

## Waste Oil Stove Heats Shop And Trailer House At Same Time

"It's a cheap way to heat two buildings at once," says Alec Yeager, Hendley, Neb., who used old oilfield pipe to build a waste oil stove that heats his 40 by 60-ft. shop, as well as a 14 by 70-ft. trailer house about 75 ft. away.

The stove is equipped with a 4-ft. high water jacket around the flue that transfers hot water to the trailer house. It burns from 3/4 to 1 1/2 gal. of waste oil per hour.

The stove mounts on four legs and consists of a horizontal length of pipe with a vertical length of 8 5/8-in. dia. pipe mounted on top of it that serves as the water jacket. Waste oil is stored inside a 50-gal. fuel tank off a Deere combine that mounts behind the stove. A continuously running air compressor that's located outside the shop blows air through a 1/4-in. dia. metal pipe that goes through the shop wall and into the stove. A venturi valve on the air pipe sucks oil out of the storage tank and atomizes it, so that the oil is blown into the burning chamber with the air as a mist.

The oil tank is filled out of a 500-gal. tank

that's mounted outside the shop. A float system ensures that the inside tank stays full all the time.

The water jacket surrounds the stove's exhaust pipe. Heated water is pumped out the top side of the water jacket to an insulated hose, buried 1 ft. underground, which runs to the trailer house. There the water is circulated through a coil-type heat exchanger. The cooled water is then sent back through another pipe that leads into the bottom of the water jacket, where the water is recirculated and used again.

"Instead of wasting heat by sending it up the exhaust pipe and out the roof, I'm putting it into water and using it to heat another building," says Yeager. "I built the stove nine years ago without the water jacket and used it for a year. However, the stove produced more heat than I could use in the shop so I decided to add the water jacket and also heat the trailer house. It provides a lot of heat. I have a central furnace inside the trailer house, but it rarely kicks on unless the temperature goes below zero.

"I get most of my waste oil from local farmers. The stove burns best with warm oil. However, I didn't want to keep 500 gal. of warm oil inside my shop which is why I added the smaller tank inside. A disc blade hangs loose on front of the stove in case the electricity ever goes out for a few minutes and then comes back on. Otherwise if the chamber is full of combustible smoke and oil shoots into the stove it could ignite again and cause an explosion. The disc blade mounts on a hinge which lets the stove vent.

"The flame inside the internal chamber burns at 1,800 to 1,900 degrees. It burns as clean as propane, with no smoke outside.

"I mounted a metal rack on top of the stove where I can put my boots or coveralls to dry them out."

Yeager says he'd be willing to make a video showing how he built the stove if there's enough interest.

Contact: FARM SHOW Followup, Alec Yeager, Box 504, Hendley, Neb. 68946 (ph 308 265-7466).



Water jacket wraps around flue, gathering heat which would otherwise go to waste. Heated water is pumped to trailer house. Note disc blade on end of stove which acts as a "safety valve".

## Home-Built Skid Steer Made From Old Swathers

Jim Lippert wanted a skid steer loader to clean up around his cattle barn, but the Chepstow, Ontario, farmer couldn't justify the price of either a new or used machine.

So he took a look at an old Owatonna he owned. It had a variable speed belt drive swather with a 20 HP 2-cylinder Wisconsin engine. He decided he could build a skid steer if he had a matching axle from another Owatonna swather. He managed to find one for sale and then got down to work.

He stripped everything off the first swather except the powered axle, wheels, and planetary drive and just took the axle and wheels off the second swather. "I narrowed the axles down as much as I could, to about 60 in. from the outside of one wheel to the outside of the opposite one. That's a little wider than most skid steers, but narrow enough to go everywhere I need to use it," he says.

Lippert built a frame of 2 by 4 by 1/4-in. thick steel and attached the axles, planetary drive, and engine. He had to rebuild the planetary drive. "The bands and clutches were worn out in it," he says. He also had to rebuild the engine.

He built his own bucket for the loader, and made lift arms for it from an old IH front-end loader. To raise and lower the arms, he found a small hydraulic pump from a Deere tractor that had its own reservoir. He calculated the fluid needs of the 36-in. stroke cylinders on the loader and decided the reservoir wasn't big enough. "I had to enlarge it

a little, so it would hold a couple of gallons of fluid," he says.

He salvaged the lift cylinders from the swather header to tilt the bucket itself. "They were one-way cylinders with about a 12 in. stroke. I converted them to two-way so I'd have more control over the bucket," he says.

He made hand levers to steer the loader. The swathers used a lever to engage the variable belt drive. With his hands on the steering levers, using another lever to engage the drive was a little awkward. So Lippert put a thumb switch on one lever and wired it to a variable speed windshield wiper motor, which he hooked up to control the belt drive. With the thumb switch, he can engage or disengage the drive.

Since his hands were going to be busy steering the machine, he made foot controls for the bucket and the loader arms. To make these, he salvaged the controls and valves from an old forklift mast.

Lippert's skid steer has been more than a year in the making. In fact, he's still making changes. "I just recently made a couple of smaller sprockets for the drive to give it more torque and less speed," he says.

Lippert teaches automotive technology at a local high school. Some of the work on the loader was done by students.

Contact: FARM SHOW Followup, James Lippert, Rt. 1, Chepstow, Ontario, Canada N0G 1K0 (ph 519 881-3238; E-mail: jclippert@wightman.net).



A matching pair of axles off Owatonna swathers was used to construct this skid steer loader. Lippert built everything, including the bucket and loader arms. Motor mounts at the back of machine for easy access.



## Reversible Snow Scoop Fits Front-End Loader

Don Campbell lives in an area of Northern Michigan that gets a lot of snow every year. He does commercial snow removal for local residents and businesses.

One of his snow movers is a Deere 5400 with a snowblower on the 3-pt. hitch. "I also wanted something to mount on the front end to move large amounts of snow backwards or forward," says Campbell, who came up with the idea of a snowblade with reversible wings.

The main blade is 1/4-in. steel. The wings are also 1/4-in. thick, mounted on hinges made from 6-in. long pieces of 1/2-in. dia.

pipe with 1/2-in. dia. steel rod slipped through.

To reverse the wings, Campbell simply pulls one pin on each side and swings them forward or back. "I can move large amounts of snow in either direction," says Campbell, who welded quick-tach brackets to the back of the blade for easy mounting and dismounting.

Contact: FARM SHOW Followup, Donald Campbell, P.O. Box 132, Gaylord, Mich. 49734.



Campbell can push or pull snow, depending on how he sets the wings on the front-end blade.