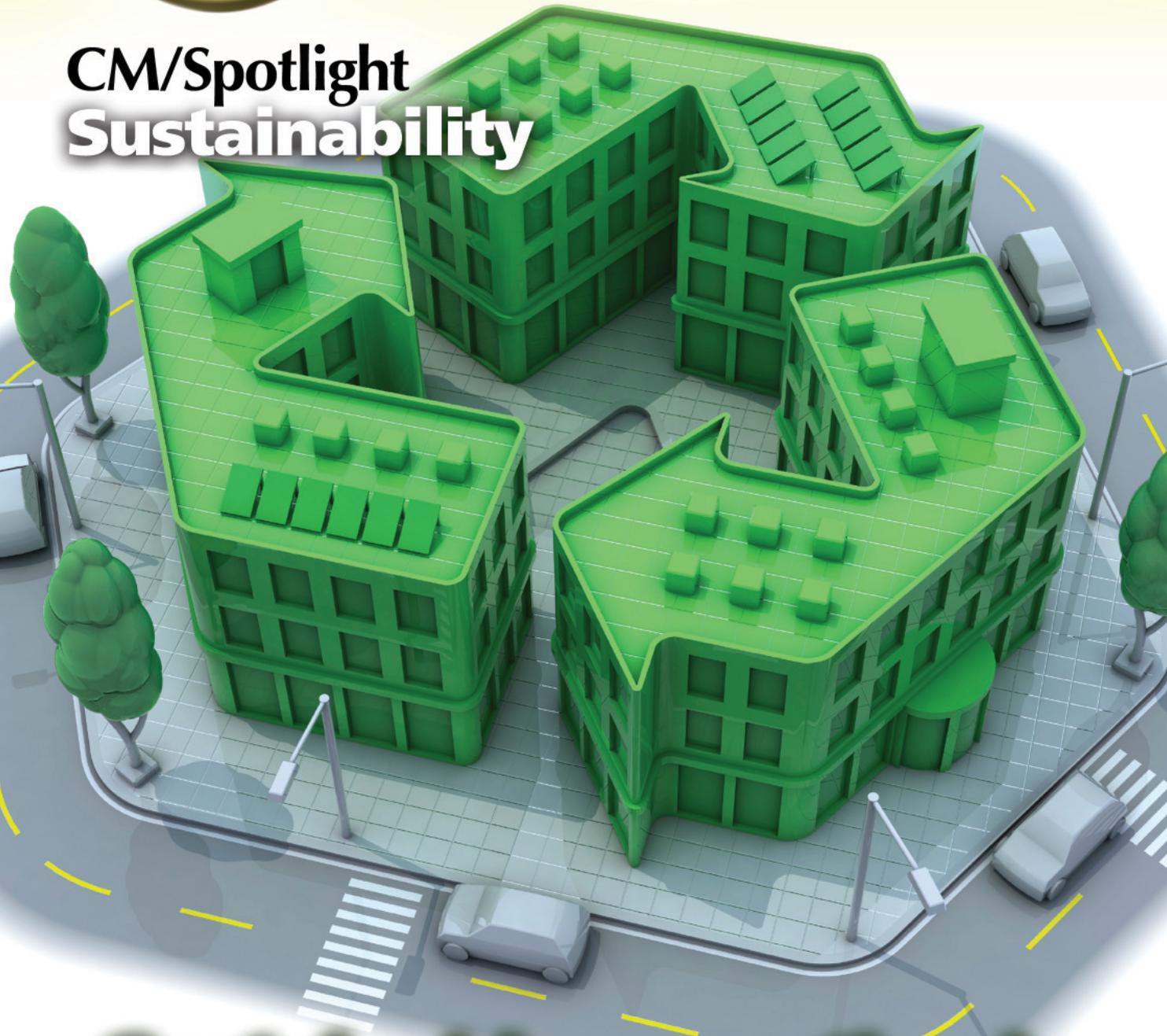




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Cleaning & Maintenance **Management**

CM/Spotlight
Sustainability



Sustainable operation is
all-encompassing.

Cool At The Top



Improve your building's sustainability and bottom line with a cool roof.

By: Jessica Clark

Do you ever wonder if your roof could be more than just a roof?

