

## Combine-Mounted Weigh Scale

"It eliminated the need for a grain cart, tractor, and driver at harvest so I can head out to the field at any time by myself," says Steve Kaltenheuser, Ames, Iowa, about the electronic weigh scale he built into the body of his Case-IH 2188 combine.

The patent pending system was on display for the first time at the recent Farm Progress Show near Alleman, Iowa. According to Kaltenheuser, his weigh scale is much more accurate than any yield monitor.

Here's how it works: A total of 10 weigh bars attach to the combine's front axle and the spindles on the rear axle. They continuously record the weight of the machine so that as grain is harvested it can be tallied up.

"It's accurate to less than one half of one percent. I've built two units so far on two different combines, and they both work great," says Kaltenheuser. "I got the idea after I bought a new combine. I rent land and divide half the grain at harvest with my landlord. I already owned two combines as well as a 1,200-bu. grain cart on tracks equipped with a weigh scale. I needed another combine to get my beans harvested faster and

would have needed another grain cart, too. My combine-mounted weigh scale eliminates the need for the grain cart, a 4-WD tractor to pull it, a driver, and also saves \$3,000 to \$4,000 per year in fuel costs.

"If I was using a grain cart I could unload on-the-go from the combine, whereas with my combine-mounted weigh scale I have to stop to unload into the truck at the end of the field. So it takes me about two days longer to harvest 1,500 acres than if I unloaded on-the-go into a grain cart. But it's worth it because I'm saving the cost of a cart, tractor, and a hired man to drive it. And I like the fact that I don't need a crew to start harvest."

When he came up with the weigh scale, he also added a 250-bu. extension (Dick's Welding, Windom, Minn.) on the combine's hopper to boost its total capacity to 570 bu. "Now I have enough capacity to make a complete round on a half-mile row and unload into a semi truck at the end of the field. I can use one combine to keep two semi trucks going full-time," says Kaltenheuser.

He says he'd like sell his patent to a manufacturer. He hopes to have the unit on the



Patent pending electronic scale is built into the body of Steve Kaltenheuser's Case-IH 2188 combine. Weigh bars attach to combine's front axle and spindles on rear axle.

market this winter and estimates it would sell for \$12,000 to \$14,000. It requires redesigning the rear spindles to accept the weigh bars.

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## PVC Pipe Used To Build Low-Cost Portable Windmill

"It can be moved from pasture to pasture, and it didn't cost much to build," says John Love, Oklahoma City, Okla., who used ordinary pvc pipe to build a low-cost, portable windmill. It can be operated from the back of a pickup or mounted on a trailer.

"It's only in the prototype stage but I think it has promise. I built it to pump water. However, it could also be used to generate electricity," says Love. "A conventional windmill of this size sells for \$10,000 to \$15,000. And they can't be moved from place to place like mine."

The 7-ft. dia. windmill mounts on a triangular-shaped frame made from 2-in. dia. pvc pipe. The pipe is filled with water, providing weight. A 3/4-in. pipe shaft runs from the windmill drive to a modified rear end off a pickup, which gears down the wheel's speed by a 4 to 1 ratio. A 20-ft. long tail with a homemade pump at one end extends at an angle down into the water. (By positioning the tail vertically, the windmill can also pump water from a well). The pump has an outside shell made of 3-in. dia. pvc pipe and contains an 8-in. stroke piston. Water is pumped up through a 1 1/2-in. dia. pvc pipe with a 1/2-in. dia pvc pipe inside it. Pipe fittings can be mounted anywhere on the frame and used to pump water to any location.

"I've tested it for almost a year, using it to pump 8 gpm of water. The wheel is very light-

weight, yet strong. I plan to use the windmill to irrigate below the dam on my place and to water livestock in another pasture. One advantage of using pvc pipe is that because of its very light weight there's no vibration even in strong winds, which would tear up a heavier windmill," says Love.

"The only way the windmill pivots is if I turn the pickup or trailer into the wind. However, I don't think a windmill has to turn with the wind to operate efficiently. In our area about 85 percent of the wind comes either from the south or the north. And since my windmill works equally well either clockwise or counterclockwise, no vane apparatus is necessary.

"What makes conventional windmills complicated, and expensive, is that they rotate into the wind. And if that gets you only 5 percent more productivity, the extra cost and weight isn't worth it."

The blade hub is made out of 2 by 6's. Love cut the boards into half moons and laminated them together, then bored sixteen 1-in. holes around the perimeter and bolted the blades onto 3/4-in. pvc shafts inserted into the holes.

The windmill can be easily disassembled. "By using a pipe wrench on the shaft I can unscrew the blade like you unscrew a light bulb."

Love says after several months of operation he found cracks in the couplings on the

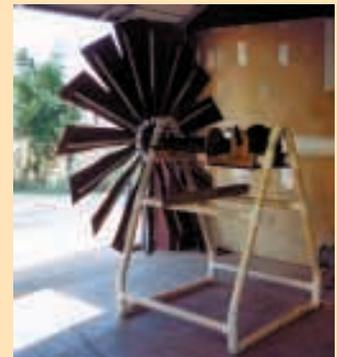


Love's home-built, portable windmill is shown here set up for well pump application. It mounts on a frame made from pvc pipe.

2-in. pvc stand, apparently due to high winds. So he's using 3-in. pvc to make a new stand and will build it to fit a trailer.

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Windmill can be operated from the back of a pickup or mounted on a trailer. A shaft runs from windmill drive to a modified rear end off a pickup, which gears down the wheel's speed by a 4 to 1 ratio.



## Home-Built Tractor Cab Built For \$200

After he checked out the price of a commercial cab for his 2002 Kubota 22 hp tractor, Jay Nevenhoven decided to build his own.

"I spent less than \$200. A commercial cab would have cost at least \$2,500," says Nevenhoven.

The Baileyville, Ill., man uses the tractor for mowing and loader work.

"I use the tractor in the winter to move snow so a cab is important to me," says Nevenhoven.

He used sheet metal and 1-in. angle iron to build the cab frame and fitted it with aluminum household storm windows. He mounted a two-piece window sideways on the right side of the cab that can be slid open for ventilation. The windshield, the rear window, and the door window are made from plexiglass. He used clear corrugated fiberglass for the

roof, which screws onto the top part of the frame. Six wing nuts are used to secure all the windows so he can remove them easily.

There's a large 6 by 12-in. truck mirror in front of the driver. He cut up sections of rubber and bolted it on front of the cab where it meets the tractor to seal everything up.

"I'm quite proud of it. Everyone in the neighborhood thinks it looks nice," says Nevenhoven. "The clear roof lets the sun shine in, which is really nice during the winter. Every spring I remove the cab and store it. It isn't too bad a job to take the cab apart. I remove the cab windows, then set the frame back in my shop and place the windows inside it."

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"I spent less than \$200. A commercial cab would have cost at least \$2,500," says Jay Nevenhoven about the cab he built for his 2002 Kubota 22 hp tractor.