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Wind Turbine Sized For Farms And Small Businesses

Eocycle offers a 25-kW turbine that produces up to 80,000 kWh of electricity annually. It's one of only two personal-sized wind generators certified by the American Wind Energy Association (AWEA) standards, making these powerful units eligible for federal tax incentives and grants.

“Small or personal wind energy systems have had their challenges over the years, often due to poor technology or low-quality construction being imported from China,” says John Mogensen, Eocycle. “Certification, when it came along, was

welcomed. It helps reduce that risk.”

Certification verifies product specifications and operations, such as the fact that Eocycle's S-16 wind turbine is the quietest in the industry. At 12 1/2 mph, it produces less than 35 decibels of sound at 328 ft. (100 meters). That compares to a whisper at 30 decibels or a library at 40.

“The S-16 has a maximum revolution of 53 per min.,” says Mogensen. “It spins slowly with high torque, thanks to its direct drive, gearless motor.”

The S-16 has a 78-ft. tall tower with three

25-ft. blades. The foundation is in a cross shape that extends 15 ft. from the center in two directions, with the third direction buried 3 to 4 ft. below the surface.

“The ground can be tilled right up to the tower,” says Mogensen. “The simplicity of the design means very few moving parts and few maintenance needs.”

Eocycle provides customer prospects with a 20-page plus wind quote that analyzes wind availability at a site. It estimates payback based on electrical usage, rate paid, where the farm's meter is placed, and how far the turbine would be placed from it. Installation and estimated annual maintenance and inspection fees are included in the payback estimate.

Eocycle crews handle installation and maintenance. Once installed, the company remotely monitors the system 24/7, managing settings updates and more. S-16 owners can also monitor their system productivity 24/7 via a smartphone app.

“If wind speeds are under 10 mph, we bow out,” says Mogensen. “However, at that speed or higher, we make a site visit, refine the quote, verify grid access fees and whether net metering is available.”

Under net metering, energy produced in excess of farm use is fed into the grid automatically. In many cases, such as in Minnesota, it's priced at retail cost and returned to the turbine owner. Some states offer a credit that expires at the end of 12 months. Net-zero metering in Minnesota is one reason the company has installed 42

S-16s in the state.

Where wind energy works physically and financially, the S-16 works very well. “Past installations have shown our wind quotes are very accurate,” says Mogensen. “With tax credits, accelerated depreciation and other governmental incentives, we see out-of-pocket costs at an all-time low and with a payback of five to eight years on the S-16. Electricity is produced at a cost of between four to six cents per kWh.”

Mogensen notes that the company has installed multiple S-16s on farms with histories of high energy use. It has also developed a larger turbine, the M-26, for larger farms, small businesses and microgrids. The M-26 has a 125-ft. tower with a 41-ft. blade length and a similar foundation but a larger footprint than the S-16.

“The M-26 is a 90-kW turbine that can produce around 260 kWh of electricity per year,” says Mogensen. “While this unit has been available in other parts of the world, we're actively starting to sell this unit in the U.S. as well. It's in the process of being certified so that it'll qualify for grants, tax and other incentives.”

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Sensors capture reflected light from green plants, then spray the weed.



Spot Spraying Retrofit For Existing Sprayers

PTx Trimble's WeedSeeker 2 isn't the only spot-spraying component on the market, but it may be the only one that sprays green weeds on a brown background. This technology is as valuable on fallow ground as in early spring or late fall.

It's compatible with most sprayers and not limited to specific makes or models. The device comes with a universal mount for easy installation. In this regard, it's similar to the company's OutRun (Vol. 48, No. 6) autonomous retrofit for tractors and grain carts.

“The WeedSeeker 2 sensor captures reflected light from green plants and then opens up the solenoid to trigger the nozzle to spray the weed,” says Katie Meyer, PTx Trimble. “It was designed for use on fallow ground, as well as in vineyards and orchards.”

