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Cool Metal Roofing--Living Up To The Promise

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It's been a relatively short time--just a few years, actually--since the metal roofing industry first started paying serious attention to the potential benefits of "cool roofs", in which metal panels coated with highly reflective finishes greatly reduce heat absorption and cut cooling costs. Today, as cool metal roofing evolves into a mature product category, it's fair to ask if the technology is living up to its promise. I believe the answer is a resounding "yes"--for building owners, designers and the roofing industry as a whole.

The Promise To Owners: Energy Savings And Long Life

Thanks to continuing field tests, the energy- and cost-saving benefits of cool metal roofing are more clearly and accurately understood than ever before. Among the most clear-cut examples is a recent case study involving two virtually identical 90,000 sq. ft. school buildings in neighboring Georgia school districts. One school was roofed with a conventional green standing seam metal roof with solar reflectance of 12%; the other had the same color metal roof with a cool roof finish that provided solar reflectance of 29%. The local electric utility measured and confirmed the comparative energy usage, and found the cool-roofed school achieved energy savings of \$8,800 in the first year alone.

Similar tests in residential settings demonstrate comparable benefits to individual homeowners. At a demonstration site in Fair Oaks, CA, researchers from Lawrence Berkeley National Laboratory and Oak Ridge National Laboratory monitored energy savings in two pairs of identical homes. One home in each pair was roofed with conventional painted metal shakes and the other was roofed using metal shakes with a cool roof finish--in this case, our company's ULTRA-Cool coating, developed by BASF Corp.'s Industrial Coatings Division.

In one typical September, the amount of heat penetrating into the attic of the home with the ULTRA-Cool roof was 36% less than in the home with the conventional coating, providing an estimated 20% saving in cooling costs.

But direct energy savings are only the beginning. In tests involving more than 10,000 hours of accelerated exposure, we have found cool roof finishes are also significantly more fade resistant than conventional coatings. Moreover, since a metal roof with a cool roof finish can be as much as 55 degrees cooler on a sunny day, heat expansion and contraction are also reduced, adding to the roof's durability and longevity, and greatly reducing total life-cycle cost.

These benefits--along with measurable, quantifiable energy savings--indicate to me that cool metal roofs are indeed living up to their promise to building owners.

The Promise To Designers: Attractive Solutions To Design Challenges

For architects, designers and builders, the energy-saving benefits of cool metal roofing are taking on added significance as they adapt their design and building solutions to comply with evolving code requirements. The most high-profile of these changes occurred in October 2005, when Title 24, Part 6, of the California Code of Regulations began regulating energy efficiency for roofs in California for the first time.

The most immediate impact of the Title 24 changes was on low-slope non-residential roofs, where cool roofs are either a required feature or a recommended option for meeting a building's total permitted energy "budget." But the effects are also being noticed in the residential market and in other states, as various jurisdictions study the effects of these new requirements.

In another recent regulatory development, the revised Chicago Energy Conservation Code also encourages the use of cool roof systems--in this case to reduce the "urban heat island" effect, which contributes to urban smog and causes increased demands on power plants. High profile initiatives such as EnergyStar and the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system are also increasing awareness--and adding to the demand.

Again, however, energy savings are only part of the story. Since these new coatings are available on an array of metal roofing products, they also enable architects to offer their clients a variety of attractive design alternatives. In addition to the clean, contemporary lines of a standing seam metal roof, they can now specify a metal roof that saves energy, resists weathering and deterioration, and offers a host of other metal roofing benefits, while faithfully replicating the appearance of virtually any roofing material, from wooden shakes and shingles to slate and terra cotta tile.

The Promise To The Industry: New Growth Opportunities

If cool roof technology is indeed living up to its promise to building owners and designers, what about its promise to the metal roofing industry in general? That question is more difficult to answer with precision, since industry-wide cool roof installation numbers are not readily available. Yet all the available evidence indicates that “early adapters” are already seeing the benefits.

In our own case, for example, our company has seen a sustained annual growth rate of approximately 25% for the past several years. Not all of that is due to our early commitment to cool roof technology, of course, but to us the link is clear--and from my discussions with other manufacturers, I know ours is not an isolated case.

Perhaps the most convincing evidence that cool roof technology is living up to its promise can be seen in this simple fact: today, virtually every metal roofing manufacturer has an active cool roof program. The metal roofing industry is making a major commitment of resources to cool roof technologies that offer energy savings, aesthetic appeal and, above all, long-term total life-cycle value.

As the regulatory environment continues to evolve, and as incentive programs that encourage energy-efficient building continue to grow, the answer to our original question becomes clear: for building owners, designers, builders, and the industry as a whole, cool roof technology is living up to its promise every day.