



NEW FEATURES ADDED:
RC-Reporter 3.4

GREEN BUILDINGS IMPROVE:
Cognitive Function



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RUNtime

The Official Quarterly Newsletter of Reliable Controls® Corporation

Q3 - 2017

INTRODUCING MACH-CHECKPOINT™ & RC-PASSPORT™



RCPassport™
Security Management
Software

A Scalable & Versatile
Security Management System



Reliable
controls

RCPassport™
 Security Management
 Software



INTRODUCING MACH-CHECKPOINT & RC-PASSPORT

A Scalable and Versatile Security Management System

The MACH-CheckPoint™ and RC-Passport™ are exciting additions to the Reliable Controls MACH-System™, the result of a partnership between Reliable Controls and DAQ Electronics. These new products introduce a comprehensive BACnet® Security Management system to the robust MACH-System, ushering in a new era of integrated security management solutions for the HVAC industry.

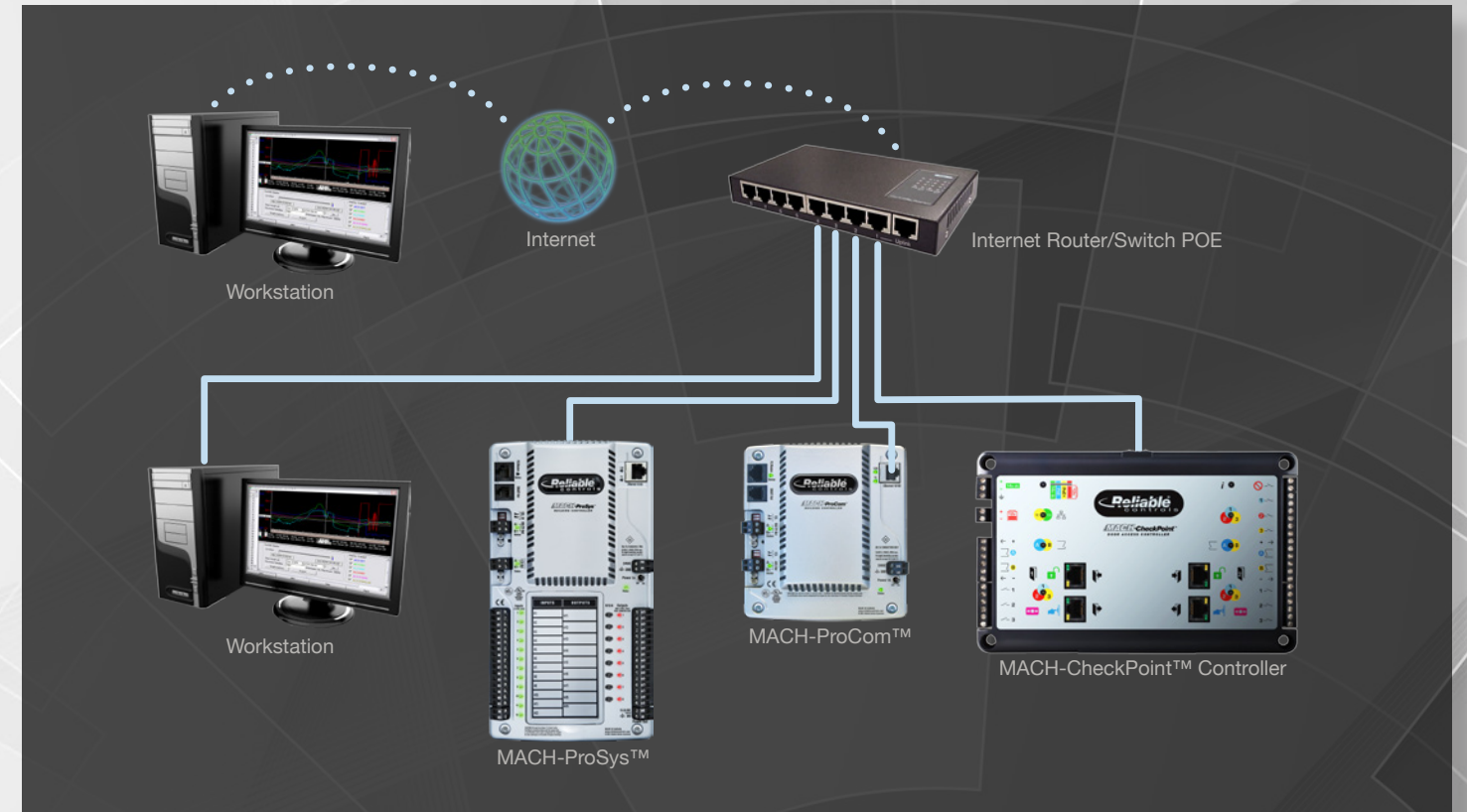
The MACH-Checkpoint controller with RC-Passport software offers true open connectivity for diverse applications with seamless integration of access control and security. The MACH-CheckPoint door access controller is a fully configurable Power over Ethernet (PoE) device, designed to meet or exceed the BACnet Advanced Application Controller (B-AAC) profile. The BACnet objects of the controller integrate perfectly into the MACH-System. It is paired with RC-Passport software, a flexible and scalable security solution providing excellent value for a

