

High-tech firm has a drive to succeed

EVT developing more efficient way to move the world

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A Springfield design and manufacturing company is one of six finalists in its category for a \$40,000 prize in a statewide competition to encourage high-tech innovations.

But the founders of EVT, Electronic Vehicle Technologies, have a much bigger prize in mind — international markets, for example — for high-torque motors and generators that would drive machinery from heavy construction equipment to wind turbines.

EVT operates from a corner of the sprawling former home of Howden Buffalo's industrial-fan factory at 3501 Mayflower Drive. The fan factory, just off Cockrell Lane on the city's west side, closed in 2003.

The company also has a research and manufacturing facility in Fairbury, about 40 miles northeast of Bloomington.

It started with direct-drive propulsion systems for riverboats — excursion boats, not the gambling kind, said Lawrence Davsko, one of three founders.

“The old paddle wheel boats (have been) converted to electric motors. If there's steam there, it's just for show,” said Davsko, a Springfield native who made stops nationwide as an executive for Pillsbury and ConAgra before retiring here in 1999. His brother, John, is a member of the Sangamon County Board.

Two other partners, Norm Rittenhouse and Dathan Johnson, are electrical and mechanical engineers, respectively. Rittenhouse works in Fairbury, while Johnson also heads Productive Resources, an engineering and design firm in Springfield.

It was Rittenhouse, Davsko said, who had been tinkering with the notion of a new type of electric propulsion system that might replace the gears, belts and drive-trains of traditional industrial motors.

“He's been working on it for 25 years,” Davsko said.

EVT is one of more than 130 companies that entered the Innovate Illinois competition sponsored by the state Department of Commerce and Economic Opportunity and the Chicagoland Entrepreneurial Center.

Winners in the “early stage” and “late stage” categories will be announced Nov. 18 at the University of Chicago. EVT is in the “late stage” category.

The technology is complex — EVT has three patents with five more pending — but the premise is simple. EVT proposes to replace friction- and heat-generating industrial gearboxes, transmissions and differentials with a single-drive, synchronous motor that in some cases would fit inside the wheel of a tractor or heavy truck.

It's all about friction, efficiency and replacing horsepower with volts, Johnson said. "We're talking about 98 percent ground efficiency," Johnson said, adding that a typical diesel or gasoline engine is about 70 percent efficient. In other words, 98 percent of the energy that goes in at the top is actually transferred to moving the vehicle or wind turbine.

Instead of gearboxes, belts and wheels, the EVT motors rely on an electromagnetic system to generate high-torque, low-speed power needed to operate wind-turbine blades and heavy equipment.

While the agricultural, construction and mining industries are targets, EVT has also set its sights on the booming demand for wind turbines. One of the periodic problems with existing technology is the heat and friction generated by gearboxes. A strong gust can also burn out the gears.

"The gearbox speeds up or slows down the rotation of the shaft as the propellers, if you will, turn over. The problem is the turning of the blades is much slower than what the generator needs to produce electricity," said Robert Reynolds, senior director of planning and operations for Prairie Power Inc. in Jacksonville.

Gearboxes in between "step up" that speed.

Reynolds said new blade technology is better at adjusting to sudden changes in wind speed to avoid gearbox burnout, but a single-drive system like that proposed by EVT should be more efficient.

"Gearboxes are expensive and heavy. They consume energy with the bearings and friction," Reynolds said. "If they've developed a direct-drive system that eliminates all the mechanics, that would be something."

While the idea has been around for years, Davsko and Johnson said price, demand and technology have finally made the idea feasible.

Some day, they added, the generators and motors might be produced at the former Howden building. Some day.

"We all have our day jobs until this is our day job," said Johnson.

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