

SOLAR TODAY

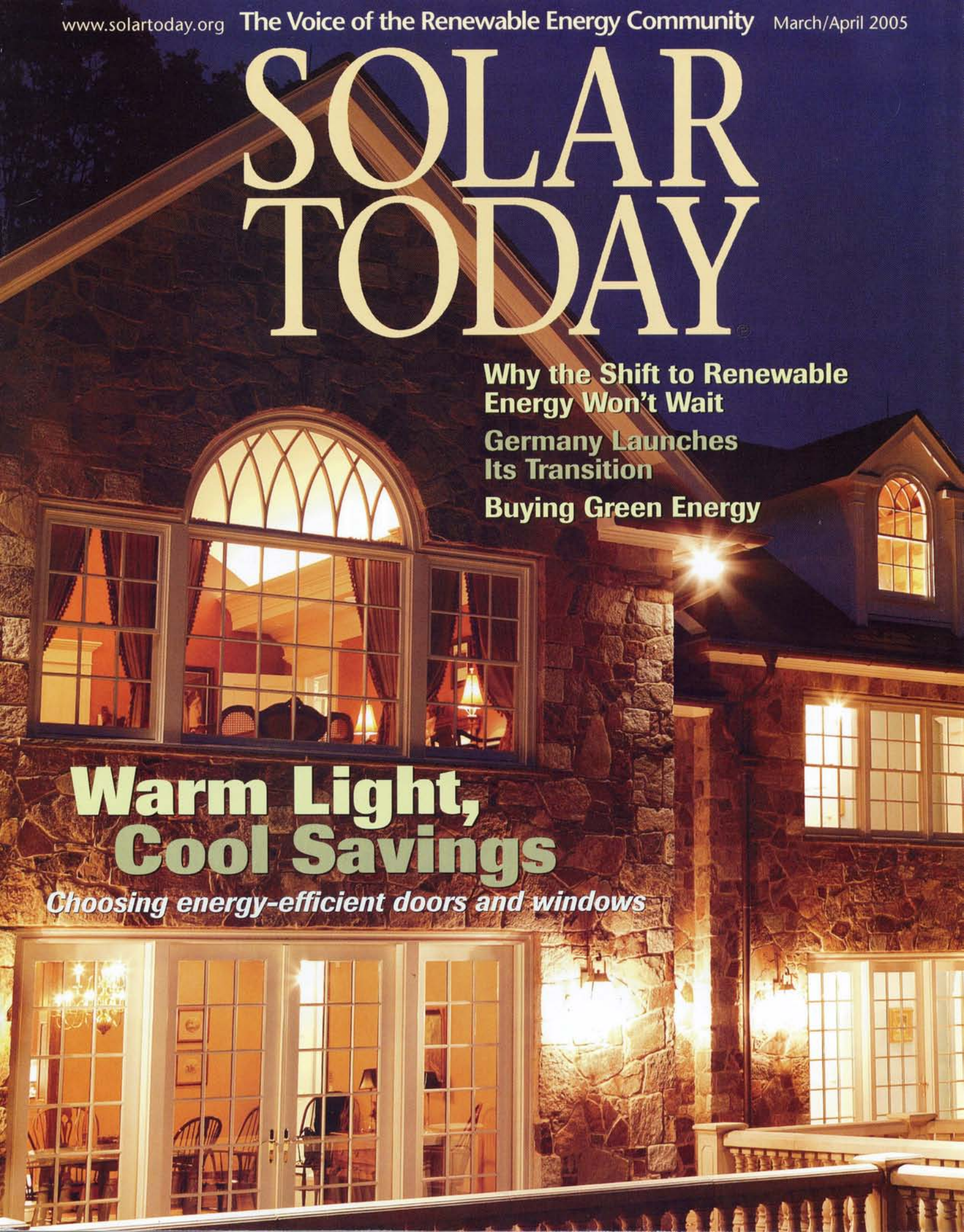
Why the Shift to Renewable Energy Won't Wait

Germany Launches Its Transition

Buying Green Energy

Warm Light, Cool Savings

Choosing energy-efficient doors and windows





Warm Light, Cool Savings

*Choose energy-efficient windows and doors
to minimize your home's utility bill.*

By Jeff Williams

Most people will agree that windows and doors are essential elements in any home. They let light in and add character and charm to a space. But windows and doors can also be a major factor in determining a home's energy-efficiency — or lack thereof. Options such as glazing and spacers can maximize a home's efficiency while contributing to the perfect look for a house.

Whether it's for a new construction project or a renovation for an existing home, the key to selecting the right window or door is to first understand the basics of fenestration technology.

Understanding Efficiency Ratings

The National Fenestration Rating Council (NFRC) has established ratings, detailed on the NFRC energy performance label, to describe a product's thermal properties.

