

Can Wind Short-Circuit a Ridge Vent?

Q. *Wouldn't a single-sided ridge vent be more effective than a standard ridge vent for a home built on a windy site? It seems that with openings on both sides of the ridge, a standard vent would simply short-circuit when the wind blows rather than draw air from the eaves vents.*

A. *Paul Fiset, director of Building Materials and Wood Technology at the University of Massachusetts Amherst, responds: In order for a ridge vent to exhaust, you*

need a pathway and a reliable driving force. Both a single-sided and a double-sided ridge vent provide a pathway, so the important question is this: What is the main driving force that pushes attic air up and out of the ridge vent?

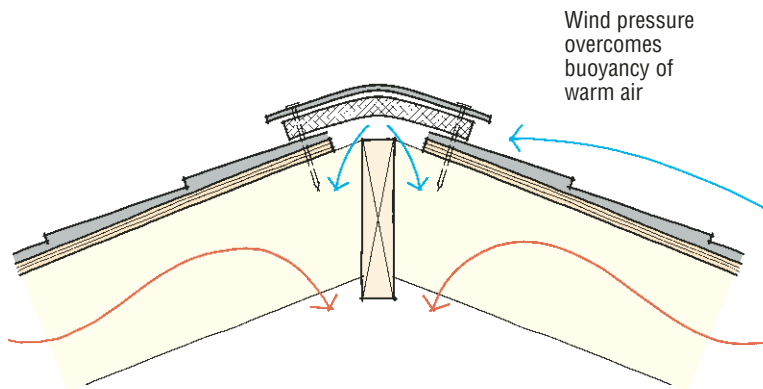
While wind direction can induce roof venting — and it's been shown that even soffit-only venting can draw air out of roofs — most often the answer is the buoyancy of the attic air. If there is a fair amount of heat loss from the

house into the attic, then the buoyancy of the warm air rising causes it to escape at the highest point, the ridge.

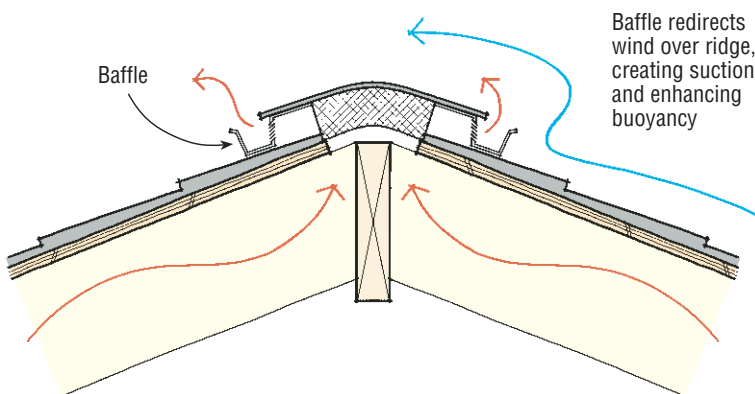
However, a more energy-efficient house experiences less heat loss, so in that case buoyancy becomes less of a driving force. Based on some tests I've run, I think it's important to install ridge vents that have an external baffle, like ShingleVent II (Air Vent Inc., 800/247-8368, www.airvent.com). As wind passes over the roof ridge, the airstream jumps over the vent's baffle, causing suction as the air lifts upward — the same way an airplane wing works (see illustration). Called the Bernoulli effect, this driving exhaust force works regardless of wind direction. Without an external baffle, either a single- or a double-sided roof vent can allow outside air to come in and short-circuit the venting process.

Baffled vs. Unbaffled Ridge Vents

Unbaffled



Baffled



Fixing a Radiant-Tubing Leak

Q. *I have a leak in my recently installed radiant tubing, no doubt caused by freezing last winter before the system was fully operational. The tubing is a 300-foot run buried in a 4-inch concrete slab. Is there some kind of "stop leak" that can be circulated in the system to plug the leak? Is there a way to locate the leak?*

A. *John Siegenthaler, a consulting engineer specializing in hydronic heating system design in Holland Patent, N.Y., responds: As far as I know, there's no product that can be circulated through any type of radiant tubing that will stop a leak. So you'll have to cut out the damaged tubing and splice in a new section.*

First, though, you have to find the leak. The only reliable method I know is to run warm water through the system and view the slab with a thermal imag-

ing camera; the leak will appear as a plume spreading out from the tubing. This will work best if the slab is relatively cool when the test is initiated.

