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# RUNtime

The official quarterly newsletter of Reliable Controls

Q2 - 2020

**RCReporter®**
Building Performance Reporting
Software

R3.7

# WHAT'S NEW

**Reliable®** c o n t r o l s

# President's message

## Learning to adapt

The world has changed significantly in the past 3 months. The December 2019 public health issue in Wuhan, China, rapidly spread from a localized flu to a global pandemic. Our lives and perspectives are now irreversibly altered. We can all agree these are definitely not the interesting times we had in mind as a blessing. The impact of COVID-19 demands that we must learn and we must adapt.

Like you, most of the employees at Reliable Controls have been learning to work from home. We fortuitously migrated to Microsoft Office 365 in early December 2019, and with that migration came a great video collaboration tool called Teams. Every day the various departments at Reliable Controls are in online meetings, collaborating with stakeholders from around the globe, designing, developing, and supporting the many new products and services from our product road map. Despite the pandemic, it seems like we are attending more meetings now than ever before! Aside from purchasing proper office furniture for our improvised home offices and computer headsets from Amazon, this online collaborative technology is allowing people to stay in touch and remain productive.

*Tom Zaban, P.Eng, LEED Green Associate*

Thankfully, our manufacturing facility in Victoria, Canada, did not close, and we have maintained continuity in operations during these COVID-19 times. The staff in the factory have adopted the WHO recommendations for physical distancing, hygiene, and safety. Although it is certainly not normal operations, our production staff have been successful in fulfilling orders in a timely manner in our protected and safe environment.

Interestingly, we are receiving reports that a number of facility managers are viewing the unexpected vacancies of their buildings as an opportunity to renovate. Absent the restrictions associated with construction in occupied spaces and the time crunch of seasonal annual maintenance, facility managers are scheduling building improvements ahead of time. Some are even expanding the scope of work. Engineers appear more inclined to specify additional air-quality improvements that go beyond traditional guidelines. Improved air-change rates, increased fresh-air volumes, better filtration, and better humidity control can help mitigate the spread of contagion in a building. Those who have not implemented remote access to monitor their facilities are now keenly aware of the benefits of this capability.

The cost of COVID-19 in terms of lost lives, decimated industries, and societal disruption is staggering. But together we will find our way to better days. We can take some comfort knowing that more than ever before, we are all in this together. And we'll find a way to adapt together. Reliable Controls and the Reliable Controls Authorized Dealer network are here to help. We can help you manage your facilities in the best possible way through the challenge of a global pandemic. Feel free to reach out to a Reliable Controls Authorized Dealer near you at any time, and let us help you learn to adapt.

people & technology
you can rely on™

# New products and official releases

## Unveiling a host of new additions to market

In the pursuit of having the most satisified customers in the building automation industry, Reliable Controls is pleased to announce the release of the following products.

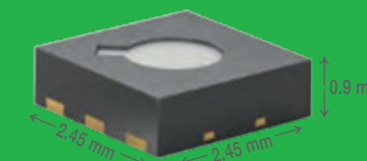## MACH-ProView™
### with VOC sensor

In late 2019 we released updated SMART-Sensor™ and SMART-Sensor EPD devices with an optional volatile organic compound (VOC) sensor. In January we added this option to all MACH-ProView controllers. This new capability provides facility operators with air-quality measurement relevant to the comfort and health of building occupants.

VOC sensing is a complementary measurement to $CO_2$ that detects a wide array of chemical compounds, both natural and humanmade, and delivers better indoor air-quality measurement than $CO_2$ alone. Reliable Controls Authorized Dealers have been incorporating these devices into builds and retrofits since their release and achieving better air quality in the facilities they manage. Find out more about VOC sensing on page 10.
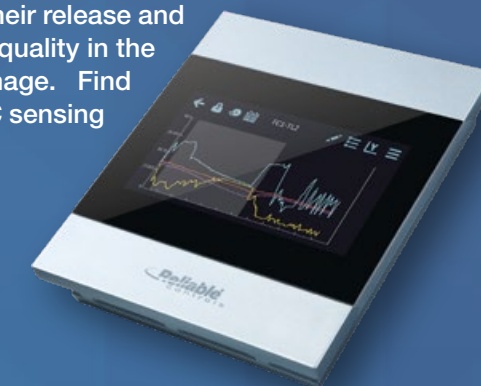
### MACH-ProView VOC sensor features:

- 0-8,190 parts per billion (ppb) range
- Resolution: 2 ppb (0-2,008 ppb); 6 ppb (2,009+ ppb)
- Automatic background calibration
- Automatic humidity measurement

*The VOC sensor available in the SMART Sensor and MACH-ProView is metal-oxide-based for indoor air quality applications. The sensor has an I²C interface in a small, dual-flat, no-leads package with a dust and water protection membrane, making it easy to integrate into Reliable Controls devices.*

0.9 mm
2.45 mm
2.45 mm

## MACH-ProView
### with optional override button

MACH-ProView non-LCD controllers are now available with an optional override button. This option allows users to set an override in applications where an LCD model is not appropriate.

