Word On Windows

So What Is An Energy Star Window?

All ENERGY STAR Windows must be rated, certified and labeled for both U-factor (heat loss) and Solar Heat Gain Coefficient (heat gain from sunlight) by the National Fenestration Rating Council (NFRC), an independent, non-profit organization which provides energy performance ratings to the window industry. ENERGY STAR Window Criteria:

- Northern Region Criteria: Windows and doors must have a U-factor rating of 0.35 or below. Skylights must have a U-factor rating of 0.45 or below.
- Central Region Criteria: Windows and doors must have a U-factor rating of 0.40 or below and an SHGC of 0.55 or below. Skylights must have a U-factor rating of 0.45 or below and an SHGC rating of 0.55 or below.
- Southern Region Criteria : Windows, doors and skylights must have a U-factor rating of 0.75 or below and an SHGC of 0.40 or below.

ENERGY STAR qualified products include windows, doors, skylights, home appliances, office equipment, TVS and VCRs, and residential lighting. For more information, visit ENERGY STAR online at www.energystar.com or call the ENERGY STAR Hotline at 1-888-STAR-YES. Window retailers and manufacturers can call the ENERGY STAR Windows Program office at 503-364-4127.

I N D S I D E

ENERGY STAR Windows Kicks Off This Spring

ENERGY STAR takes the pain out of buying windows," said Daniel Reicher, the Department of Energy's Assistant Secretary for Energy Efficiency and Renewable Energy, who himself is a home remodeler. Many consumers will feel the same way when they see the ENERGY STAR label on windows, doors, and skylights in stores this Spring.

ENERGY STAR, the symbol for energy efficiency, has garnered significant industry support. Supporting industry members include : Accu-Weld, Andersen Corporation, Cardinal IG, Crystalite, Inc., Empire Pacific Industries, Gilkey Windows, Insulate Industries, Inc., Jeld-Wen, Inc., Marvin Window and Doors, Merzon Industries, Mikron Industries, Inc., Milgard Manufacturing, PPG Industries, Inc., Spectus Systems, TruSeal Technologies, and Viking Industries, Inc. According to Gary Curtis of D&R International, Ltd., consultant for the U.S. Department of Energy (DOE) and U.S. Environmental Protection Agency (EPA), "The ENERGY STAR Windows Program provides the manufacturer with an excellent basis for market differentiation. It helps consumers feel more secure about making a purchase when they see an independent imprimatur of quality and performance."

The U.S. Department of Energy welcomes windows manufacturers to the Energy Star program. From right to left: Stephen Sullivan, Executive Vice President, American Architectural Manufacturers Association; Dan Reicher, Assistant Secretary, Energy Efficiency and Renewable Energy, Dept. of Energy; Kurt Heikkila, Vice Presedent Technology and Business Development, Anderson Corporation and David Nemtzow, President, Alliance to Save Energy.

"Many ENERGY STAR windows are as energy efficient as walls in new construction," said Mr. Reicher. "The Department is proud that manufacturers, utilities and retailers have volunteered to help consumers identify these ENERGY STAR products. It's a painless way for the average person to have a real impact in helping this country meet our climate goals." ENERGY STAR, a public-private partnership, is designed to help consumers identify and purchase the most energy efficient products.

The ENERGY STAR Windows program was developed with input from window,

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Interview

HIGH PERFORMANCE WINDOWS SELLING POINT FOR PULTE LAS VEGAS

David Beck, Director of Construction, Las Vegas, Nevada Division of Pulte Homes was interviewed by Word on Windows (WoW)

WoW: So tell us, just how did Pulte's Las Vegas Division—a mainstream builder—turn into a national leader of innovative building practice?

