CASE STUDY

SPRAY FOAM HOME

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 insulation homes.

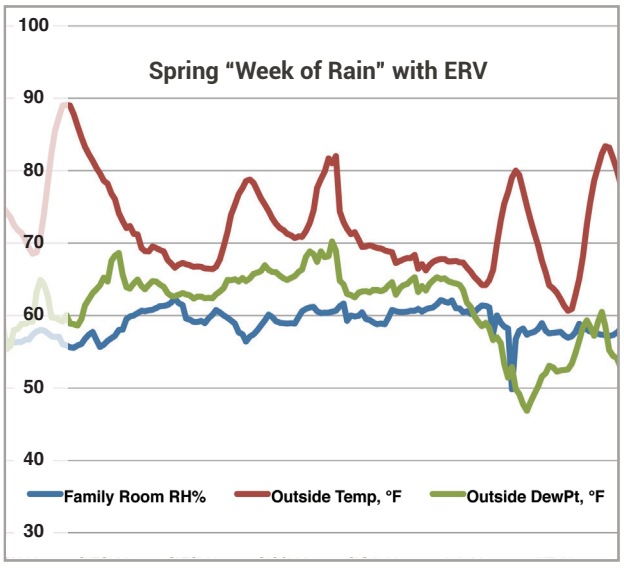
PROBLEM

A home recently dealt with excessive humidity levels in several of its rooms. The house was designed and built using energy efficiency best practices which included spray foam insulation. 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 naturally. It builds up inside the home and can raise relative humidity to uncomfortable and even dangerous levels. 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.

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 the 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.

Energy Recovery Ventilator installed in the home.



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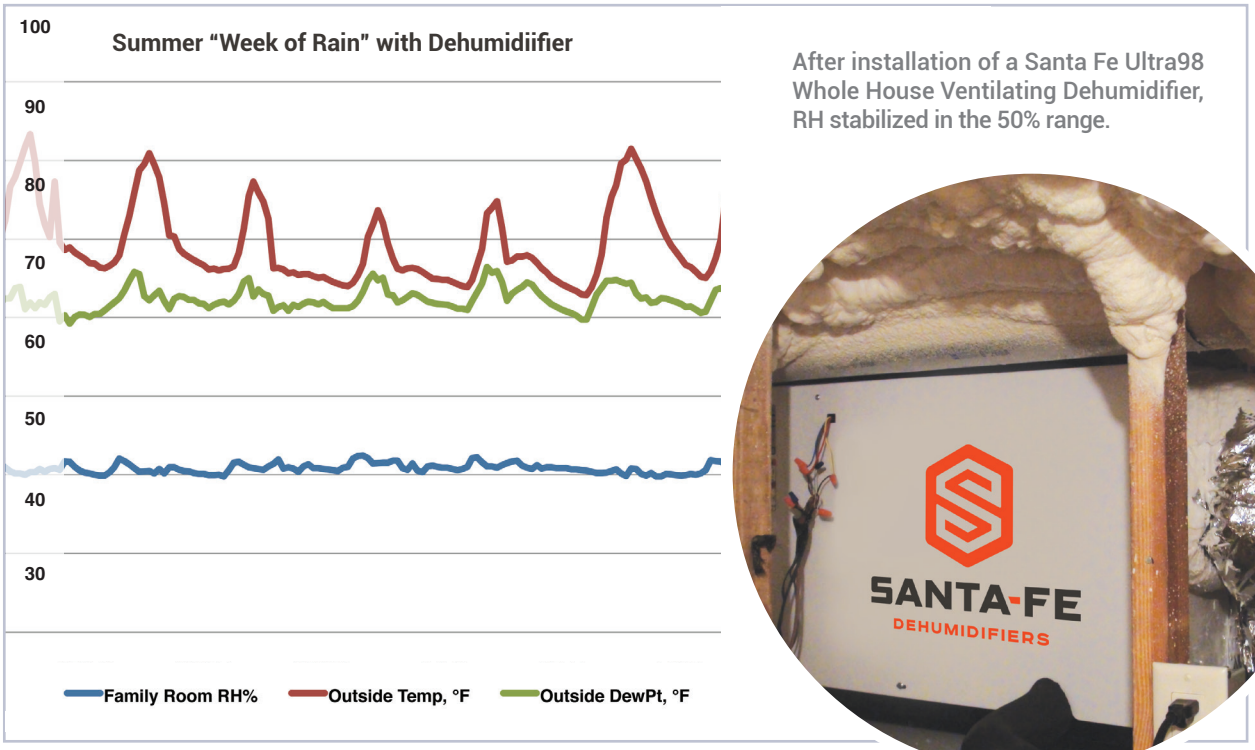
SOLUTION

A **Santa Fe Ultra98 Whole House Ventilating Dehumidifier** was installed. Almost immediately, the RH stabilized in the 50% range, even with high dew point and temperature levels outside. The Santa Fe Ultra98 Whole House Ventilating Dehumidifier was able to bring in the right amount of fresh, filtered air while also maintaining proper humidity levels throughout the home, independent of the air conditioning system.



After installation of a Santa Fe Ultra98 Whole House Ventilating Dehumidifier, RH stabilized in the 50% range.

Why Install a Whole House Ventilating Dehumidifier?

Indoor humidity cannot be effectively or efficiently controlled with an air conditioning system alone, especially during part-load times. Excessive moisture can contribute to poor indoor air quality, property damage, mold, and discomfort.

Including a dedicated whole house ventilating dehumidifier as an integral part of the mechanical system protects the home and creates a comfortable, healthier living environment.