wide range of security challenges.

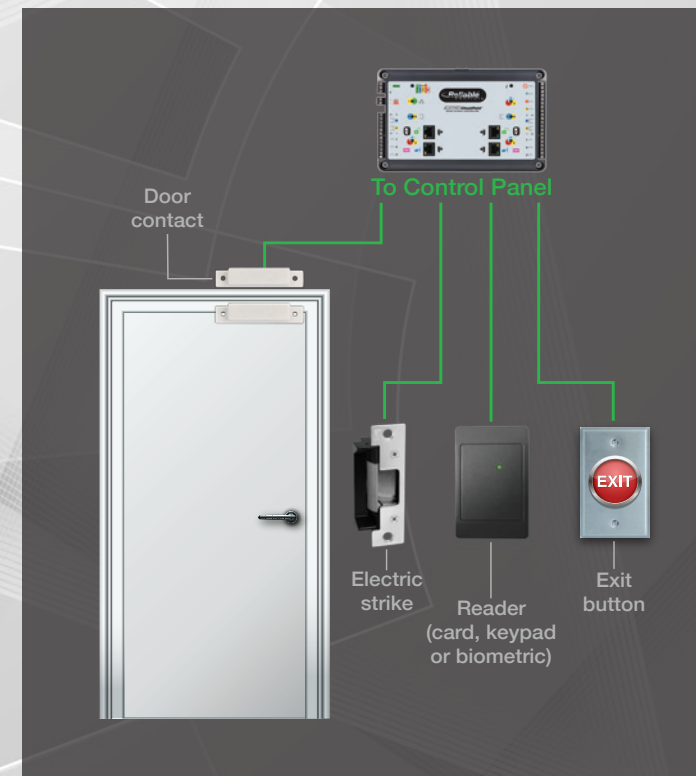
The MACH-CheckPoint is configurable in two modes, “classic” or “duo”. The classic mode supports two doors with up to four readers, and the duo mode supports two doors, each with a reader-in and request-to-exit, or two doors, each with reader-in and reader-out. The MACH-CheckPoint can also provide local battery backup charged by the PoE supply. Access card credentials are stored in the controller and administered from the RC-Passport security management software.

RC-Passport provides a software interface, with which security professionals are able to optimize legacy systems, comply with current industry standards, and counter future threats. Ensuring that previous investments in security infrastructure are not wasted, RC-Passport software supports the framework of existing 3rd party security systems, easily integrating with installed equipment. RC-Passport is also uniquely designed to adapt to the next generation of security requirements.

