Return to Learn Safely

Air Quality Management

Occupancy Monitoring

Contact Tracing

Value InspirED Products & Service

Air Quality Management

- CO2 sensors in classrooms are an economical way to ensure air quality meets or exceeds CDC guidelines
- Measure particulate matter (PM_{10} $PM_{2.5}$ VOC) levels, especially in high-traffic areas
- Monitor HVAC systems for filter health, leaks, ventilation, circulation, and preventative maintenance

Air Quality in Classrooms & Common Areas - CO2 & VOC

Poor indoor air quality can lead to a large variety of health problems and potentially affect comfort, concentration, as well as staff and student performance. In the era of COVID-19, CO^2 levels can be used as a proxy for transmission risk. The evidence points towards airborne transmission being a major factor in the spread of COVID-19.

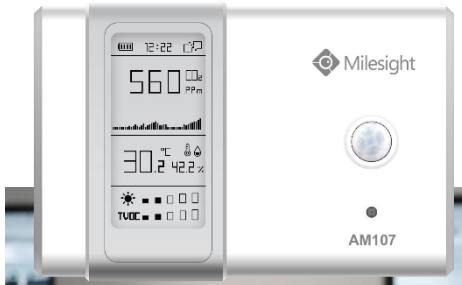
Volatile organic compounds (VOCs) are a wide range of organic chemicals found in various man-made and naturally occurring solids and liquids. They evaporate easily at ordinary room temperature which is why they are termed volatile.

VOC monitoring devices can help measure the effectiveness of improved filtration strategies

Air Quality in Classrooms & Common Areas - CO2 & VOC

CO2 & VOC Monitoring Device

- Easy to install and manage
- Can be placed in every classroom
- Measures building health through air quality
- Integrated with multiple sensors like humidity, temperature, CO2, VOC, light, barometric pressure, etc.
- Standard AA batteries - One year work without replacing batteries
- Set level thresholds in platform (ex: If above 800ppm, send alert. At 800ppm one breath of every 10 breathes has been breathed before)



Potential Applications

- HVAC
- High traffic areas (gyms, lunchroom, etc)
- Integration with lighting systems (energy savings)
- Spaces without adequate ventilation

Air Quality in Common Areas - Particulate Matter

Particulate Matter is a mixture of solid particles and liquid droplets found in the air. The most dangerous, PM2.5 can only be detected using an electron microscope. Particulate matter contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. Studies have found a close link between exposure to fine particles and premature death from heart and lung disease.

This PM sensors measures the level of 2.5-micrometer particles in the air.

PM 2.5 is an established particulate size threshold in air quality measuring. It's also slightly smaller than the size of a virus nucleus, which about 3 µm.

A high level of 2.5-µm particles in the air means there's a greater chance that there's potentially some COVID-19 nuclei in the space.

Air Quality in Common Areas - Particulate Matter

PM Monitoring Device

- Easy to install
- PM2.5 sensor measures the concentration of small particulate matter in the air
- Measures building health through air quality
- Long battery life

Potential Applications

• High traffic areas (gyms, lunchroom, etc)
• Spaces without adequate ventilation

HVAC Monitoring

HVAC equipment can be monitored, such as the Airco unit, the Valve positions, the Tank filling, Leak detection, Air Pressure

Monitors air pressure before and after filter. If the levels are not homogenous, then the filter likely needs replacement. This tells you when to change filters and saves on energy cost (a blocked filter requires more energy to push air through)

Occupancy Density Monitoring

Occupancy monitors use PIR sensors that add pulses every time a person has entered the room. Use this data to direct cleaning crews, automatically turn lights off/on, adjust HVAC system, etc.

- Temperature sensor
- Humidity sensor
- Light sensor
- Motion detection sensor (PIR)
- Discrete and minimalistic design

Managing Common Areas

- Manage occupancy of lunchrooms, gyms, weight rooms, and other common areas with occupancy monitors.
- Send notifications to cleaning crews when occupancy reaches 0%
- VOC sensors can monitor the particles in high use areas. A combination of air quality and air flow monitoring can provide a very clear picture of how safe a space is.

Occupancy, CO2, and Temperature Monitoring

Measuring temperature, humidity, occupancy, light, sound, and CO_2 levels can help you to observe and create an excellent indoor quality that is essential for the student and faculty well-being and productivity. Strategically placed sensors can help you collect valuable information about your buildings.

Better allocate your resources, optimize staffing, reduce costs, monitor your indoor climate, monitor room and desk occupancy, movement, and more.