The override button is located in the same place as the occupancy sensor on the front of the controller. These options are mutually exclusive.

- Useful for after-hours applications.
- The override button can be configured to behave as a latching switch.

# SMART-Net™ Expansion Board

For SMART-Net devices that use terminal-block connections instead of modular RJ11 connections, the new SMART-Net Expansion Board maximizes both the number of SMART-Net devices you can use and the combined SMART-Net cable length you can connect to a host controller. Powered externally or by the host controller with 24 VAC or VDC, the SMART-Net Expansion Board supplies power for up to 16 SMART-Net devices and does not repeat the SMART-Net device signal, simplifying field wiring and providing a high degree of flexibility. The SMART-Net Expansion Board is a versatile accessory to expand your connected devices in the field.



### Features

- RJ11 and four-pin port allow you to connect the SMART-Net Expansion Board to the host controller's SMART-Net port.
- Optional external power, supplied by 24 VDC or VAC connection, boosts the power for heavily loaded SMART-Net networks.

## SETUP-Tool™

The SETUP-Tool is an easy-to-use, handheld device that allows you to quickly calibrate airflow measurements on a MACH-ProAir™ or MACH-Air™ controller through the host controller's SMART-Net port without a PC connection.
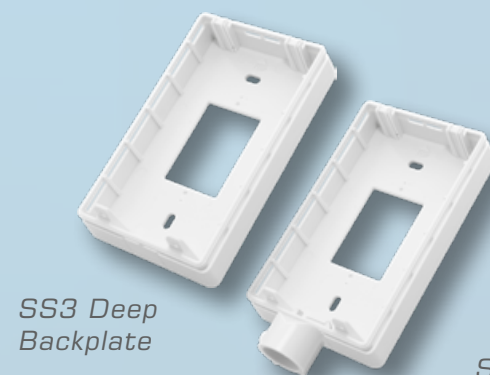
Applications:
- Perform airflow calibrations on MACH-ProAir and MACH-Air controllers using the default Flow tool configuration.
- Configure the SETUP-Tool as an MSet tool and set controller's MS/TP communication parameters.



## SS3 Deep Backplate



*SS3 Deep Backplate*

*SS3 Deep Backplate with conduit coupler*

The SS3 Deep Backplate is an accessory that facilitates surface mounting without the need to cut an opening in the wall. In support of this objective, the backplate has a knockout that is sized perfectly for Wiremold, or it can be ordered with an optional conduit coupler for use with wiring enclosed in ½" electrical metallic tubing.

This is ideal for gas-sensing or wireless SMART-Sensor or SPACE-Sensor™ Temperature models or mounting on an exterior wall where thermal bridging could influence sensor readings. It is designed to fit and cover single-device electrical boxes and is compatible with any device with the third generation SMART-Sensor or SPACE-Sensor Temperature form factor.

# SPACE-Sensor EnOcean
# SMART-Sensor EnOcean Accesspoint

We recently launched the next generation of SPACE-Sensor EnOcean and SMART-Sensor EnOcean Accesspoint wireless devices. Both products feature a deep backplate to accommodate the wireless antenna and provide an optimal wireless signal. The devices have smooth contoured lines in a modern and stylish design that complements any decor. Optional tactile buttons and sliders provide a high-quality user experience.

The SPACE-Sensor EnOcean and SMART-Sensor EnOcean Accesspoint are available with 868 or 902 MHz FSK radio with a standard warm gray or white enclosure.

## SMART-Sensor EnOcean

The SPACE-Sensor EnOcean delivers a wireless temperature sensor solution made simple with the energy harvesting technology of EnOcean. All models of the SPACE-Sensor EnOcean include a large photovoltaic cell that generates enough power to adequately charge the device under most lighting conditions. A fully charged SPACE-Sensor EnOcean can sustain up to 8 days of normal transmissions in complete darkness. Available with optional battery backup, override button, setpoint slider, or setpoint slider with heat/cool icons, the SPACE-Sensor EnOcean is an excellent solar-powered wireless sensor that is hardware programmable and fully compatible with other EnOcean devices.

