

Home-Built Boiler Warms Shop Floor

Furniture maker Rod Adams needs lots of ventilation in his shop when he's applying lacquer and other finishes to wood. Thanks to his wood-fired water heater and radiant floor heating system, he can open all the windows, even in the middle of winter. It can get down to 20 degrees inside and yet when he shuts the windows, the shop warms right back up to 70 degrees in a few minutes.

"When I built the shop, all my friends beat me over the head to put in a radiant floor system," recalls Adams. "I thought it was crazy, but I only had to spend about \$200 on tubing."

He assembled his wood-fired boiler from scrap. The firebox is a 16-in. diameter diesel fuel tank. It sits inside an old air compressor tank that serves as a water jacket.

Adams' storage reservoir is an old water pressure tank that stands behind the boiler. Fifty feet of copper tubing inside the reservoir acts as a heat exchanger for the closed loop, in-floor heating system.

"The reservoir is higher than the water jacket so hot water thermo-siphons on its own, automatically circulating within the system," explains Adams. "When the thermostat calls for heat in the building, water is

pumped through the coils in the reservoir and out to the lines in the floor."

He says the hardest part in constructing the system was to weld it tight so it wouldn't leak. He adds that the domed shape of the fire box aids in distributing the heat. Adams recognized that the door he cut in the end of the firebox that extends beyond the water jacket could be subject to heat stress.

"I tack welded a 1/8-in. thick fire plate to the inside of the door, leaving an air gap between the two," he explains. "The plate acts as a blast panel to protect the door from the heat. Air enters through holes in the door and through holes in the blast panel to reach the combustion chamber."

He adds that unlike a wood stove that you have to damper down when it gets too hot, the water-heating stove can burn as hot as it wants because of the cooling effect of the water.

"I like a quick fire that produces a lot of heat, captures it and stores it," says Adams.

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Winch-Powered 3-Pt. Hitch

"I bought a used 48-in. mower cheap and was going to go out and buy a 3-pt. hitch tractor to use it on, but I didn't know if it was going to work," Gary Masyk of Edmonton, Alberta says. "Instead, my son Brett and I made a home-built hitch for my W4 McCormick, to try it out on."

The father-son project turned out to be a keeper, and Masyk never did end up buying another tractor because it worked so well.

They "threw it together" in a couple of hours and the project only cost about \$125 thanks to a particularly helpful Princess Auto store manager in Edmonton.

A cheap, 12-volt, 1,000-lb. electric ATV winch provided all the electricity he could ever need, easily lifting the 250-lb. mower.

Using 3/8-in. angle iron, Masyk welded a sub-floor solidly to the tractor floor, so that it sticks out 4 in. past the tractor. On the flat side of this sub-floor, he drilled a hole on each end, and that's where the implement linkages are bolted on (they become hinges).

"I used scrap 3 by 3 by 3/8-in. angle iron under the tractor for reinforcement, and for the rods that go to the sides of the mower, I used 18-in. long pieces of 3/16 by 2-in. flatbar," Masyk says. "The top arm consists of two pieces of 1/4 by 2-in. flat iron, that come to a V at the tractor. I welded them to the angle iron base. There's a small 2 1/2-in. Chev. pulley bolted onto the point of the V. I bolted the winch to a piece of 1/4-in. plate, and then bolted the plate to the available holes on the top of the transmission. From there, the cable runs over the top of the pulley, and it goes down to two 1/4-in. chains (straddling the pto shaft) that are bolted to the base of the mower."



A 12-volt, 1,000-lb. electric ATV winch is used to raise and lower homemade 3-pt. hitch.

The winch control is strapped to the tractor's fender.

Masyk's invention is still going strong three years later, allowing him to mow grass at the family's acreage.

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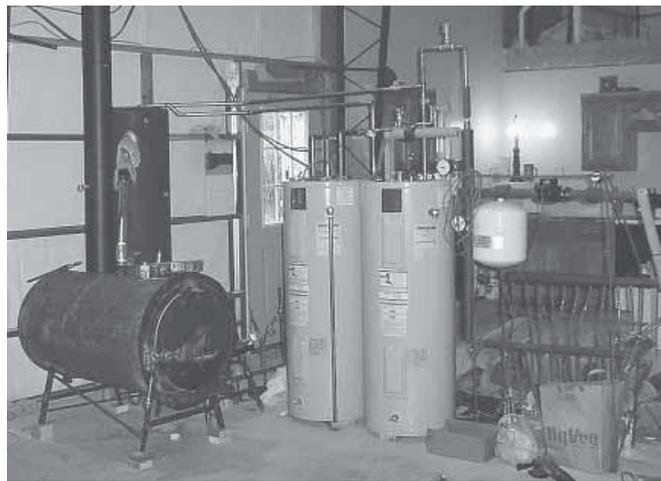
Christmas Lights Can Replace Heat Tape

Instead of using a heat tape under your water trough, Allan Brown of Marwayne, Alberta, says a string of Christmas lights are ideal for keeping the frost out of your line.

They're cheap to buy, and if one bulb goes out, the rest stay on. They give enough heat to keep a water line from freezing, but they never get warm enough to melt anything. If

you're using it on a vertically-mounted line, Brown suggests putting a weight on the end of the string and dropping it in the hole, so the bulbs lay against the pipe.

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Rod Adams heats his shop using a wood-fired water heater and radiant floor heating system.



"It works great for edging my blacktop driveway," says Dan Stuckmann, who replaced the back left wheel on his Sears Craftsman garden tractor with a 16-in. dia. disc.

Garden Tractor Works Great As Lawn Edger

"I got tired of edging my old blacktop driveway by hand, so I replaced the back left wheel on my Sears Craftsman garden tractor with a 16-in. dia. disc. It's a simple solution, but it works great," says Dan Stuckmann, Manitowoc, Wis.

The Sears garden tractor drives the rear wheels using a keyed shaft, in which the rear wheel is held in place with a C-clip. Stuckmann bought the disc and a keyed hub at a local farm supply store and welded the hub to the disc. To replace the tractor wheel with the disc, he just jacks up the tractor, removes the C-clip and wheel, and replaces it with the disc. The wheel's hub was much wider than the disc hub, so he also slid some light tubing over the axle for use as an additional spacer.

"It takes less than two minutes to change over and sure saves on my body. I really like it," says Stuckmann. "I drive the tractor in low gear with the engine running at just above idle. The tractor rides on the disc and also drives it, because the disc is keyed just like the wheel it replaced. On my tractor the disc is about 1 1/2 inches lower than the wheel, which helps it slice the sod. After I'm done edging, I use a flat spade to scrape the cut-away sod off the driveway."

Stuckmann says that when the ground is very dry, either additional weight or a second pass is required to cut the sod. "This all depends on a person's own weight. I used the edger after a good rain, and it cut fine in one pass with a 25-lb. weight clipped to the tractor's hitch," says Stuckmann.

"If I had a large garden I'd like to try using discs in place both rear wheels, along with a simple depth gauge that I'd attach to the disc for use in making rows. The gauge



The disc is about 1 1/2 inches lower than the wheel it replaces, which helps it slice the sod.

would maintain a constant depth in the soft soil and would also help drive me forward."

He says he'd consider making such units for anyone who's interested.

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