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ENERGY FOCUS

Doors Offer Choices to Energy Efficiency

By Adam Wasch

Doors represent choices in our lives. Lovers threaten each other with dire consequences if one or the other walks out "that door." We're promised the door will open if we knock. People wait at death's door. Others swing wide the door to opportunity, which we are told doesn't knock twice. Then, there are literal doors. These stick, jam, and warp – especially in Alaska, where outside and inside winter temperatures often vary by 100 degrees or more.

It used to be that exterior doors were custom made. Door hanging was an expert skill for craftsmen, who built the jambs, mortised the hinges, and hung doors complete with latching hardware and locks. Most doors were wood, designed with a multitude of panel styles and elaborate trim. Doors were made by hand or in local millwork shops. Brass interlocking seals kept the elements out.

Today, doors come "pre-hung" in their own frames. Doors are mass produced in standardized sizes, typically clad in metal, and made with vinyl seals. Unique doors – the kind you see in picture calendars – are mostly an abandoned art. This loss might indicate a depreciation in the significance we ascribe to doors. Value is measured primarily in terms of function, price, and conformity of style.

Nevertheless, contemporary exterior doors can perform an excellent job of keeping us warm in the winter. Because they come preinstalled in their own frames, newer doors often fit and insulate better than older doors. All-wood doors may have the most impressive appearance, but they provide the least insulation and require regular upkeep to remain in good condition. All doors will contract and expand with the temperature, but wood doors are the most dynamic and can react to humidity levels, too, which can make them difficult to open and close at times. For the most part, people prefer wood doors for reasons of aesthetics, not function.

The better insulting doors are made with polyurethane foam insulation cores encased in metal. This method can provide R values up to R-6 – several times the insulating value of a solid wood door. Heavier gauge steel will provide more resistance to denting or other damage. Rust-free aluminum cladding is often used, but can easily be dinged. Fiberglass doors are also available. These doors can simulate the appearance of wood, but provide good insulation while also being maintenance free.

Some quality doors come with magnetic stripping like the kind you find on your refrigerator to provide a tight seal with the door frame. Interlocking seals, especially in the threshold, are effective at keeping the

elements out. Vinyl or rubber seals tend to crack and fail in Alaska's extreme cold temperatures. When installing a pre-hung door, expanding insulating foam is typically used to fill any gaps between the door frame and the rough opening. Generally speaking, the quality of a pre-hung door will be determined by the quality of the wood framing used, hardware, and how well the door fits inside of the frame.

Windows in doors are a source of significant heat loss. If you choose a door with a window, look for at least double pane construction and warranties that cover the window seals and any hardware used to open or close the windows. Fixed windows that do not open will seal better than windows with sliding panes. Sliding glass doors, which are popular on decks and for the views they provide, are major sources of heat loss. Good seals, hardware, and warranties that guarantee proper operation of these doors are critical. Doors that swing open and close will generally seal better and be easier to maintain than sliding doors. If you buy a sliding door, try to find one that allows you to replace its weather stripping when it wears out.

Whatever type you choose, multiple panes and "low-e" coatings that help reduce heat loss are important. Look for glass doors that employ a thermal break – a non-conducting central frame member – to prevent heat loss from the inside portion of the frame to the outside.

Finally, installing storm doors over your existing exterior doors can be a cost-effective way to increase the energy efficiency of your home, especially if you're adding to an older, under-insulated door. Storm doors offer you the same material and insulating choices that regular doors do, but can be fitted with screens for the summer months. Be mindful of direct sunlight in the summer – a lot of heat can build up between the storm door and your exterior door, possibly warping the latter.

Adam Wasch promotes energy awareness for the Cooperative Extension Service (CES) and the Cold Climate Housing Research Center (CCHRC).
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