A two-pole DIP switch is used to configure transmissions every 10, 60, or 120 seconds, and the tactile pushbutton on override models sends a momentary on/off signal to the receiver. For battery backup models, a lithium cell battery provides 5 years of operation in a no-light environment.

## SMART-Sensor EnOcean Accesspoint

With its attractive design, available options, and the ability to be installed on nearly any surface, each SMART-Sensor EnOcean Accesspoint communicating transceiver can network up to 18 points from EnOcean wireless devices. The device communicates through the SMART-Net port on Reliable Controls products and does not require separate power. Users can connect up to eight SMART-Sensor EnOcean Accesspoint devices using SMART-Net.

The SMART-Sensor EnOcean Accesspoint is fully compatible with other EnOcean devices and is available with an optional override button, setpoint slider, or setpoint slider with heat/cool icons.



*enocean®alliance*

The MACH-ProView with optional VOC sensor or override button, SMART-Net Expansion Board, SETUP-Tool, SPACE-Sensor EnOcean, and SMART-Sensor EnOcean Accesspoint are all covered by our industry-recognized 5-year warranty.

# RCReporter® 3.7

### Building performance reporting on a new level

R C-Reporter 3.7 is now available! This powerful building performance reporting software allows you to extract intelligence from your building data and discover actionable insights to improve your operational efficiency. Identify, evaluate, and rank energy-wise and comfort-balancing opportunities to support your continuous optimization strategy. RC-Reporter brings clarity to building performance analytics with readable, reliable, rational reports, delivered automatically by email or integrated directly into your building control system.

With RC-Reporter, you can view your electrical, gas, water, or alternative energy consumed yearly, monthly, daily, or hourly, or break out consumption by device or device category. At Reliable Controls we are able to compare our energy-use intensity, daily energy consumption, actual usage vs. target usage, and monthly potable water consumption year over year using this comprehensive reporting software.

## RC-REPORTER OFFERS FLEXIBLE REPORT GENERATION

Build custom reports quickly by selecting and configuring report components.

Select multiple ranges of time-series data from multiple RC-Archive databases.

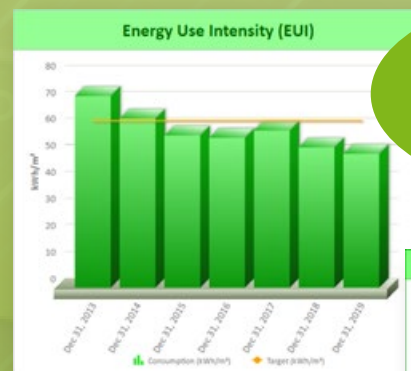Configure report charts to be displayed in RC-Studio System Groups.

Run simple and complex queries to refine data used in report components.
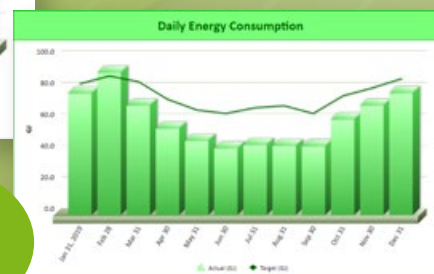
Apply standard math functions to data.

Store saved reports securely on the RC-Reporter server.

Easily export reports to and import reports from other RC-Reporter installations.

Export reports in PDF format.

*View your **energy use intensity** to identify ways to reduce your carbon footprint.*

*Monitor **daily energy consumption.***

*Compare **monthly water consumption**.*

# OFFICIAL RELEASE

With every release of RC-Reporter, we unveil the features and improvements that our customers rank as most important. Components in RC-Reporter are used to analyze building performance data from RC-Archive and external files. The new Periodic component in RC-Reporter 3.7 allows building managers and operators to compare data trends over current and previous time periods.

To configure a chart that compares that monthly electrical consumption against previous years, for example, use the Periodic component and specify a period length of 1 calendar year, a period end of 1 calendar year before today, and monthly sampling (Figure 1).

In Figure 2, yearly electrical consumption is compared for the current and previous 3 years. In this example the period-end date is set to 0 years before today.

