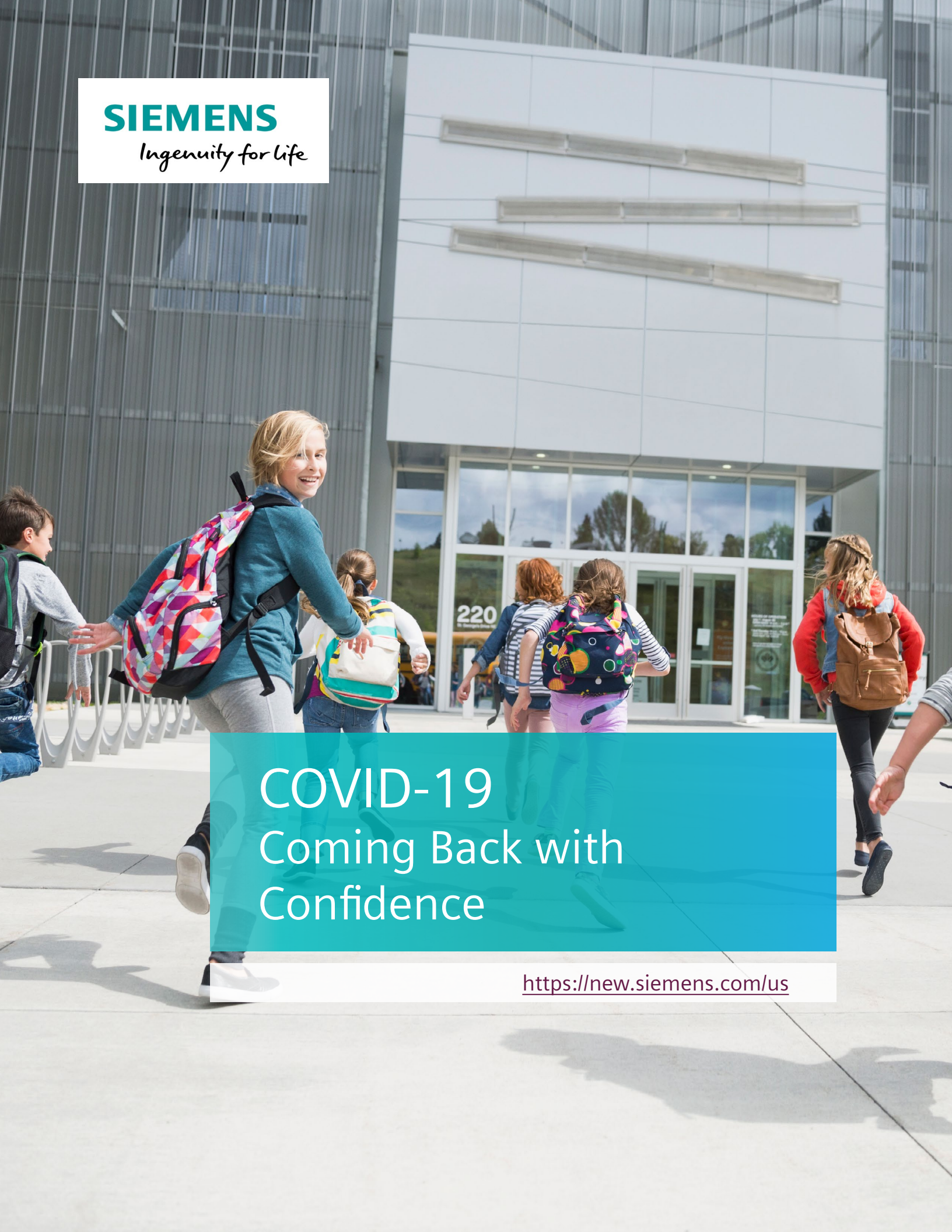



# COVID-19
## Coming Back with Confidence

https://new.siemens.com/us

## Coming Back with Confidence

As a result of the Covid-19 pandemic, the world is now sensitive to the very real threat of new bacterias and viruses that represent health risks and challenges to individuals and schools. Life will not go back to business-as-usual, and we must be prepared to take proactive measures to improve public health & safety, addressing new rules for education and social distancing guidelines. With Siemens solutions, we will help our customers **create safe and healthy indoor environments** so they can **come back with confidence**.