Beck: *Well, it was pretty straightforward. We've had a long-standing relationship with Joe Lstibruck (Building Sciences Corp) and one day he approached us with an idea for making homes far more efficient at no higher first cost. We were intrigued enough by Joe's system engineering approach to home construction to volunteer to let him test the approach. That's how we became involved in the (Department of Energy's) Build America project. (Build America is a voluntary program creating partnerships around the country, matching up experts like Joe Lstibruck with builders, providing free technical assistance to show builders new ways to produce better products)*

WoW: Your company constructs over 1000 new homes every year in the Las Vegas area serving markets from the first time buyer to the luxury home purchaser. Why did you feel a need to change?

Beck: *Actually, we in the homebuilding industry have been producing pretty much the same product for close to 50 years. Sure, components have been improved, but we have not taken a wholistic approach to efficient production. And, although we offered energy-saving options, we found buyers not willing to pay for them. We wanted a way to 'build in' the quality that comes with efficient construction. We wanted to keep pace with other industries—like automobiles—that have improved the quality of their products.*

WoW: What were some of the window lessons from the Build America project?

Beck: *We chose vinyl windows using advanced spectrally-selective glass (PPG's Sungate 1000). Although these windows added $400-$500 more to the project cost, they were a big factor in saving us $400-$600 in reduced air conditioning costs. But then we had another problem. Once we reduced the cooling load, we were undersized for heating. The answer to that problem proved to be an upgraded combined hot water/space heating unit, 75 gallons with 20 minute recovery. With all the construction changes and savings, we ended up with a total net cost of $150.*

> *"Homeowners have occupied the two advanced performance homes for 18 months now. They are easily 30 percent more efficient than our regular models, and closer to 50 percent better than the average homes built in our area."*

WoW: So are you satisfied with the results?

Beck: *Homeowners have occupied the two advanced performance homes for 18 months now. They are easily 30 percent more efficient than our regular models, and closer to 50 percent better than the average homes built in our area. We're about halfway through construction of an entire subdivision built to these standards and sales are outpacing land permits! A second subdivision of larger homes for the "move-up" market will break ground in a few weeks.*

WoW: Do you see high performance windows as a selling point?

Beck: *Yes. We have spectrally-selective glass in all our display models, because it cuts our energy costs (those homes get a lot of traffic!) and it prevents fading of materials. Efficient windows are of great interest to our buyers. In this regard, our suppliers, Jeld-Wen and Summit have been terrific partners.*

WoW: Any final thoughts?

Beck: *We're working very hard now to get the system engineering approach- and advanced window products—into the affordable housing market. First time buyers are the ones who truly will benefit from lower monthly utility bills. I feel every new home, regardless of whether it is entry level or upper end, needs to meet certain basic standards: it must be safe, energy conserving, and of high quality construction.* ■

WORD ON WINDOWS was produced with funding from the Windows and Glazings Program at the U.S. Department of Energy in support of the Efficient Windows Collaborative. For more information on the Collaborative, contact:

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View

by CHRIS MATHIS

WHAT IS AN ENERGY EFFICIENT WINDOW?

While Efficient Window Collaborative members have already effectively answered this question at the time of purchase (NFRC rated, Energy Star compliant, etc.), perhaps there are other "time" elements we should consider when thinking of expanding our current definition limits.

Certainly we could consider the energy that goes into the birth of an efficient window. What about the raw materials used? Are the glass plants efficient? What about the frame and other material suppliers? Where does measurement of efficiency end?

In thinking in broader terms, we also could consider the death of the product. How long should an "Energy Efficient Window" last? Those whose focus is on first costs might say "7 years is a good number." Why not 50 years, or 100? Should windows last as long as our buildings? How long should the "efficiency" performance of the window last?

Frames, spacers, seals, coatings, films, etc.—if only one small component fails, the total performance can erode.