Better by design™



Application Diagram



Door Access Diagram

RC-Passport Features:

System Features

- High performance software incorporating a MS SQL Server operational database
- Flexibility to address a wide range of applications from simple alarm annunciation to multi-facility security management
- Scalable, open architecture which enables a high degree of customization
- GIS-based maps with user-definable icons and real-time data
- Integrated visitor management solution

Access Control

- Latest smart card and biometric technologies

Video Management

- Integration and control of both digital and analog systems with full control

Intrusion Detection

- The most robust intrusion detection and alarm handling system in the industry

Better by design™

RCReporter® 3.4

Building Performance Reporting Software



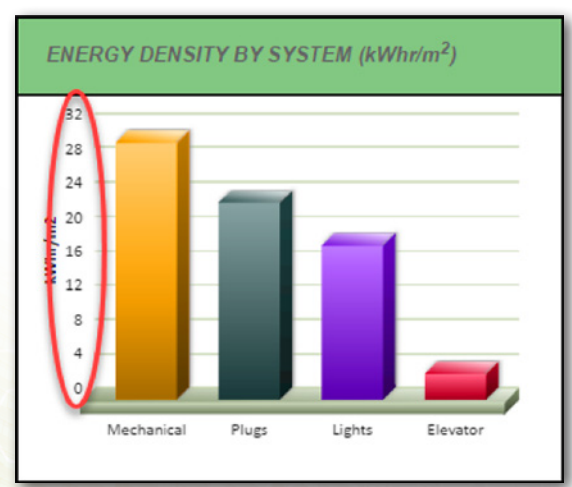
New Features and Improvements

Extract intelligence from your archived building data and make informed operational decisions with RC-Reporter®. This fully customizable, server-based application allows you to analyze the trend and runtime data from any BACnet Internet-connected building, and generate professional performance reports, quickly and accurately. New features include:

Custom Gridline Increments

Customize the major gridline divisions for values that appear on the left, y-axis of a chart component. By default, RC-Reporter automatically assigns gridlines according to how well they fit in the chart. Fine-tune the incremental values for gridline divisions by entering a value in the Increment column of the component data worksheet.

| Decimals | Scaling | Increment |
|----------|-------------------|-----------|
| 0 | Min: 0 Max: 32 | 4 |
| 0 | Min: 0 Max: 32 | 4 |
| 0 | Min: 0 Max: 32 | 4 |
| 0 | Min: 0 Max: 32 | 4 |



Test Email Server Connection

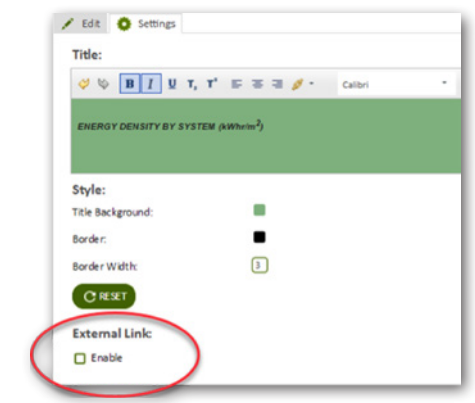
When configuring RC-Reporter's connection to an external email server, you can now verify SMTP server credentials by testing the connection within the user interface.

New TIME Function in RC-Reporter Queries

RC-Reporter queries can now include the **TIME** function, which can be used to specify a particular time as query criteria. For example, the **TIME** function can be used in a Where clause to filter point data for a particular time of day.

```
Value("LTG-M-WRm") Where Value("LTG-M-WRm") = 1 AND (TIME <= 8:30 OR TIME >= 17:00)
```

External Link to Integrate Components in RC-Studio®

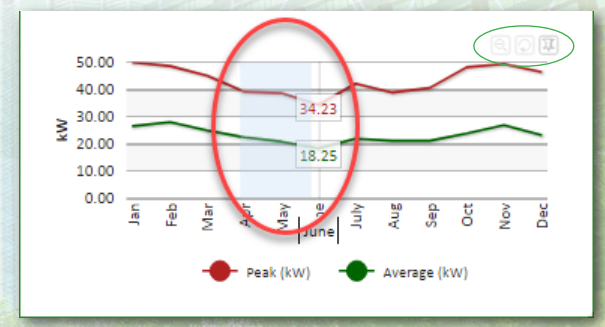


RC-Reporter now provides the ability to assign a URL to a report component as an **External Link**. You can use an External Link in an HTML animation from RC-GrafXSet®, which can be annotated in an RC-Studio System Group that is enhanced, or used in conjunction with the new Dashboard FlexTiles™ in RC-GrafXSet. The resulting System Group annotated with an RC-Reporter Component animation can then be viewed in RC-WebView®, and the MACH-ProWebCom/Sys™ browser user interface.

