

VENTILATION: ARE YOU OVERCOMPENSATING?

Meet Pat, the facility manager for a three-story office building in Western Canada. For the 50,000 sq ft of space, the energy spend is \$3 per sq ft. Motivated to reduce costs and improve on the building's Energy Star rating of 40, Pat is starting with the simplest ways to improve building performance. The economizer has been professionally serviced (article three in this series). Now the focus is on determining whether or not the building is over-ventilated.

Chances are, it is. Over-ventilation is the most common energy offender in commercial buildings. When a building is constructed, the systems are designed and configured to perform at maximum occupancy levels - requiring a lot of fresh air. Typically, buildings are not used as designed and are rarely full all the time.

According to Health Canada, along with ASHRAE and BOMA, maintaining CO₂ levels between 750-1000 parts per million provides a safe, comfortable and energy efficient environment.

Most buildings are at 500 and below. This means the systems are pulling in too much fresh air.

Although there are many causes of over-ventilation and just as many solutions, the first step for Pat is to have a professional measure the CO₂ over a period of "work days" as well as "off days" like holidays and weekends. Measurements will also be taken from a variety of locations in the building. Once complete, Pat will have a report detailing the levels over different times and in each of the areas.

If the report shows that the CO₂ is on the low end, Pat could consider the following from BOMA's Energy Efficiency Program:

- Take a look at the fans and adjust ventilation in unoccupied and low-density areas to reduce the ventilation to a practical, yet comfortable level.
- Where code permits, close outdoor air dampers during the first and last hours of occupancy to permit fast warm-up and cool-down.
- Regularly inspect and repair ventilation equipment.
- Be sure dampers have proper seals and adjust to ensure complete closure.

When ventilation is done right, it is the perfect application of reduce, reuse and recycle. By not bringing in unnecessary outside air and working with the existing conditioned inside air that's already been paid for, Pat will see somewhere between a 12% -30% reduction in energy use. Pat has lots of ideas about how to better use that money.

**Questions about how to make your plan a reality?
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