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WORD ON WINDOWS *plans to publish the occasional personal editorial from our membership. We welcome your contributions and we are grateful to Chris Mathis for being our inaugural "guinea pig." Of course, the opinions of our guest authors are entirely their own and do not necessarily represent the viewpoint of the Alliance to Save Energy or the Efficient Windows Collaborative.*

Integrated Education Is Key To Transform California Market

High performance window products right now represent the smart economic choice for both builders and buyers in California. To "drive home" that point-and to permanently transform the new and replacement windows market-members of the California Window Initiative (CWI) will be taking their educational message on the road during 1998, visiting members of all the window market segments at their individual places of business to educate them on the latest window energy efficiency innovations and benefits.

CWI is a collaborative group of window and building technology experts. The program is funded by Southern California Edison and Pacific Gas & Electric. The core of CWI's market transformation concept lies in the integration of the window energy efficiency message, starting with the upstream glass manufacturers, proceeding through the window companies and their distributors, to the production builders, the home centers and to window stores and dealers. The plan is to take the entire window energy message to the window company sales meetings, the builder's conference rooms, retail showrooms and home center sales floors where window purchase decisions are made.

The educational effort starts at the top. CWI will collect technical and marketing information from the top 6 glass companies. From there, the group proceeds to educate the top 30 window manufacturers/distributors supplying the California market. Major builders constitute the next level, with educational efforts planned for the 50 largest production companies. Title 24 Energy Consultants (experts that advise California builders on compliance with state building code) will also be reached with training and reference materials. In the replacement window segment, the top 100 retail window sales outlets will be offered window energy training for their sales staff at their place of business. The state's largest window replacement contractors will be offered similar training, also on-site. All in all, during 1998, CWI will be conducting close to 200 on-site training sessions as well as over 60 presentations at professional meetings.

cartoon

Seminar and workshop attendees will learn about technologies such as spectrally selective glass coatings, low-conductivity frame enhancements, and low-conductive inert gas fills, features that can provide significant heating and cooling energy savings at low incremental cost. Richard Heath and Associates serves as the administrator/prime contracor for CWI; other members include: James O'Bannon, PhD, president of RHA, in Chico; Bill Mattinson, principal of SOLDATA Energy Consulting in Santa Rosa; Steve Easley, principal of S.C. Easley & Associates in Danville and Kenneth Nittler, P.E., principal of Enercomp, Inc. in Auburn. The project is supported or endorsed by the California Energy Commission, Lawrence Berkeley National Laboratory, the Natural Resources Defense Council, the Alliance to Save Energy, and the Efficient Windows Collaborative. ■

SPOTLIGHT *On Collaborative Members*

EDGETECH I.G. LTD. Improving the energy efficiency of insulating glass units was the goal of Canadians Michael Glover and Gerhard Reichert when they developed a unique sponge rubber architectural seal back in 1995. Together, they founded Edgetech I.G. Ltd., Ottawa, Ontario to manufacture their product, known as Super Spacer. In 1989, the company became a fully-owned subsidiary of Lauren International, an international polymer and rubber extruder located in New Philadelphia, Ohio. In 1994, with Super Spacer sales thriving, the company moved to a 450,000 sq. ft facility in Cambridge, Ohio. The new plant provided increased manufacturing capacity and houses the company's extensive research laboratory and quality control division. Today, Edgetech's line of thermal-resistant, flexible-tape, edge-seal products are considered leaders in warm edge technology. Super Spacer is actually a blend of silicates and moisture-absorbing desiccant material manufactured with millions of tiny insulating air pockets that conduct heat at a rate of over 950 times lower than that of aluminum and 85 times less than stainless steel. The products combine with the thermal properties of low-e coatings, argon gas and multi-glazing assembly to provide maximum condensation resistance, durability and energy performance in windows and are marketed to IG manufacturers throughout the world. ■