Once you've located the leak, mark the location on the slab, chip away the concrete to expose the tubing, and patch the leak. Check with the tubing manufacturer for the required fittings and procedure to do the repair, and be sure to pressure-test the circuit before patching the slab.

The hardest part of this process may be locating a thermal imaging camera. Unless you have access to one owned by a local utility, volunteer fire department, or other agency, you'll need to contract with an infrared inspection service.

Solar Shingles

Q. *Solar modules that can be installed in place of roof shingles seem to make more sense than PV modules mounted on racks above the roof (see "Installing Solar Electric Power," 3/05). Besides being much less noticeable, it seems that using photovoltaic shingles would save on the expense of installing a regular roof. Why aren't more people using them?*

A. *Gary Gerber, owner of Sun Light and Power, in Berkeley, Calif., responds:* Actually, many people are using these solar modules — we call them building-integrated photovoltaics, or BIPVs — as roofing. Designed to replace long-lived roofing systems such as composite slate shingles, concrete tile, and standing-seam metal roofing, BIPVs are normally installed by a roofer as part of a new roof. Because most of these roofs are actually a mixture of PV modules and conventional roofing material, the roofer has to weave the two together, while a solar contractor makes the necessary electrical connections and supervises the work.

There are several reasons there are not more BIPVs. For one thing, most PV systems being installed today are for retrofit, in cases where a new roof isn't required. Second, of those homeowners who do need a new roof, many choose composition shingles, and there is no PV system that cost-effectively replaces this type of roofing. Third, an integrated PV roof is not necessarily less expensive than putting modules above the roof; often, it's actually much more costly, due to higher material costs, increased wiring costs, and smaller modules that require more total labor to install.

Fourth, long-term maintenance and repair of a BIPV system may involve removing and replacing the roof itself, a prospect that concerns some homeowners (even though the BIPV usually has a 25-year warranty). Finally, most solar companies would prefer to install their systems themselves rather than deal with the logistics and costs of hiring, training, and supervising a roofer.

BIPV makes the most sense for new construction, especially when the builder can hide the system from view in plain sight. As more new-home builders and developers get wise to the advantages of offering PV to their customers, expect to see many more of these BIPV roofs dotting the landscape (if we can spot them).

Soundproofing a Through-Wall Air Conditioner

Q. *My neighbor has a noisy through-the-wall air conditioner that runs day and night. So that I could get a better night's sleep, I thought I would offer to build him a soundproof box he could place around the AC unit, before I resort to more drastic measures. Is it possible to build a simple structure that will reduce noise, provide the necessary ventilation, and be weather-resistant? The unit is located below a glass-block*

wall, on the first floor above a concrete walkway with ample space around it.

A. *Fernando Pages Ruiz, a building contractor in Lincoln, Neb., and the author of Building an Affordable House, responds:* Unfortunately, you cannot build a soundproof enclosure of any kind that would also provide adequate ventilation for the AC unit. Noise travels through air, so by definition a soundproof enclosure would have to be airtight.

The solution to your neighbor's AC noise output lies at your own bedroom window. First, check that your window seals tightly. You'd be amazed how much sound you can block with good weather stripping. Remove the casing around your window and seal the area around the jambs with caulking or expanding foam sealant. If that doesn't help, consider installing heavy, solid shutters that can be sealed tightly. You could also replace your existing window with a vinyl window frame (vinyl provides better sound attenuation than wood) and laminated glass. For a sure-fire solution, Soundproof Windows (877/438-7843, www.soundproofwindows.com) makes add-on window units (they're used in conjunction with your existing windows) with sound-attenuating frames and glass that can reduce sound infiltration by up to 90 percent.

Otherwise, if your neighbor's unit is showing signs of age, you could ask him to replace his air conditioner with one that has a lower sone rating (sones are used by appliance manufacturers to indicate the relative noise level of their products; a lower number signifies a quieter machine).

Got a question?

Send it to Q&A, JLC, 186 Allen Brook Lane, Williston, VT 05495; or e-mail to jlc-editorial@hanleywood.com.