

How Spray Polyurethane Foam Insulation Can Help Achieve Zero Net Energy

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The Zero Net Energy (ZNE) movement has gained incredible momentum over the past few years in North America. Zero net energy buildings generate as much power from onsite energy sources as they consume and may be achieved with new, ground-up construction as well as with facility retrofits. When applied to commercial property renovation, the resulting structure benefits both the owner and the end user with a building that creates and saves its own energy, while providing a positive global impact from its reduced environmental footprint.

A Solution for ZNE Energy Efficiency: Spray Polyurethane Foam

Energy efficiency must accompany energy generation in a structure as a major variable to meeting ZNE requirements. Thus exceptional insulation and air-sealing throughout the building envelope as well as high performance roofing are both paramount. Spray Polyurethane Foam (SPF) solutions are increasingly utilized in ZNE projects for both applications because of the material's superb ability to seal a structure and to provide a single-source solution as a water, thermal and air barrier.

A building enclosure will either enhance or hinder the energy efficiency of the structure. Depending on the materials and methods utilized in construction, energy loss may occur at various points throughout the roof, walls and ceiling via air leakage. Air sealing is necessary in ZNE buildings and SPF works well to achieve it.

As a thermal insulator, SPF forms in place and fully adheres, almost completely eliminating the cracks and gaps that allow escape of conditioned air. It may also be installed in a continuous layer, eliminating thermal bypasses typically found in cavity insulations. SPF boasts stellar thermal insulation performance, offering the highest R value in the industry.

In roofing, SPF performs as both a protective roofing material and as an insulator. The effectiveness of insulation – whether roofing or in walls and floors – is measured through a combination of factors including moisture control, air leakage, health, safety, durability, comfort and energy efficiency – with SPF scoring exceptional marks in all categories. In short, the material dramatically reduces the demand for heat and air conditioning in a structure, making it an ideal material for use in a building renovated to achieve ZNE.

High-performance insulation will continue to be of key importance in the Zero Net Energy movement as it forges fully ahead. And ZNE construction and retrofit activity is unlikely to wane - for good reason. ZNE structures benefit the owner, the end user and ultimately the environment as well.

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