Occupancy, CO2, and Temperature Monitoring

Occupancy, CO2, and Temperature Monitoring Device

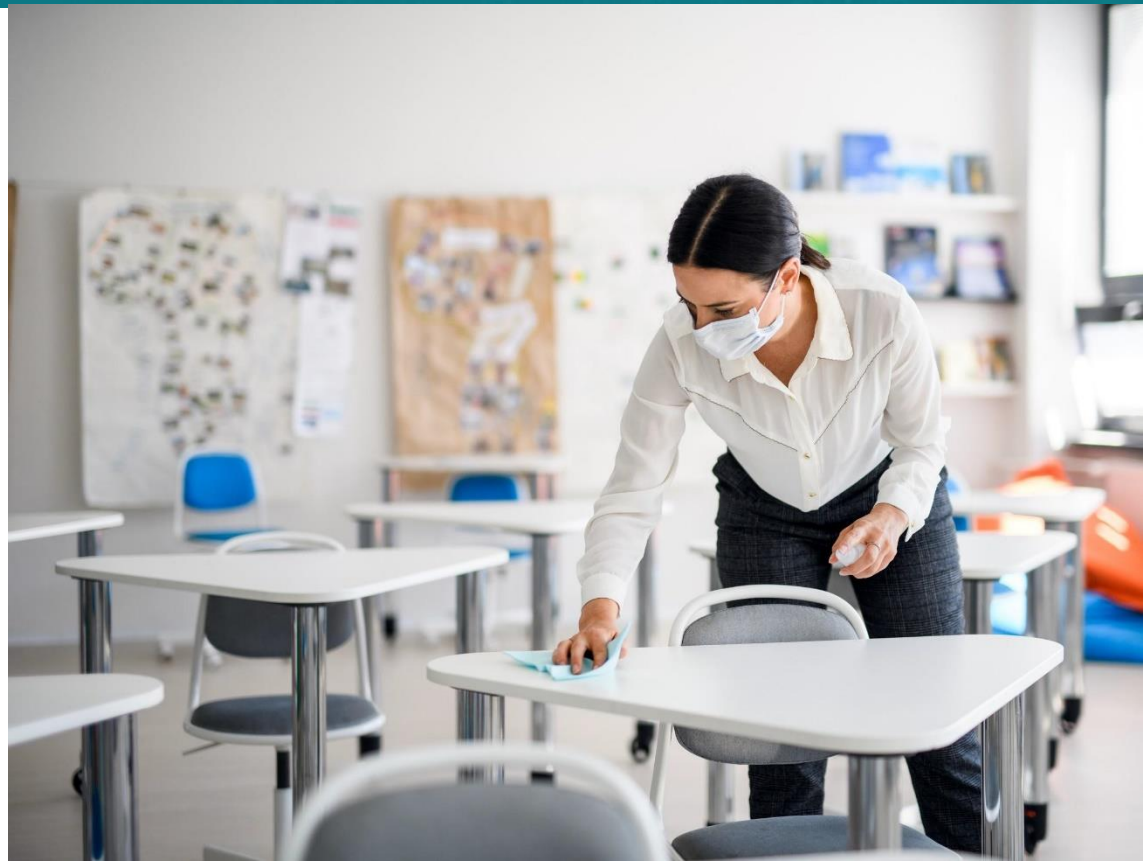
- Easy to install
- Can be placed in every classroom
- Keep CO^2 levels below 700ppm in occupied rooms
- Battery-powered - up to 10 year battery life

Sick Building Syndrome

Sick building syndrome (SBS) is used to describe a situation in which the occupants of a building experience acute health or comfort-related effects that seem to be linked directly to the time spent in the building, though no specific illness or cause can be identified. Building occupants complain of symptoms associated with acute discomfort (e.g., headache; eye, nose, or throat irritation; dry cough; dry or itchy skin; dizziness and nausea; difficulty in concentrating; fatigue; and sensitivity to odors).

Mitigation Recommendations

- Check vents for obstruction (artwork accidentally hung on top of intake)
- Fewer people in classroom
- Adequate supply of outdoor air
- HVAC inspection
- Clean and disinfect surfaces often
- Leave doors and windows open for increased airflow



Safe Distancing & Contact Tracing

- Promotes student distancing compliance by tracking and cataloging close proximity interactions.
- Provides historical and real-time anonymous student/faculty interaction data.
- Supports faculty/student interactions across campus.
- Offers a simple and economical solution for schools of all sizes.

Safe Distancing Solution Overview

- Each educator/student is outfitted with a wearable Bluetooth/LoRa badge sensor.
- The recommended proximity distance is controlled and set by the Administrators (defaults to ~6 feet).
- When students or teachers come into close proximity of each other, their wearable sensor badge alerts them with a buzzer and vibration notification.
- In addition to the buzzer/vibration notification, the wearable badge sensor sends a data notification message to a Cloud-Based Distancing Platform to log the duration of the close proximity interaction.
- Administrators can run historical reports from the Cloud-Based Distancing Platform to track and trace past interactions.

HOW TO USE OUR SAFE DISTANCING SOLUTION

4 EASY STEPS

ASSIGN SAFE DISTANCE THRESHOLD

Establish a corporate wide safe distancing threshold in the READY Sensors platform. Your badges will automatically begin to enforce this threshold.

