

## MECHANICAL VENTILATION OF SIP STRUCTURES

As we insulate and seal homes to achieve greater levels of comfort and energy independence, Premier panels have proven themselves to be the most cost effective and stable method of construction. Although this simplified process of super-insulation has shown positive impacts on the quality, comfort and energy savings of structures, it has also created the need for controlled ventilation. Many of today's indoor airborne pollutants can be effectively controlled, and ultimately increasing the comfort and livability of a structure.

Mechanical ventilation has proven effective in mitigating fumes from combustion appliances, radon, formaldehyde and even pollutants such as excess humidity and tobacco smoke. Established levels of humidity are governed by region. A rough rule of thumb is to limit the relative humidity, in the interior of a building to 50. This will be low enough to inhibit mold or mildew based pollutants yet high enough to reduce low humidity pollutants like dust mites.

In order to remove the contaminated air, a means of exhaust is essential. Typically, that exhausted air is replaced with fresh air from outside the structure. Several methods of accomplishing this are available. They are listed as follows:

- 1.) Air to air heat exchangers - These small units generally draw air from source areas like kitchens and bathrooms where excess humidity is created. Moisture laden warm air is carried through ducts to the unit where it transfers the heat through a core, similar in function to the radiator of a car, while carrying the moisture out of the structure. Thus, the exhaust air tempers or pre-heats the cold unconditioned but fresh air that is coming in from outside. These units are also known as HRV's or Heat Recovery Ventilators.
- 2.) Exhaust only systems - These units come in many shapes and sizes from, simple one room units to multiple duct whole house exhausts. These units typically exhaust the stale air and rely upon natural infiltration to replace the exhausted air. They can create a negative pressure in the structure.
- 3.) Ventilating windows - These windows use a small grille to both exhaust and replace air in a house. They are manually operated and can be used in selected windows or in every window in a home.
- 4.) Air Cleaners - These units run the gamut from inexpensive table top versions to very sophisticated whole house systems. They are used to remove particulate pollutants but generally are not designed for the removal of gaseous pollutants. Typically these are not recommended for either humidity or radon control.

Whatever your choice in mechanical ventilation, your design professional should be involved in any indoor air quality maintenance design. Several sources are available for in depth, objective, information on the subject of air quality. Some are listed below:

National Center for Appropriate Technology  
P.O. Box 2525  
Butte, MT 59702-2525  
(800) 428-2525

Energy Efficiency and Renewable Energy Clearinghouse  
P.O. Box 3048  
Merrifield, VA 22116  
(800) DOE-EREC