



VENTILATION

THE

AIR QUALITY IMPROVEMENT
STRATEGY YOU MIGHT BE MISSING

Ventilation: The Air Quality Improvement Strategy You Might Be Missing

In this era of concern over community health, many have discussed the role individual behavior can play in keeping oneself and others “safe” (quotations: ours, definition: yours).

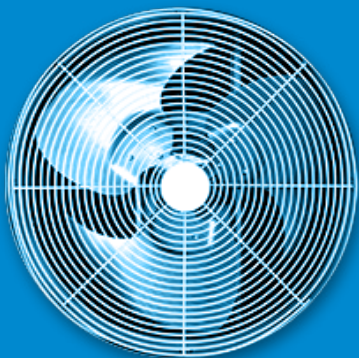
We’re not interested in debating popular wisdom on this topic, nor weigh in on what the right course of action may be for any particular group, company or family, obviously.

What we can credibly address for our commercial HVAC customers: the indisputable evidence that ventilation plays a huge role in the air quality of your building.

In a nutshell?

Having good air ventilation in your commercial building is good for everyone inside. In fact, this emphasis on fresh, clean air is now a code requirement for most California commercial properties.

It is also a productivity tool for your employees, as well as a positive safety intervention, with or without a pandemic to worry about, too.



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Learning from the Past

It wasn't always so.

In the 1970s, with energy conservation the newest catchphrase for the HVAC industry and the nation at large, new buildings (and old ones) were supposed to be as air-tight as possible. The Arab Oil Embargo of 1973-1974 meant that there was a serious energy crisis at hand, with fuel prices sky high. Builders became consumed with the idea of creating air-tight, energy efficient homes and commercial buildings. These in turn would allow them to track ACH (air changes per hour), with the idea of keeping these numbers as low as possible to avoid greater expense in heating and cooling the indoors.

While there were huge gains in this period in terms of green design innovation and new energy saving techniques, these airtight buildings also brought to light a troubling reality: without good ventilation to the outside, people inside these buildings were more likely to be sick.



Productivity and motivation were down, and absenteeism was up. The cause wasn't a mystery: chemicals off-gassed from paints, carpets, construction materials, and more were now ever-present in many indoor environments. After all, they weren't being "flushed out" with a regular influx of air from the outdoors. Sick building syndrome and other related issues became a growing problem, with indoor air quality newly relevant for builders, HVAC specialists and engineers alike.

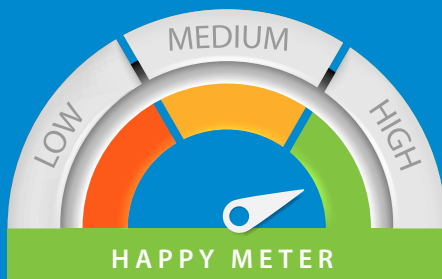
Covid-19 Brings Air Quality Concerns into Popular Culture

The pandemic has brought these concerns into even sharper focus. With experts scrambling for ways to improve our immediate health and safety, research has increasingly demonstrated that it's the air quality of any given building or indoor space that is critically important. It's no longer just a question of mold in your ductwork or toxic industrial carpet sending people home with unusual respiratory infections or mysterious feelings of fatigue. Today, your newest employee crunching numbers through their lunch break could be spreading potentially fatal viruses simply by eating a bologna sandwich at their desk.



In other words, the perils of poor ventilation isn't just a subject for HVAC conferences or architecture conclaves. Popular media has seized upon this topic as the issue of our times. Air quality is now on the mind of every tenant, customer, or employee working in a commercial building.

For that reason, it should be on yours too, if you're a commercial building owner. Ventilation is the strategy you should embrace, now more than ever before. In doing so, you'll be not only helping to keep your building safe from Covid-19, but other equally serious bacteria, viruses and contaminants. And a silver lining? Studies show that healthy indoor air quality is directly linked to productivity and workplace satisfaction. In this time of a "great resignation," every bit helps. Clearly, a well-ventilated building is a happier one.



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Ventilation Solutions That Make Sense Now

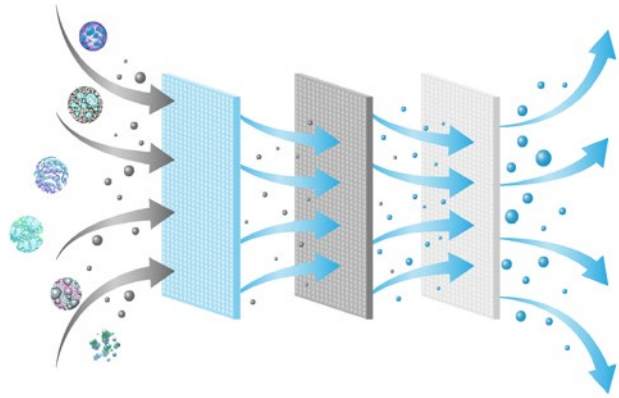
Consider the following from the California Department of Public Health:

Ventilation is an important control strategy for maintaining good IAQ and improving poor IAQ.