ASSIGN BADGES

Provide badge IDs to all employees and visitors. When a badge makes a noise, time to move apart. If employees remain in close proximity a notification is provided and timestamped in the Ready Sensor app.

MONITOR READY SENSOR PLATFORM

Corporate administrators can visualize which employees have been in close proximity for how long and on which day and time.

KEEP BADGES CHARGED

Employees only have two jobs: wear the badge when in the workplace and be sure to keep them charged.

Return to Learn Solution Components

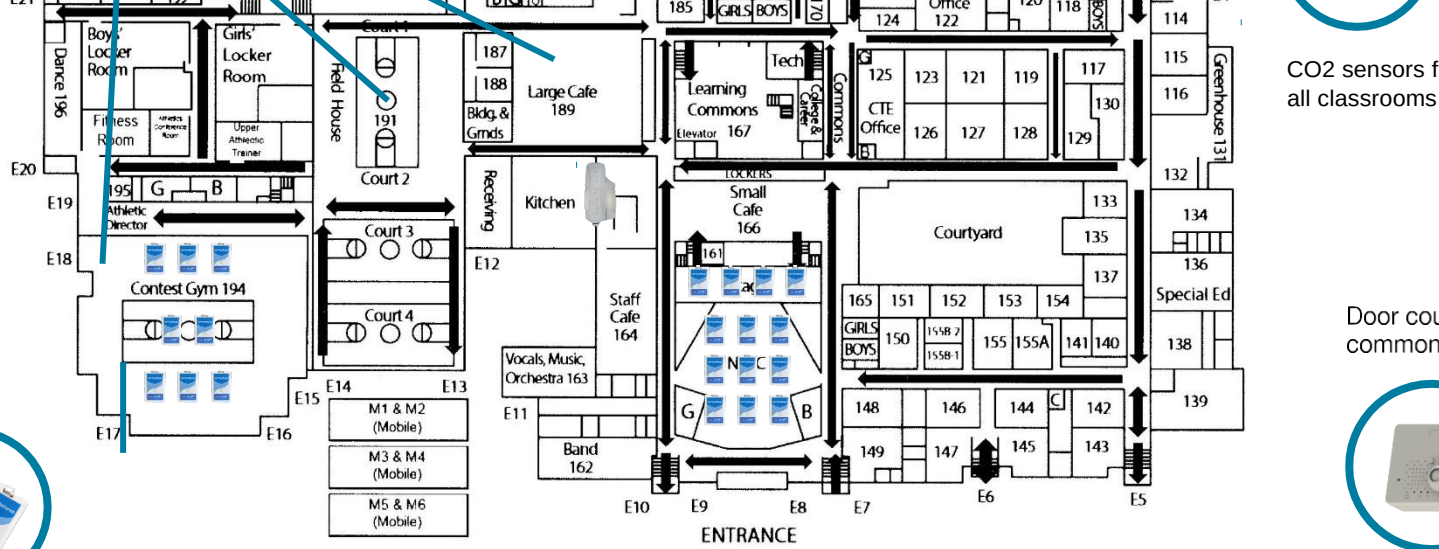
1. Point of Presence Sensors
2. LoRa/LTE Gateway
3. Cloud-Based Platform

C/oud Based Distancing Platform

Sensor Placement

Refrigeration monitoring

voe sensors for high traffic areas



CO2 sensors for all classrooms

Contact tracing lanyards for sports teams, group extracurriculars

Door counters for common areas

Return to Learn, Safely!

- Safety for students and faculty
- Strength in data
- Better communicate to students, faculty, unions, parents with real anonymous data
- Report proactively how your building is performing according to CDC guidelines
- Address issues immediately (ventilation, density)
- Objective contact tracing, not subjective interviews and lengthy process
- Know how many people are where and when

American Rescue Plan

https://buildbackbetter.gov/wp-content/uploads/2021/01/COVID_Relief-Package-Fact-Sheet.pdf

- $54.3 billion for K-12 schools, largely delivered through Title I funding. That's about four times what schools received in the CARES Act approved in March.
- This money can be used in many ways including:
  - Repairing school facilities, especially **ventilation systems, to improve air quality** and reduce spread of Covid
  - Training staff on the best ways to sanitize schools and proper use of personal protective equipment (PPE)
  - Supporting afterschool and summer learning programs

Base Pricing

Volume discounts available

CO2 / VOC Monitor	$221.50
PM2.5 Monitor	$225.00
HVAC Sensor	$286.25
Occupancy / Temp Monitor	$81.25
Safe Distance Lanyard	$100.00
Router / Gateway	$656.25
Company Subscription	$137.50/mo
Device Connectivity	$6.25/mo/device

Next Steps:

Discovery of best practices

1. Size of student body, faculty
2. Instruction method (remote/hybrid)
3. Campus layout, size of building(s)
4. Age of buildings and HVAC system
5. COVID case history
6. **CONTACT V.i.P.S.**

V.i.P.S.

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