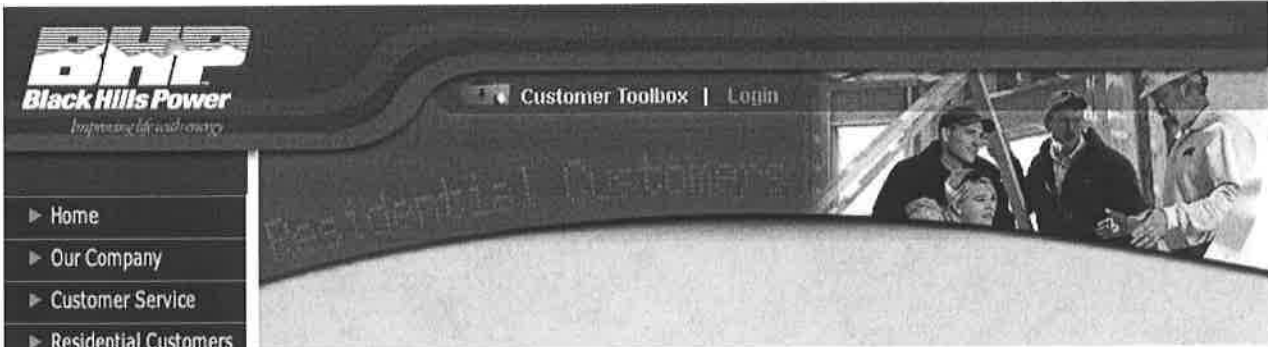


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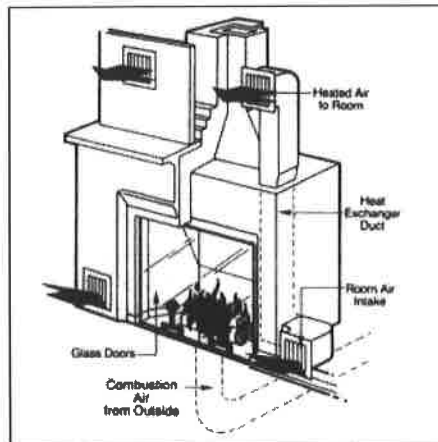


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Fireplaces and Woodburning Stoves ... May Raise Energy Costs



Fireplaces

Fireplaces were once the source of heat in American homes, so it is understandable that many homeowners believe burning wood in their fireplace is saving them energy and fuel.

Unfortunately, the opposite is actually true in many cases. Fireplaces are notorious for heat loss. While burning, the average fireplace is operating between 5% and 15% efficiency, drawing almost as much heat up the chimney as it is producing, plus losing a tremendous amount of heat through infiltration and conduction during the 90-95% of time it sits idle in the home.

The fireplace damper does not completely stop air movement up or down the flue. A seal is not formed even when the damper is closed. Infiltration around the perimeter of the damper is considerable in most cases, since oxidation, residues, and head warpage have contributed to the size of gaps.

A single layer of metal is all that separates treated inside air from the elements outside -- a loose fitting layer at that. If any other opening in the building were to be covered only by a loose fitting sheet of metal, the homeowner would be alarmed and give immediate consideration to the problem. But since the fireplace damper is hidden from view, it usually goes unnoticed.

Most fireplaces must be considered a contribution to interior decoration, designed to cheer your heart and soul, but not to warm your body. Thus, this discussion of fireplaces will be more in the view of cutting back on heat loss than in turning them into heat-producing elements in the home.

Many products are listed on the market for turning the fireplace into an efficient heat producer. Some will improve the heat efficiency of burning wood, but they require careful evaluation.

Following are some suggestions for reducing heat loss and improving efficiency:

1. Supply outside air to minimize the amount of heated interior air being drawn up the chimney flue.
2. Crack open a window near the fire if you do not have outside air feed.
3. Set back the thermostat while a fire is burning. Otherwise, the draw may cool down walls away from the fireplace causing the furnace to over-operate to compensate for cooler wall temperature, increasing interior temperature and gradient between interior and exterior. This will add to normal heat loss.
4. Glass doors or a controlled damper will reduce the amount of air draw while the

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fire is burning.

5. A system that draws inside air through a cavity and returns it to the room will increase efficiency, especially if the front is enclosed with a glass door and there is a fresh air intake from the exterior of the home to provide air to feed the fire.

Because the fireplace is a factor in energy conservation, a basic understanding of its operation is required to answer questions that are likely to come up. Some basic solutions to fireplace problems are:

1. Make sure the damper is always fully open before lighting a fire. Usually this creates a down draft.
2. Chimneys on outside walls should be warmed before a fire is started. Accomplish this by using a rolled up newspaper as a torch.
3. The damper opening should be at least 50% larger than the flue area.
4. If the fireplace does not have a smoke chamber, the addition of a hood enclosure would be beneficial.
5. The hearth opening should not be more than ten times the area of the flue opening.
6. Back smoking may be caused because the house is tightly sealed. Crack open a window to check if this may be the problem.
7. All cracks in the flue or chimney should be repaired. This can be done by using aluminum or high temperature caulk.
8. In order to prevent creosote build-up, green wood should be avoided. Wood over six inches in diameter should be split, stacked and dried for approximately one year.
9. The chimney should be regularly cleaned to prevent chimney fires.

Close attention to non-operational time is important. If a family burned a fire every evening for three hours from November 1 until April 1 each year, they would be using their fireplace only 5% of the time. So it is fairly safe to say that many fireplaces are not in operation from 95% to 99% of the time.

In that period of time there is a constant heat loss through the damper. Two methods of decreasing this heat loss are glass doors and a positive controlled damper system.

Wood Stove Checklist

1. Have you chosen a well-built stove? Stoves tested by independent agencies, such as U.L., are recommended.
2. Is the stove in a safe location? The stove should be placed on noncombustible material. Check with your building official for information on approved noncombustible hearth materials.
3. Is the stove installed properly? Don't connect the stovepipe to the same chimney used by another furnace or appliance. Don't pass the stovepipe through a ceiling, closet or attic. Allow the proper clearances from walls. Check manufacturer's instructions and local building codes for recommendations.
4. Is the stove properly maintained? Burning properly dried wood increases heating efficiency and reduces creosote build-up. Keep burning temperatures high enough to ignite gases released by burning wood. This increases heating efficiency and reduces creosote build-up. Place a stack thermometer 18" away from the stack's connection to the stove and regulate burning temperatures between 200 degrees to 400 degrees. Check your chimney regularly for creosote build-up. How often cleaning is needed depends on the amount of use, type of wood used, and the way you operate your stove.
5. Have you established safety rules? Be prepared for a fire.
 - o Make sure everyone knows the warning sounds of a chimney fire -- a loud roar, sucking sounds and shaking stovepipes.
 - o Post the telephone number of the local fire department near your phone.
 - o Keep a class ABC dry fire extinguisher handy. Make sure everyone knows how it works. Explain to everyone what to do in case of a fire.
 - o Be sure to notify your insurance company about any wood stove installation. It may invalidate your coverage if you don't.
 - o All homes should have smoke detectors. This is particularly important when heating with wood.