Parents, students and staff expect that a deep cleaning and sanitizing of all spaces will occur during this long vacancy, but they will also want assurance that they will not be returning to the same pre-pandemic building environments that do not actively address the new issues we face. Teaching in close quarters will require new personal disciplines but they also need confidence that schools are adopting superior methods to enhance and maintain safety and sanitation.

To get started we will support you with no-cost evaluations of building assets to develop the preliminary strategy for these re-congregation technologies and also highlight additional energy savings measures. Because Siemens is an essential employer, we will be able to complete this work within the confines of rigorous CDC and local physical distancing protocols. Our projects will focus on using local companies as an opportunity to stimulate the local economy and re-invest in our communities.

Everyone is experiencing similar fiscal and operational burdens and we want to help lead the efforts to deliver impactful solutions. We are also continuing our work to support distance learning STEM education activities along with our current work on further developing the regional STEM to workforce ecosystems for access & equity for all students.

### Sustainable Safe Building Strategies

- **24/7/365 entire building Ionization air purification technologies for HVAC systems to continuously clean and disinfect the indoor air to reduce pathogens and improve air quality while also saving energy.**
- **Thermal scanning technology to assess for risks on entry for new safety and security protocols.**
- **Both portable and permanent UV light room sterilization systems for high traffic areas and touchable surfaces that are identified by IoT data sensors throughout the infrastructure and data management applications.**
- **Contact tracking systems that are customizable to help preserve privacy.**
- **Communication tools for ensuring that occupants can feel informed and connected.**
- **Ongoing monitoring and verification of the status of building systems that provide the improved, safer environment.**
- **Actionable occupancy data to guide the application of deep cleaning and sanitizing procedures to reduce ongoing maintenance costs.**
- **Important visual aids for validation that occupants are in a safer environment, including public information and app-based notifications.**
- **Marketing and communication support to help our customers publicly demonstrate re-congregation strategies and commitment to a safe environment.**

# Come back with confidence to safe, healthy school environments

SIEMENS
Ingenuity for life

- Reduce the spread of airborne and surface contaminants
- Improve air quality
- Manage energy performance
- Enable social distancing
- Provide real-time updates
- Sustain healthy & safe environments
- Defer capital budgets
- Empower program

Clean the air and surfaces with non-ozone producing ionization technology and removal of harmful VOCs

Combine technology and HVAC maintenance strategies to reduce the spread of viruses

Defer capital budgets to operating budgets through financing options

Improve air quality with new HVAC maintenance strategies and advanced filtration

Reduce bacteria, mold and some viruses with fast and safe portable disinfection UV technology

Monitor office occupancy for density and safe distancing leveraging equipment and IoT sensors and analytics

