occupant vacates the space, they can save energy by switching their zone to unoccupied mode using myControl. The building automation system also sweeps zones to unoccupied mode each evening.



TEMPERATURE

myControl allows occupants to easily adjust the temperature setpoint of their work space. The setpoint determines temperature control for the radiant floor and incoming air from the trickle vents.



SUNSHADES

myControl allows occupants to dynamically adjust the position of their individual exterior motorized sunshades. Exterior sunshades provide a highly effective way to minimize cooling loads in summer due to solar gain.



LIGHTING

myControl allows occupants at Reliable Controls to dynamically adjust their individual lighting setpoint. The system then uses daylight-harvesting to automatically adjust lighting to maintain a constant lumen level.





LEED® Canada - NC 1.0

Reliable Controls Headquarters Annex

CaGBC Project # 12221

November 13, 2013

Building with purpose

GREEN BUILDING RATING SYSTEM

56 Points Achieved

Platinum Rating Achieved

Possible Points: 70

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-70 points

12 Sustainable Sites Possible Points: 14

Y	Prereq 1	Erosion & Sedimentation Control	Required
1	Credit 1	Site Selection	1
	Credit 2	Development Density	1
	Credit 3	Redevelopment of Contaminated Site	1
1	Credit 4.1	Alternative Transportation, Public Transportation Access	1
1	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
1	Credit 4.3	Alternative Transportation, Alternative Fuel Vehicles	1
1	Credit 4.4	Alternative Transportation, Parking Capacity	1
1	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
1	Credit 5.2	Reduced Site Disturbance, Development Footprint	1
1	Credit 6.1	Stormwater Management, Rate and Quantity	1
1	Credit 6.2	Stormwater Management, Treatment	1
1	Credit 7.1	Heat Island Effect, Non-Roof	1
1	Credit 7.2	Heat Island Effect, Roof	1
1	Credit 8	Light Pollution Reduction	1

5 Water Efficiency Possible Points: 5

1	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
1	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
1	Credit 2	Innovative Wastewater Technologies	1
1	Credit 3.1	Water Use Reduction, 20% Reduction	1
1	Credit 3.2	Water Use Reduction, 30% Reduction	1

5 Innovation & Design Process Possible Points: 5

1	Credit 1.1	Innovation in Design: Green Education Program	1
1	Credit 1.2	Innovation in Design: Green Housekeeping Program	1
1	Credit 1.3	Innovation in Design: Exemplary Performance: Heat Island Effect, Non-Roof	1
1	Credit 1.4	Innovation in Design: Exemplary Performance: Water Use Reduction	1
1	Credit 2	LEED® Accredited Professional	1

12 Energy & Atmosphere Possible Points: 17

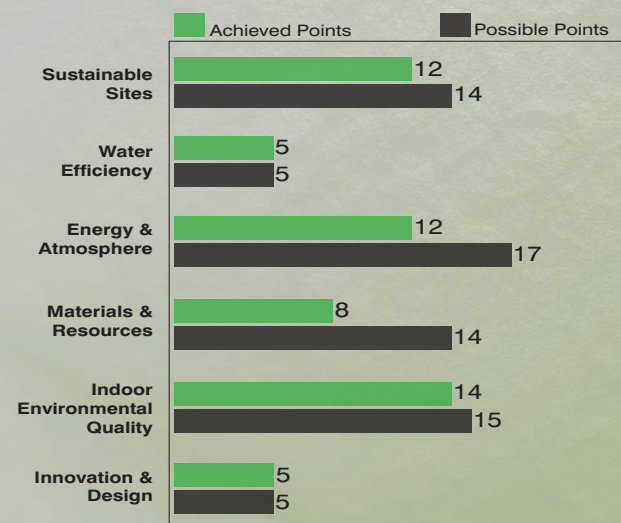
Y	Prereq 1	Fundamental Building Systems Commissioning	Required
Y	Prereq 2	Minimum Energy Performance	Required
Y	Prereq 3	CFC Reduction in HVAC&R Equipment	Required
8	Credit 1	Optimize Energy Performance	1 to 10
	Credit 2.1	Renewable Energy, 5%	1
	Credit 2.2	Renewable Energy, 10%	1
	Credit 2.3	Renewable Energy, 20%	1
1	Credit 3	Best Practice Commissioning	1
1	Credit 4	Ozone Protection	1
1	Credit 5	Measurement & Verification	1
1	Credit 6	Green Power	1

