

The Building Tight/ IAQ/Active Ventilation Equation: One Solution

by Michael Fallarino

There's no questioning the fact that we are building progressively tighter. That's a good thing. Recent developments in building science are pointing increasingly toward the benefits of tight construction. New methods of fabrication are demonstrating the multidimensional virtues of sealing off all air infiltration routes, and keeping walls better insulated and drier.

But very tight construction and tightly sealed buildings require us to understand some rudimentary dynamics about indoor air quality (IAQ) and the physics of air movement within structures. There isn't any virtue in creating a tight structure if the quality of air in that structure is substantially lower than the outdoor air. According to the US Environmental Protection Agency (EPA), this is often the case.

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Understanding how to keep walls dry and how to lower our heating and cooling costs is very important (air infiltration commonly raises these costs by as much as 50%), but we must remember that our structures are living environments. If we are to seal our buildings tightly, then there are two additional factors that must be partners in the equation.

The first is that structures - even newly constructed ones - can easily become polluted. It isn't so easy to understand the multifarious dimensions of the pollution. Many of these pollutants may come from materials used in the construction of the building or from objects, furnishings, and chemicals brought into the building.

Another dimension of this equation is the need for systems which actively exchange the indoor air for (hopefully) fresh outside air. Understanding the physics of indoor air movement helps. One rudimentary aspect of the physics of indoor air involves the tendency of air to move from a gradient of higher pressure to a gradient of lower pressure. Such pressure gradients need not be great. In fact, the pressure gradients inside structures that affect IAQ may be so small that they can be active and create an effect at levels lower than we would be concerned with as those same gradients relate to

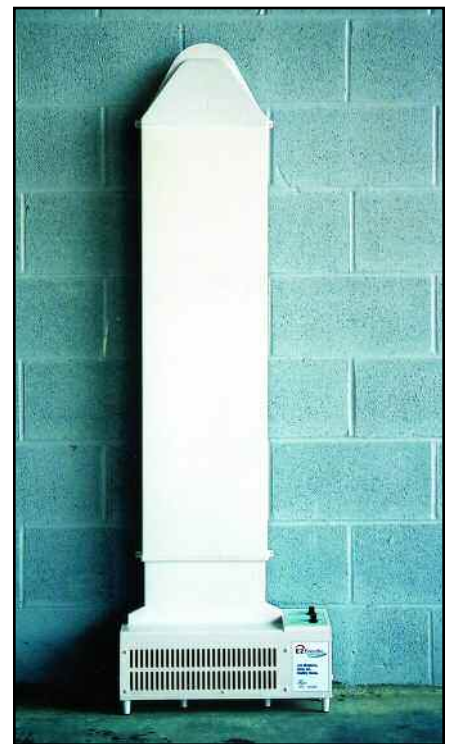
energy conservation. This is a *critical* point.

The E•Z Breathe Solution

One solution to this equation is currently being marketed by E•Z Breathe™ Ventilation Systems. The concept behind the operation of the E•Z Breathe System is simple. A mechanical air exchange system with a controllable humidistat is installed at the base floor of a structure.

Normally this would be a basement. Basements are commonly a source of inducing pollution into our indoor environments. Additionally, the air in basements is frequently a source of undesirable and potentially polluted water vapor which seeks to equalize itself by flowing into a drier space (typically, the upper floors of the structure).

As a contractor, I'm commonly in basements which have been converted into living space. And just as common-



ly, there is a palpable musty, moldy characteristic to these spaces. It is truly difficult to seal and finish these spaces and not have problems (for instance: hidden mold, mildew, wood rot, insect infestation, and moisture condensation) develop under and behind the installed trims.

The E•Z Breathe system was created with all of these problems and dynamics in mind. It is an active ventilation system that exhausts to the outside of the building. By inducing a pressure gradient that draws air from the upper levels of a structure downward toward

damper areas, the moisture in these lower areas is actively diminished and dissipated, and exhausted to the outside of the structure. This can also aid structures that may have condensation problems in the upper floors of the building.

In the process, this system can assist in purifying the air in the structure, and replace dehumidifiers. It's an energy efficient system, and operating costs are estimated by the company to typically run in the two to four dollar per month range.

For more information about E•Z Breathe Ventilation Systems, contact them at 365 Highland Road East, Macedonia, OH 44056; call them toll free at 866-822-7328, or visit them on the web at www.ezbreathe.com.

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