As a result the data for each month except the current one—October—cover the full month for each year. For the current month, the data are compared for the same relative date in each previous year. If today's date is October 16, data are shown for the previous three Octobers up to October 16. As the current date progresses, the data for October are updated.
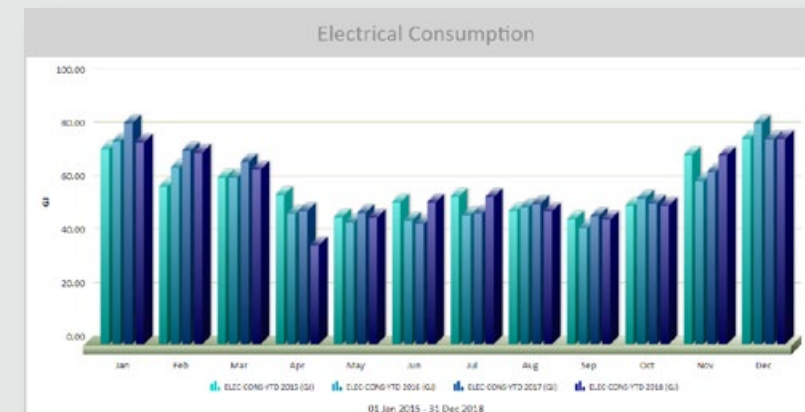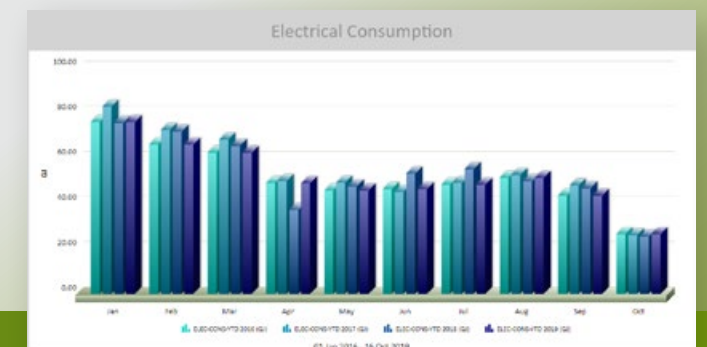
Figure 1: Periodic component chart comparing monthly electrical consumption for the previous 4 years.

Figure 2: Periodic component chart comparing monthly electrical consumption for the current and previous 3 years.

## New in RC-Reporter 3.7

- Periodic component

- Ability to drag components onto a report

- Option to show or hide a component title and header area

- Count function

Periodic component

**When you view a Periodic component, you can:**

- Hover over columns to view a flyout that contains the column value.

- Click a data series name in a legend to view or hide the related column.

- Compare data year-over-year to easily visualize efficiency.

In Figure 3, gigajoules of energy are compared for the years 2018–2020. Hovering over a column shows its value.

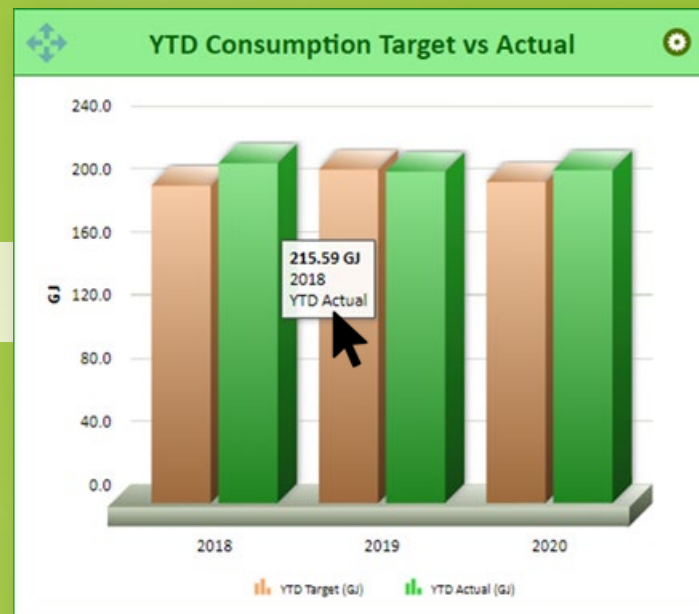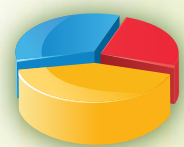To discover more about RC-Reporter, visit reliablecontrols.com/products/software/RCR.



Figure 3: Hovering over a column shows its value.

**RC**Reporter® **3.7**

Better by design™

# WELCOME TO OUR NEW
Reliable Controls Authorized Dealers



**Machaya Consulting**
Roodepoort, South Africa
www.machayaconsulting.co.za

**Modustech**
Barreiro, Portugal
www.modustech.pt

**iTek Drives**
Johannesburg, South Africa
www.itekdrives.com

**SimplAire**
Willemstad, Curaçao
www.simplaire.nl

Reliable Controls sales, installation, service, and support are 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.

Reliable controls Authorized Dealer

# Sensing volatile organic compounds



According to the World Green Building Council, we spend 90 percent of our time indoors. Given that statistic, it's clear the quality of the air we breathe in buildings can dramatically impact our health and well-being. At Reliable Controls we believe sustainable buildings are a key component to reducing the health and environmental impacts of indoor and outdoor air pollution.