GILKEY WINDOW COMPANY was established in 1978 in Cincinnati, Ohio. Founded on old-fashioned commitment to honesty, quality and responsive customer service, the company has rapidly grown to be one of the largest remodeling companies in the local market and one of the top remodelers in the country. Gilkey offers a full range of energy efficient window products, from low-e to spectrally-selective low-e, to Heat Mirror (tm) (which carries a U-value of .19 or.15 versus .48 of standard dual glazed windows). Customer education is a specialty of Gilkey. The company has lucid and straightforward consumer information on its web site, helping prospective purchasers understand the technology behind its efficient windows. A recent retrofit project called for the replacement of 400 windows at St. Rita's School for the Deaf in Evandale. The greatest challenge for Gilkey was to maintain the inherent character of the

original 82 year old building and to recreate a number of unique window styles, including several arches. When complete, all 700 windows will boast custom-crafted, turn-of-the-century look, NFRC-rated windows: a unique combination of old-style with the most progressive energy efficient windows on the market. ■

INSULATE LLC, of Auburn, Washington (south of Seattle) was founded in 1979 by Annette Edwards and Garry Wamsley. Their first products were insulated glass and screen doors. By the mid-'80s, the company was promoting vinyl windows for new construction-a novel idea at the time. The late 1980s and early 1990s were a period of rapid growth and in April 1996, Certainteed Corporation purchased fifty percent of Insulate, with Wamsley and Edwards owning the other half. The company serves the Northwest region as far east as Montana and south to Northern California with a full line of high quality windows and doors, offering some of the best U-factors available. A wide range of thermal performance options are available including: two types of warm edge technologies, standard and spectrally selective low-e glass, and argon gas. The company labels all qualifying products with NFRC labels and includes information on solar heat gain and visible light transmission where appropriate. Insulate prides itself on being a resource of technical information for its customers, and strives to educate its dealer network, teaching them how windows can be fine-tuned to meet homeowners best overall thermal performance and comfort needs. New high performance products include French doors, garden "pop-out" windows and operating radius casement windows (the first production company to offer these kinds of windows in vinyl). ■

Collaborative *News*

EWC Promotes in Florida

In March, Efficient Windows Collaborative Manufacturer members and independent window producers in the Florida market gathered at the impressive Florida Solar Energy Center to kick-off discussions of the Central Florida Efficient Windows Pilot Project. The purpose of the central Florida project is to develop an education and marketing initiative designed to increase sales of high-efficiency products in the region. The March meeting was a first step of many toward market transformation in the southeast.

Of the goals and process, Alecia Ward, program manager of the EWC said: "First we identified core window companies in the area who are interested in marketing high-efficiency products, then we invited our EWC manufacturer members to the table. With the support of these two groups, we agreed to a set of program guidelines and action steps that will incrementally move the market toward sales of highly-efficient fenestration products. That kind of collaboration is good for everyone involved, but especially good for consumers in the Florida region."

EWC and FSEC staff will work through the spring to recruit additional partners such as utilities and retail outlets; develop and host training sessions for company and sales representatives; schedule education and promotion sessions aimed at builders, contractors, and home centers; publicize the regional effort via local print and broadcast media and trade channels; and develop financing options. Participants in the central Florida project will reconvene during the early summer to evaluate the progress that has been made.

We Will See Clearly Now

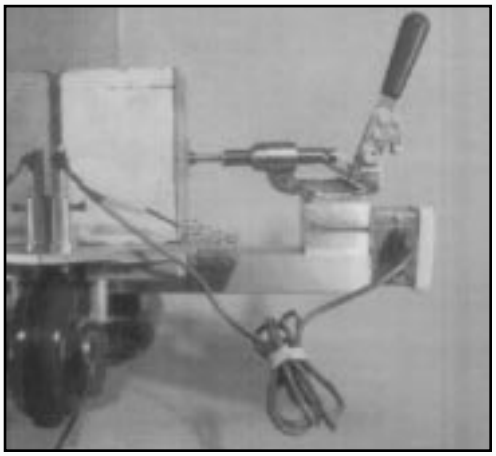
How do you know an efficient window is performing efficiently? The answer may be coming sooner than you think, thanks to research underway at a Department of Energy research laboratory. All across the U.S, local and regional efforts are supporting the adoption of cost-effective, efficient window technologies in the marketplace. Administrators of these programs need to know that their money is being wisely invested-that the high performance windows specified for installation are actually in place and working correctly. However, verifying the installation of advanced window technologies in the field is difficult because many of the technologies employed (gas fills, low-e coatings) are not discernible to the human eye. While the labeling system developed by the National Fenestration Rating Council represents an important basis for field verification, additional non-destructive field test procedures would provide an ultimate check to:

