

Contractors vent their problems to avoid heat and moisture buildup

It has become more and more evident that proper ventilation plays a critical role in protecting structures as well as saving energy. In summer, temperatures in an unventilated attic can reach as high as 140°F. As this heat builds up it can radiate downward, burdening the home's cooling system. As it radiates outward through the roof, this heat can accelerate deterioration of roofing materials and other structural members.

An unventilated attic can also be destructive in winter weather. During the colder months, moisture generated throughout the house rises and collects in the attic. If there is no ventilation present to remove this moisture, the dampness can penetrate insulation, reducing the insulation's effectiveness. This moisture may also rot other building materials if it is allowed to collect on them over a period of time.

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Air exchange keeps attics cool and dry

by W.J. Anderson
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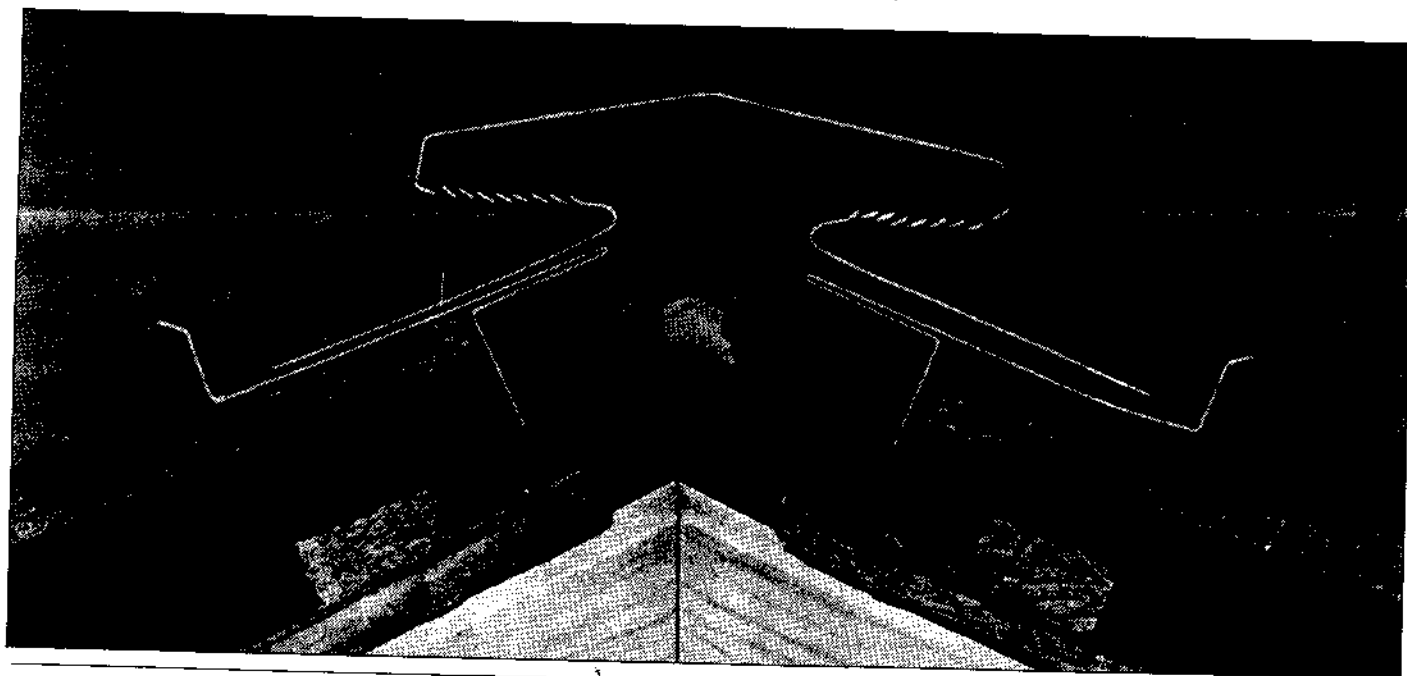
For proper attic ventilation, non-air vents such as PRC Uniflash Vents® should be used to assure a continuous exchange of air and to prevent rain, snow and insects from entering the attic.