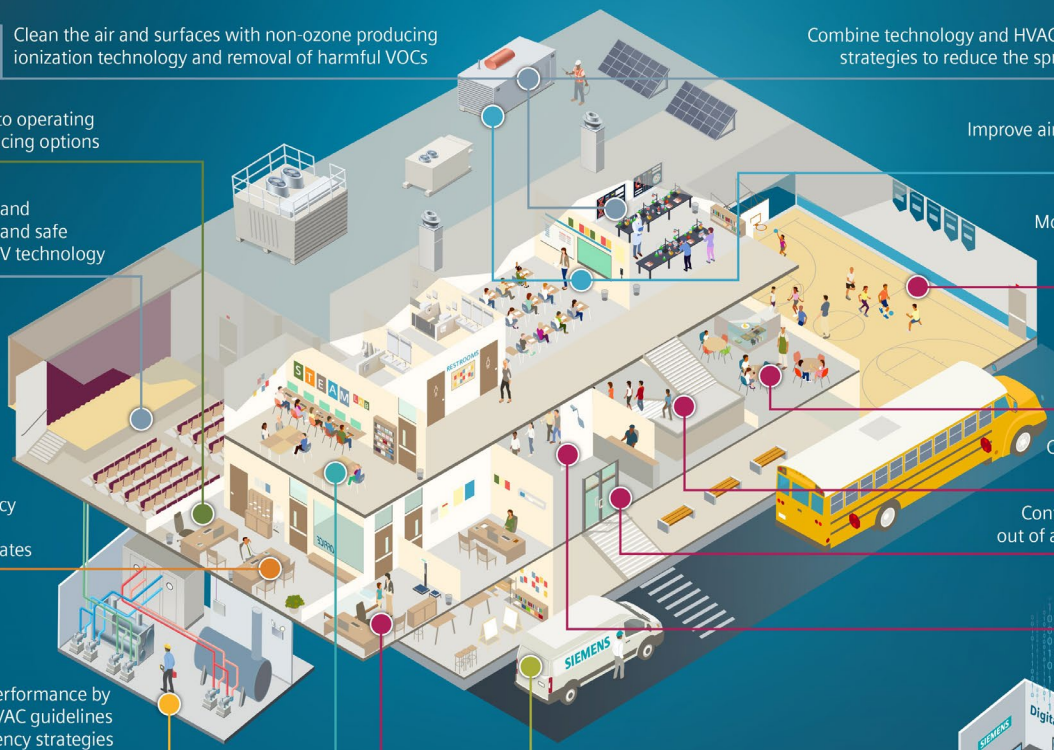
Create a targeted sanitation and surface disinfection strategy with equipment and IoT sensors

Provide real-time updates on space utilization and emergency notification of critical events or COVID-19 updates

Contact tracing for individuals who tested positive

Control occupancy in buildings by counting people coming in and out of a building leveraging video analytics or access control readers

Identify who encountered occupants to track and stop the spread of viruses using FLIP camera technology





Manage energy performance by off-setting new HVAC guidelines with energy efficiency strategies and IoT technology

Utilize 24/7 monitoring, remote response and resolution, and maintenance to help onsite teams

Provides innovative learning opportunities on technology and programming for STEAM, student success and more

Utilize on-site service, with skilled technicians and safe workspace planning, for maintenance and corrective actions

Leverage advanced analytics and fault detection to identify issues early and service equipment based on need

Screen occupants for evidence of elevated skin temperature using thermal cameras

usa.siemens.com/K12

## Dedicated Infection Control

In the fight against infection, keeping all elements of personal protective equipment (PPE) and the building environment disinfected is critically important to the safety and success of returning to school. Developed by our solution partner, **Violet Defense™**. This dedicated infection control solution provides buildings with a proven, easy-to-implement way to disinfect PPE and education environments.

**Siemens has been in a unique position with emergency efforts supporting the temporary hospital expansions across New York, allowing us to develop new, sustainable strategies to create safer and healthier environments for all.**

### About Violet Defense

Since its inception, Violet Defense has been on a journey to harness the germ-killing power of ultraviolet light to help protect the world from germs. Its patented technology miniaturizes the deployment of UV light to integrate into almost any product or environment.

### Proven and Effective Protection Made Easy

Our dedicated infection control solution enables you to create a space designed to help disinfect personal protective and other critical equipment.

- Manufacturer testing has demonstrated effectiveness against certain viruses and bacteria*
- Harnesses the germ-killing power of light to kill bacteria and viruses in the air and on surfaces
- Designed to make disinfection easy, system will kill germs in a flash with pulsed Xenon full-spectrum UV light

