

Pellet Fuel for Commercial and Residential Heating Applications

FACT SHEET



BIOMASS



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WHAT IS PELLET FUEL?

Pellet fuel is a biomass energy product made of wood residue or other plant materials. Most pellets are made of hardwood sawdust originating from wood waste products such as pallets and wooden packing materials, or from the waste produced by manufacturers of furniture and other wood products. Pellets can also be made of crop waste such as corn stalks or straw, or even waste paper. The wood waste or other biomass is pulverized, dried and compressed into pellets.

Pellet fuel has several advantages over cordwood, woodchips or other forms of wood as heating fuel because the consistent manufacturing process produces a uniform fuel source. The moisture content of pellet fuel is lower and more uniform, and it produces more heat per unit of weight, making it a more efficient fuel. It also burns cleaner, and takes less space to store, about four to five times less than that of cordwood by weight.

HOW IS PELLET FUEL UTILIZED?

Pellets are currently used by a variety of businesses to fire stoves and furnaces in greenhouses, small manufacturing facilities and farms. Pellets are also used in institutional settings such as schools, theaters and correctional facilities. Pellet fuel is popular for home heating as well, where it is used in freestanding stoves, fireplace inserts and even residential furnaces, instead of cordwood.



PHOTO COURTESY DON WICHERT

A commercial-scale system installed at the Old Hayward Eatery & Brew Pub in Hayward, Wisconsin, is expected to utilize approximately 100 tons of wood pellets per year.



No adhesives are used because the biomass contains a natural lignin substance that holds the pellets together.

Today's pellet stoves, furnaces and boilers precisely regulate fuel supply and combustion air, resulting in efficiency ratings of 80 percent to 85 percent. Additionally, because of the near total combustion of pellets, these units produce virtually no creosote and can be vented horizontally in a plastic pipe like a natural gas furnace. Pellet fuel must be added to the fuel hopper, which may require several minutes of labor each day, but it is then automatically fed to the combustion chamber as needed. Otherwise, pellet burning units are designed to operate much like any other stove, furnace or boiler.

WHAT ABOUT FUEL QUALITY?

The Pellet Fuel Institute (PFI) maintains pellet fuel standards. These include specifications for properties such as bulk density, pellet diameter, pellet length, fines content by weight, chlorides and ash content. The main purpose of these standards is to maintain reliability in pellet fuel products, as organic materials vary widely in their natural properties. Reliable pellet unit performance depends on a fuel supply of consistent quality.

PFI also specifies two grades of fuel: premium and standard. The difference between the two grades is the inorganic ash content which determines how clean it will burn, and subsequently, how much stove maintenance will be required. Premium pellets contain less than one percent inorganic ash content and standard pellets contain less than three percent. Standard grade pellets, which are made of wood waste containing tree bark or coarse agricultural waste such as nut hulls, should only be burned in stoves or furnaces designed to use them. However, 95 percent of available pellets are premium grade, made of hardwood sawdust, and can be used in any pellet stove, furnace or boiler.

WHAT IS THE COST OF HEATING WITH PELLET FUELS?

Like determining the cost of any space heating fuel, one needs to factor in the energy efficiency of the building, the level of heating required and the seasonal climate where the building is located. A typical residential pellet stove might utilize as much as two to three tons of pellet fuel per year. With pellet fuel, the actual price will depend upon the user's distance from the manufacturer, pellet availability and the time of year pellets are purchased. Many pellet users save money by buying pellets off season or signing a pre-season agreement with a supplier.

Pellet fuel is a relatively cost stable and price competitive fuel. Current prices for pellets range from \$100 per ton to \$200 per ton. Using an average cost of \$1.50 per ton of pellets burned in a typical stove, this cost is approximately \$11.50 per million Btu's. This compares favorably with the cost of electric heat, and is similar to other common fuel costs in 2007.

WHERE IS PELLET FUEL MANUFACTURED?