U-values represent the amount of heat that escapes through a wall, window, roof or other surface in an hour. The lower the

This Somerset Hills, N.J., home was designed to let natural light flow into the space, while maintaining energy-efficiency. It features Weather Shield's Legacy Series windows and exterior French doors throughout.

U-value, the more energy-efficient a material is.

R-values, the opposite of U-values, measure an object's resistance to heat flow. The higher a material's R-value, the lower its U-value and the less energy it will lose. A window's R-value depends on three factors: the number of layers of glass (called glazing), what's between those layers (either air or gas), and whether one or more layers of glazing have been treated with a low-e coating.

It is important to note that different climates and styles of homes require different glazing options to maximize energy-efficiency. Options for windows (and doors with glass) range from single-glazed glass that replicates historic homes but has minimal insulating value up to R-10 for maximum thermal efficiency.

Single-glazed windows — those having a single pane of glass — have a low R-value and are best used in structures such as garages and tool sheds, where energy-efficiency is not a major consideration.

A step up from single-glazed windows is a double-glazed window — also called insulated or "insul glass" windows. Air or safe, colorless, odorless gas is tightly sealed between the two panes of glass. To raise a window's energy-efficiency as high as value R-5, one or both panes can be treated with a low-E coating.

Low-E (low-emissivity) glazing uses a microscopically thin metal or metal-oxide layer on the glazing surface to filter out the heat-transmitting part of the light spectrum, greatly reducing a window's U-value. Windows with low-E glass are generally more energy-efficient, offering homeowners increased home comfort. And low-E glass blocks the harmful spectrum of sunlight responsible for fading furniture and draperies.

For the best energy-efficient insulating power in a window, homeowners should consider triple-glazed windows. Argon or a mixture of argon and krypton fill the spaces between the three panes of glass. These gases are denser than air, thereby reducing heat transfer and increasing the window's insulating power. Triple-glazed windows with low-E coatings on two of the panes have dramatically improved energy-efficiency, achieving values as high as R-10.

Edging Out The Cold

Innovative spacers — the material used to hold the layers of glazing in an insulating unit at the appropriate distance, usually at the edge — are another option for increasing a window's performance. For years, some window manufacturers have relied on metal and aluminum spacer bars, inadvertently incorporating the conductive qualities of these materials. The result was heat loss and condensation on the unit's edges. But new warm-edge spacers, using less-conductive materials, significantly enhance the performance and energy-efficiency of windows.

Warm-edge technology employs a proprietary high-performance bondline adhesive that provides exceptional resistance to argon gas transmission, thereby maintaining the window's long-term thermal properties. Warm-edge spacers increase the window's edge-of-glass temperature, and insulate the frame and edge of glass better than their metal and aluminum counterparts. Their flexible frame allows them to fit around windows of any shape and size.

Let There Be Light

Natural lighting and energy-efficiency lead design decisions for New Jersey home.

When the husband-and-wife architectural team of Ileana Martin-Novoa and Jonathan Katz set out to design a 16,000-square-foot residence for their clients in the rolling hills of northern New Jersey, energy-efficiency was a top priority. "Our clients were very concerned with designing a home that was completely energy-efficient. They wanted a light, bright, beautiful home, but one that would meet or exceed all energy building codes," says Martin-Novoa. "Our goal was to let natural light flow into the space, yet maintain a high level of energy-efficiency. We knew the windows and doors we selected would play a significant role in meeting these objectives."

Researching the options. Both the client and architects spent a great deal of time researching energy-efficient options for the home. The team ultimately selected Weather Shield's Legacy Series windows and exterior French doors for the entire home. "All the windows and doors have insulated glass, and the double panes are filled with argon gas to reduce energy consumption," says Martin-Novoa. The glass is finished with a low-E coating, which keeps the home warm in the winter and cool in the summer and helps protect interior furnishings and valuables from fading.

"Although windows and doors with insulated glass and low-E coatings are more expensive than less energy-efficient ones, our clients researched their options and realized that they would quickly recoup the extra cost in lower energy bills," notes Martin-Novoa. "In addition to using less energy, some utility companies in the New Jersey area give rebates to customers whose houses meet certain energy codes."

Reaping the rewards. Completed last summer, the home features a geothermal heating system, deeper exterior walls for increased insulation and energy-efficient windows and doors. The new homeowners enjoy a light-infused home designed to conserve energy for decades to come. ●

Weighing The Full Costs

Before selecting windows for any new construction or remodeling project, homeowners should discuss glazing options appropriate to their design requirements, region and budget with the architect, builder or remodeler.

In addition to being a major contributor to the appearance of a home, windows and doors are a significant investment. They can increase the monthly energy bill or reduce heating and cooling needs. The key is to choose the best window or door for the long run. ●

Jeff Williams is senior brand manager at Weather Shield Windows & Doors, one of the nation's leading window and door manufacturers. For more information, contact Weather Shield at 800.477.6806 or visit www.weathershield.com.