**Results available upon request*

### How it Works

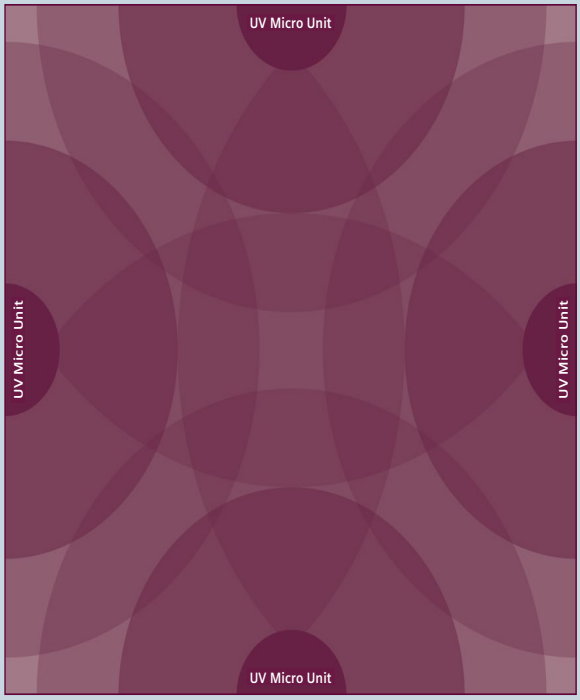
This infection control solution combines the germ-killing power of ultraviolet light with an optimized 8′ x 8′ layout that maximizes UV exposure to kill harmful germs. PPE and other critical mobile equipment is placed within the designated 8′ x 8′ area where pulsed Xenon technology is used to deploy powerful bursts of UV-C, UV-B, UV-A, and violet-blue light capable of killing certain bacteria, viruses, fungi, and mold.

### What the Solution Contains:

- Eight UV units - each is designed to have two units installed on each of the four walls (one high, one low) of an 8′ x 8′ room (Siemens provided)
- Aluminum suspension wires and hardware for hanging masks or other PPE equipment (customer provided)
- For optimal results we recommend installation of either aluminum sheets or mirrors on the walls to maximize reflection and UV exposure (optional)

### 8′ x 8′ Targeted Coverage Area

The dedicated infection control solution provides the equipment needed to create an 8′ x 8′ disinfection space where PPE and other mobile equipment is exposed to UV light from all angles.



## Ozone-Free, Needlepoint Bipolar Ionization Solution

Provide reliable, long-term protection of your students, staff and visitors from surface and airborne pathogens with this innovative, ozone-free approach to cleaner indoor air. Developed by our solution partner **O2Prime Solutions™**, this needlepoint bipolar ionization solution transforms your building's infrastructure into a front line of defense. Equipment is easily installed in HVAC systems (or use of a portable unit) to flood the air with hundreds of millions of positive and negative ions that attack pathogens, mold, and other airborne/surface contaminants.

### About O2Prime

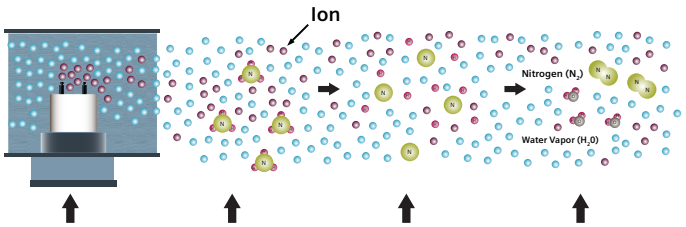
Our mission at O2Prime is to provide indoor air quality solutions that lead to healthier occupants, increased productivity, and clean, fresh, healthy environments. By reducing the need for outside air, O2Prime solutions promote smaller, more cost effective HVAC systems and can increase energy savings related to heating and cooling.

### Key Benefits

- Ozone-Free - will not harm lungs
- Can run anytime, including when the space is occupied
- Rapid installation that integrates with building automation system

## Needlepoint Bipolar Ionization Technology

### VOC Effects



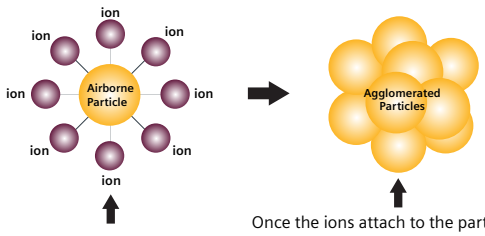

**Ions** created in forced air stream.

Ammonia ($NH_3$) Molecule.

Free floating positive and negative ions produced by the unit breaks down gasses.

