Ellsworth Olson and Meredith Ulstad converted a 100 hp, 3-phase synchronous electric motor into a pto-powered backup generator.

He Built A Farm-Size Standby Generator For Under $750

When it comes to standby backup generators, Ellsworth Olson has one of the best, thanks to his friend Meredith Ulstad.

Olson, a Madison, Minnesota corn, soybean and wheat grower, says Meredith called him last winter to tell him about a great bargain he found at Harris Machinery Co., a surplus store in St. Paul, Minn. It was a 100 hp, 3-phase synchronous electric motor.

Olson had no use for an electric motor that big, but Ulstad, a retired electrical engineer, offered to help convert the motor into something Olson did need - a backup generator. Olson bought the motor and then built a trailer on which to mount it. He credits Meredith, though, with the entire motor-to-generator conversion.

"If you set the wiring right and apply power to the output shaft, a synchronous motor becomes a generator," Olson says.

The generator puts out 3-phase 220-volt alternating current. Ulstad located a center-tapped transformer the kind used on farms from the main power feed from the electric company - and then connected it between two of the output lines to provide single-phase 110 volts.

"You really need to know what you're doing with this or you could cause a lot of damage or worse," Olson cautions.

He made the generator trailer from the front axle of a 3/4-ton pickup. "It needs to be a fairly substantial trailer, since the motor is rather heavy. We mounted a spline on the end of the motor shaft. I cut the pto shaft from a Deere 7 ft. rotary mower to the right length and attached that to the spline shaft on the motor. We added shields, too, to reduce the danger around the shaft. I built the trailer with a shelf on the back and put a 220 outlet on it, so I can load up my welder and take it anywhere I can get with the trailer," Olson says.

He powers the generator with a 3020 Deere. The pto is set to run at about 720 rpm's, which assures him that the current coming from the generator is 60 Hertz, like the power feed he gets from the electric company.

"To determine the rpm's necessary for an AC generator to produce 60 Hertz AC power, you divide 7,200 by the number of poles on the generator," Ulstad explains. A typical pto-powered generator might have only 4 poles, meaning it would need to turn at 1800 rpm's.

"One of the greatest benefits of this particular motor is that it is a 10-pole machine. This means it needs to be turned at only 720 rpm's, so it can be hooked directly to the tractor's pto shaft," he says.

Ulstad says most pto-powered generators require higher rpm's or a gearbox or V-belt arrangement to increase the speed, in order to generate 60-Hertz alternating current like the feed you get from the power company.

Ulstad says the generator is capable of producing more than 65 kilowatts of sustained output when operating as a single-phase power source. Olson says that's much more than is needed to power his farm.

"Olson figures the total cost was between $700 and $750.

For more information, contact: FARM SHOW Followup, Ellsworth Olson, Rt. 2, Box 24, Madison, Minn. 56256 (ph 320 752-4739).

Olson made generator trailer from the front axle of a 3/4-ton pickup.

Home-Built "Crop Mister" Powered By Old Furnace Fan

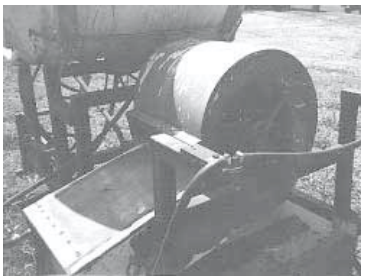
Robert Davis, Savannah, N.Y., used an old furnace fan to make a pto-driven crop mister that he uses to apply foliar fertilizer to soybeans. It can also be used to treat fruit trees, vegetable crops, or even to "mist" livestock on hot days.

The rig is equipped with a 300-gal. tank mounted just ahead of the furnace fan blower, which can be rotated up to 200 degrees in either direction using a hydraulic cylinder.

"I built it almost entirely from used components so my total cost was only about $350. Commercial mist blowers sell for anywhere from $3,500 to $8,000," says Davis.