Do you wish it could reduce energy costs and increase the life of the roofing system and air conditioning (AC) unit?

Do you ever wonder if the roofing material you choose can have an effect on the occupant comfort in the living spaces below — or even help combat global warming?

Cool roofs can do all this and more, even while maintaining the color, texture and aesthetic value of traditional roofing materials.

With options in virtually every roofing material and slope, in new construction and remodel projects across the map, cool roofs may be the perfect next project for your facility.

How Do I Know What's Cool?

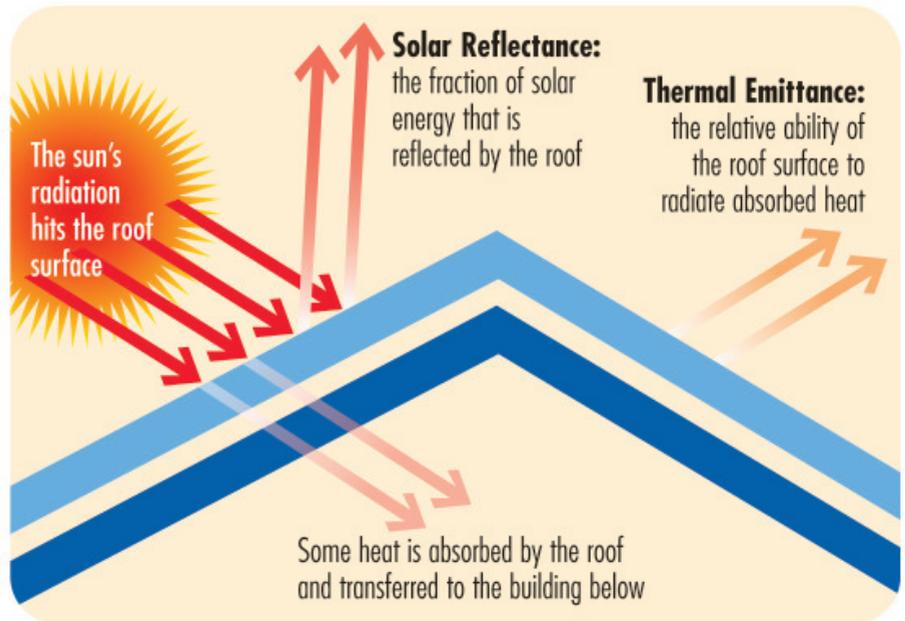
You can identify cool roofs by understanding two simple radiative properties of roofs as they relate to solar radiation and heat.

When sunlight hits your roof, it can either be absorbed or reflected.

In order to realize the benefits mentioned above, your roof should reflect as much sunlight as possible and absorb as little as possible.

Solar reflectance is the percentage of solar radiation that your roof reflects on contact.

This is crucial because whatever sunlight is not reflected is absorbed and degrades



Some municipalities offer rebates for installing cool roofs because they help decrease your building's draw on the power supply.

into heat.

Solar reflectance can be measured and is reported as a value between 0 and 1.

Thermal emittance, a measurement of the ability of your roof to reradiate any absorbed heat, is also measured on a scale of 0 to 1.

Solar reflectance and thermal emittance are sometimes combined into one calculation called the solar reflectance index (SRI).

Code bodies and voluntary green build-

ing programs sometimes use SRI because the single value is indicative of both the roof's solar reflectance and thermal emittance properties.

SRI is measured on a scale of 0 to 100, though particularly poor and good roofs can rate below 0 or above 100, respectively.

It is important to note that roofing materials may have a low solar reflectance and high thermal emittance or vice versa.

A cool roof will have both a high solar

reflectance and thermal emittance, with both values being as close to 1 as possible, or an SRI value that is as high as possible.

Reaping The Benefits Of Cool Roofs

Cool roofs are one of the easiest ways to increase the sustainability of your building while improving the bottom line, and eco-conscious and business savvy building owners across the country are taking note.

Cool roofs are basically roofing products that minimize the heat transfer to the building below, while quickly shedding any heat that has penetrated the surface.

These characteristics can be achieved through either light colored surfaces or the integration of pigments in the material formula with high spectral reflectance.