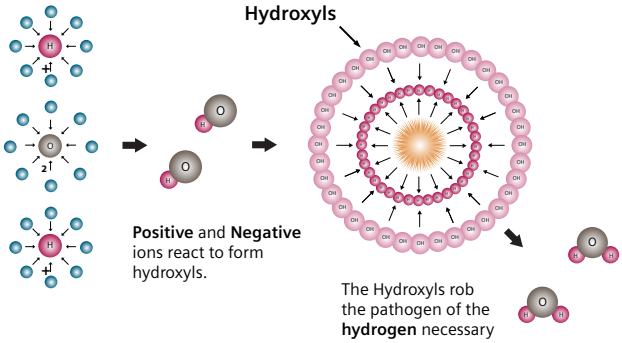
The gases regroup to form safe and desirable gases already prevalent in our atmosphere.

### Airborne Particle Effects




Once the ions attach to the particle, the particle grows larger by attracting nearby particles of the opposite polarity, thereby increasing the filtration effectiveness.

### Bacteria and Pathogen Effects




**Positive** and **Negative** ions react to form hydroxyls.

The Hydroxyls rob the pathogen of the **hydrogen** necessary for them to survive, making them inactive.

Creating water vapor ($H_2O$) in the process.

Ozone-Free Needlepoint Bipolar Ionization artificially creates millions of positive and negative ions and releases them into the forced air circulation of an HVAC system travelling into spaces inside building(s).

### Supporting Safe Smart Buildings

As the need for testing building environments expands, Siemens is harnessing our capabilities, expertise, and global network of partners to outfit and supply our customers in the following ways:

- Supporting the rapid design and development of Smart Building infrastructure
- Identifying sources of potential contamination and offering effective technology to mitigate the risk
- Developing a holistic approach to safe building environments

## Creating an Environment that Protects

This ionization solution treats the air by generating positive and negative ions that normally exist in nature and releases them into the forced air circulation of an HVAC system where they can travel into spaces throughout the building. The ions are capable of attacking viruses, bacteria, pathogens, and mold at the molecular level, breaking them down and robbing them of their hydrogen molecules necessary for survival. Manufacturer testing has demonstrated effectiveness against certain viruses and bacteria*.

**Results available upon request*

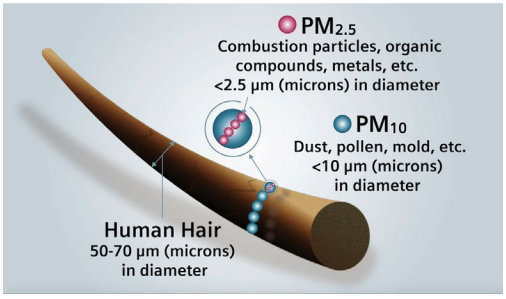
## How it Works

This needlepoint bipolar ionization solution uses positive and negative ions, forced through a building's HVAC system or portable units, that are capable of attacking and deactivating certain bacteria, pathogens, airborne particles, and VOC.

**Bacteria & Pathogen Removal** - Positive and negative ions react to form hydroxyls. The hydroxyls rob the pathogen of needed hydrogen, making them inactive and creating water vapor (H20) in the process.

**Airborne Particle Removal** - Ions attach to the airborne particle causing the particle to attract nearby particles of opposite polarity. As a result, the particle grows larger and becomes more vulnerable to filtration systems.

**VOC Removal** - Free-floating ions are used to break down ammonia (NH3) molecules and other VOCs, and regroups them into safe and desirable gases, like nitrogen and water vapor, that are already prevalent in our atmosphere.




***Ozone-free, needlepoint bipolar ionization deactivates particles smaller than PM2.5.***

## System and Installation Options

This ionization solution can be installed at the air handler, in duct work, or as a mobile device. Siemens also offer sensors to monitor ion levels being produced. We will analyze system requirements and provide recommendations for optimal implementation.