Did you know some of the chemicals used in common office products and building materials can have an adverse effect on people's health? Volatile organic compounds (VOCs) are gases emitted into the air from everyday products or processes. Some VOCs are harmful by themselves; some react with other gases to form pollutants in the air.

For example, formaldehyde, a colorless gas with a sharp, bitter smell, is one of the most common VOCs found in building materials such as plywood, particle board, glues, certain types of foam insulation, and even drapes and fabrics. VOCs are also emitted when fuels such as gas, wood, and kerosene are burned. In addition, many personal care and office products, including perfume and cosmetics, air fresheners, cleaners, varnishes, and printers, release VOCs (Figure 1).

VOCs can cause eye, nose, and throat irritation; headaches; breathing problems; and even cancer. They can disrupt communication between plants and between plants and animals. Anthropogenic VOCs are regulated by law, especially indoors, where concentrations are the highest. Harmful VOCs typically are not acutely toxic but have compounding long-term health effects.[1]

Indoor concentrations of VOCs are significantly higher than outdoors. New products and building materials as well as improved insulation for energy efficiency have resulted in increased levels of VOCs in homes and buildings. One step you can take to significantly reduce your intake of harmful gases is to use effective VOC measurement tools.
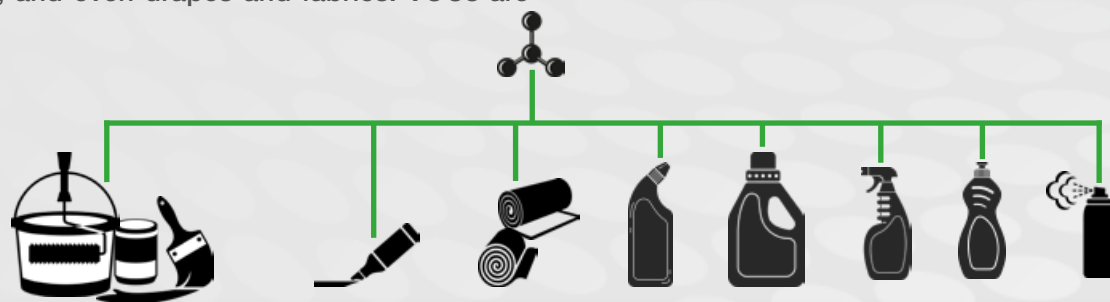


*Figure 1: Examples of products that emit VOCs.*

If the windows and doors in your home or office are normally closed, the potential for adverse health effects due to high VOC concentrations is increased.[2] Monitoring the level of VOCs in your space with dedicated sensors and increasing the amount of fresh air available will promote awareness and improve air quality. Make sure the ventilation systems in your building are working effectively to reduce the VOCs regularly produced by personal care products and office equipment.

Global consensus on the impact of VOCs has prompted governmental organizations in countries such as Australia, Finland, Germany, Hong Kong, and Japan to issue guidelines for total volatile organic compound (TVOC) standards of indoor air quality. TVOC refers to the total concentration of VOCs present simultaneously in the air and is a practical measure of evaluating indoor environments for contamination. The German Federal Environment Agency defines TVOC levels as shown in Table 1. The recommendations are based on the results of a large number of controlled exposure studies that established a relationship between increased TVOC levels and adverse health effects.

| Level | Hygienic Rating | Recommendation | Exposure Limit | TVOC (ppb) |
|---|---|---|---|---|
| 5 Unhealthly | Situation not acceptable | Use only if unavoidable Intense ventilation necessary | hours | 2,200–5,500 |
| 4 Poor | Major objections | Intensified ventilation necessary Search for sources | < 1 month | 660–2,200 |
| 3 Moderate | Some objections | Intensified ventilation recommended Search for sources | < 12 months | 220–660 |
| 2 Good | No relevant objections | Ventilation recommended | No limit | 65–220 |
| 1 Excellent | No objections | Target value | No limit | 0–65 |

*Table 1: German Federal Environment Agency TVOC guidelines.[3]*

Air purification and cleaning devices equipped with suitable filters are also an effective way to reduce the concentration of VOCs in indoor air, particularly in locations where ventilation with outside air is not appropriate. Most national governmental bodies provide guidelines for avoiding and removing VOC sources in indoor environments.[4] You can achieve proper ventilation with an automatic demand-controlled system with suitable sensors.

## CO$_2$ AND VOC SENSORS

You can use both the CO$_2$ and VOC sensors to measure indoor air quality, but they are not interchangeable. Both sensors provide important benefits but measure different things.

