"It's quick and easy to use and leaves no mess to clean up," says John Gipson, who made his own anti-freeze injector for tractor tires.

Fluid Injector For Tractor Tires

Using pvc pipe and other components that can be purchased at any local hardware store, John Gipson made his own anti-freeze injector for tractor tires.

"It's quick and easy to use and leaves no mess to clean up. Also, it saves money because I don't waste any anti-freeze and because I don't have to pay a tire service to put the anti-freeze in," says Gipson, of Gilmer, Texas.

He says he came up with the idea because he puts water in the rear tires of his loader tractor for weight. "During the winter I used to have to keep my tractors in a shop so the water inside the tires wouldn't freeze. After several attempts to get anti-freeze into the tires, I came up with this device, which takes less than an hour to assemble."

The injector is made from a 4-in. pvc cleanout tee with a threaded plug in the tee. A pressure regulator connects to an air compressor with an air hose, a threaded pvc ball valve, a 6-ft. long clear plastic hose, and a hose adaptor.

To use the system, Gipson removes the valve stem from the tire and hooks up the hose adapter. Then he attaches the pressure regulator to the air hose quick disconnect, and also attaches the disconnect to the device. After pouring antifreeze into the cleanout tee, he replaces the clean-out cap. Then he opens the ball valve and applies air pressure, using the pressure regulator to push the antifreeze into the tire.

"The clear hose lets me see when all the antifreeze is in the tire. Once that happens I release the regulator and disconnect the hose from the tire," says Gipson. "The apparatus will hold a gallon of antifreeze. If I need to put more than a gallon of anti-freeze in a tire, I just repeat the process. It takes less than 30 minutes to put anti-freeze in the tires."

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Injector is made from a 4-in. pvc cleanout tee with a threaded plug in the tee.

Backhoe is rigged with a chainsaw driven by a hydraulic motor that operates off the backhoe's hydraulics. It's used to get rid of tree saplings along roadways.

Backhoe Chain Saw Clears Roadsides

Gary Barker is the highway commissioner for his township near Nokomis, Ill. He was faced with the daunting task of ridding a long stretch of road of tree saplings that had narrowed the roadway so much that it was difficult for large equipment to travel on it.

That's when he hit on the idea of rigging a backhoe with a hydraulically-driven chain saw. The saw attaches to a rectangular steel plate and is driven by a hydraulic motor that operates off the backhoe's hydraulics. He made up a sprocket to fit the saw's drive.

It took some doing to get it going and it takes some deft handling to make it work right. However, the two workers who operate it now "fight over" who gets to use it.

The necessary art is learning just how fast and delicately to move the saw.

Wayne Keith uses scrap wood, left over from his sawmill business, to power his 1987 Dodge pickup.

Wood-Burning Truck Gets 9,000 Miles Per Cord (MPC!)

By Jim Ruen, Contributing Editor

Wayne Keith burns wood to power his 1987 Dodge Dakota. The wood he burns is free since it's scrap left over from his sawmill business.

"I modified the differential on it to give it a high speed rear end, and then installed an overdrive," says Keith. "Wood gas will only run a car motor to about 2,400 rpm's, but with the changes I can get the truck up to 91 mph. I can go 80 to 90 miles on a single fill of wood."

His first effort (still used as a farm truck) has an 80-gal., 6-ft. tall gasifier barrel. It looks like a big water heater standing up in the rear box with wood gas radiator panels standing several feet above the cab. A 30-gal. barrel on a platform over the front bumper is filled with hay and serves as a filter for the cooled gases.

The 1987 Dakota is Keith's second wood-fired truck. Although it looks like a standard truck, it has a smaller gasifier standing in the truck box and a filter built into the bed. Wood gas radiator pipes look like sideboards.

With both units, Keith fuels up by filling the barrel with small chunks of wood. He reports that it takes only about 45 seconds for enough wood gas to be produced to run the trucks.

"The new gasifier holds about 30 gal. and only sticks above the cab by about four to five inches, adding hardly any wind resistance," says Keith.

Dr. David Bransby, professor, Energy Crops and Bioenergy, Auburn University, is a nationally recognized expert on biomass conversion. He has worked closely with Keith, evaluating his gasifier and experimenting with non-wood fuels from chicken litter to corn and switchgrass cubes.

"We've put all kinds of stuff in there, and as long as it meets certain requirements, it works fine," says Bransby.

The down draft gasifier limits the amount of oxygen available to the burning fuel. This creates incomplete combustion of "syngas" which would normally be burned or released into the environment as smoke. It comes out of the firebox as hot as 2,000° F. Thus the need for the radiator side boards to cool the gas. Once cooled down, it's piped through the hay filter and then to the carburetor where it replaces gasoline.

One of the beauties of the system is that relatively few changes need to be made to the existing truck and fuel system. The cab does have a few added dials and controls.

"I have some temperature and pressure gauges to tell me what's going on in the syngas generator," says Keith.

He starts his truck on gasoline and then switches over to wood gas. A second gas pedal installed on the floorboard controls wood gas flow. To switch between gasoline and wood gas, Keith simply moves his foot from one pedal to the other, while mixing the two is as almost as simple as pressing down on both pedals at once.

A 30-gal. barrel on a platform over the front bumper is filled with hay and serves as a filter for cooled gases.

A second gas pedal installed on the floorboard controls wood gas flow.

His first wood gas pickup still runs great.

"I also have a valve that manages the air-to-fuel ratio in the carburetor, so I can adjust it as I drive and as the syngas production density changes," says Keith.

When pulling a load up a hill where he needs more power, all he does is press down on the gasoline pedal. "The trucks work great on wood gas for driving around local roads, but when I get on the interstate, I will add about 5 percent gasoline to get up to faster speeds more quickly," he says.

The only regular maintenance required is to clean out the grates on the gasifier. Keith cleans it about every 1,000 miles.

"I built the second gasifier with an opening under the grates," he says. "All I have to do is open it up and stick a suction hose in the top to clean out the ashes."

Keith's next project is to adapt the gasifier to power an electrical generator. He's working with a 7 kW unit that will sit in the back of the pickup. Keith plans to drop an intake column into the gasifier to pull gas directly to the generator.

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