# Siemens Body Temperature Solution Minimizes Infection Risk in Building

- Contactless temperature measurement at main entry points in buildings
- Integrates into workflow of existing security and access solutions
- Increases protection of building occupants

Some people who have elevated skin temperature may also have elevated body temperature and/or fever; some people with these may have COVID-19. A number of thermal cameras are available, but only some are cleared by the FDA for the purpose of detecting people with elevated skin temperature. Siemens has selected only those cameras that have passed this clearance.

To ensure the highest level of accuracy, the cameras measure the body temperature near the eyes. A positive result triggers acoustic and visual alarms. The temperature is measured for each person individually to ensure accurate and reliable results. If a person shows an elevated body temperature and this finding is confirmed by a second reading obtained with a medical thermometer, the follow-up steps defined in the workflows are initiated automatically.

## Siemens Smart Buildings IoT Solutions

With **Enlighted Building IoT** application, contact tracing and alerting are possible with occupancy history. Density heat maps support social distancing and occupancy limits to help reduce the spread of the virus. Motion trails can identify bottle-necks and help monitor cleaning schedules while enabling contact tracing functions. Desk sensors help keep open spaces safe and optimized.

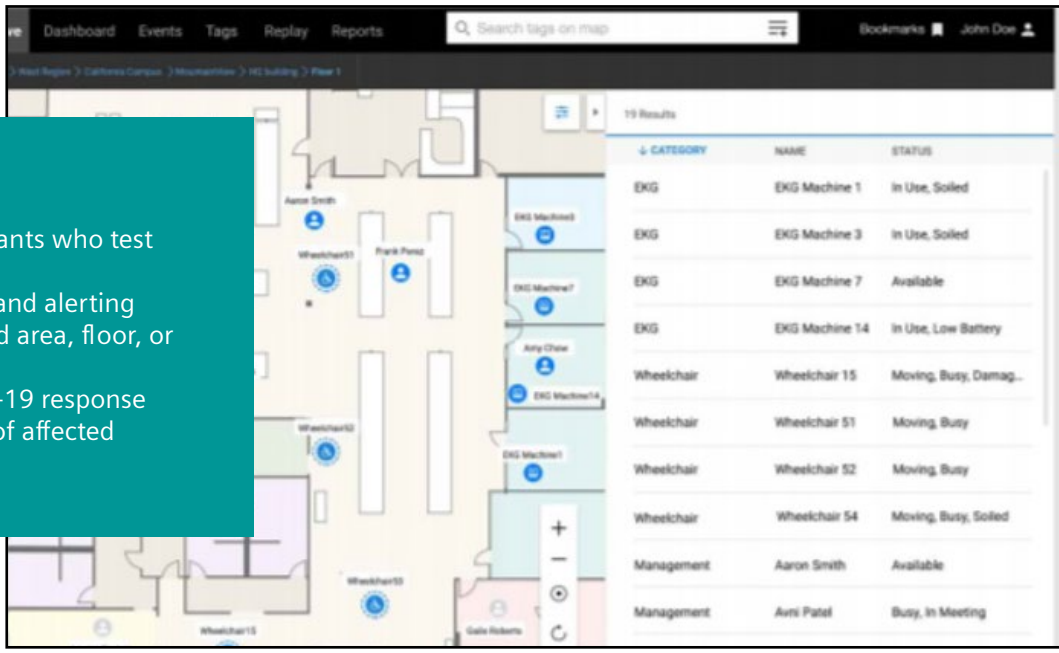
Building owners can more easily answer the following questions:

