

VENTILATION CONTROLS

As buildings become increasingly airtight, awareness of mechanical ventilation grows. Proper ventilation is essential for removing excessive moisture that promotes mold and mildew build-up which can deteriorate a building's structure. Mechanical ventilation also helps remove accumulated volatile organic compounds (VOCs) that affect indoor air quality (IAQ) and may cause health problems for occupants.

Different lifestyles place different demands on the ventilation system. For example, a single adult, most likely, will require less ventilation than a family of five with pets. Also, an adult homeowner may be more likely to properly operate a manual ventilation control than a tenant or children that share a bathroom. Therefore, selecting a suitable control that runs ventilation at the proper time and duration will ensure that both the occupant's health and building structure are protected.

There are several types of *manual* and *automatic* controls that can be applied to ventilation systems. Some controls are more suitable for intermittent or continuous ventilation. The following discusses options to help select a suitable control.

Manual Controls:

Manual controls require the occupant to activate the ventilation fan when needed. This allows people who are particularly sensitive to indoor air quality to manually control and maintain their comfort level. The disadvantage of manual controls is that some people may not sense the need for ventilation and not turn it on.

The basic manual control is an on/off toggle switch, however, there are other controls with functions that may be more suitable to the occupant's lifestyle.

Delay off timer: Shower curtains, towels, walls and cabinets retain moisture long after the occupant has finished and left the bathroom. The advantage of a delay off timer is that it continues to evacuate moisture and odor after the occupant has finished.

Manual timers: There are two basic types of manual timers. The less expensive are spring-wound, known as a "countdown timers", suitable for intermittent bathroom ventilation. Electronic timers are more decorative and expensive but allow the occupant to select a time duration with the push of a button. Electronic timers do not produce the sometimes annoying ticking sound that countdown timers are known for.

Speed controls: Speed controls allow the user to set the desired speed (airflow) of a ventilation device. Speed can be controlled either continuously or in steps. One of the disadvantages of speed controls is that they can cause an undesirable fan motor humming noise.

Automatic Controls:

These controls can be full or semi-automatic. An example of a fully automatic control is a 24-hour duty cycle timer that is programmed to cycle on and off over a 24-hour period. A semi-automatic control is a control that has an override switch. An example would be an occupancy sensor with a manual on/off override.

Occupancy (motion) sensors: Occupancy sensors are suitable for intermittent ventilation. An advantage is that the ventilation system will operate without having to rely on the occupant's interaction. The ventilation system will remain "on" and continue working for a duration after the occupant has left the room, much like a delay off timer.

Humidity sensors (dehumidistat): Dehumidistats can be used to turn a ventilation system on/off when relative humidity reaches a certain level. These controls are most likely to be used in bathrooms to evacuate excessive moisture. Dehumidistats have few disadvantages. One disadvantage is that seasonal changes in outdoor relative humidity necessitate seasonal readjustments to function optimally. Another disadvantage of a dehumidistat is that, compared to other controls, it requires rather complicated wiring and programming.

Automatic timers: Automatic timers operate fans at programmed times throughout the day. Typically a 24-hour programmable timer is used to run a fan in morning and evening hours when there is a high demand for ventilation. For continuous ventilation, the control can be programmed to operate throughout the day to help evacuate any accumulation of VOCs or other indoor air pollutants.

Controls can also be used in combination with each other to provide both intermittent and continuous ventilation. For example, a programmable timer may be used to cycle the fan on and off throughout the day to address overall indoor air quality. A relay to an on/off toggle switch can be on the same system for the occupant to manually override the timer and turn the fan on while using the bathroom. The key to selecting the right control or combination of controls is to first understand the occupant's lifestyle and ventilation needs. Then select a control that provides proper ventilation with little or no involvement by the occupant.