The spray nozzle delivers a precise dose of herbicide to kill the weed. The company claims it can reduce the amount of herbicide applied by up to 90 percent.

WeedSeeker 2 can be monitored and controlled from any ISOBUS-compatible display. The interface, described as simple and intuitive, lets the operator track herbicide use and log coverage maps. If a compatible monitor isn't in the sprayer, a PTx Trimble GFX1260 or 1060 can be installed.

Each sensor has its own light source,

allowing it to run night and day, as well as in dusty conditions. The mounting brackets allow the sensors to be mounted top, front or bottom as needed to prevent damage when the boom folds.

The spot spray system was redesigned with a streamlined sensor housing that allows spray liquid to drain away regardless of the boom position. The lightweight sensor allows even the largest booms to be outfitted without bracing or retrofits. However, some older sprayers may not have the hydraulic lift capacity to handle the additional weight even with the redesign.

A standard WeedSeeker 2 system can handle up to 96 sensors, while a typical 120-ft boom requires only 72. A smaller system for use with a maximum of 18 sensors is also available.

Meyer assures potential users that speed is not a limiting factor with WeedSeeker 2. “Your sprayer can travel at 25 mph and still be accurate,” says Meyer.

See dealers for pricing. Visit the Trimble website to locate the nearest dealer. Trimble offers several ROI calculators on its website to detail savings.

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Remote Kit Automates Swing Auger

If you're tired of lifting and pushing your swing auger, Kramble Industries has the kit for you. Kits are available for 10 to 16-in. tube augers, making it easier to move swing augers into place to unload trucks. Al Reid says Kramble revamped the kits in 2013.

“In 2014-15, we brought out the dual motor drive to work with the bigger and heavier 16-in. augers,” says Reid. “Single motor drives make up about two-thirds of sales, but quite a lot of dual motor drives go on 13-in. augers as well.”

Unlike many companies that outsource parts, Kramble fabricates all the steel parts and designs and manufactures the electrical components.

The kit includes a 300-ft. range, FM remote control and manual swing/winch controls. The 12-volt DC electric system ensures operation without starting up a tractor. The powerful electric worm gear drive system mounts to the swing auger tube, keeping drive wheels out from under trucks and ruts the trucks or trailers might make. Optional equipment includes an electric winch to raise and lower the swing auger for transport and LED lights.

A hand crank jack between the auger tube saddle and the drive wheel trailer raises and lowers the drive wheels. Putting more pressure on the drive wheels will lift the hopper over a rut or obstacle, as well as increase traction.

“Since we build it all here, we can service and support it here,” says Reid. “One of our biggest offerings is that we answer the phone. Machines shouldn't answer the phone. Our objective is always to get someone to the phone when a customer calls.”

Phone support can be helpful during installation; however, Reid emphasizes that the kit is designed for easy installation. Kramble also offers an extensive line of troubleshooting videos.

“Installation on the auger takes about an hour,” he says. “Connecting the wires to the tractor can be a little time-consuming, but generally within two hours, installation is complete.”



“Everything can be controlled from the remote,” Reid says. “That includes up to three LED spotlights to make it easy when driving up to unload at night. The kit is even self-diagnosing.”

Aside from single drive with a motor on one wheel and a chain drive to the second, or dual drive with motors on both drive wheels, the major difference between kits is the size of the clamp. The saddle clamp goes around the auger tube with six bolts to hold it in place. The kit has cables to get power to the unit, connections for easy disconnect from the tractor's 12-volt system, and optional winch and clutch controls.

“Everything can be controlled from the remote,” adds Reid. “That includes up to three LED spotlights to make it easy when driving up to unload at night. The kit is even self-diagnosing.”

“The remote has warning lights for low voltage and to indicate if there are power function problems,” says Reid. “The first channel is for the drive motor(s), and the second is for the 6,000-lb. winch and the LED lights.”

Kits start at \$3,757 CAD (\$2,640 USD) for the basic single-motor drive. The dual motor drive starts at \$4,092 CAD (\$2,875 USD).

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