



REFLECTIVE INSULATION MANUFACTURERS ASSOCIATION

Reflective Technology - METAL BUILDING SYSTEMS

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Using Reflective Insulation in Pre-engineered Metal Building Systems

Written by: Susan Shulins, December 19, 2001 REVISED 12/26/01
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The Many Benefits of Using Reflective Insulation in Metal Building Systems

While metal building systems are widely used across the country for various commercial and industrial applications, they often pose a difficult challenge: how to maintain desired temperatures inside while keeping energy costs down. During the past few years more and more companies have found the solution by installing reflective insulation throughout their metal building systems.

The product is gaining popularity for its energy saving benefits, ease of installation and competitive pricing, said Bob Wadsworth, president of Astro-Foil Innovative Energy, an Indiana-based reflective insulation manufacturer.

"The entire market has grown by about 25 percent during the past five years," said Wadsworth, a 20-year industry veteran. Because metal buildings conduct heat, maintaining desired temperatures during the summer and winter months can be an ongoing - and often expensive - challenge.

Based on technology first used in NASA's space program, reflective insulation works by reducing the transfer of heat across a building's air spaces - a big benefit in metal buildings.

While mass insulation slows down conductive heat transfer, reflective insulation works by reflecting heat away from its surfaces. Because reflective insulation is manufactured with highly reflective, aluminum foil surfaces, 95-97 percent of the radiant heat that strikes the surface is reflected, and only three to five percent of the heat is emitted through the insulation.

The major benefit of this reflective property is that in the winter, heat inside a metal building is reflected off the insulation's shiny surface back into the building so that the heat is retained inside.

In the summer, heat that's radiated through the roof is reflected off the insulation's surface back to the roof - not to the inside the building - keeping temperatures inside the building cooler.

As with other types of insulation, reflective insulation is available in various R-values.

The major types of reflective insulation include:

- A layer, or multiple layers, of aluminum foil separated by a layer or layers of plastic bubbles or foam material.
- Multiple layers of aluminum, kraft paper and/or plastic with internal expanders or flanges at the end for easy installation.

As with all types of insulation, to achieve maximum performance, the insulation must be properly installed according to the manufacturer's specifications," said Wadsworth.

"The performance of reflective insulation will depend on the number of reflective surfaces facing air spaces, so for maximum performance the shiny, reflective surface should be exposed to the building's interior so that it can function as a radiant barrier," said Wadsworth.

"The result is that occupants inside the building are more comfortable and less energy is needed to maintain desired temperatures," said Wadsworth.

The Reflective Insulation Manufacturers Association (RIMA), the only trade association representing the reflective insulation, radiant barrier and radiant control coating industries, provides installation guidelines and information about reflective insulation and manufacturers. (To learn more about the benefits of reflective insulation, or to find a manufacturer or installation guidelines, visit the RIMA website, www.rima.net, or call the association at 1-800-279-4123).



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In addition to its energy saving capabilities, reflective insulation has many other desirable features:

- Reflective insulation is easy to install, resulting in lower labor costs. It's fiber-free, lightweight, and can be cut to fit virtually any configuration. In most cases, reflective insulation can be installed by smaller crews and in less time than with other types of insulation products.
- Reflective insulation can be installed over previous insulation to increase insulating properties, or to improve a building's interior appearance.
- The insulation's reflective surface can reduce interior lighting requirements by as much as 35 percent, helping to reduce energy costs.
- Reflective insulation's low moisture transfer improves the overall thermal performance of the building.

While the products can be used in almost any climate, they are currently most popular in southern states where excessive heat can send energy costs soaring, said Darryl Bagwell, national commercial sales manager for Fi-Foil Company, a reflective insulation and radiant barrier manufacturer.

Last year a Florida beverage distributor installed reflective insulation using a patented system manufactured by Bagwell's company inside its 30,000 square-foot climate-controlled metal warehouse facility with the goal of achieving lower interior temperatures without incurring higher energy costs. In about two weeks a three-man crew installed the reflective bubble insulation throughout the facility, without disrupting the daily flow of inventory.

With the new reflective insulation the distributor met its goal.

"The company was able to raise the bar to obtain the lower temperatures it needed without increasing energy costs," said Bagwell.

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