

Agricultural Engineering

ENERGY MANAGEMENT SERIES

Reprinted October 1982

Publication 324-865

prepared by
Jerome R. Smith
Extension Housing Specialist

ENERGY CONSERVATION IN THE RURAL HOME

HOW TO SAVE MONEY WITH STORM DOORS AND WINDOWS

You may be able to cut your heating bill in half if you don't now have storm windows and storm doors on your house. Even if you do have storm windows and doors, they might not be giving you the best protection.

This Fact Sheet will show you how to save money on your heating bill—and it will help with summer cooling, too.

The key to success in weatherizing windows and doors is providing a dead air space between panes of glass or plastic (an air gap between $\frac{1}{4}$ of an inch and 2 inches is satisfactory, but a $\frac{3}{4}$ -inch gap is best). Any of the following methods will be useful in providing this air space.

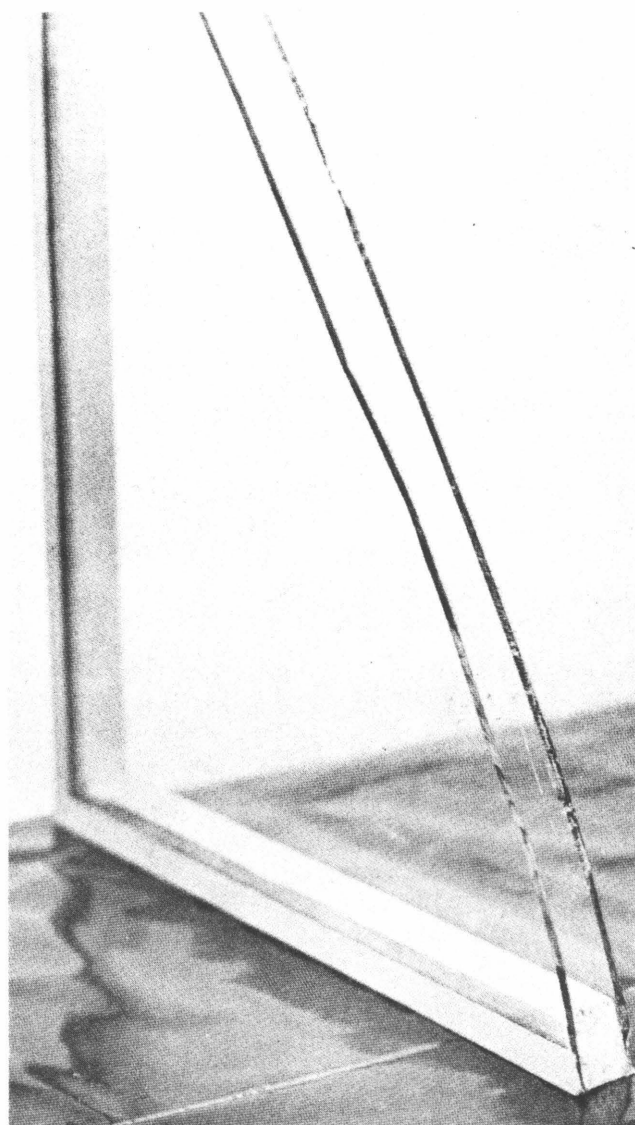
INSULATED GLASS

An excellent permanent solution is to use insulated glass windows (sheets of glass with an air space between) in place of single panes. You can get several good insulated windows on the market. They are the most practical for new construction. Cleaning insulated glass windows is easier than cleaning storm windows; however, insulated glass is more expensive to replace when broken.

STORM WINDOWS

Either prefabricated metal windows or wooden storm windows will do the job.

The metal storm windows usually come completely assembled and ready for installation. You will probably have to make adjustments when you install the windows.



These units usually are displayed where they are sold so you can examine them closely before you buy. If you install your own units, carefully follow instructions from the dealer.

Wooden storm windows are just as useful but require periodic painting and space for summer storage.

Most storm window frames for windows have either two or three tracks for the up-and-down movement of glass and screen inserts. Regardless of the number of

LD
5695
A762
no. 324-865
VPI
Spec



POINTS TO LOOK FOR IN STORM DOORS AND STORM WINDOWS

When you select storm doors and windows, consider the following points:

- The strength of the main frames and frames for the glass or screen inserts is important. Also look for good design to assure easy and efficient handling.
- Look for weathertightness to prevent the entrance of water, cold air, dust, and insects. However, an opening or weep system is standard at the base of all storm windows to release excess moisture.
- You should be able to remove the glass and screen inserts from inside the house. This makes house cleaning easier and requires no outside climbing.
- Think ahead to possible repair problems. Does the dealer offer repair service or can you get replacement parts and do the repairs yourself?
- When you buy new units, check to see that you have all the hardware: hinges, closers, wind chains, locking latches, vinyl base weatherstripping and screws. Check for quality and sturdiness.
- Are materials, workmanship, finish, and assembly under warranty for an adequate period?
- Select the appropriate finish to match your exterior finish.
- When metal framed storm panels are placed on metal storm windows, use a gasket to prevent metal-to-metal contact.

storing glass panels that slide out of the way for ventilation are convenient but will probably cost more.