He built a steel frame to support the blower and equipped it with a bearing-supported driveshaft. The tractor pto shaft is used to belt-drive the shaft via a gearbox and three 14-in. pulleys that hook up to the blower's smaller 4-in. pulley. A pair of spray nozzles mount on the output side of the blower.

To rotate the blower back and forth, he mounted a sprocket on the front side of the blower housing and mounted a hydraulic cylinder on one side of the steel frame. He mounted a smaller sprocket on a piece of angle iron that's hooked up to one end of the hydraulic cylinder. Extending or retracting the cylinder rotates the blower back and forth.



Pto-driven crop mister uses a furnace fan to apply foliar fertilizer to soybeans. Blower can be rotated up to 200 degrees in either direction using a hydraulic cylinder.

"It'll blow spray out 30 to 100 ft. depending on how much wind there is," says Davis. "It provides uniform coverage if the air is still. However, even a slight breeze will result in non uniform coverage. It works best in confined areas such as around Christmas trees, buildings, and small orchards."

Contact: FARM SHOW Followup, Robert Davis, 2030 Bixby-Wood Road, Savannah, N.Y. 13146 (ph 315 365-2266).

Add-On Valve Gives Deere 4020 Four Remote Outlets

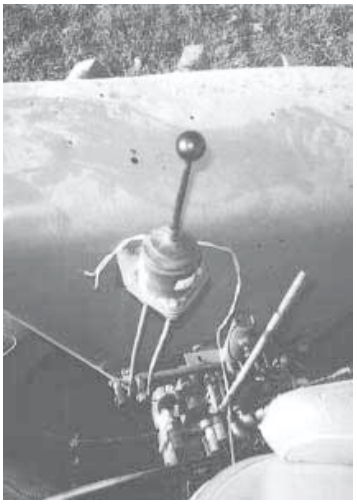
"Our Deere 4020 tractor had only one remote hydraulic outlet on it. To get more outlets, we bought a closed center, 3-spool valve and plumbed it in, mounting it on the right fender," says Donald Davies, Dawn, Mo.

He brazed a T pipe fitting to an elbow in an existing hydraulic line, then ran a hose from it up to the add-on valve. A return hose runs from the extra valve back to the tractor's transmission case.

Two of the three spools are used to operate the tractor's front-end loader, while the third one is used to operate implements on back. A 3/8-in. dia. steel rod controls the third spool which runs into a connector block on back of the tractor.

A wobble stick and wobble box valve, mounted higher on the fender, are used to control the extra hydraulics.

"I spent about $150 for the 3-spool valve, which is much less than I would have paid for a commercial unit," says Davies. "The hose and closed center valve are under pressure all the time. However, the only time oil goes through the valve is when we activate the lever. The operator uses only one hand to control all loader operations. He moves the wobble stick right or left to tilt the bucket up or down and moves it forward or backward to raise or lower the loader."



Davies uses a "joystick" to control the extra hydraulic outlets.

Contact: FARM SHOW Followup, Donald Davies, Rt. 1, Box 194, Dawn, Mo. 84638 (ph 660 745-3350; fax 3360).

Get Your Phone Calls While You're On The Computer

One of the most frustrating things about going onto the internet is that it ties up a phone line. If you balk at the cost of adding a second phone line, you'll be interested in these web-based companies that help you take calls while you're on line.

Essentially, they all work the same. You download and install a small utility on your PC and sign up for a free voice mail account. If someone calls while you're on line, a window pops up on your screen with the number of the caller. You then have three options: Forward the caller to voice mail, play the caller a digitized message ("I'm on line right now and will call you back"), or ignore the call. All messages sent to voice mail can be retrieved and played over the web without signing off the phone line.

Here are three of the sites offering the service: www.buzme.com provides the voice mail forwarding option at no cost but charges $5 per month for the "Reply, Take Call" feature. Two other Web sites, www.internetcallmanager.com and www.pagoo.com charge about $4 per month but offer free trials.