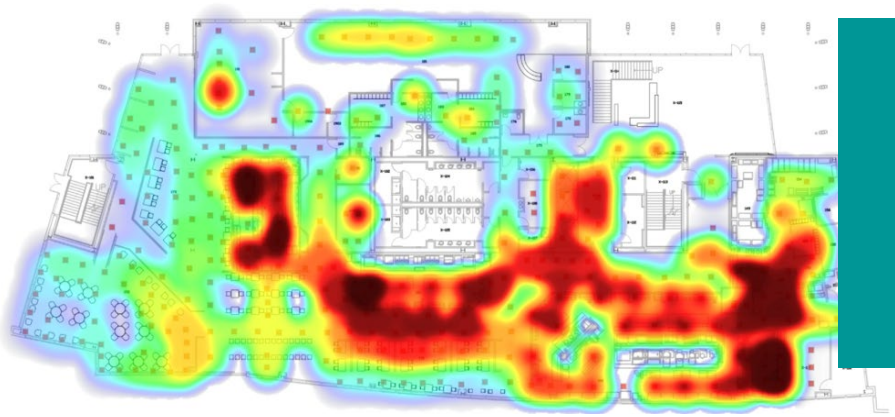
- Where did COVID-19 positive staff or student occupy?
- Which areas are typically the most densely populated?
- Where should we focus efforts to reconfigure our classrooms and offices and/or eliminate seats?
- Were these changes effective?
- What are the most frequent paths taken through the building? At what times?

Armed with answers to these questions, schools can provide signage to guide occupants away from high-traffic areas while also adapting janitorial practices.

### Contact Tracing and Alerting

- Trace contact history for occupants who test positive
- Configurable occupancy limits and alerting for too many people in specified area, floor, or building
- Data-driven decision for COVID-19 response based on replay of movement of affected student or staff movement



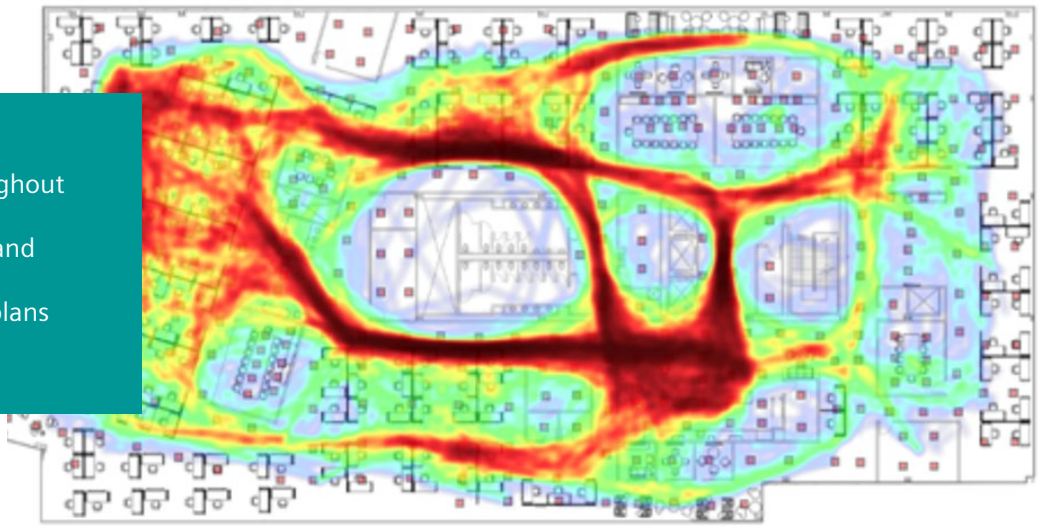



### Understand Space Usage Patterns and Density

- Identify areas that are the most densely populated
- Focus efforts on office reconfiguration and seat elimination to reduce density
- Validate if changes were effective

## Locate At-Risk Pathways

- Find most-used pathways throughout a building
- Reroute traffic flows with signs and barriers
- Validate effectiveness of traffic plans
- Optimize janitorial routines



## Safe and Optimized Open Offices/Spaces

- Enlighted desk sensors identify which desks are occupied in real time
- Automate desk reservation together with our software ecosystem partners
- Operate to reduced desk inventory with smart desk booking and understand utilization with occupancy analytics


**Comfy** empowers occupants with a configurable mobile app, which enables service and event discovery, school amenities search, occupant location, building navigation, classroom and office bookings, and room personalization (such as lighting and comfort settings). With Comfy Insights, schools rely on data aggregated from disparate systems to decide whether to open or close specific floors or rooms, based on user traffic and occupancy, and determine cleaning schedules based on the use of spaces and amenities.


**We are doing everything we can to support our customers and partners, with health and safety as top priority.**

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