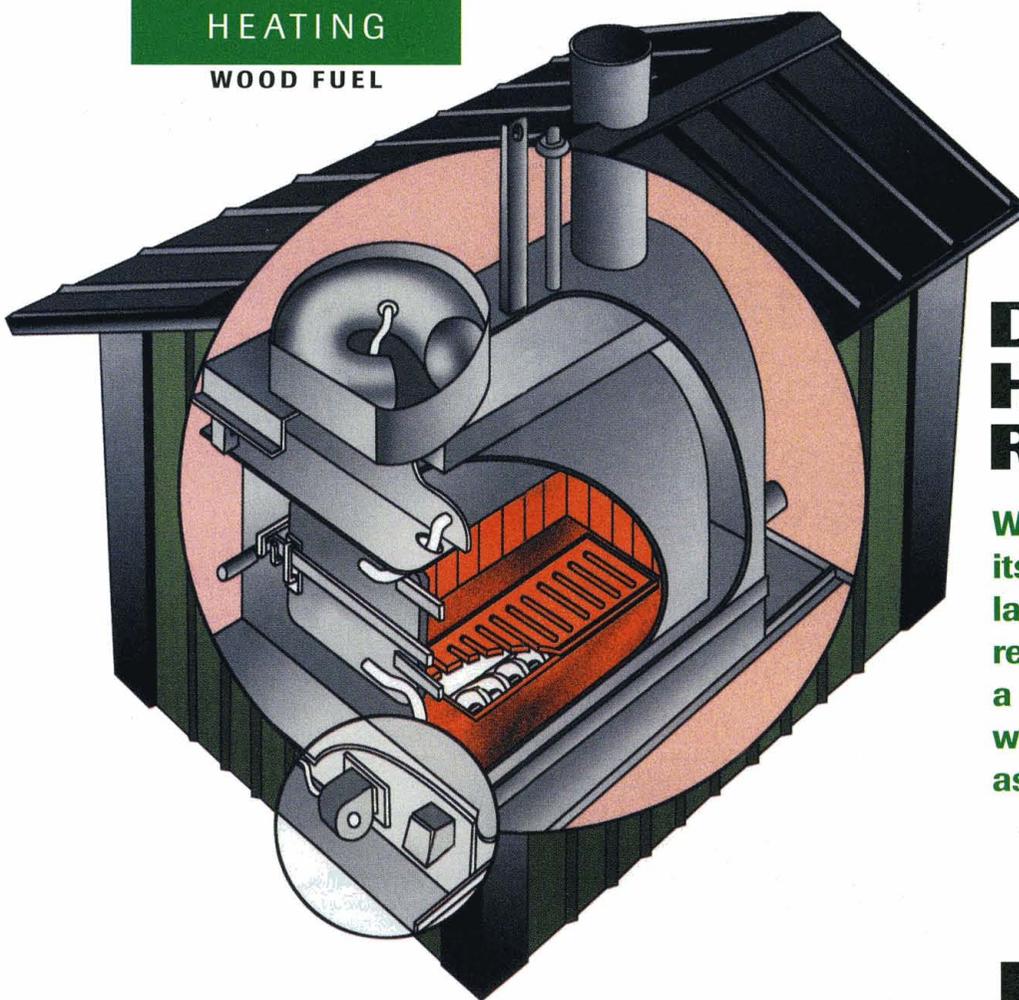


HEATING

WOOD FUEL



Outdoor furnaces, like the Model 400 DCSS from Heatmor Inc., offer performance features such as forced-air drafts, an ash auger chamber and cast iron grates, and a large, water-cooled firebox door. They are constructed of heavy gauge stainless steel.

Do You Have The Resources?

Wood fuel is a bargain in its raw form, especially if large supplies are readily available. Here's a look at the viability of wood-burning systems as an energy source.

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FUEL prices are returning to acceptable levels, and most forecasts seem to project more reasonable fuel costs this winter.

Last winter once again reminded us of the importance of energy efficiency to greenhouse operations, as fuel costs increased more than 300% for some growers. Recent global factors such as the United States' reliance on foreign oil during these unstable times have convinced some growers to take another look at one of the earth's most renewable resource – wood.

Wood burning systems are not a new concept, and outdoor furnaces have proven to be a viable energy source for wholesale growers for years.

Len Busch Roses, Plymouth, MN, installed a wood-burning system in 1977 that accounts for more than 50% of the operation's total BTUs. The system can produce up to 13 million BTU per hour at a fraction of the cost of natural gas, says Pat Etzell of Len Busch Roses. "Our cost per million BTUs using wood fuel is around \$1.50 with 70% efficiency, versus \$4.80 for natural gas with 82% efficiency." Other costs related to the system at Len Busch Roses

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include labor and regular maintenance. "But even with labor and the cost of periodic replacement and repair, the system works out nicely," Etzell says.

Another grower who relies on wood heat in the greenhouse is Dottie Warner of Superior Seedlings, Lizton, IN. A grower of oak trees, nursery liners, and native trees for reforestation projects, Superior Seedlings recently upgraded from a Heatmor 400 DCSS wood-burning, outdoor furnace to the new Model 800 CSS furnace.

"We heated one 30- by 96-foot greenhouse with the 400, but our second greenhouse is 32- by 152-feet," Warner says. "We went to the 800 for both, although the 400 might have been sufficient." Warner explained that the larger furnace will eventually be used to heat three greenhouses.



Fueling an outdoor furnace can be as simple as loading a pallet of wood waste into the firebox twice each day. Photo courtesy of Heatmor, Inc.

Supply Side

Both Etzell and Warner benefit from nearby fuel sources, a key factor in the economy of wood-burning systems.

"Our energy source is local wood," Warner says. "We rarely have to travel to obtain fuel because when trees fall, we burn them."

Len Busch Roses pays about \$10 to \$12 per ton for transportation of waste wood from nearby cabinet manufacturers, pallet makers, and pallet recyclers, Etzell says. The wood itself costs nothing.

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Consider This...

While fuels such as wood, wood waste, and recycled oil may appear to be cheaper in their raw form, there are several considerations that should be made before making them your primary source for fuel, according to Jim Rearden, president of TrueLeaf Technologies.

Equipment: To burn wood and wood waste, a specially designed boiler will need to be installed.

Transportation: Will the alternative fuel be delivered to you or will you need to pay for delivery or pick it up yourself?

Labor: Most wood-chip burners are equipped with auger feeds, but someone will still need to fill the hopper.

Environmental issues: It is important to see if there are any local codes or regulations that dictate what to use for heating fuel.

Maintenance: You may need to budget more dollars annually for preventative maintenance and cleaning of the equipment.

Controllability/Redundancy: With alternative fuel supplies, you may not be able to rely on a steady, predictable source to burn.

All this is not to say alternative fuels don't make sense, Rearden says. "My suggestion is that you look at all sides of the issue before you jump," he says. "Many growers might find that they will yield more benefit from investing in high efficiency heating equipment using traditional fuels with a computerized control system."

Both growers agree that their wood-burning systems are clean and efficient with little or no emissions.

"The ash is collected and the system is clean," Etzell says. "We had a permit for the system upon installment and have not had any problems."

Definitely An Option

If you are a grower who has access to an inexpensive (or free) and steady local source for fuel, wood combustion systems may be worth looking into. With new systems that are clean, safe, and efficient, growers have realized energy cost reductions of 50% or greater.

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