GREEN TECH THE SERIES COLUMN FOR JUNE 1, 2016
HEADLINE: SOLAR SHADES; TIME TO CUT THE A/C COSTS

With the rising costs of electricity, changes in the climate, extremes in the temperature swings the need for air conditioning is quickly becoming part of any home package today. There are options, mini-split systems, heat pumps to improve, not only cooling, but heating, along with the conventional system. There are options; if nothing else to reduce operating time and, thereby, costs.

Window shades and screens have been around since the Ming Dynasty. The Chinese made them from bamboo and developed a roll-up system that is still, in a similar assembly, in use today. When it comes to window coverings, I often see venetian blinds, wooden louvered shades and the old faithful pull-down cloth blind, but don't yet see solar blinds. I have mentioned this to some clients and commonly get the response, "Well, since regular screens darken the room, solar blinds must be even darker." The common window screen has a small benefit on reducing the sun's rays, but it's minimal. Further, conventional screens certainly do not reduce the glare in a room.

The term "daylighting" is one commonly used by architects and building designers. The challenge is to allow enough natural light while controlling the glare and the heat. One area where the window manufacturers could help is to offer glass with lower transmittance; this is a subject for a future column.

The summer sun's rays produce approximately 230 BTU per square foot. This means a large picture window facing south, with an opening of five feet high and six feet long, allows nearly 7000 BTU into your home. When you look at the fact that a small gas fireplace can produce 18-20,000 BTU, it's not hard to see how a house full of windows produces so much heat. This, of course, translates into the required cooling load to counter-balance this summer solar gain. As the climate changes, use of air conditioning is rising dramatically, resulting in more and more electricity being used to feed these units.

Development of better, clearer solar films for windows has happened over the past 10 years. There are two drawbacks to a film. It's not as effective in the winter and some window manufacturers will not warrant their windows if solar film is installed. This is due to the temperatures created within the actual window frame and thermopane. While the introduction of solar screens or solar shades for the residential market happened some time ago, their popularity has recently grown in leaps and bounds.

What has made these shades so popular? In a sentence, they work and work very well. Independent testing shows that most of these shades reflect around 70% of the radiant heat; redirect over 60% of the sun's rays and reduce the damaging UV rays by close to 90%. UV rays can discolor furniture, flooring and drapes. While some claims by solar shade manufacturers seem a bit farfetched, savings in heating and cooling can be expected. If you have a significant number of windows, this could translate into savings upwards of 30-40%. Further, if the type of solar shade you purchase can be reversed in the winter, they will help keep the heat in, as well. Since radiant heat accounts for 80% of heat movement and most homes have a window surface area of 15-20%, this accounts for up to half of the heat loss or gain.

"Krumpers Solar Blinds," located in Ottawa, Ontario is one of the premier solar shade companies. They have been, for a number of years, quietly manufacturing one of the best solar blinds on the market today. These transparent internal blinds are made from a laminated polyester film. According to their technical information, "these blinds are made of a film that has a thin coating of aluminium sandwiched between the laminations. The polyester gives the film its color, strength and pliability, while the aluminium, which is so thin that you can see through it, provides the medium for reflecting the sun's rays." One side is a silver color, it faces outwards in the summer to reflect the radiant and solar heat back outside. The opposite side is black. This black side faces out in the winter and acts as a passive solar collector. It also reduces the cold infiltration around your window. The Krumpers people claim that their blinds can reduce winter heat loss from the windows by up to 45%.

The Krumper solar blinds are fitted into the window frame, which creates a still air space that acts like insulation. In fact, they advertise that, properly installed, these blinds can be rated up to an R10 insulation value. When you couple this with triple pane windows, you now have window openings with more potential R value than some homes have in their walls, never mind their windows.

Along with the obvious benefits, solar shades have a number of side benefits. They reduce glare, allow some degree of daytime privacy and protect your floors and furniture from fading.

After some amount of research into other makes, we expect to add these solar shades in our spa building at some point this year. They are a Canadian product, designed and produced right here at home. They are not cheap, but when you factor in their cost vs. the savings in your heating and cooling, they are an easy

choice. Oh, one more point, you are reducing your carbon footprint just a little bit more. For more information go to www.krumpers.ca

Questions or comments: Cam Allen L.I.W. NHI ACI
E-mail:cam@alltechconsultinggroup.com