Wood-Fired Clothes Dryer

Matt Studer, Bloomville, Ohio, recently sent FARM SHOW photos of how he uses an outdoor wood burning stove to provide heat to an electric clothes dryer.

"The only electricity I use now is for a 1/10 hp motor that operates a heat exchanger, and the motor that turns the drum," says Studer. "We made the conversion last January and have used it to dry our clothes since."

Here's how he went about making the conversion.

"A few years ago I installed an outdoor wood burning stove. I built a 12 by 14-in. plenum out of 24-ga. steel and mounted it on the side of the dryer. Two heat exchanchanger units, connected in series, attach to the plenum. I used standard floor register duct fittings to connect the plenum to the dryer's air intake duct. I removed the existing heating element but didn't change anything else on the dryer. I wanted the dryer to run like it would have if the heating element was still providing the heat."

The heat exchanger produces 50,000 btu's at 700 cfm's with a 180-degree water temperature from the outdoor stove. "It takes a little longer to dry clothes than it did before, but since I'm not running a 220-volt heating element, I'm saving on electric costs," says Studer. "I figure the cost of electricity will probably continue to go up, so I look for substantial savings for years to come.

"I installed a pump and wired it to the motor leads so it will run whenever the dryer motor runs. I also installed two ball valves so that no hot water circulates when the dryer isn't being used."

Studer runs his wood stove all year long, since he also uses it to heat the hot water in his house. He installed a "double pass" heat exchanger next to the hot water heater. "The heat exchanger consists of copper tubes, one inside the other. The inner tube carries water from the hot water heater, and hot water from the stove runs through the outer tube," says Studer. "Last fall I shut off the electricity to the heating element inside the hot water tank, and I haven't had to turn it on since."

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Matt Studer uses hot water from an outdoor wood burning stove to provide heat to his electric clothes dryer. He removed the dryer's heating element, then mounted a 12 by 14-in. plenum on one side. Two heat exchanger units, connected in series, attach to the plenum.

"Hot Rod" Radio Flyer Wagon

"My son Doug recently built this self-propelled Radio Flyer wagon using parts from an old go-cart," says Curtis Fox, Brainerd, Minn.

Powered by a 6 1/2 hp Honda clone engine, the toy wagon rides on 6-in. rear wheels and 4-in. front wheels. To "drive" the wagon, the operator simply depresses a foot pedal on front.

He cut the rear axle and wheels off a go-cart to serve as the back end and bought new wheels on front. He used 1-in. sq. tubing off a pair of old bus seat frames to build a frame that supports the wagon as well as the front axle. The Honda engine chain-drives a centrifugal clutch, and from there a jackshaft chain-drives the rear end.

The ride is cushioned by a pair of 12-in. springs off a mountain bike. A foot-operated gas pedal is connected by cable to the carburetor. The steering wheel is off a go-cart, and the rider sits on a garden tractor seat.

"It turned out quite well," says Fox, who provided some help in building the self-propelled wagon. "It's fun to drive because you sit up higher than you do in a go-cart. The front end has independent front suspension that I made from heavywall tubing with 5/16-in. dia. tie rod ends, so it really rides smooth. I mounted a home-built wheelie bar on back to keep from tipping over."

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"Hot rod" Radio Flyer is powered by a 6 1/2 hp Honda clone engine.

Spinning Wheel Of Color

Anyone who says you can't see the wind hasn't seen a group of Whirlydoodle wind turbines in action. When a wind current moves through one, the LED lights change from red at low wind speeds to green to a full spectrum of color that gets brighter as the wind speed increases. The spinning light can be seen as far as a half-mile away.

The colorful spinner was invented by Timothy Jones of Ann Arbor, Mich., who has had a lifetime fascination with windmills. The Whirlydoodle is a simple device with a 20-in. blade made out of clear high-strength polycarbonate plastic fitted with 18 multi-colored LED lights connected to a high efficiency generator. Wind spins the blade to power the generator to light the LED's.

Assembled in Michigan, the Whirlydoodle sells for $50 (plus shipping) and is popular with gardeners, homeowners, wind enthusiasts and grandparents eager to impress their grandchildren. The spinning light show also attracts the attention of teachers who use them as an educational tool as well as people interested in public art.

The colorful turbines were a big hit when he partnered with the City of Ann Arbor to test them as public art by mounting them on street poles. Jones hopes to create the world's largest windmill farm, in terms of the number of windmills, by installing 1,000 of them in a landscape public art display.

Work on the next generation of Whirlydoodles has started with University of Michigan mechanical engineering students studying the existing design and conducting wind tunnel tests. By late summer, Jones hopes to have more shapes and versions available as well as a new form of solar-powered art.

The Whirlydoodle is mounted on a piece of metal pipe that slips over a 1/2-in. OD pipe (supplied by the customer). It can be displayed in a variety of places – in the garden, on fence posts and on a deck, for example.

Check out videos of it in action on the Whirlydoodle website.

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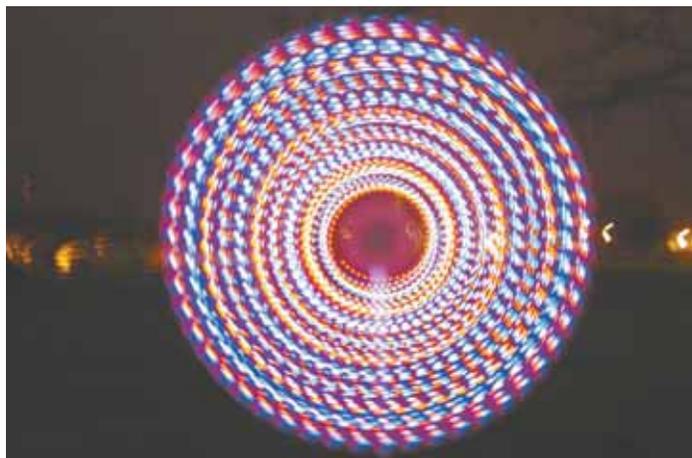
Clear plastic blade is fitted with 18 multi-colored LED lights connected to a generator. Wind spins blade to power the generator to light the LED's.