— ensure that the right labels end up on the right product;

— ascertain performance after temporary labels are removed,

— ensure that energy performance does not degrade with time (loss of gas-fills, degradation of coatings). Researchers at Lawrence Berkeley National Laboratory's Windows and Daylighting Group are developing promising state-of-the-art non-destructive techniques for quantifying the thermal conductance and solar heat gain characteristics of glazing systems in the field. Tools being developed include:

1) a portable, simplified spectrophotometer which can confirm the presence of low-emissivity coatings and the type of coating (spectrally selective or conventional),
2) tools to measure gap widths, and
3) a cold-puck thermography process to ascertain the insulating value of a window.



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FOR MORE INFORMATION, contact Dariush Arasteh at LBNL (510-486-6844; D_Arasteh@lbl.gov).

Fact Sheets Hit the Streets

By now, all Collaborative members should have received their camera-ready copies of the Efficient Windows fact sheets. Fact sheets define the benefits of high performance windows and suggest criteria for selecting the right windows for each of the three climate zones. We're interested in your feedback on the fact sheets and your ideas on how we all can use them to best advantage. Please remember that the information is copyrighted, so give credit if you plan to excerpt from the fact sheets.

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door, and skylight manufacturers, glass and framing material manufacturers, as well as utilities, designers, government representatives, and public interest groups.

The ENERGY STAR performance criteria are tailored to fit the energy needs of the country's different climate regions — Northern, Southern and Central. The ENERGY STAR window label and Climate Region Map give consumers clear guidelines for determining which window products are most appropriate for the area in which they live. ENERGY STAR labeled windows, doors and skylights offer consumers high performance products that can lower energy bills without sacrificing versatility, style or comfort.

DOE and EPA estimate that by installing ENERGY STAR windows, doors and skylights, the average U.S. household can reduce its annual energy bill by 15 percent. ENERGY STAR makes it SIMPLE for manufacturers to market to consumers high quality products that can save them money on their energy bills while helping the environment. ■

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Seals, for example, are small, but very important in keeping gas fills contained, keeping moisture laden air out, protecting low-emissivity coatings and maintaining good appearance. But seals are often warranted for only 5 years.

We all understand that manufacturers must draw the line somewhere with regard to liability costs. But just last week, I received two calls from people seeking advice on replacement windows for their eight-year old house!

On the afterlife . . .

Is the recipe for efficiency different when considering replacement/retrofi rather than new construction? Can we re-use old frames? Glass? Hardware? If there is no recycling, then we are potentially sending about 20 to 25 million windows per year to landfills. What percentage of these might be recycled/re- used or otherwise reclaimed?

Perhaps it is not necessary or prudent to try to have total agreement on ONE definition of what constitutes an "efficient window." But let us at least keep the discussion and ideas flowing. Here is one effort to spur such debate as we all move forward to educate the public and the industry on window efficiency and performance. ■

R. Christopher Mathis welcomes collaborative members' ideas and comments. His company, MCSquared, is based in Columbia, MD. (301) 596-1931

PROPOSED FUTURE DEFINITION "ENERGY EFFICIENT WINDOWS"

Are energy efficient...
- in production (energy efficient production facilities)?
- in performance (right for the job and the climate, both heating and cooling)?

Are made from environmentally-responsible materials from certified renewable woods?
- from recyclable materials?
- from recycled materials?

Have long lives (How long?)

Have sustainability
- can be reclaimed/recycled at the end of their life as a window?
- can be refurbished into a new window?
- can be reclaimed into other new products?

Mailer