Buy storm doors with tempered safety glass or non-breakable rigid plastic to reduce breakage hazards. A grill or bar across the door at the point where your body is most likely to press against the door will also help reduce breakage.

Kickplates at the bottom prevent damage from continued use. Automatic closing devices and strong safety springs are important, particularly in windy locations. Wooden storm doors are equally as effective as metal storm doors if not slightly more so, but they require painting.

COST CONSIDERATIONS

Plastic is the least expensive way to winterize your windows and doors. If you can't afford to do your whole house (whether with plastic or permanent glass units), do the side of the house that faces the prevailing winter winds. If you can afford permanent storm windows and doors, you'll probably find them more economical than plastic ones in the long run. Permanent storm windows and doors, while more expensive, add value to the property. Plastic units do not.

BEST RESULTS IN EXTREMELY COLD CLIMATES

Windows should be constructed with wood frames and sash, and should be fitted with double-sealed glass in extremely cold climates. You can make your own insulated window by sealing in another layer of glass in the sash, with an air space between the two panes. To eliminate condensation problems along the edge of these double-insulating glass panes, you may install storm windows over the outside of the wood sash.

Ordinary storm windows fitted onto the window frames are not suitable for prolonged periods of sub-zero temperatures. Moisture will condense on the storm window and obscure the glass with heavy frost.

Storm doors and closed entries are desirable for arctic climates. Metal doors with an insulated core and special thermal separators between the inside and the outside shells are especially good for arctic conditions.

tracks, you should be able to remove all the inserts from the inside of the house.

The triple-track frame allows you to move all the inserts separately to up or down positions. You can also remove them separately from the frame. Although triple-track frames are more expensive, their free movement of inserts does permit you to clean and ventilate easier at either the top or bottom of the window. You can also get frames with inserts that you can tilt in.

In the double-track frame, the screen insert is under the outside top glass insert and supports it. You can raise or lower the bottom glass insert for ventilation. You must remove the screen from the outside track before you can remove the upper outside glass insert from the frame.

Factory-built storm windows or panels for casement, sliding, awning, and picture windows require special designs, depending upon the style of the original window. You can insulate most windows of this type by removing the screen panels and replacing them with glass or plastic panels on the inside of the existing window.

Storm windows also are available for basement casement windows which open either to the inside or outside of the basement.

PLASTIC COVERS FOR DOORS AND WINDOWS

Plastic, can give you the same effective insulation as permanent storm units. You can either use the plastic to cover your present doors, windows, or screens; or you can mount the plastic covering on its own separate fitted frame.

Plastic comes in rolled sheets or is already cut and packaged in kits that include tacking strips, tacks, and instructions for installation. The plastic film varies in thickness, clearness, and resistance to deterioration by sunlight. Polyethylene, for example, is cloudy, flexible, and usually lasts only a year. Vinyl sheets, on the other hand, are clear, flexible, and last from 2 to 3 years in direct sunlight. Polyester film is clear and rigid, but might rattle when the wind is high—it is usually finished in 7-mil thickness and stays clear from 6 to 7 years or longer. Plastic sheets of the same thickness as glass are available and can be effectively used in place of glass; however, it is not nearly as scratch resistant as glass. During the warm months plastic may have to be removed for ventilation.

STORM DOORS

You can get several styles of prefabricated metal storm doors. Pick one that suits the style of your house. Look especially for strength and rigidity of framing. Combination screen and storm doors are popular. Self-



HOW TO AVOID MOISTURE PROBLEMS

You'll have less condensation on the inside surfaces of glass panes when you install storm doors and windows. There might be some condensation if you draw drapes or shades at night or if the inside air is especially moist. Remember that while plastic storm covers should be snug, they need not be completely air tight. Weep vents in aluminum storm windows also allow a small circulation of air, thus preventing condensation.

Weatherstripping on sashes of the house windows can prevent moisture condensation inside the storm windows. See your materials supplier for the best materials for your needs. Insulating storm panels or plastic films placed inside the house should be well sealed around the edges to prevent warm damp air from getting between the inside window and the storm window.



OTHER ADVANTAGES OF STORM WINDOWS AND DOORS

- They reduce cooling needs in the summer as well as heating costs in the winter.
- They reduce the noise entering your home.
- They cut down on drafts.
- Self-contained units provide storage space for inserts not in use.

Agricultural Fact Sheet
United States Department of Agriculture

Virginia Cooperative Extension Service programs, activities, and employment opportunities are available to all people regardless of race, color, religion, sex, age, national origin, handicap, or political affiliation. An equal opportunity/affirmative action employer.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, and September 30, 1977, in cooperation with the U. S. Department of Agriculture. Mitchell R. Geasler, Interim Dean, Extension Division, Cooperative Extension Service, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061; M. C. Harding, Sr., Administrator, 1890 Extension Program, Virginia State University, Petersburg, Virginia 23803.