The CO$_2$-sensing technology in the SMART-Sensor and MACH-ProView is a nondispersive infrared sensor—a spectroscopic sensor that uses an infrared source, an infrared filter, and an infrared detector (Figure 2). It is stable and not subject to the short-term drift found in other air-quality sensors.

2 Results of studies of VOCs in schools - https://iaqscience.lbl.gov/table-1-results-studies-vocs-schools

Report No 19 TVOC in indoor air quality investigations - Section 4 (pg 13): VOCs and Health Effects: Exposure - Rresponse Relationships - http://www.inive.org/medias/ECA/ECA_Report19.pdf

Volatile organic compounds' impact on indoor air quality - https://www.epa.gov/indoor-air-quality-iaq/volatile-organic-compounds-impact-indoor-air-quality

Health effects of VOCs on humans - http://best-inspection.com/posts/health-effects-of-vocs-on-humans

Indoor air facts no.4: Sick building syndrome - https://www.epa.gov/sites/production/files/2014-08/documents/sick_building_factsheet.pdf

Berkeley Labs: Introduction to VOCs and health - https://iaqscience.lbl.gov/voc-intro

3 Bundesgesundheitsblatt–Gesundheitsforschung Gesundheitsschutz 2007, 50:990–1005, Springer Medizin Verlag 2007. (DOI 10.1007/s00103-007-0290-y)
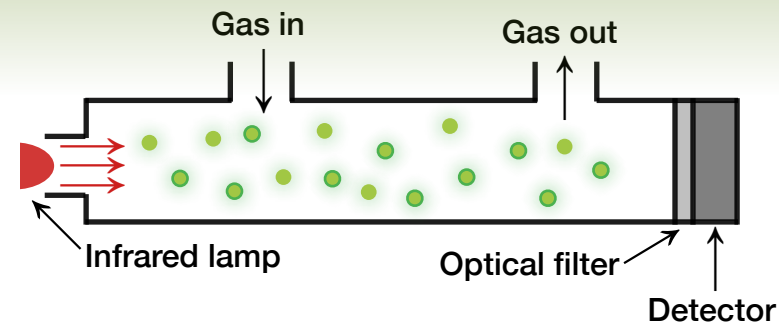
4 World Health Organization (WHO) Europe guidelines for indoor health: http://www.euro.who.int/__data/assets/pdf_file/0009/128169/e94535.pdf

1 Scented products emit a bouquet of VOCs - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3018511

The 10 most common VOCs: Are they in your home? - https://freshome.com/10-most-common-vocs

Figure 2: Nondispersive infrared sensor operation.

Gas in    Gas out

Infrared lamp    Optical filter    Detector

The CO₂ sensor is designed to detect and measure CO₂ in the surrounding air and to control the ventilation rate in occupied spaces. People are the primary source of CO₂ in indoor air. Outside air CO₂ levels tend to be relatively low and constant. You can measure CO₂ indoors to determine whether a room or building is occupied. In other words, higher levels of CO₂ correspond to more people inside and therefore the rate of air exchange required.

As a control, a CO₂ sensor can activate an alarm or mitigation strategy such as filters or ventilation. Because CO₂ is an inorganic compound, it is therefore not a VOC and does not cause an air-quality sensor to react. You can apply both a CO₂ sensor and a VOC sensor to a demand-controlled ventilation strategy.

Unlike a CO₂ sensor, a VOC sensor does not indicate the rate of ventilation needed but instead the concentration of VOCs in the air. As such, it does not necessarily indicate the level of VOC contaminants is harmful but denotes a general change in their concentration. This makes VOC sensors a better solution in applications where unusual concentrations of these harmful gases may be periodically present.

A building manager will see energy savings with CO₂ sensing, as ventilation is based on actual occupancy rather than the design occupancy of the space. When pollutant loads are low, ventilation rates can be reduced, which may occur during or after occupied hours. Whereas a CO₂ sensor can be monitored to reduce ventilation during unoccupied periods, a VOC sensor may maintain ventilation rates during unoccupied periods if a significant pollutant level is detected. You can also use VOC sensors to detect high VOC concentrations that might occur when special equipment is used or when potent chemicals from cleaners are released into the air (Figure 3).


Figure 3: The VOC sensor in the SMART-Sensor EPD detects VOCs from various everyday products.

You can depend on technologies from Reliable Controls to monitor potentially harmful odors, fumes, and other air contaminants. Whether you need to measure particulate matter, relative humidity, temperature, CO₂, or VOCs, Reliable Controls has sensor options to suit your needs. Create a smarter building environment that provides relevant air-quality measurement and increases energy efficiency with VOC sensing.