These pigments reflect in the near infrared spectrum, as opposed to the visible spectrum, allowing color products to retain reflective properties.

Studies have shown that on particularly hot days, lighter surfaces stay up to 70 degrees Fahrenheit cooler than dark surfaces.

This can have a significant effect on the amount of cooling energy your building uses, as well as the lifespan of cooling equipment and the roof itself.

Because cool roofs reflect more heat than traditional roofs, they help keep the building below cooler.

By keeping the building cooler, cool roofs decrease the need for air conditioning.

Keeping your roof at a constant temperature will also help extend the life of the roof itself, and some studies have even shown that the insulation below your roof is more effective if it is kept at a lower temperature.

Altogether, cool roofs can help you save up to 40 percent in cooling energy over traditional dark roofs and can equate to significant savings in roof maintenance.

Cool roofs not only make financial sense for building owners, but can also improve the sustainability of your facility.

The decrease in cooling energy that you benefit from indirectly helps combat global warming by decreasing the need for more fossil fuel.

By decreasing your roof's temperature, you are also helping reduce the ambient air temperature around your building, combat-

ing heat-related and smog-related illnesses such as asthma and heat stroke, as well as a phenomenon in cities called the urban heat island effect.

The urban heat island effect is the increased temperature of urban centers over surrounding areas due to the concentration of non-reflective surfaces.

Lowering the urban heat island effect can help lower cooling energy loads across the city.

Choosing A Cool Roof

Now that you understand the energy performance properties and benefits of cool roofs, how do you go about choosing a cool roof that is right for your building?

The steps outlined below can help you get the most out of your cool roof.

1. Check for requirements and rebates

Codes are catching on to the benefits of cool roofs, and your local or state energy or building codes may require cool roofs for new construction or even replacement roofing projects.

Voluntary green building programs such as the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) program offers a credit for cool roofs.

Codes and green building programs usually specify a minimum solar reflectance, thermal emittance and/or SRI value.

Additionally, always check to see if your local utility offers a rebate for cool roofs.

2. Find a cool roof that meets your requirements

The most reliable source for solar reflectance and thermal emittance values are third-party product rating programs, like the Cool Roof Rating Council's (CRRC) Product Rating program.

The U.S. Environmental Protection Agency's (EPA) ENERGY STAR program is another resource for identifying cool roof products.

The CRRC rates the energy performance properties of roofing products through their Accredited Independent Testing Laboratories (AITL).

The CRRC rates both the initial and aged — over three years — solar reflectance and thermal emittance values in order to get a comprehensive view of how a roofing product will perform over its entire lifetime.

The CRRC does not set minimum standards for what deems a "cool" roof; this is left to the code bodies and voluntary programs.

The CRRC does maintain a free online list of rated products and their radiative properties.

Third-party rating programs are crucial because they offer standardized, consistent test methods and credible ratings.

3. Select the roof that is right for your building

You may want to consider what makes sense for your roof's slope, budget, climate and energy savings goals.

The U.S. Department of Energy (DOE) has developed two cool roof calculators where you can enter specific information about your building and location to determine the potential energy savings of installing a cool roof.

The calculators can be used to help you compute a simple payback analysis unique to your project parameters.

If sustainability is a concern, you may also want to consider the environmental impacts of roofing materials.

These include the recycled content, toxicity, greenhouse gas emissions linked to shipment and weight and wastes associated with raw material extraction and application methods.

Work with a contractor to determine what will work best for your building.

With these steps in mind, you are on your way to choosing a cool roof that meets your budget, environmental factors and aesthetic requirements.

Make the sustainable switch and have the coolest building on the block. **CM**

Jessica Clark, Leadership in Energy and Environmental Design Accredited Professional (LEED AP), is the marketing liaison for the Cool Roof Rating Council (CRRC). She organizes educational outreach for the program including presentations, writing and speaking engagements, as well as marketing material. The Cool Roof Rating Council is a non-profit organization that maintains a credible, third-party rating program for measuring and labeling the radiative properties of roofing products. The Council publishes these ratings via its online directory as a public service for use by building owners, architects, code officials and other interested parties. For more information, please visit www.coolroofs.org or call us toll free at (866) 465-2523.