

“Upside Down” Windmill

Old silos could be retrofitted to generate wind energy with a revolutionary new “upside down” wind energy system that we first wrote about 2 years ago (Vol. 36, No. 2). The SheerWind system consists of a tower that captures wind at the top and funnels it down through a tapering passage, which accelerates the flow and feeds into turbines to produce power. The concept is similar to strong winds that swoop down between tall office buildings.

“At low wind speeds, conventional windmills run at only about 10 percent capacity while our system reaches 72 percent,” says Daryoush Allaei, CEO and founder of SheerWind in Chaska, Minn.

SheerWind works in urban areas as well as wide open rural areas. Other advantages include no noise from exposed blades, no birds harmed by spinning blades and the ability to create towers out of a variety of materials, because they don’t need to hold up heavy turbine blades.

“You could take existing silos and convert them. Put an air-catching head on top and a generator below, and you’re done,” Allaei says.

The model in Chaska is made of flexible materials, so it’s portable and has the potential to be deployed for military and emergency use.

Allaei envisions different size SheerWind systems for a variety of customers: building owners, communities, industrial parks, shopping malls, mega farms, etc. Currently his company is custom-building systems for clients who have specific kWh energy goals. Eventually he hopes to set up mass production of 4 or 5 models. According to simulations and field-testing, the Invelox technology can produce three times more energy than a traditional wind turbine and bring wind power generation costs down to 1 to 2 cents/kWh. Installation costs are about 40 percent less than traditional turbines and 40 to 50 percent less expensive to operate and maintain.

With recent publicity and energy awards, Allaei says he has been contacted by people and companies in the U.S. and overseas.

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“Under Header” Auger Windows For Easy Baling Cornstalks

Chopping cornstalks while harvesting corn isn’t a new idea. But this new header-mounted stover collection system from German manufacturer Geringhoff not only chops the stalks, it also collects them into a windrow. We saw it for the first time at the recent National Farm Machinery Show in Louisville, Ky.

The stover collecting header has been widely used in Europe for several years. Geringhoff will test the header-mounted system here this fall and expects to introduce it to North American farmers in 2014.

Specially designed, wind generating blades mount under the snap rolls and cleanly chop stalks into 4 to 18-in. pieces. The heavy-duty blades are equipped with wind vanes at each end that blow the chopped material horizontally into an auger, which runs the length of the header. The auger then delivers the material to the middle of the header, forming a windrow.

According to Geringhoff, it eliminates

the need for a separate stalk chopping and raking pass. They say that whenever you rake cornstalks you pick up rocks and dirt, which isn’t good if you’re using the stalks for livestock feed or cellular ethanol production. The company says its header-mounted system keeps the stover clean.

The operator disconnects the chopper on back of the combine so everything that comes out of the combine, including cobs and husks, falls on top of the windrow. Tests show the system collects 65 to 70 percent of stalks in the field.

“North American testing is necessary as the corn here is very different than European varieties, and we must ensure the stover will flow properly along the auger,” says a company spokesman.

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Photo shows underside of new cornhead. Wind generating blades chop stalks into 4 to 18-in. pieces, then blow them horizontally into an auger. It delivers the material to middle of header, forming a windrow. Inset drawing shows auger under header.

Feederhouse Screens Produce Cleaner Grain

“When I talk to grain farmers about the screens we make I ask them if they want to run dust and dirt through their combines, wear out bearings, augers and chains, and get dirt in the tank, or do they want cleaner material going into the machine from the start,” says Manitoba grain farmer Bill Dueck. “Once they realize that our slotted feederhouse screens will practically eliminate any dirt entering the machine, I’ve usually made the sale.”

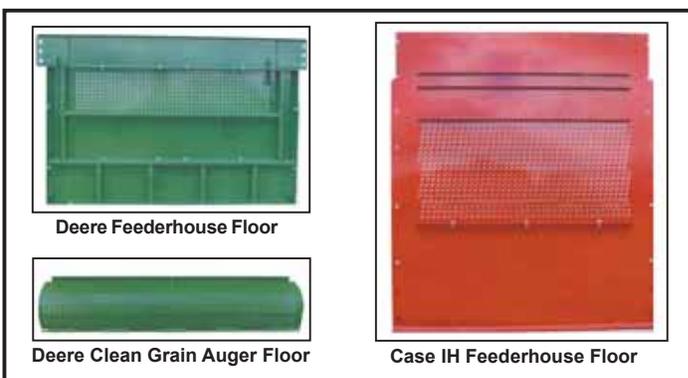
Dueck manufactures and markets slotted screen panels that replace the solid metal feederhouse floors on Deere, Case IH and other combine models. The screens, which are made of 10 gauge steel with 3/16-in. wide by 7/8-in. long slots, are used during pea, edible bean and soybean harvest. The screened area is 16 in. deep and Dueck says it removes a large amount of dirt, dust and chaff that would normally go right into the machine with a solid feederhouse floor.

“I had one customer tell me that he tied a 2-gal. pail under his machine and, after making one round, the pail was almost full,” says Dueck. “That was about 20 percent of

the screen area, so a lot of dirt and dust was going back onto the field rather than into the machine.”

Dueck came up with the idea about 12 years ago when he noticed a large amount of dust and dirt in the harvested peas on his own farm. “The pickup gathers up small pieces of dirt and with a solid feederhouse floor, in the machine it goes,” says Dueck. “The air system on the combine removes some of the dirt, but not all of it.” Using the JJB feederhouse screens results in a much cleaner sample, and in some cases, a premium price for cleaner product. One of Dueck’s customers told him he received a one dollar a pound premium for his peas compared to peas from a combine without the screens. Other customers have traded combines and ordered screens for their new machines because they see the advantages of cleaner grain.

JJB’s screens bolt onto the feederhouse when the OEM solid metal floor is removed. The company makes a solid metal plate to cover the screen area when small grains or canola are harvested. It’s held in place with spring-loaded pins. Farmers who want to



take their mechanical cleaning process even further can use JJB screens on elevator doors and clean grain auger floors. Those products are made of 14-gauge steel and have 5/32-in. by 3/4-in. slots that run either straight or at an angle.

The feederhouse screens range in price from \$1,500 to \$1,750 depending on combine model. Dueck recommends a farmer trying

the feederhouse screens first, then adding the other screens if the grain sample is still dirty.

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