Like most farmers, third-generation Nebraska corn grower Brian Wall is constantly looking for ways to make his farming operation more efficient and profitable.

One of the ways he is doing that is by using variable frequency drive (VFD) control technology. Wall recently installed a Lindsay Watertronics VFD control panel on his 100 horsepower irrigation pump in Hamilton County, Neb. The VFD control technology is designed to save Wall energy, water and maintenance costs.

"The variable frequency drive control technology is something new we are trying on our farm to reduce our cost of electricity," Wall says. "Electrical costs are a major expense for us in running our irrigation pumps and systems."

In simplest terms, VFD control technology adjusts the speed of the electric motor on Wall's irrigation water pump to match the specific demands of his irrigation system. Unlike a fixed single-speed drive, the Lindsay Watertronics VFD control technology saves energy by providing a “soft start,” gradually increasing the motor speed until it reaches peak operating speeds. Further energy savings are realized with energy rebates from the power companies, VFD technology can pay for itself in less than five years. Plus, you have less wear and tear on your pumps and irrigation systems."

— Brian Wall

"THE VARIABLE FREQUENCY DRIVE CONTROL TECHNOLOGY IS SOMETHING NEW WE ARE TRYING ON OUR FARM TO REDUCE OUR COST OF ELECTRICITY."

— Erich Williams, The Pivot Man

VFD TECHNOLOGY PRECISELY AND EVENLY MATCHES PUMP OUTPUT TO IRRIGATION SYSTEM DEMAND
by the VFD’s ability to precisely and evenly match pump output to system demand.

Lindsay’s local Zimmatic dealer, The Pivot Man in Grand Island, worked closely with Wall in designing and installing the VFD control panel.

“There is lots of buzz and curiosity in our area about VFD technology,” says Erich Williams of The Pivot Man. “We have installed several VFD control panels on farms in our area this year and are working to educate growers about the benefits of this energy-saving technology.”

Wall is using the Watertronsics VFD control technology on a pump that supplies 800 gallons of water per minute (50.5 liters per second) to a pivot that irrigates approximately 150 acres (61 ha) of corn. The pivot includes a MAXfield corner system.

“The VFD control panel was installed in June and we are still documenting the potential energy savings,” Wall says. “But the VFD control technology seems to be especially beneficial for a corner irrigation system because of the variability of water pressure at the end of the pivot. With VFD technology, the water pressure at the end of our corner arm is at about 30 pounds per square inch (2 Bars). Without VFD it can be as high as 70 pounds per square inch (4.8 Bars).”

Williams is working with Wall and other growers and local electric utilities in central Nebraska to fine-tune the VFD devices for maximum energy and water savings.

“I am really impressed with these new VFD control panels,” Williams says. “With energy rebates from the power companies, VFD technology can pay for itself in less than five years. Plus, you have less wear and tear on your pumps and irrigation systems.”

The VFD control panels are custom-designed and pre-tested at Lindsay’s Watertronsics manufacturing facility in Hartland, Wisconsin.

As VFD control technology continues to grow in popularity, The Pivot Man and Williams are helping to install the devices on area grain bins and grain bin towers, legs and drying systems.

“The Watertronsics VFD control technology works great for slowly ramping up electric motors. It’s less shock on the motor and the system. With a fixed drive irrigation motor, you’re basically pumping against a brick wall and there’s nothing you can do about it. VFD technology is changing all of that,” Williams says.

The Watertronsics VFD control technology can be installed on both new and existing electric motors.

Cory Fuehrer, Energy Efficiency Program Manager with the Nebraska Public Power District (NPPD), says interest in variable frequency drive (VFD) technology has increased in recent years as farmers become more aware of the benefits of the technology and potential energy savings.

“The VFD technology can save a great deal of energy and works especially well if you have varying flows of water, such as on a corner system, end guns and hilly terrain,” Fuehrer says. “Irrigators are much more cost conscious and see VFD technology as a way to optimize revenue and reduce energy costs.”

NPPD, in partnership with participating local electric utilities, now offers energy rebates to qualifying customers who install the VFD technology. The rebates amount to 20 cents per kilowatt hour saved.

“A lot of growers don’t know about the VFD incentives but it’s starting to catch on as they see the benefits of this new technology,” Fuehrer says.

For more information, contact your local Zimmatic dealer or visit http://www.nppd.com/EnergyWise/incentives.asp.