

CAN WOOD-BURNING SYSTEMS BE MODERNIZED?

Last Updated: Thursday, March 28th, 2013, Created: Thursday, October 14th, 1999

Open fireplaces are not heating systems. They have traditionally been built on an outer wall, creating sealing problems for air barriers and wasting lots of heat through the back of the chimney. Fireplaces should always be built on the inside walls -- if you build one at all. The problem with traditional open fireplaces is that their radiant heat toasts the front of you while their conductive heat draws so much warm air up the chimney that they create a net heat loss in the house. Dampers, glass doors and fresh-air inlets or entire "a zero clearance" inserts can convert these hearths into net energy producers. (Use a grid to hold the wood in a zero clearance fireplace or thermal distortion of the fireplace may destroy its safety features -- and start a fire on the back side.) Take a look at the new gas fireplaces -- they are rapidly becoming more popular than wood fireplaces -- the same look, no wood pile and it always works. If you insist on building a traditional open fireplace in your new house you will need to find an old timer who has built successful ones. The only studied attempt to document the good and bad points in wood fireplace construction that I have been able to find is an out of print document from the early 80's from the now defunct Center for Research and Development in Masonry in Calgary. This is a fascinating document that shows how great Grandpa's shallow central pioneer fireplace got moved to the cold outer wall, enlarged, turned into a decoration and never worked right since then. Manufactured wood and gas fireplace appliances have all but eliminated the drive for continued studies of open hearth fireplaces. For those of you trying to deal with existing fireplaces:-- Leave the damper open at all times if you are counting on the chimney for your required planned-hole-high-in-the-house (search keyword "Neutral Plane" for the title "WHAT IS A PLANNED-HOLE-HIGH-IN-THE-HOUSE?"); otherwise, keep it closed when not in use.-- Fireplaces which draw fresh air for burning minimize house air heat losses up the chimney.-- Fireplaces with heat exchanger systems, with or without fans, are excellent. A few are even classified by CMHC as furnace systems.-- Fireplaces with fresh air fan systems that by design or accident, create a positive pressure in the house lower the neutral plane into the basement (search keyword "Neutral Plane" for the title "WHY SHOULD I CARE ABOUT THE NEUTRAL PLANE?") and force moisture into the walls. If the walls are well insulated, you can have problems. Wood-burning stoves and furnaces are classified as heating systems. In the Maritimes, for example, they are strongly encouraged. Air-tight, wood burning units are much more efficient -- less heat loss up the chimney, lower temperature, and more even heat distribution as well as more efficient burning. They require proper size chimneys and conscientious chimney cleaning because of low temperature soot and creosote build-up. Stiff, flat, wire brushes are made especially for the task. Wood burning systems are not for lazy people; fire safety and economy dictates that you become your own chimney sweep. Pellet stoves and furnaces are probably the transition from inefficient to efficient when you want to burn wood or other cellulose derivatives (corn cobs, etc.). They are semi-automatic, clean and some are made to high-efficiency standards.

Keywords:

Fireplace, Furnace, Heating, Boiler, Wood