8 Materials & Resources Possible Points: 14

Y	Prereq 1	Storage & Collection of Recyclables	Required
	Credit 1.1	Building Reuse: Maintain 75% of Existing Walls, Floors, & Roof	1
	Credit 1.2	Building Reuse: Maintain 95% of Existing Walls, Floors, & Roof	1
	Credit 1.3	Building Reuse: Maintain 50% of Interior Non-Structural Elements	1
1	Credit 2.1	Construction Waste Management: Divert 50% from Landfill	1
1	Credit 2.2	Construction Waste Management: Divert 75% from Landfill	1
	Credit 3.1	Resource Reuse: 5%	1
	Credit 3.2	Resource Reuse: 10%	1
1	Credit 4.1	Recycled Content: 7.5% (post-consumer + 1/2 post-industrial)	1
1	Credit 4.2	Recycled Content: 15% (post-consumer + 1/2 post-industrial)	1
1	Credit 5.1	Regional Materials: 10% Extracted & Manufactured Regionally	1
1	Credit 5.2	Regional Materials: 20% Extracted & Manufactured Regionally	1
	Credit 6	Rapidly Renewable Materials	1
1	Credit 7	Certified Wood	1
1	Credit 8	Durable Building	1

14 Indoor Environmental Quality Possible Points: 15

Y	Prereq 1	Minimum IAQ Performance	Required
Y	Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
	Credit 1	Carbon Dioxide (CO ₂) Monitoring	1
1	Credit 2	Ventilation Effectiveness	1
1	Credit 3.1	Construction IAQ Management Plan: During Construction	1
1	Credit 3.2	Construction IAQ Management Plan: Testing Before Occupancy	1
1	Credit 4.1	Low-Emitting Materials: Adhesives & Sealants	1
1	Credit 4.2	Low-Emitting Materials: Paints and Coating	1
1	Credit 4.3	Low-Emitting Materials: Carpet	1
1	Credit 4.4	Low-Emitting Materials: Composite Wood & Laminate Adhesives	1
1	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	Credit 6.1	Controllability of Systems: Perimeter Spaces	1
1	Credit 6.2	Controllability of Systems: Non-Perimeter Spaces	1
1	Credit 7.1	Thermal Comfort: Compliance with ASHRAE 55-2004	1
1	Credit 7.2	Thermal Comfort: Monitoring	1
1	Credit 8.1	Daylight & Views: Daylight 75% of Spaces	1
1	Credit 8.2	Daylight & Views: Views 90% of Spaces	1

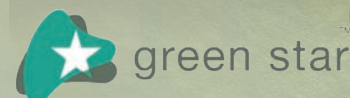


5 Star Green Star

Tower 2 of Adelaide's City Central precinct is a landmark 13-storey commercial building that utilizes the latest ESD technology to achieve a 5 Star Green Star rating. Green building features include chilled beams for cooling, low water-use fixtures, and low energy lighting.

13,000 m² (139,931 ft²) . 1,048 points

City Central Tower 2 / Adelaide, Australia



NABERS 3.5 Star

120 Collins Street is a post-modern 50-storey skyscraper in Melbourne that pays homage to New York's grand Art Deco buildings through its granite facade, unique setbacks, and central mast. Currently sitting at a NABERS 3.5 Star rating, plans for the structure include achieving a NABERS 5 Star rating.

65,000 m² (700,000 ft²) . 12,729 points

120 Collins Street / Melbourne, Australia



6 Star Green Star

The Katitjin Centre has a 6 Star Green Star rating, the highest green star rating possible. The rating was achieved through a combination of passive design, efficient equipment selection, sophisticated control systems, and an extensive 45 KW photovoltaic installation for a dramatic energy footprint reduction.

1,400 m² (15,069 ft²) . 360 points

Katitjin Centre / Perth, Australia



NABERS 5 Star

28 Sydney Avenue is a 5 Star NABERS Energy rated office building located in the heart of the Parliamentary Precinct. The building incorporates bicycle parking, shower and locker facilities, and an extensive 45 KW photovoltaic installation that resulted in a dramatic reduction of the building's energy footprint.

14,629 m² (157,465 ft²) . 1,792 points

28 Sydney Avenue / Canberra, Australia



USA GREEN BUILDINGS



LEED Gold

1050 K Street is a LEED® Gold certified facility, which features the latest techniques in green design such as triple-scrubbed indoor air, power from wind energy, efficient water usage, and maximized use of daylight.

