Frosty Mornings give Homeowners a Thermal Image

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Have you been out for an early morning walk or coming back from the bus stop and noticed patterns on your rooftop?

What you are often seeing is what an infrared image or thermal image might look like. The frost pattern on your roof enables you to see contrast in temperature or areas that might either be warmer or colder than another. The first things you probably notice are the silhouettes of your roof decks support system.

Thermal imaging has long been used by building construction technicians to see thermal signatures that indicate heat leaks and which ultimately allow them to improve the efficiencies of cooling or heating air-conditioning.

We all know that heat rises. When it's cold, heat from your conditioned or heated space rises. The heat generated by your heating system and what you've paid for rises up through your ceiling, through your insulation and eventually through your roof. Traditional batt or blown fiberglass insulation is helpful but even the very best insulated attics with it merely slow the rate in which this occurs.

Many of us have heard the term "R-value". Some of us know that residential insulation has R-values typically ranging from 19-36. R-value is calculated by using the Thermal Conductivity of a material. Thermal conductivity is the measure of the amount heat that will be transmitted through a one inch (1") thick piece of such material, one square foot (1 $ft.^2$) in size, in one (1) hour, when there is a one degree Fahrenheit (1° F) temperature change.

$$k = \frac{\text{BTU} * \text{inch}}{\text{sq. ft.} * \text{hour} * {}^\circ\text{F}}$$

This calculation allows of to them calculate a C-Value or values for Thermal Conductance (C).

$$C = \frac{k}{\text{Thickness In Inches}}$$

R-Value then is the reciprocal of C.

$$C = \frac{1}{R}$$

The point in understanding R-value is to understand that insulation does not block, redirect or reflect heat it merely absorbs and slows the transfer of it down.

There is another material that has been used in construction for more than 30 years. Radiant Barrier, differently from insulation, does not have an R-Value. Radiant Barrier does not absorb heat but rather reflects and re-directs it.

For this reason, this technology was most notably put to the test in the 60's when NASA was trying to find a way to protect the astronauts during space walks from the extreme temperature shifts ranging from -459 degrees Fahrenheit **(°F)** to 460 degrees Fahrenheit **(°F)**. That's hot & cold!

NASA discovered that they would have to have a seven-foot thick protective layer on the space suit if they attempted to use conventional insulation. Obviously, this was way out of the question. Instead of trying to insulate the suits, they turned to reflective technology and used aluminum foil radiant barrier to solve the problem. NASA reflected the heat of their own body back at the astronauts to keep them warm, while at the same time they used the foil to reflect the deadly direct radiation from the sun (radiant heat) out of the space suit to keep them cool. So, used right…we know it works.

Construction grade radiant barrier is made of highly reflective aluminum and is typically reinforced with a middle fabric layer making it puncture and tear resistant unlike basic kitchen foil. With a radiant barrier properly installed, you can significantly reduce the amount of heat that common insulation materials merely slow down thereby maximizing the efficiency of your existing insulation materials making your living space more comfortable while reducing your overall energy utility costs.

Just as we can see heat leaving our roof deck in the Winter, we know that heat penetrates our attic in the Summer. This heat raises the temperature in your attic well above 100° and usually upwards to 120° of higher for an extended period of time. Under these conditions your roof deck support system, your heating and cooling system and your air handling system all absorb this heat and become warmer themselves. So much so, eventually it's like having a toaster atop your house and running through out your attic.

A radiant barrier has the ability to reflect 97% (or at a minimum 90% as prescribed by the official Department of Energy definition of a true radiant barrier) of the heat from the sun back out. A radiant barrier stapled to the underside of your roof-deck or rafters would then emit, or give off, only 3% of the heat from the outside and result in an overall cooler attic which means less heat entering your living spaces resulting in lower utility bills.

The good news is that Radiant Barrier material is affordable and cost effective. Especially with Tax incentives currently in-place a homeowner can have radiant barrier in their home and completely off-set the cost in less than 24 months. After that, it's like extra money in your pocket along with a more comfortable living space.

With ones home or other really personal, high-frequency use items in our lives, it seems that "Good is good enough only when better is not an option". "I'm just like everyone else. If there is something better out there, I want to give it a look. If it makes sense and I can afford it, we consider it further", this from Jason DeMarchi, Managing Partner for Adding Value LLC in Cumming, Georgia. "I know what it's like…it seems there is always room for improvement somewhere. This is where our company tries to help."

The most efficient homes are those whose roofs do not show silhouettes of the homes frame and stay frosty the longest. So the next time its cold, first think that Spring IS AROUND the corner. But second, know what Mother Nature is giving you the opportunity to see and what it might mean for your wallet or pocket book, your family and your home.

More information on Radiant Barrier in your home can be seen at:
www.addingvaluellc.com/Energy_Efficiency_WeatherizationA

For information on current Tax incentives visit:
www.addingvaluellc.com/Energy_Efficiency_American_Recovery_and_Reinvestment

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