



Heat from burning bales is used to dry grain and also to heat a pair of homes.



Bale furnace mounts on trailer so it can be easily moved to anywhere it's needed.

## Portable Bale Furnace Dries Grain, Heats Homes

Ron Horvath of Leross, Sask. likes the flexibility of his mobile bale furnace that burns large round bales of flax and wheat straw. He uses it to dry grain, and also to heat two homes.

The one-bale unit mounts on a heavy-duty I-beam trailer with duals all around.

He says the 8 by 12-ft. bale burner cost him about \$16,000 to make. He hired a machine shop to build the furnace itself and then he did all the plumbing, electrical work and other finishing work.

"To insulate the furnace ourselves, we bent and spaced out some 1-in. tubing 6 in. out from the furnace, and then filled the space in with fiberglass insulation," Horvath explains. "Then we sheeted it with white steel cladding by screwing it onto the steel tubing with self-tapping metal screws."

A big insulated door covers the main furnace door keeping heat in during operation. There's a 2-ft. sq. inspection opening in the main door.

"It's important to see if the bale is leaning on the main door before opening it because it could flop out on you," he says. "The main door on the furnace is 4-in. deep, and has double wall construction, allowing it to be full of circulating water to prevent warping. Usually, the bale burns from front to back because there's a large-volume, forced air fan on the front end. The furnace has a thermostat to regulate the damper and it's usually set at 180 degrees. The fan thermostat is set for 140 degrees."

For transferring the furnace's heat to a grain drying application, Horvath purchased two large radiators from a local grain dryer manu-

facturer and ran 1-in. tubing from the radiators to the water jacket on the furnace. The furnace has two small 110-volt electric-driven pumps that circulate water continuously.

"Water going into the radiator is 170 to 180 degrees, but coming out, it's just luke warm so most of the heat is pulled into the bin," he says.

Horvath concedes that running the furnace is not free. You have to have the bales and the time to put them into the furnace. However, he says the furnace costs 1/3 as much to run as using natural gas or propane.

Horvath heats two homes - his and his parents - by parking the furnace about half way between the two houses so it's only a couple hundred feet away from each.

The furnace's hot water is carried to each house by double-walled Kytex plastic pipe that is buried 3-ft. under ground, inside Styrofoam insulation. When the water reaches the house furnace, it flows through a small radiator that's mounted in the heat duct right above the furnace. Hot water is pushed through each system continuously and a separate thermostat in each house allows Ron and his dad, George, to control when the furnace fan kicks in to distribute the warm air through the houses.

"With the original thermostats as a back up, we can still use our furnaces the way we always did if we need to," he says.

In the spot where the pipes come up out of the ground near the furnace, Horvath set it up so they emerge into a small plastic barrel that he dug into the ground. During the summer, when the furnace isn't being used for heat, he covers the opening of the barrel with

a big disc blade so he can run the lawn mower right over it.

The furnace easily heats Ron's 1,200 sq. ft. bungalow and his dad's 1,500 sq. ft. two story home, simultaneously.

When used for grain drying purposes, the furnace can be hooked up to two bins at a time.

"If you're pulling a lot of heat off the furnace, the bale will burn up a lot faster," he says. "For the two houses, one bale will last one to three days depending on the outside temperature."

"The furnace is plumbed and wired for a third pump because it's my intention to heat a shop in the future," Horvath explains.

He says that, compared to burning flax, wheat straw "gives you slightly more than half the heat and twice as much ash." "As a result, he prefers flax. It's also a cheaper source of energy because producers just want to get rid of it since it's difficult to incorporate back into the soil. With no other uses for



Hot water from furnace is plumbed into heat radiators that supply heat to bin-drying fans.

it, they have to burn it just to get rid of it, so Horvath is able to do them the favor of baling and hauling it away, while at the same time securing his winter fuel supply for only his input costs. Occasionally, when it works into his rotation, he grows some himself, too.

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A roll of wire simply slips onto pipe mounted on side of loader bucket.

## Simple Barbed Wire Unroller

When Lawrence Bauer of Lucasville, Ohio, needed a one-man barbed wire unroller, he hit on a simple idea that he says is easier to use than anything on the market.

He drilled a hole in the corner of his Deere 460 loader and inserted a long 1-in. threaded rod and bolted it in place. Then he put a piece of pipe over it so the wire spool would revolve on the rod. Washers at both ends keep the

spool on while bolts hold it to the loader.

"Once mounted, it is simply a matter of unrolling the wire while the tractor is stationary or fastening the wire to a post and then slowly driving the tractor along," Bauer says.

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Four 30-gal. plastic barrels, attached by lengths of chain to arms, go "flying" as the arms rotate.

## "Flying Barrels" Backyard Ride

A combine wheel and axle form the base of a "flying barrels" backyard ride built by Wayne Bergsma of Carman, Manitoba.

The ride consists of four 30-gal. plastic barrels suspended from 10-ft. long horizontal steel arms. The barrels are attached by lengths of chain to the end of each arm and go "flying" as the arms rotate.

The 4 1/2-ft. dia. combine wheel is rotated by a 1/2 hp variable speed, 220-volt electric motor. The motor mounts above the wheel and drives a 172-in. V-belt.

"I built it a few years ago for my kids, who had a lot of fun with it. Now my grandkids use it," says Bergsma.

He started out by drilling a 12-in. dia. hole

about 8 ft. deep and filling it with concrete. A 3-in. dia. solid steel shaft extends 10 in. above the concrete. A long pipe mounts over the shaft and supports the combine axle. A 6-in. thick concrete pad was poured on top of the ground to hold everything in place.

Four lengths of 1 3/8-in. dia. steel pipe, curved inward at the top, are buried in the sides of the concrete pad and welded onto the sides of the center pipe to keep it stable.

He cut out holes in the barrels for kids to sit in. He put hooks on both sides of all the barrels and attached lengths of chain to them.

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