

# “Tornado-In-A-Can” Pulverizes Waste Products And Crop Residue

Kansas farmer Frank Polifka has figured out how to tame the power of a tornado.

Polifka spent years trying to make a man-made tornado. It appears that the controlled destruction of his “canned tornado” can grind and dry just about any material.

Polifka calls his device a Windhexe. He says it can turn tin cans into pellets the size of BBs, reduce gravel to dust, and thoroughly pulverize waste products, including manure and dead animals, into powder which can be disposed of fairly easily.

After building and successfully demonstrating his initial prototype about five years ago, Polifka teamed up with Dave Cantrell, Reeds Spring, Missouri, and Mike Banks, Eden, Maryland, to form Universal Agri Products, Inc. The company is exploring uses for the technology in a number of industries, from processing agricultural and food processing wastes to preparing metals and plastics for recycling.

The “tornado in a can” uses air compressors to create a true tornadic vortex in the center of a conical chamber that looks much like a hopper-bottomed feed bin.

Items to be processed are dropped into the

top or tossed up from the bottom. The tornado-like vortex causes them to virtually explode. As the parts crash into each other in the chamber, they are smashed to powder. The longer the materials stay in the vortex, the smaller the particle created.

Depending on the temperature of air and the type of compressors used, air temperature inside the vortex rises to between 200 and 400 degrees Fahrenheit. Additional heating of the air as it goes through the system can be used to dry materials instantly.

Even without added heat, though, a slurry of broken eggs and eggshells fed into the Windhexe comes out as a powder.

Universal Agri Products has tested several sizes of the Polifka machine, mostly to determine how well they work for processing food manufacturing wastes and garbage.

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Vortex machine (above) can be used to process all kinds of products for waste disposal or for use as feed ingredients. It reduces virtually any product to dust including chicken feathers (above right), broccoli (right), chicken gizzards (below right), and tin cans (below).



Godfrey installed model airplane remote control servos on the mower to turn its motors on and off. He uses a joystick to steer the machine.

## Remote-Controlled Mower Saves Inventor's Back

Ideas can come from anywhere. Al Godfrey, Richmond, British Columbia, got a big one when he spotted a remote control unit from a model airplane in the trash at a friend's house. He knew right away how he could use it.

Godfrey is a retired electrical engineer who has about 3/4 of an acre of lawn to mow. He'd been using a 35-year-old Allis Chalmers garden tractor with a 42 in. deck. “I have arthritis and as the years went on, the pain in my back from riding that old tractor got worse and worse,” he says.

Once he found the remote control, he started putting together a collection of parts that he could use to build a remote-controlled electric lawn mower.

“I knew that General Electric used to make several models of electric riding mowers back in the 1970s so I went looking for one,” he says. He located a GE Elec-Trak that was nearly 30 years old.

“It had sat out back of a barn for years and was really just rusted junk. There was a lot of work to be done on it, but the drive motor

and transaxle still worked.” He paid \$200 for it.

Once he got it home, he tore off the seat and steering wheel, since he didn't plan to ride on the machine. He upgraded the motor controllers to more modern technology and redesigned the entire drive train.

“The 42-in. mower deck has three blades and each is driven by a separate motor. I had to rebuild those motors, but it wasn't that difficult,” he notes.

In place of the steering wheel, he added a steering motor. Another motor raises and lowers the deck. With the main drive motor, that makes six different electric motors on the mower.

He installed model airplane remote control servos on the mower to turn the motors on and off. He uses the joystick to control steering and other buttons to run the deck lift and mower motors.

Once he put the mower to work, he found he liked sitting on his porch to mow his grass.

But it didn't take him long to realize that it



An 8 mm video camera on mower transmits to a receiver hooked to Godfrey's television set.

was difficult to gauge how close the machine was to trees and fences. He decided to mount an old Canon 8 mm video camera on the mower. He wired it to a miniature transmitter that sends the picture to a receiver hooked to Godfrey's television set.

“The video transmitter is the kind of equipment they use in security systems,” he explains. “It's not extremely powerful, but it sends the picture signal about 1,000 ft., which is more than enough for this use.”

The camera makes it easier but he still has to pay attention. “It takes a lot of concentration to drive it. The steering is rather precise and my backyard is not smooth, so I watch the screen all the time.

There's a golf course behind his house and golfers often stare as the riderless machine trundles across the turf. “I do get some interesting comments,” he says.

Godfrey says it took most of a year to get the mower together and operating, and he fig-

ures it cost between \$1,000 and \$1,500 in total. “The most expensive part was the batteries. I obtained three new large, high tech batteries (Optima Group 32 spiral wound prototypes) for \$200 apiece,” he says. These batteries operate the mower for more than two hours before reaching 50 percent discharge. Recharging them with the onboard charger takes four to five hours.

Still, he doesn't consider it a high-tech machine. “I used a lot of old junk-box parts rather than a new computerized or solid state circuits,” he says.

He's shown it off a few times at shows and fairs and participated with it in an electric tractor pull. He won.

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