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Pellet Stoves & Wood Boilers

There's a reason why New Englanders refer to winter as the heating season; New England and New York combined use 86% of the nation's second most popular heating fuel: wood. Although we may use an astounding amount of oil to keep warm through the winter, wood heat is engrained in New England culture. Long before the Industrial Revolution there was only one way to heat a home and that was with wood. The abundant forest landscape of the Northeast coupled with the grit and fortitude of New Englanders, has kept wood heat an economical and viable option. However, as with everything in our world, technology has rapidly evolved the wood heat industry past the traditional fireplace or woodstove.

Operating a woodstove is considered a basic skill in the Northeast. Woodstoves, in general, are designed very simply. As we may have progressed past the Non-EPA "metal container you throw a log into", there are very few components other than a baffle, damper, and possibly a catalytic element. However, this is not the case for pellet stoves or wood boilers.

Wood boilers, though simple, are more complex than woodstoves. A fire is started in the firebox which is surrounded by a "water jacket" (a compartment in the vessel holding water). The water is heated by the fire and pumped out of the appliance into a heat exchanger.

Pellet stoves are even more complex as they are comprised of more mechanical components than a basic woodstove or wood boiler. The system begins with an electrically-driven auger delivering pellets from the hopper to the "burn grate". The burn rate or how fast the pellets are delivered, is regulated by a circuit board which the operator can control. A fan then pushes the heat into the room.

Both wood boilers and pellet stoves are reliant on electricity to stay operating, whereas a wood stove does not require auxiliary power.

Because of the mechanical and electrical elements in pellet stoves and wood boilers, more maintenance is required than that of a woodstove. It is essential to familiarize yourself with the owner's manual and learn what is necessary for daily, monthly, and annual maintenance since there is more to monitor in the system than built-up ash. In addition to "in-house" maintenance, a professional contractor specializing in wood burning technology should service and

clean pellet stoves and wood boilers on an annual basis. This will help ensure that all parts of the assembly are properly cleaned out and in working order.

One measure that may help extend the life of a pellet stove or wood boiler, and prevent potential malfunctions, is selecting a high quality fuel.

Fuel for a wood boiler is typically cordwood, which is the same fuel source for a woodstove. There are two measures to take into consideration with cordwood:

- Is hardwood or softwood being used?
- Is it seasoned?

Hardwood will provide a longer burn time and a hotter burn temperature than softwood, both of which help with efficiency. However, most importantly, only seasoned wood should be burned. Seasoned wood will have a moisture content of under 20%. The longer it has been stored in a dry area, the lower the moisture content. Burning seasoned wood will help to eliminate creosote buildup and help prevent the equipment from malfunctioning.

Overall, pellets output more BTUs (British thermal units) than cordwood and it's primarily due to the moisture content (5% vs 20%). In a pellet fire, heat is not wasted in evaporating moisture from the wood. In addition, pellet stoves are designed to bring enough air in by using fans to achieve complete combustion which cannot occur with a traditional woodstove. In a complete combustion process, smoke is not created and less heat is wasted. These efficiencies make pellet stoves an attractive option. However, selecting a high quality pellet is key to the process.

Pellets are made by compressing dry sawdust at a high pressure and temperature. The high pressure and temperature releases a natural organic binder from the dust, which allows it to keep the traditional pellet shape. Cheaper pellets will use a synthetic binder, such as glue, which affects the efficiency of the stove and produces a less clean heat.

Other ways to determine if pellets are of good quality are by simply observing the uniformity of their shape and the smell of the product. If the pellets are uneven in length, and show signs of cracks, this is a sign of a cheaper pellet. If the pellets give off a synthetic odor, the manufacturer most-likely used glue as a binder for those pellets.

There is no doubt wood heat is here to stay in New England. It's only a matter of how the technology will change in order to keep it an efficient option. As long as we commit to understanding the new exposures that come with the new technology, wood heat can remain not only an efficient option but a safe option as well.

For more information regarding pellet stoves and wood boilers, please contact Acadia's Virtual Loss Control Team at 207-874-5701 or virtuallc@acadia-ins.com.

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SAMPLE

Pellet Stoves & Wood Boilers Maintenance Checklist

Date: _____ **Time:** _____ **Inspected by:** _____

Pellet Stove Maintenance

Daily

- ☐ Check pellet hopper for adequate pellet supply and remove any foreign objects
- ☐ Check burn pot for excessive buildup of ash, and remove ash if necessary

Weekly

- ☐ Empty and clean ash pan, dispose of ashes in noncombustible container

Annually

- ☐ Have a qualified professional clean and inspect the unit

As-Required

- ☐ Clean burn pot, dispose of ashes in noncombustible container
- ☐ Clean ash trap, dispose of ashes in noncombustible container
- ☐ Clean glass door, use nonabrasive cleaners
- ☐ Clean heat exchanger, refer to owner's manual on proper way to clean

Wood Boiler Maintenance

Daily

- ☐ Check water levels to ensure no leakage in line
- ☐ Inspect fire box and ash areas, remove any foreign objects or ash if necessary

Weekly

- ☐ Inspect chimney for excessive soot build up or foreign objects
- ☐ Remove built up ash and store in covered non-combustible container

Semi-Annually

- ☐ Check pH and nitrate levels of water, compare findings to owner's manual

Post Season

- ☐ Have a qualified professional clean and inspect the unit
- ☐ Cover chimney with cap to prevent foreign objects from entering during off-season

As-Required

- ☐ Inspect and clean firebox, dispose of ashes in noncombustible container