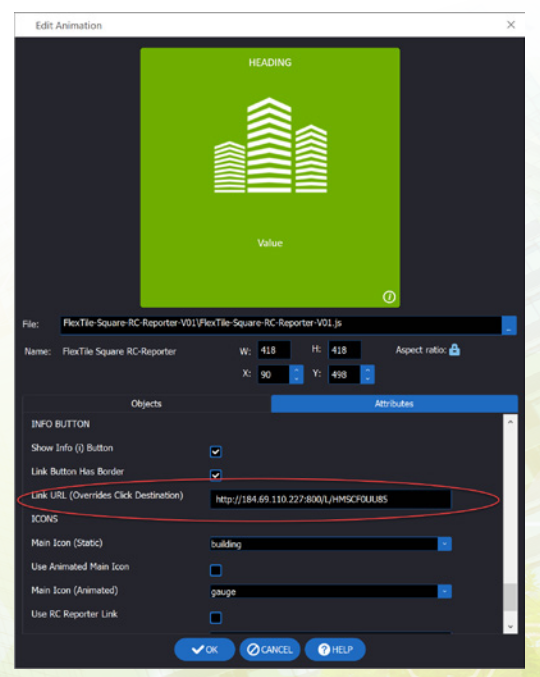
Check the Enable checkbox to automatically create a URL

Zoom and Pin Functionality in Line Chart Components

When viewing a line chart component (date range, profile components), a new suite of visualization tools is available in the upper right corner of the component. You can now **Zoom In** to a particular area of the chart, and **Zoom Out** one level at time, or **Reset** the display to the original setting. You can also **Pin** a section of the chart and drag it to another part of the chart in order to overlay the two line sections. This makes it easier to directly compare two sections of a line chart.



Use the Pin feature to select data and drag horizontally



Annotate the FlexTile animation in RC-Studio and configure with the External Link URL



TRADE SHOWS

Visit Reliable Controls at these Upcoming Trade Shows:

MCE Asia 2017
September 12-14, 2017
Expo and Convention Center
Marina Bay Sands, Singapore
Booth #F18



Febrava
September 12-15, 2017
Sao Paulo Expo
Sao Paulo, SP, Brazil
Booth #122



Canadian Healthcare Engineering Society National Conference
September 17-21, 2017
Scotiabank Convention Centre
Niagara Falls, ON, Canada
Booth #1024



CAPPA/APPA Annual Meeting
September 17-21, 2017
St. Louis Union Station
St. Louis, Missouri, USA



WELCOME TO NEW DEALERS

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Building Source & Controls, Inc.
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www.srdcontrols.com



Tri Star Companies, Inc.
Batesville, MS, USA
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Reliable Controls sales, installation, service, and support are all performed by a growing network of independent, factory-trained Authorized Dealers. Each dealer is committed to the green building controls industry and to providing total customer satisfaction.



GREEN BUILDINGS LINKED TO COGNITIVE FUNCTION

Air Quality Measurably Improves Employee Productivity

The increased adaptation of renewable energy is resulting in a rapid paradigm shift around the world. There is a global focus on attaining more sustainable solutions to reduce global climate change and meet sustainability goals while reducing expenditures. Building automation systems (BAS) are at the forefront of this green movement, providing the ability to track energy and make effective changes to the way buildings operate. This reduces both the environmental footprint of a building and its operating costs. The capability to track energy to make effective changes to reduce the effects on the environment can turn a conventional building into a green building – and these achievements have an additional benefit besides cost savings; *green buildings make employees more productive.*

Many studies link green buildings to higher cognitive functioning, performance, and productivity. While the benefits of green buildings have been studied extensively, the emphasis in the past has been on costs versus benefits; however, newer studies show that green buildings can provide both cost reduction and value-added benefits, like measurable employee productivity. The benefits of green buildings are more likely to occur when the building and organization are both treated as an integrated system from the start, which is also key to an effective BAS. Effective planning with parameters in place to provide accurate metrics means that building operators are able to optimize the system, and achieve significant results through minor changes based on real-time data.