# INDOOR AIR QUALITY

**90%** of the average person's time is spent indoors

**2-5x** more pollution indoors than outdoors

## Common indoor air pollutants

**Airborne particles**
from diesel exhaust, dust, smoke, and other sources

**Formaldehyde**
from building materials, furniture, personal care, and smoking

**Household gases**
from activities such as painting, cooking, and smoking

**Ozone**
from outdoor air

O₃

**Carbon dioxide**
from people exhaling

Reliable controls®

Empowering building sustainability for 30+ years.

# Authorized Dealer MP Service achieves the first LEED Platinum certification in El Salvador

With 28 percent of global $CO_2$ emissions attributed to heating, cooling, and lighting in commercial and residential buildings,[1] it's incumbent on the building industry to advance the World Green Building Council's mission to transform the built environment to be healthier and sustainable. In alignment with this goal, MP Service, a mechanical engineering and controls contractor in San Salvador, set out to construct a new head office building that would become the first LEED Platinum–certified facility in El Salvador.

A Reliable Controls Authorized Dealer and valued partner since 2002, MP Service takes great pride in promoting the green building initiatives advocated by the U.S. Green Building Council. When the company outgrew its headquarters, it purchased a property to be renovated and set strategic guidelines for the development of a highly sustainable building that prioritizes environmental stewardship and the health and well-being of its occupants. MP Service implemented an integrative process in the design, construction, and operation of the renovated space, with all HVACR systems designed under ASHRAE Standards 189.1, 90.1, 62.1, and 52.2.

MP Service hired B100 Arquitectos, a group of architects with extensive experience in LEED- and HAUS-certified projects, and implemented the Arc platform and LEED Performance Path to collect, manage, and benchmark data during the steps to LEED certification. Arc calculates a performance score out of 100 based on a global data set and action-oriented strategies across five categories: energy, water, waste, transportation, and human experience.

The building management system, building envelope, air-conditioning system, lighting control system, and power generation system contributed to MP Service's energy Arc score of 30 out of a possible 33 points.

MP Service integrated a MACH-ProWebCom into the local area network to communicate with all Reliable Controls and third-party HVAC devices. Twenty-six MACH-ProZone controllers are distributed throughout the facility, connected via BACnet MS/TP. Building managers use RC-Studio to control ventilation, exhaust, and a chilled water plant networked with fan-coil units by BACnet IP.

The interior was designed to maximize the use of natural light whenever possible, and MP Service installed a MACH-ProCom to seamlessly integrate a third-party lighting control system. Building managers rely on occupancy sensors and RC-Studio scheduling to ensure the system operates at peak efficiency. RC-Archive collects information about light fixture status, illuminance levels, and power consumption, and a third-party meter monitors voltage, current, and other electrical parameters for both the external power supply and MP Service's own solar power plant.

El Salvador has high solar radiation levels, which made the use of photovoltaic power a viable option. The photovoltaic system can provide up to 32.9 MWh per year, or up to 90 percent of the building's power requirements. To improve efficiency, building operators extract actionable intelligence from collected building data using RC-Reporter.

One of the most effective measures to reduce the building's thermal load was to apply a coating to the building envelope that helped reduce passive heat gain. MP Service installed thermoacoustic panels with a heat-reflective finish on the roof to combat the heat-island effect and provide waterproofing. This configuration earned an R13 rating for thermal insulation.

Typically, most of a building's water cycles through the building and offsite as wastewater.[2] One way to reduce water consumption is to use reclaimed water. MP Service installed low-flow toilets and a rainwater harvesting system to earn a water Arc score of 12 out of 15 points. The 3.8-liter single-flush toilets are served by the harvesting system, which has a capacity of 35,000 liters and can satisfy the building's demand for toilet and irrigation water throughout the wet season and over 3 months during the dry season. Using collected water for these purposes reduces the burden on the municipal water supply and wastewater systems and limits the use of potable water for landscaping.

A constant stream of products is acquired and discarded in commercial buildings to support operations and maintenance. The amount of waste a facility generates has a significant environmental impact. At MP Service, waste-sorting bins for paper, polyethylene, aluminum, and residual waste are provided at four locations throughout the building, and the company held information sessions for employees when the new facility became operational. As a result, MP Service collected over 350 pounds of recyclable material during the LEED evaluation period and earned a waste Arc score of 8 out of 8 points.