Pellet fuel is produced by more than sixty manufacturing facilities in the United States and Canada. These pellet manufacturing facilities receive, sort, grind, dry, compress and bag wood and other biomass products into a convenient pellet fuel. Pellet mills may sell their product directly to customers or market the pellet fuel through retailers. Pellet fuel is typically sold in 40-pound bags, but can also be purchased in bulk quantities. Although pellet fuel is becoming more available, you should locate a supplier in your area before purchasing pellet burning equipment. See links in the LEARN MORE section of this fact sheet for more information.

DOES FOCUS ON ENERGY HAVE FUNDING FOR PELLET FUEL PROJECTS?

Focus on Energy has several program incentives for non-residential wood pellet fuel projects. The incentives are described in more detail at the Focus on Energy Web site. To be eligible for funding, systems must have an automated feed system and combustion fan, a documented emissions rate no higher than that for EPA Phase II wood stoves or qualify for the EPA Outdoor Wood-fired Hydronic Heaters Program. See the EPA link under the LEARN MORE section for more information. The system must also be saving or displacing natural gas, LP gas (propane) or electricity by utilizing sawdust, wood pellets, wood chips or other types of approved agricultural products.

WHAT ARE THE RECOMMENDED STEPS TO INSTALL A WOOD PELLET HEATING SYSTEM?

1. Determine the current heating requirements and annual fuel costs

- Will the heating requirements change in the future?
- Will the fuel availability and cost change in the future?

2. Contact equipment vendors to identify a suitable wood pellet system

- How large a system and what features (such as automatic feed) are desirable?
- How much labor and storage space will be required for fuel management?

3. Verify the availability and price of wood pellets in the area

- Is there a reliable local supplier of wood pellets?
- What is the cost of the pellets and what are the options (bagged versus bulk, delivery schedule, storage requirements)?

4. Compare the cost of heating with wood pellets to the existing heating costs

- Will the wood pellet system provide an economic advantage over the current heating system?
- Have labor, fuel storage, and other costs been considered?

5. Determine if any financial incentives, such as those available from Focus on Energy, are available for the proposed project

- Verify eligibility for Implementation Grants or Cash-Back Rewards at the Focus on Energy Web site
- Apply for Focus on Energy financial incentives before ordering equipment

6. After receiving Focus on Energy approval, proceed with the purchase and installation of the wood pellet system

7. Verify Installation by completing the Notice of Installation and returning it to Focus on Energy staff

Wood pellets are becoming more popular because they are a locally available, renewable fuel. They are potentially less expensive than fossil fuels, support local businesses and keep energy dollars in local economy.

LEARN MORE

focusonenergy.com/renewableenergy

Learn more about Focus on Energy Renewable Energy financial incentives.

focusonenergy.com/reyellowpages

Find Full Service Installer information including lists for Wood Pellet Manufacturers and Suppliers and Wood Full Service Installers in Wisconsin.

focusonenergy.com/re literature

Click on Biomass to download the Wood Pellets for Heat and Profit: The Sunny Slope Gardens Inc. Case Study and other related material.

pelletheat.org/3/residential/comparefuel.cfm

Calculator for comparing the cost of wood pellets with other fuels, at the Web site of the Pellet Fuels Institute.

nchpba.org

Residential pellet stove, furnace and boiler dealers in the Upper Midwest, at the Web site of the North Central Hearth, Patio & Barbecue Association (NCHPBA).

epa.gov/woodheaters/what_epa_doing.htm

Information about the EPA Outdoor Wood-fired Hydronic Program; look for the orange tag when purchasing an outdoor wood-fired hydronic heater (eligible for Focus incentives).

Focus on Energy works with eligible Wisconsin residents and businesses to install cost effective energy efficiency and renewable energy projects. Focus information, resources and financial incentives help to implement projects that otherwise would not get completed, or to complete projects sooner than scheduled. Its efforts help Wisconsin residents and businesses manage rising energy costs, promote in-state economic development, protect our environment and control the state's growing demand for electricity and natural gas. For more information call **800.762.7077** or visit focusonenergy.com.