Green buildings are designed using an integrated team approach to save energy, use less water, and create less waste during construction and operation, while providing an elevated level of indoor comfort. By implementing this well-rounded, holistic approach, a green building provides enduring social, environmental, and economical benefits.

The measurement, verification, and controllability

of mechanical and electrical systems are critical aspects in the design and operation of sustainable buildings. Reliable Controls is uniquely positioned to deliver long-term solutions to these important sustainability requirements. Designing, manufacturing, and servicing products under one roof, Reliable Controls helps facilities achieve green building certifications, including LEED®, Green Star, and NABERS, partly through the use of the industry-standard ASHRAE BACnet® protocol. Choosing the BACnet protocol for building controls supports green buildings because the standard allows multiple vendors to co-exist and share data on a common network, thereby maximizing the usefulness and longevity of the network.



At the Reliable Controls headquarters, there are ten different BACnet vendors integrated into a single system. BACnet integration of the HVAC, lighting, and security systems allows a very high level of interoperability and as a result, a high level of optimization. Individual control of temperature, light, sunshades, and occupancy is provided via LAN or wireless access provides an elevated level of occupant well-being.

There are several recent studies that review the link between green buildings to cognitive functionality. *At Home with Nature* links environment and behavior, a study in which the effects of “greenness” on cognitive functioning is examined. It demonstrates that a natural environment plays a far more significant role that has previously been recognized. Results of this study indicate that the most improved buildings in terms of greenness also tend to house those with the highest levels of cognitive functioning. This is echoed in *Elements of Environmental*

Design that Make an Impact on Health, which finds that the “ambiance” of a space has a measurable effect on its occupants.

Green Buildings, Organizational Success, and Occupant Productivity examines a variety of frameworks used by organizations to evaluate performance, along with correlations between investment in green buildings and productivity. The bottom line of this study is that green buildings are relevant to business interests across the full spectrum of concerns, from portfolio issues like real estate investment, to enhanced quality of individual workspaces.

This research on personal control over environmental conditions, especially temperature and ventilation, shows a strong link to enhanced workplace performance. In the Reliable Controls MACH-System™, personal control is often delivered using the myControl® app. The myControl® app is a fully customized, mobile interface, which provides individual, personal control with accessible settings for occupancy, temperature, lighting, ventilation, and more. Freely available on Android and iOS devices, the myControl app is configured by a Reliable Controls Authorized Dealer, providing access and control using a combination of three “views”: SPACEview, LISTview, and STATview.



SPACEview on iPhone

myControl®



One of the most comprehensive studies linking green buildings to cognitive functionality, *Associations of Cognitive Function Scores with Carbon Dioxide, Ventilation, and Volatile Organic Compound Exposures in Office Workers: A Controlled Exposure Study of Green and Conventional Office Environments*,

examines how physical elements affect the physiological, psychological, cognitive, and social functioning of building occupants. It cites the advent of sustainable design and green building strategies as the reason for reinvigorating questions regarding specific factors in buildings that lead to optimized conditions for health and productivity. This double-blind study was undertaken in a controlled office environment to estimate the effects of several indoor environmental quality parameters on an objective measure of cognitive function in nine domains: basic activity level, applied activity level, focused activity level, task orientation, crisis response, information seeking, information usage, breadth of approach, and strategy functions. Cognitive performance was measured in indoor environmental quality conditions in “green” and “conventional” buildings. Additional conditions simulated a green building with a high outdoor ventilation rate (“green +”) and elevated carbon dioxide (CO₂) levels independent of air ventilation.

