SMART AIR QUALITY

Healthier, safer indoor environments

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Indoor air quality has a direct impact on human health and wellbeing. But when the air we breathe is polluted with contaminants like allergens, viruses, mold, smoke, and vapors from cleaning supplies and furniture, we can experience significant side effects. Healthy people may experience eye irritation and headaches, whereas older adults and those with certain health conditions may experience asthma attacks, cardiac distress, or even cancer[i].

The case for improving indoor air quality

People who work in "green" office buildings have significantly better on cognitive function scores.[ii]

Office buildings with low ventilation rates have a negative impact on workers' ability to focus.[iii]

Increased ventilation and improved air filtration may reduce employees' sick leave by 9-20%.[iv]

The financial benefits of improving office IAQ can be 17x higher than the cost of the improvements.[v]

The science: airborne contaminants and human health

The current focus has been on particulates less than one micron. Airborne contaminants – such as mold, dust, mildew, bacteria, wildfire smoke, and viruses – pose the greatest risk to human health. Not only do these fine particulates stay suspended in the air for longer periods of time, but they can also penetrate deep into the lungs, where they do the most damage.

Did you know ...?

- Indoor air pollution can be 2x to 5x higher than typical outdoor pollution[i]
- U.S. companies could save as much as $58 billion annually by preventing sick-building illnesses.[v]
- Breathing in clean air can add more than 2 years to average human life expectancy. The harm that current air pollution has to life is comparable to smoking, among other health hazards.[vi]

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Let's look at a smarter approach to optimizing indoor environments. Many building managers tend to address indoor air quality with a traditional approach of installing more effective air filters or increasing ventilation rates. However, increasing the amount of outdoor air may bring polluted air inside and inadvertently worsen the air quality – in addition to increasing the amount of energy needed to condition the air.

Experts now know that a single approach to improving IAQ is no longer good enough; instead, a multidimensional approach is required for creating safer, healthier indoor environments.

Healthier buildings = Healthier people

Temperature
Maintaining temperature with in the ASHRAE standards is a key component of indoor environmental quality and comfort.

Humidity
Achieving acceptable relative humidity levels affects comfort and prevents growth of mold, bacteria, and other airborne contaminants.

CO_2
Optimizing ventilation and other HVAC strategies minimizes exposure to high levels of CO_2, which can affect cognitive function.

Total VOCs
Monitoring for and mitigating Volatile Organic Compounds (VOCs), which are emitted from everyday products, play a major role in improving indoor air quality.

Fine particulates
Addressing fine particulates, which can pass through the body's natural defense mechanisms, may help reduce associated health problems.

Ozone
Minimizing indoor concentrations of ozone can help prevent adverse health effects (e.g., asthma and respiratory irritation).

77% of U.S. employees believe their companies should keep them informed of their building's IAQ.[vii]

Because we understand just how important the indoor environment is to our short-term health and long-term wellbeing, more people demand their employers address ongoing ventilation, environmental, and human health challenges in our buildings.

The Smart Air Quality program relies on multiple, scientifically proven technologies to monitor, diagnose, and recommend strategies and solutions to address the ongoing environmental and human health challenges. Using the latest monitoring and mitigation technologies, real-time analytics platform, and ongoing filtration services, we can design and implement a customized program to best meet the needs of building.

Smart Air Quality Program consists of the following elements:

- Continuous Air Quality Monitoring
- Needle Point Bipolar Ionization - NPBI™
- Ultraviolet Light Solutions
- Improved Filtration & Ventilation
- AI-enabled Dynamic VAV Optimization (DVO)
- HVAC & Automation Systems Optimize and Maintain

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Continuous monitoring + live dashboards: The foundation of Smart Air Quality

At Siemens, we recommend a focused approach to improving indoor environmental quality that aligns with the latest guidance from ASHRAE® and the Environmental Protection Agency (EPA):

Easy-to-interpret, color-coded dashboard

1. Monitor indoor environments in real time
2. Allow experts to assess the actual air quality from trending data and reporting
3. Implement the appropriate technology solutions, strategies and services
4. Continue to monitor and make ongoing adjustments, if needed

By relying on continuous monitoring and real-time dashboards to accurately represent and reflect changes in a building's air quality, we can help diagnose air quality problems; recommend the appropriate corrective actions; and help keep everyone as safe and healthy as possible.

Visit **usa.siemens.com/smartairquality** to learn more about how we can help create healthier indoor environments for all who work, live, shop, and visit your buildings.

[i] U.S. Environmental Protection Agency | link
[ii] Environmental Health Perspectives | link
[iii] Harvard T. H. Chan School of Public Health | link
[iv] Embry-Riddle Aeronautical University | link
[v] Society for Human Resource Management | link
[vi] Air Quality Life Index | link
[vii] FacilitiesNet.com | link

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