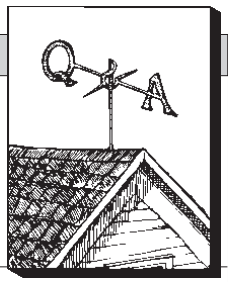
Heating Choices



by Henry Spies

Q. *I built two-houses that are primarily heated by woodstoves. My customers are considering adding backup heating systems. Each house burns about three or four cords of wood per year.*

Could you weigh the merits of the following: electric baseboard; high-efficiency oil furnace; high-efficiency LP-gas furnace; high-efficiency kerosene; heat pump. The houses have design heat loads of 30,000 to 40,000 Btuh at -15 degrees.

A. The answer depends on how much the backup system will be used. Electric baseboard is inexpensive to install but very expensive to operate. If it is seldom used, however, it might be the most economical choice.

High-efficiency oil furnaces are not available in sizes small enough for these houses—it is difficult to build an efficient oil burner with a firing rate of a half gallon per hour or less. A high-efficiency LP-gas furnace might be the best choice: these are available in the correct size and the maintenance on a gas furnace is usually less than on other types.

The heat pump is the most expensive system to install, and would be competitive only if there were a need for central cooling. The operating cost might be half that of electric baseboard, but the installation cost might be five or more times as much.

I am not familiar enough with vented high-efficiency kerosene burners to evaluate them. Unvented kerosene heating units should not be considered.

Water-Heater Tank Failures

Q. *We have seen several water-heater tank failures in the last few years, in both gas and electric models. Are the tanks made cheaper today? Is there anything home owners can do to prolong the life of the tanks?*

A. There are several possible reasons for a high failure rate in water-heater tanks. It may be that the water is being treated differently, with the addition of more chlorine to counteract higher pollution levels, or there may have been a change in the softening process. If surface-water sources are used, there may be increased acidity in the lakes and reservoirs.

It is also possible that different piping materials are being used and dielectric unions are not being used to connect pipes of dissimilar metals. Many people are not aware that the heater tanks normally contain a sacrificial anode to reduce corrosion, and it may be necessary to replace that anode as it is consumed.

Manufacturers are also claiming that flue gases in fuel-burning water heaters are more corrosive because they are often located in utility rooms near laundry equipment where chlorine bleaches are used. It is possible that the glass lining was made with some pinholes in it, but the process is highly automated and fairly foolproof.

As for maintenance, the recommended practice of draining a few gallons of water from the tank every few months is a good one. Keeping the gas burner and pilot clean and burning with a blue flame is also important. If the problem is with the water, consider pretreatment. The flue should provide a good draft, and the use of chlorine bleaches in the immediate area should be avoided.

Venting an Old Roof

Q. *Would there be any advantage in installing a ridge vent when reroofing a house? I am currently working on a house with two gable-end vents. There are no soffit vents. The house is 1 1/2 stories with a rear dormer. The ceiling has two layers of R-19 batts, one in the joist spaces and&e other perpendicular to the joists.*

A. The key to the answer is a question: Is there any visible evidence of moisture problems on the bottom of the roof sheathing? If not, leave well enough alone. If there is, the best answer is to install a ridge vent *and* soffit vents.

If there is no soffit, the best substitute is louvers in the triangular spaces behind the knee walls. There should be air chutes above the slanted portion of the ceiling to allow air movement from the knee-wall section to the space above the second-floor ceiling.

Sharing a Flue

Q. *Is it safe to vent oil and gas appliances into an unlined masonry chimney?—R.L., Claysville, R.I.*

A. No. Neither gas nor oil is particularly pure, and both contain some sulfur, which is converted to sulfur dioxide during the combustion process. As it combines with the water that is also produced, a dilute sulfuric acid results, which will attack the mortar in an unlined chimney. Burning coal produced a tar coating on the masonry that protected it from these acids. The susceptibility of the mortar to sulfuric acid is the reason that joints in clay flue liners should be made with fire clay rather than mortar. ■

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