The results of this study clearly tie green building to a higher level of cognitive function.

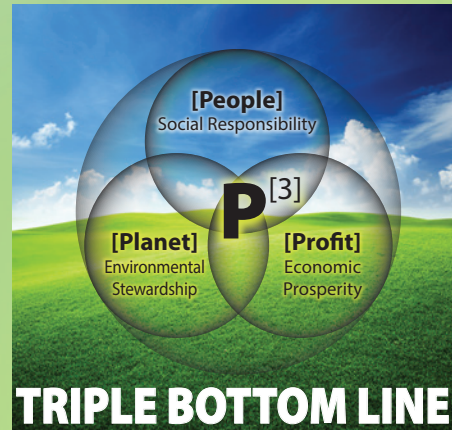
Cognitive function scores were significantly higher in green building conditions

compared to the conventional building condition for all nine functional domains. The largest effects were seen for crisis response, information usage, and strategy, all of which are indicators of higher level cognitive function and decision-making.

For crisis response, scores were 97% higher for the green condition compared to conventional, and 131% higher comparing green+ and conventional conditions. For information usage, scores in the green conditions were 172-299% higher than conventional. And for strategy, which tests the participants’ ability to plan, prioritize, and sequence actions, the green and green+

scores were 183% and 288% higher than with conventional conditions.

HVAC engineers use CO₂ level transmitters to regulate airflow in modern office buildings. CO₂ measurement is primarily used to estimate the number of occupants in a defined space. CO₂ sensing is featured in many Reliable Controls MACH-System controllers and peripherals, including the SMART-Sensor, SPACE-Sensor, and MACH-ProView controllers. The CO₂ sensor used in these products has a convenient auto-calibration feature that establishes a baseline CO₂ level for any space.