12,633 m² (136,000 ft²) . 1,075 points

1050 K Street / Washington D.C.



LEED Gold

The San Ysidro DMV Field Office is a LEED® Gold certified building, the first new government structure in California erected to meet the construction benchmarks outlined in the state's Global Warming Solutions Act.

14,636 m² (158,000 ft²) . 1,800 points

DMV Field Office / San Ysidro, CA



LEED Gold

Calling on a robust material palette and an advanced Building Management System to provide increased longevity efficiency, the Welcome Center achieved a LEED® Gold certified rating, allowing the town to remain in accordance with their sustainability initiatives.

4,200 m² (45,208 ft²) . 85 points

Welcome Center / Jackson Hole, WY



LEED Gold

Three new LEED® Gold certified schools were recently added to the Alamosa School District to allow for the closure of outdated/overcrowded facilities that lacked community accessibility. In addition, energy and operating costs for the aging schools were far above today's acceptable levels.

11,000 m² (116,000 ft²) . 573 points

Alamosa School District / Alamosa, CO



CANADA GREEN BUILDINGS

LEED Gold

The First Peoples House on the University of Victoria campus houses the Office of Indigenous Affairs, aboriginal student counselling services, classroom space, a student lounge and elders' lounge, faculty offices, a kitchen, and a ceremonial hall styled after a Coast Salish long house.

1,161 m² (12,500 ft²) . 157 points

First Peoples House - UVic / Victoria, BC



LEED Gold

The Vancouver Aquarium is a LEED® Gold certified project that uses the Reliable Controls® MACH-System to cool office areas with sea water, and regulate fresh water and salt water environments for the aquatic life.

11,000 m² (118,404 ft²) . 573 points

Vancouver Aquarium Aquaquest / Vancouver, BC



LEED Platinum

Dockside Green is a 1.2 billion dollar development earning the world's first platinum LEED® ND (Neighborhood Development) certification. The site's first completed building broke the world record for the highest LEED point score.

120,000 m² (1,291,669 ft²) . 2,500 points

Dockside Green / Victoria, BC



LEED Gold

The Kamloops Centre for Water Quality is the largest operating facility in North America to use Zenon membrane treatment. Built between March 2003 and December 2004 at a cost of \$48.5 million, the current daily treatment capacity is 160,000 cubic meters.

11,000 m² (118,404 ft²) . 353 points

Water Treatment Facility / Kamloops, BC



Reliable Controls HQ Annex

Market segment
Corporate

Location
Victoria, BC, Canada

Total area
1,512 m² (16,178 ft²) office
2,465 m² (24,375 ft²) parking

Protocol
BACnet

Project type
New construction

Installation type
HVAC, lighting, security, energy monitoring

Total system objects
1,068

Installed equipment



2 MACH-ProCom™ controllers



5 MACH-ProSys™ controllers



2 MACH-ProWebCom™ controllers



67 MACH-ProZone™ controllers

Interested in Reliable Controls technology for your next project?

Learn more about Reliable Controls Corporation headquarters:
reliablecontrols.com/corporate/facility

Find an Authorized Dealer near you:
reliablecontrols.com/sales

Explore other Reliable Controls projects:
reliablecontrols.com/projects

Project Profile

The LEED® Platinum certified facility is home to Reliable Controls corporate departments, research and development, and technical support. Reliable Controls Headquarters Annex has two storeys above ground and two levels of underground parking. The facility is annexed to the existing manufacturing facility.



The Reliable Controls® HQ Annex is a naturally ventilated LEED Platinum certified facility, designed to operate using 50% less energy than the ASHRAE 90.1(1999) standard. LEED points were achieved in part through an extensive bioswale at the center of the structure's stormwater management and soil erosion strategy. 99% of all construction waste was diverted from landfill or incinerators, and the building consumes 60% less potable water than a baseline building.

The building is naturally ventilated by 57 trickle vents, which modulate and temper the natural flow of air into the building through a heating/cooling coil and damper. In winter, air is drawn from the building by an extraction fan with heat recovery. In summer and the shoulder seasons, a wind tower drives ventilation, using modulating dampers that open or close according to the wind direction and speed. When necessary, hot water or chilled water is generated by two air source heat pumps, and delivered to the trickle vents and radiant floor. Lighting consists of modulating fluorescent fixtures with wireless control and daylight harvesting, as well as LED lighting. BACnet integration of the HVAC, lighting, and security systems allows occupied comfort settings to be enabled on a per occupant basis, triggered by unique security cards. Individual control of temperature, light, blinds, and occupancy is provided via LAN or wireless access from any computer or mobile device.



Better by design™