TELAIRE®

Application Note

Ventilation Controls Save Energy and Reduce Emissions in Commercial Spaces

Overcooling and overheating a building wastes money. Both of these conditions occur when too much or not enough outside air is brought in. In either case, proper CO_2-based ventilation control can eliminate this problem by bringing in the right amount of outside air to maintain the indoor environment, saving energy and reducing emissions

Typically, when most ventilation systems are commissioned the outside air intakes are set to bring in the target per person ventilation rate multiplied by the building's capacity (e.g. 15 cfm of outside air/ person x 2,000 people = 30,000 cfm). This works great as long as the building is always filled to capacity. When the building is not fully occupied, money and energy are wasted by conditioning outside air that is not needed and consequentially, adding to the building green house gas emissions. When doors are open, for example in a retail unit or cinema, you are ventilating.

Using Amphenol Advanced Sensors' CO_2-based ventilation control, the air is continually monitored so when the doors open and close, the influx of outside air is taken into account, so there is no need for the air conditioning system to bring air in mechanically.

How Much Does it Save?

Using Amphenol Advanced Sensors' Telaire sensors and Ventulator™ program you can calculate the expected energy savings when using ventilation control.

The annual energy savings in typical retail stores across the nation are shown in Table 1 to the right. Savings calculation is based on a 10,000 ft2 space occupied for 18 hours per day, seven days per week. Savings increase as the store size increases and the occupancy period is extended.

Based on these savings, the CO_2 sensors pay for themselves within a couple of months while reducing the customer's costs and CO_2 emissions.

Annual Savings		
Location	Total $	$/sqft
Miami, FL	12,664.00	1.27
Baltimore, MD	17,603.00	1.76
Boston, MA	18,729.00	1.87
Chicago, Il	18,001.00	1.80
St Louis, MO	17,243.00	1.72
Houston, TX	12,549.00	1.25
Los Angeles, CA	5,998.00	0.60
Portland, OR	11,530.00	1.15
Toronto, Ont	22,527.00	2.25

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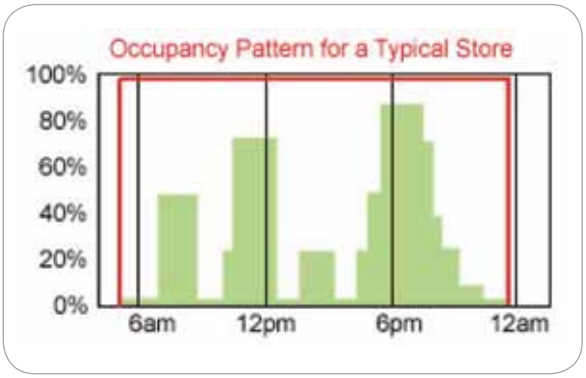
Advanced Sensors

How Does it Work?

Ventilation Control adjusts the economizer's outdoor air intake based on the measured CO_2 levels to maintain the proper ventilation rate (15 cfm of outside air/person). The graph below shows a typical occupancy pattern for a retail store or supermarket. With Ventilation Control, the outdoor air intake follows the occupancy pattern. As customers come and go throughout the day, the CO_2 sensor adjusts the amount of outdoor air entering the store accordingly. Most ventilation systems operate based on maximum occupancy.



Reduce Costs and Save Energy

Telaire has a complete line of low-cost carbon dioxide sensors that use patented infrared sensing technology and come with a five-year calibration guarantee. The 7001 hand-held CO_2/Temperature monitors can be used to determine under- and over-ventilation in existing applications. The Telaire 7001Di comes with a Hobo Datalogger making it a complete indoor air measurement tool by recording RH, temperature, and CO_2 over a few days. Couple this with a Ventulator™ energy analysis and you have all the data to justify adding demand-based ventilation control to both existing buildings and new constructions.

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