Why Ventilation and Moisture Control are Important for Spray Foam Insulation Homes
Spray foam insulation has been increasing in popularity over the last several years. While initial costs are more expensive than traditional insulation, there can be significant long-term energy savings. This is because spray foam is not only an effective insulator, but also a powerful air sealing agent. Sealing restricts air movement through the building envelope.

If air moves through insulation, the R-values are diminished. Air sealing also reduces the natural ventilation rate (or air leakage rate), further reducing heating and cooling loads.

All sounds good, right? But natural ventilation dilutes the concentration levels of pollutants generated inside the home. Studies show that without it, dust, allergens, moisture, and other pollutants can build up to unhealthy and even dangerous levels. Therefore providing mechanical fresh air ventilation is especially important in spray foam houses.

Cooking, showering, breathing, and other day-to-day activities generate a moisture load that needs to be removed. If the house is sealed tight with spray foam, it is much harder for this moisture to leave the house naturally. It builds up inside the home and can raise relative humidity to uncomfortable and even dangerous levels.

While most spray foam homes are required to have some form of mechanical ventilation (ventilation to ASHRAE 62.2 Standard is recommended), there are many questions on how best to provide it. The most common strategy being practiced throughout the country is using an Energy Recovery Ventilator (ERV) – but is this best solution?

ERVs are a balanced ventilation system originally developed for northern climates. They bring air into the home and blow an equal amount of air out of the home. The ERV core transfers some heat and moisture (energy) between the two air streams. But the energy transfer isn’t perfect. As a result, during typical summer conditions in a hot/humid climate, some additional moisture is added to the home when ventilating. With each additional air change, even more moisture is added. As moisture from the ventilation is combined with the internal moisture loads, the relative humidity can quickly climb out of control.

To make matters worse, the air conditioner’s run time is reduced due to the spray foam’s effective thermal insulation, meaning less ability to remove moisture.

The best solution for mechanical ventilation in humid climates is a high efficiency Ultra-Aire Whole House Ventilating Dehumidifier. Ultra-Aire dehumidifiers are capable of bringing in filtered outside air, putting the house under a slight positive pressure and dehumidifying the air as necessary. In addition to dehumidifying the air brought in for ventilation the units also maintain interior humidity 24/7 independent of the air conditioning system.

Ultra-Aire dehumidifiers are the most energy efficient on the market, while offering multiple sizes to ensure a good fit for most applications.

For more information on Ultra-Aire’s complete line of products, visit www.Ultra-Aire.com.
Both graphs depict what is known as a “part-load humidity problem”, which occurs when outside temperatures cause the air conditioner in the home to run only occasionally. Since the air conditioner is typically the only drying mechanism in the home, these are the most challenging times to control humidity in the home.

As depicted in the graphs, outside temperatures are generally below 80 degrees, with high humidity (shown by the outside dewpoint). These conditions are typically associated with cloudy or rainy days or overnight periods.

Since the air conditioner isn’t running enough to keep the home dry, supplemental drying is required. As shown in the top graph, an ERV allows the inside relative humidity to accumulate to uncomfortable levels. In contrast, the lower graph shows that with an Ultra-Aire Whole House Ventilating Dehumidifier, inside relative humidity is controlled to a comfortable level.

According to the Environmental Protection Agency, indoor relative humidity (RH) should be maintained between 35% and 55%.
Ultra-Aire™ – The Solution for Moisture Control and Ventilation

Ultra-Aire Whole House Ventilating Dehumidifiers exceed ENERGY STAR® qualifications and are the most energy efficient on the market. The units bring in the right amount of fresh, filtered air while maintaining proper humidity levels throughout the entire home year round.

Installed by your HVAC professional to provide the ultimate in structural protection, comfort, and indoor air quality, Ultra-Aire units are designed to provide effective moisture control, fresh air ventilation and high efficiency air filtration. Single units are available for conditioning areas ranging up to 5,000 square feet. Multiple units are easily combined for larger areas or where zoning requires individual units to be tied to each A/C system.

<table>
<thead>
<tr>
<th>Water Removal*</th>
<th>Current Draw</th>
<th>Efficiency</th>
<th>Energy Factor</th>
<th>Sized For</th>
<th>Air Filter</th>
<th>Dimensions</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultra-Aire 70H</td>
<td>70 pints per day</td>
<td>5.1 amps</td>
<td>5.0 pints per kWh</td>
<td>2.4 L per kWh</td>
<td>Up to 1,800 Sq. Ft.</td>
<td>MERV-11</td>
<td>12”W 12”H 28”L</td>
</tr>
<tr>
<td>Ultra-Aire 98H</td>
<td>98 pints per day</td>
<td>5.9 amps</td>
<td>6.1 pints per kWh</td>
<td>2.95 L per kWh</td>
<td>Up to 2,300 Sq. Ft.</td>
<td>MERV-11</td>
<td>14.5”W 19.5”H 32.375”L</td>
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<tr>
<td>Ultra-Aire 100V</td>
<td>110 pints per day</td>
<td>6.4 amps</td>
<td>6.2 pints per kWh</td>
<td>3.0 L per kWh</td>
<td>Up to 2,500 Sq. Ft.</td>
<td>MERV-11</td>
<td>21”W 49”H 17”L</td>
</tr>
<tr>
<td>Ultra-Aire XT105H</td>
<td>105 pints per day</td>
<td>4.9 amps</td>
<td>8.8 pints per kWh</td>
<td>4.2 L per kWh</td>
<td>Up to 2,500 Sq. Ft.</td>
<td>MERV-11</td>
<td>20.25”W 21.75”H 41.5”L</td>
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<tr>
<td>Ultra-Aire XT155H</td>
<td>155 pints per day</td>
<td>8.0 amps</td>
<td>7.3 pints per kWh</td>
<td>3.4 L per kWh</td>
<td>Up to 3,500 Sq. Ft.</td>
<td>MERV-11</td>
<td>20.25”W 21.75”H 41.5”L</td>
</tr>
<tr>
<td>Ultra-Aire XT205H</td>
<td>205 pints per day</td>
<td>13.2 amps</td>
<td>5.7 pints per kWh</td>
<td>2.7 L per kWh</td>
<td>Up to 5,000 Sq. Ft.</td>
<td>MERV-11</td>
<td>20.25”W 21.75”H 41.5”L</td>
</tr>
<tr>
<td>Ultra-Aire SD12</td>
<td>184 pints per day</td>
<td>1.4 amps</td>
<td>6.6 pints per kWh</td>
<td>3.1 L per kWh</td>
<td>Up to 4,000 Sq. Ft.</td>
<td>MERV-11</td>
<td>20.25”W 21.75”H 41.5”L</td>
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</tbody>
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The Ultra-Aire SD12 also provides 4,300 BTUs/Hour of Sensible Cooling

XT PATENTS: D570,988 and 8,069,681

1-800-533-7533 | www.Ultra-Aire.com

*at 80°F and 60% RH
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