Properly designed ventilation can dilute particles and gases in indoor air and prevent contaminants from

accumulating to levels that may cause health or comfort problems. It can also remove excessive moisture and prevent microbial growth. Ventilation is best used together with efforts to remove or reduce the sources of the indoor contaminants, and, in some cases, air cleaning.

Let's take a look at types of ventilation that you can use within your commercial building.



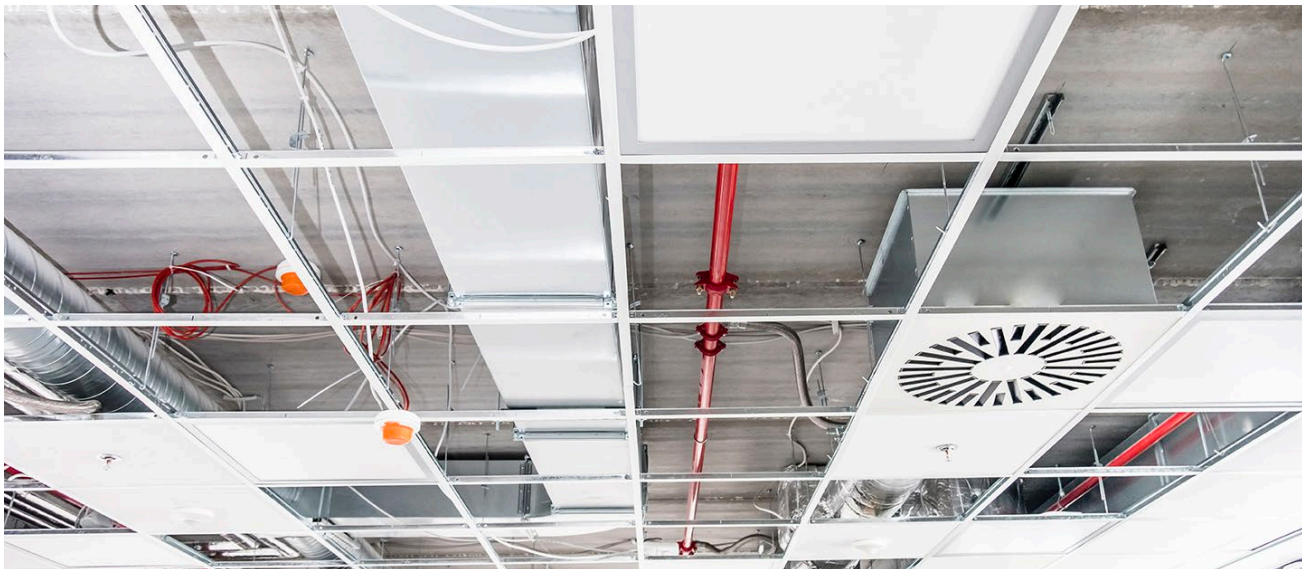
Natural Ventilation

This is the easy one, and the most intuitive. Open doors, open windows, even cracks in door seals and more obviously foster airflow from the outdoors to the inside of your building. Many of your tenants and regular occupants, not to mention brief visitors, will find signs of this kind of ventilation immediately reassuring. An open window or a propped open door in the reception area will go a long way to making people feel safe and comfortable as they enter your commercial space.

That's good, right? Up to a point.

Keep in mind that this method of ventilation does not provide any moisture control, nor is it necessarily predictable or always efficient at removing contaminants, viruses or other irritants from your indoor air. Furthermore, a windy or cold day may mean doors are shut and windows are closed, hampering efforts at cleaning indoor air even further.

For that reason, it's important to consider other methods for appropriate ventilation within your building.



