Better ventilation = greater health and safety - by David Sachs

October 05, 2020 - Owners Developers & Managers

Wearing a mask, washing our hands, and social distancing are clear precautions we can take in the face of the COVID-19 pandemic. And many have taken refuge from the virus by spending more time outdoors in the safety of fresh air. But how can we protect ourselves when we're indoors? The answer likely lies in improving your building's ventilation.

While there is no silver bullet for combating COVID-19, improving building ventilation will play a central role in shaping our indoor spaces in the current and post-pandemic world. Better ventilation will improve air quality and create healthier spaces. While occupants may not immediately or directly observe the change in operation, they will see long-term benefits through decreased exposure to airborne pathogens and cleaner, fresher air.

Assess Existing Systems & Determine Upgrades

While there are energy laws requiring building owners to regularly assess and adjust their building systems—like NYC's Local Law 87, the retro-commissioning and energy audit law—indoor air quality may require a closer look.

If you're concerned about indoor air quality, find an experienced ventilation expert. When they get to your property, they will assess your ventilation system, which may include various techniques such as visual inspection, camera drops, smoke tests, or blower-door tests. For exhaust systems typically present in multifamily bathrooms, kitchens, and corridors, system improvements may include cleaning and sealing the exhaust shafts, installing high-efficiency variable speed exhaust fans, and installing constant exhauster registers (CERs) in each apartment. They may recommend that the building operator disable any exhaust timers that may be present to increase ventilation. They may also recommend retrofitting the corridor exhaust shafts to supply air to positively pressurize the building.

In forced air systems with return air, your ventilation expert will start by investigating air filtration. Replacing your filters regularly ensuring that they have a tight fit and are well seated is the first line of defense in removing airborne particles that can carry the virus. Your ventilation expert may also explore increasing the filtration (defined by the MERV rating), which will allow for the removal of even smaller airborne particles. Building operators should also explore improvements that can increase the percentage of fresh outdoor air supplied in the space and reducing the amount of 'recycled' air, which may have contaminates.

Energy Efficiency Impact

It is important to keep in mind that increasing ventilation rates often results in increased energy consumption via increased fan energy and/or increased heating and cooling loads. Thus, it is critical that design teams work with experienced energy consultants to design these systems and model expected energy consumption post-retrofit correctly. This will also enable decision-makers to see how different system improvements or renewable energy technologies may work to offset the increased consumption or lead to an energy decrease. For example, you can install Energy Recovery Ventilators (ERVs) in supply/exhaust systems, which can recover the heating or cooling energy in the exhaust air and transfer it to the supply air. Or you can retrofit a system with an air-side economizer, which utilizes outdoor air rather than the cooling system to cool the building on moderate weather days.

Your energy expert can weigh the various scenarios to help you plan for any impact on energy performance. While these upgrades can reduce energy expenses, ventilation upgrades may often increase energy consumption. In such cases, remember the importance of providing a healthy and safe environment for your occupants. When it comes to central systems or owner-maintained systems, it is the owner's responsibility to ensure that at least code-minimum ventilation is provided. If you find yourself in this situation, remember that the increase in energy spending may result from currently having an under-performing building that does not meet the occupant's needs. In this new world we live in, that could cause bigger, more costly problems for you in the long run.

How Can Occupants Do Their Part?

What can building occupants do? Ensure all of your ventilation registers are unobstructed and cleaned regularly—dirt and debris can significantly reduce ventilation rates. If you're unsure whether your bathroom or kitchen exhaust is working, try the "toilet-paper" test. Hold a tissue or one square of toilet paper up the exhaust register—if it sticks to the register, you are receiving at least some exhaust ventilation. If it falls, then you are receiving little or no ventilation.

What Next?

Curious about your ventilation system? Look through your Local Law 87 energy audit to see if there were any ventilation recommendations. If there were, that's a great place to start! If there were not, give your energy auditor or preferred ventilation expert a call and see the best path for your building.

Once your ventilation project is complete, it's time for your occupants to enjoy their more comfortable, healthier, and safer space!

David Sachs is the director of existing buildings at Bright Power, New York, N.Y.