Ice dams are another problem caused by improperly ventilated attics during winter. The dams are created when heat trapped in the attic rises and warms a roof undersurface, melting the snow that has collected on the roof. The runoff from the melted snow flows under the snow layer until it comes into contact with a cold surface (usually the roof edge) and freezes. The process continues until ice dams build up and create ponds of water. The standing water increases the possibility that moisture will seep through shingles or penetrate ceilings and walls.

Today's construction practices, which make homes almost airtight, have intensified the problem of inadequate attic ventilation. In addition to trapping heat and moisture within the building, tight construction also prevents the escape of smoke, odors, grease and other pollutants.

Adequate airflow is the key

Because the problems associated with inadequate ventilation so often involve the deterioration of roofing systems, achieving proper ventilation has become a growing concern among roofing contractors.



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The best way to combat these problems is by assuring a continuous exchange of air in the attic. In the summer, this airflow can deter heat buildup and help to maintain an attic air temperature that nearly equals the outside temperature. In the winter, the free exchange of air allows moisture-laden air to escape outdoors and keeps the roof temperature cold enough to prevent ice dams.

The principle behind proper attic ventilation is simple: air vents placed as near the roof peak as possible will allow stale air to escape, while intake vents installed in the soffit or under eaves will allow air to enter the attic area.

The presence of both intake and exhaust vents is important for proper air movement. The vents must also be balanced for effective ventilation. The Static Ventilating Committee of the Home Ventilating Institute (HVI) recommends that 60 percent of the net free area of the required ventilation be placed in the under eave location and 40 percent at the roof or gable location. The Federal Housing Authority's guidelines specify a minimum of 1 square foot of ventilator net free area for each 300 square feet of attic floor space. However, if no vapor retarder is used, the net free area should be doubled, providing 1 square foot of free area for each 150 square feet of floor space.

Static vents a vital component

Static vents play an integral role in achieving adequate air movement. A static ventilation system consists of a series of strategically placed non-mechanical vents. These vents are usually placed in openings in the attic space and must be properly installed to take advantage of the natural flow of air.

There are five basic types of static vents: ridge vents, rooftop vents, triangular gable-end vents, rectangular gable-end vents and under eave vents.

Ridge vents are designed to provide a continuous opening along the ridge line of a pitched roof. These devices prevent rain and snow from entering the attic, while allowing an ongoing exchange of air between the attic and the outside.

Rooftop vents are placed over holes cut in the roof near the peak. They also let air escape and prevent rain, snow and insects from entering the attic. They are normally placed on the rear slope of the roof.

The triangular and rectangular gable-end vents are installed on the gable ends of the house. The triangular vents are fitted to the high point of the gable ends, while the rectangular vents are placed slightly lower.

Regardless of which vents are used, the under eave vents are necessary to create a system in which air flows continuously from the attic to the outside. Installed in the roof overhang on both sides of the house, the under eave vents allow fresh air to flow into the attic and out through the other vents.

Powered vents enhance airflow

Static vents provide a natural ventilation system that can solve many of the problems created when there is no free flow of attic air. However, the ventilation process can be enhanced by using the static vents in conjunction with other ventilating devices.

One device is a turbine vent, which rotates when it encounters a wind from any direction. This rotation creates reduced air pressure in the ventilator's stack, which draws the air from the attic space and pulls in fresh air through the under eave vents.

Attic ventilators may also be powered by an electric motor. These vents are usually equipped with a thermostat that turns them on automatically when the temperature rises above a preset level. Equipped with a humidistat, the powered ventilator can also be activated when the moisture level of attic air exceeds prescribed limits.

To receive more information about proper ventilation equipment and techniques, contractors should contact HVI. The Institute, a division of the Air Movement and Control Association, publishes a number of helpful pamphlets. HVI is recognized as a quality control agency by the International Conference of Building Officials. Inquiries should be addressed to: HVI, 30 W. University Drive, Arlington Heights, Ill. 60004.