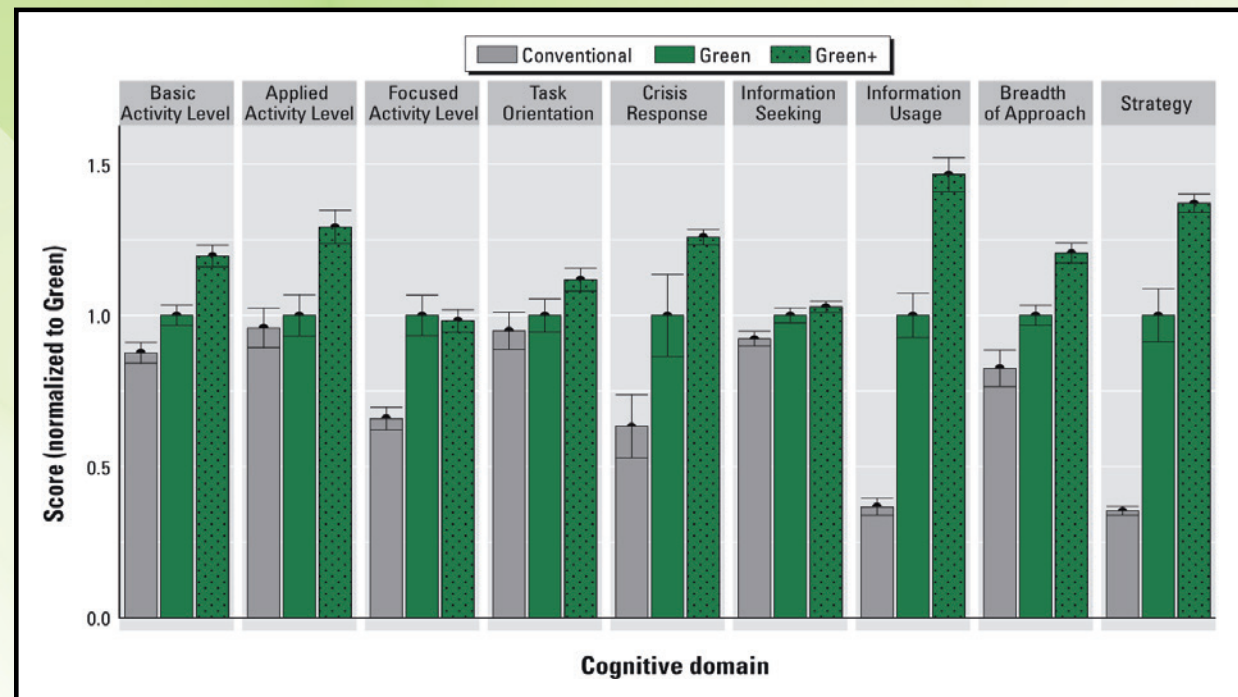


alarms if any sensor exceeds 1200 PPM. This ensures that sustainability guidelines are met and that energy consumption and costs are optimized while maximizing the health and well-being of the building's occupants.

Green buildings not only save money on operating costs and address environmental concerns, but the resulting improvements are also establishing a healthier, more productive workforce that is measurably more cognitively functional than in dated and inefficient conventional buildings. The Reliable Controls MACH-System provides the capability to measure, verify, and control the systems, which are critical to meeting

sustainability goals and which in turn, can have a measurable effect on employee productivity and the triple bottom line of people, planet, and profit.

The LEED Platinum certified Reliable Controls Headquarters Annex has CO₂ sensors installed throughout the building, which are integrated into the BAS. The building's trickle vent dampers, wind tower dampers, heat recovery ventilator maintain the CO₂ setpoint with programmed



PEOPLE & TECHNOLOGY YOU CAN RELY ON

Providing Simple, Flexible, Sustainable Solutions

Reliable Controls has been providing simple, flexible, and sustainable products and services for over thirty years. The company is committed to excellence in the building controls industry. Its business objectives have been, and continue to be, to deliver the best in terms of quality, dependability, and customer satisfaction.

Managed by a talented group of individuals, every employee in the organization makes a direct contribution to product development, processes, and/or support. A simple corporate philosophy built on being open and honest in all aspects of business has resulted in steady growth and long-term relationships with the most satisfied customers in the industry.

The work of Reliable Controls employees helps create building technologies that reduce carbon emissions and improve occupant comfort and well being.



CORAL LEISURE CENTRE WICKLOW

WICKLOW, IRELAND

RECREATION

ENERGY MONITORING

The Coral Leisure Centre is located in Wicklow, about a 40-minute drive from south of Dublin, Ireland. The facility has a 25-meter deck level swimming pool and a 9-meter learner pool, along with a sauna and a steam room. It also offers a fully equipped gymnasium and an aerobics studio.

PROJECT DETAILS

Reliable Controls Authorized Dealer, LCS Control Systems, completed this project for the Coral Leisure Centre in Wicklow, Ireland, updating the building's air handling system and adding monitoring for gas and electricity usage.

The Reliable Controls MACH-System™ controls the HVAC for the centre. The temperature and humidity levels in the swimming pool and changing areas are controlled to maintain the required setpoints through the air handling units' fan speeds, heating valves, and mixing dampers. Air velocity sensors are also mounted in the supply and return ducts to ensure that the required air changes per hour are maintained.

Gas and electricity meters are monitored to record the energy usage of the building, with alarms to show when the energy usage goes above the normal levels. A combination of line and bar graphs is used to display the information to the staff.

The MACH-ProWebSys controller allows staff to access the building automation system through their web browsers. MACH-Stat and MACH-ProView LCD controllers are installed for local monitoring and adjustments. External access to the system is also available to the staff for offsite monitoring.

To learn more about projects using Reliable Controls® visit www.reliablecontrols.com/projects/overview



PROJECT TYPE:
Retrofit

INSTALLATION TYPE:
Air Handling, Utility Metering

EQUIPMENT INSTALLED:
MACH-ProWebSys™
MACH-Stat™
MACH-ProView™ LCD
MACH-ProZone™

INTEGRATION:
BACnet®

NETWORK:
EIA-485, Ethernet/IP

RELIABLE CONTROLS® DEALER:
LCS Control Systems



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