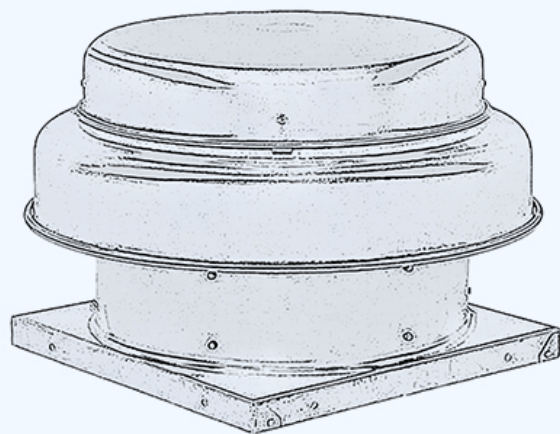
Mechanical Ventilation

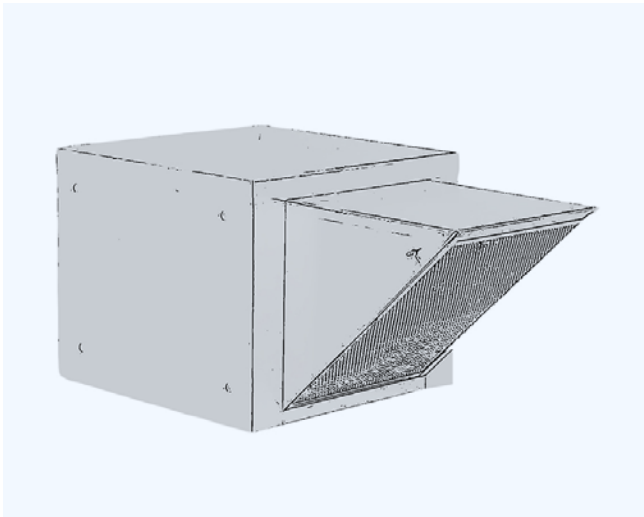
In many cases, it's not always possible just to open a window or door to improve ventilation. A department store, a factory or even an office building may not be designed for these kinds of quick fixes. In these cases, many commercial buildings employ something called mechanical ventilation, or a system of fans, blowers and air handling units connected to existing HVAC system ducts.

As a commercial building owner, you should consider:

Exhaust Ventilation Systems

Exhaust Ventilation Systems depressurize your building. Relatively inexpensive to install, these don't require heat exchange, since the air coming and going is the same temperature. After installing a fan in a central "exhaust point" location, the fan can in turn be connected to ducts in multiple rooms in the building (a kitchen or bathroom, for example). Passive vents are also placed in select windows or even within walls to also bring in fresh air. Exhaust ventilation systems do not remove moisture, making them unsuitable in frequently damp conditions.



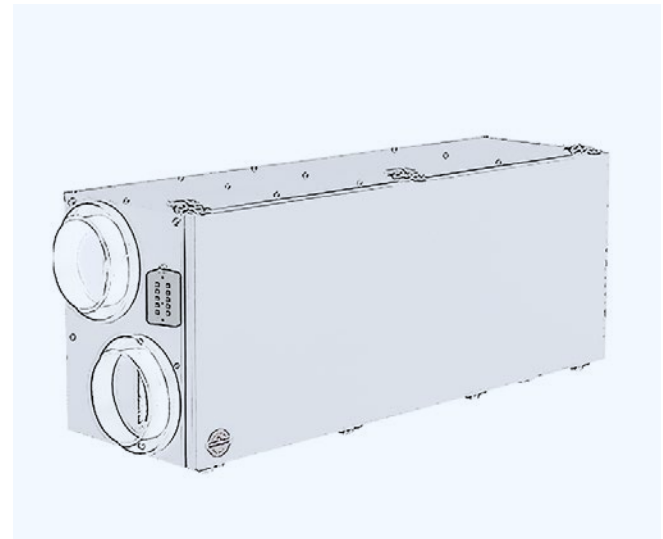


Supply Ventilation Systems

This equipment works by pressurizing your commercial building. Utilizing a fan to bring outside air inside, stale indoor air escapes to the outside using strategically placed vents, range-fan ducts and more. This method of ventilation is also relatively easy to install, with just a fan, vents and a simple duct system. Unlike the exhaust method, a supply ventilation system also reduces pollutants with its pressurization. Air may also be filtered as it enters.

ERV Ventilation Systems

Energy Recovery Ventilation Systems (ERVs) improve energy efficiency by improving indoor air quality while helping your HVAC system maintain a consistent temperature of the “new air” without having to work to heat or cool it. These systems are used in colder climates, but variations of the technology used are employed worldwide. Installed correctly, they can promote good ventilation while also helping you to save significant wear and tear on your heating and air conditioning equipment.



Balanced Ventilation Systems

Using heat exchange, this is the most effective way to provide adequate ventilation for your commercial building. It neither pressurizes or depressurizes your building, but instead supplies fresh air to high traffic areas and eliminates pollutants from spaces that often generate them. With two duct and fan systems as well as filters, these systems require more maintenance, though they also provide greater reliability and effectiveness overall.

Remember, ventilation is more than just a **“tool in the mitigation toolbox,”** as the CDC describes it in its use against the spread of Covid-19.

Used with air cleaners and in conjunction with regular HVAC maintenance, good ventilation ensures better indoor air quality.

As a commercial building owner, investing in ventilation efficiency makes your building safer and more desirable. And in this day and age, it's one thing to communicate rote concern for your employees, tenants and customers. But to demonstrate it with a thoughtful investment in sensible HVAC ventilation?

That upgrade is priceless.



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Robert Helbing, PE, is President of Air-Tro Heating and Air Conditioning Company. He is a Caltech-degreed aeronautical engineer (yes – a rocket scientist!), as well as a 4th generation contractor and 3rd generation engineer. He is a past-president of the Institute of Heating and Air Conditioning Industries (IHACI); Air Conditioning Contractors of America (ACCA) Contractor of the Year, 2011; and a 15-year member of Excellence Alliance Industries, a membership organization committed to the development and improvement of HVACR companies nationwide. Bob is also a founding member and past committee chair for the Western HVAC Performance Alliance, a council of stakeholders in the Energy industry which includes utilities, regulators, manufacturers and contractors. He currently serves on two committees for the WHPA: Commercial Quality Installation and the Existing Buildings Energy Efficiency. He can be reached at 626.357.3535 and bobhelbing@airtro.com.

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