Transportation is one of the largest contributors of greenhouse gas emissions. A well-considered location is a key component to reducing the environmental impact of employee transportation. The transportation score in Arc is generated from a brief survey administered at least once a year that asks respondents, "On a typical day, how to you get to the building?" The new MP Service headquarters is centrally located with easy access to urban infrastructure and public transit, which earned it a transportation Arc score of 12 out of 14 points.

Employees are happier, healthier, and more productive in LEED buildings, according to the U.S. Green Building Council.[3] MP Service installed 48 SPACE-Sensor devices in its new facility to measure and control temperature, humidity, $CO_2$, and VOCs. Outdoor air is supplied through 16 injection fans that comply with the fresh-air requirements set out in ASHRAE Standard 62.1. In addition, MP Service flushes out the building's air every morning before employees arrive.

MP Service achieved an impressive 19 out of 20 points in the human experience Arc score, which is based on occupant satisfaction, interior $CO_2$ levels, and interior VOC levels.

In the LEED Performance Path, 90 of the possible 100 points are derived from how a building performs in the Arc criteria. Project managers can pursue the remaining 10 points by submitting LEED documentation to Green Business Certification Inc. (GCBI), the credentialing body that administers LEED certification. MP Service scored 81 points for performance and received 10 credits from GCBI for its renewable energy generation, heat-island effect reduction, thermal comfort, and light pollution reduction efforts.

MP Service is proud to achieve energy savings of approximately 50,000 kWh per year with its new facility. The simplicity and effectiveness of the Reliable Controls system helped empower the organization to realize a 91-point LEED v4 O+M rating and a history-making Platinum certification. The building not only reflects the values of MP Service and Reliable Controls; it also promotes the local green building industry and contributes to a more sustainable future in San Salvador.

1 worldgbc.org/news-media/hero-net-zero-uae-emirates-green-building-council
2 https://www.usgbc.org/articles/metrics-motion-exploring-water-arc
3 https://www.usgbc.org/articles/metrics-motion-exploring-human-experience-arc

# OFICINAS EN EL PARQUE

## MONTERREY, MEXICO

ADMINISTRATION

## OVERVIEW

*Best known as Torres Moradas due to their distinctive purple color, Oficinas en el Parque (Offices in the Park) are two towering steel-and-glass skyscrapers surrounded by landscaped grounds in Monterrey, Mexico. Monterrey is the capital and largest city of the northeastern state of Nuevo León and the base for many significant international corporations. Both towers have five underground parking levels; Morada Tower 1 has 24 floors, and Morada Tower 2 has 28 floors. The Oficinas en el Parque have views of the Sierra Madre mountains and the Puente de la Unidad suspension bridge.*

## PROJECT DETAILS

Authorized Dealer VIMAU implemented a complete Reliable Controls system during a retrofit of the Torres Moradas buildings in Monterrey.

The MACH-System in each tower consists of a dedicated MACH-ProWebCom controller that provides users with an interface to the whole building. Each building is cooled by a dedicated variable flow chilled water plant integrated using BACnet MS/TP. Building operators use MACH-ProSys (Tower 1) and MACH-Pro2 (Tower 2) controllers with MACH-ProPoint expansion modules to operate the chiller plants and serve distributed air-handling units. This integration allows for start and stop sequences, setpoint control, capacity control, and operation monitoring. Several MACH-ProZone and MACH-ProAir controllers are networked throughout the buildings to control air handling units and variable air volume boxes. All field controllers are connected to the main controller in each tower using BACnet MS/TP.

Security is important at the Oficinas en el Parque, so VIMAU installed RC-RemoteAccess software to deploy a flexible, secure BACnet Virtual Private Network.

The buildings were fully operational during the retrofit, which was completed in a short time—less than 2 weeks. Reliable Controls and VIMAU are pleased with the outcome of this project.

**To learn more about projects using Reliable Controls, visit reliablecontrols.com/projects/overview**

**PROJECT TYPE**
**Retrofit**

**TOTAL AREA**
**76,000 m² (818,057 ft²)**

**INSTALLATION TYPE**
**Chiller, fan-coil unit, variable air volume, HVAC**

**EQUIPMENT INSTALLED**
**1 MACH-Pro2™ controller**
**42 MACH-ProAir™ controllers**
**3 MACH-ProPoint™ controllers**
**1 MACH-ProSys™ controller**
**3 MACH-ProWebCom™ controllers**
**46 MACH-ProZone™ controllers**
**RC-RemoteAccess®**

**NETWORK**
**EIA-485, Ethernet, B/VPN**

**PROTOCOL**
**BACnet**

**BACNET**
**Dual chiller plant, air handling units, variable frequency drives, variable air volume unit**

**POINTS**
**5,000**

**RELIABLE CONTROLS AUTHORIZED DEALER**

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