VENTILATION - GENERAL

Since the LEGALETT System moves air within the slab, and not within the structure, it cannot be used for ventilation. This lack of air movement has many pleasant side effects discussed elsewhere in this site. However, some ventilation air is still required, and this is implemented by using a code-required ventilation system.

Separation of the heating system from the ventilation system has another often-overlooked benefit - it reduces the size and required operation time of the ventilation system to only what is required to maintain fresh air. Trying to combine the heating and ventilation systems is an inefficient process, since you must ventilate all the time to maintain heating. The problem with ventilating all the time is that since you are bringing in fresh air, it is typically colder or hotter than the interior air, and energy is required to change the temperature of the fresh air to be the same as the ambient. For a structure that is intermittently used, this energy usage is a total waste, not just for heating/cooling the fresh air, but actually moving it around as well. Such intermittent-use structures, like churches, schools, or other assembly buildings are especially suited to the LEGALETT System, since the LEGALETT System heats all the time as required, maintaining a superior comfort level, while the ventilation system (with its accompanying high energy consumption for air movement and heating/cooling) is only used during occupancy. Such energy savings can be substantial, even in residential applications. Refer to 'HRV/ERV Operation with Legalett' Product Data Sheet for more information. In summary, ventilate (and heat/cool) only when required to save energy, and enjoy the comfort of the LEGALETT System all the time!

BUILDING TECHNIQUES THAT REDUCE THE INFLUX OF HEAT AND HUMIDITY

ICF Walls:
Insulated Concrete Form (ICF) walls, with their internal concrete cores, offer the benefits of thermal mass through what is commonly called the 'thermal mass effect'. Simply put, these wall systems use the thermal mass of concrete to slow spikes of temperature from passing through the concrete wall. They absorb the heat spike in the middle of the day, and radiate it back outside during the night, thus reducing the effect of the heat spike (or cold snap at night). This effectively reduces the heating and cooling requirements of the structure.

Low-E Windows:
Low-E coatings, which act as insulators to heat in the summer (and winter), reducing the heat flux through the window into the structure, also reducing the cooling requirements of the structure.

Energy Recovery Ventilators:
Opening windows during the summer is typically done to 'cool' the building, especially at night. The problem with doing so is that while you may be bringing in cooler air into the house, you are also bringing in humidity. This elevated humidity (typical of hot, muggy summer days) is what causes the discomfort that air conditioning tries to reduce. Remember that air conditioning is 90% dehumidification, and 10% cooling. The answer to reducing this influx of humidity is to ventilate the house using a mechanical ventilation system that brings in fresh air, while rejecting the heat AND humidity in the fresh air, maintaining the lower temperature inside the structure. This can be done with an Energy Recovery Ventilator (ERV), which is the same concept as a Heat Recover Ventilator (HRV), but also recovers (or in this case, rejects) the humidity in the incoming fresh air stream by transferring it to the outgoing stale air stream.