

Nursery pumps up energy savings with new VFD

Profile: Hans Nelson & Sons Nursery

Problem: A 50-horsepower irrigation pump at Hans Nelson & Sons Nursery only ran at top speed, delivering too much water at times. The grower wanted to adjust the flow as watering needs varied.

Solution: The nursery installed a variable frequency drive (VFD) on the pump, giving them the watering flexibility they needed. The VFD also significantly trimmed water and electricity costs.



"We're really happy with the savings and the flexibility of the VFD."

— Clint Bottenberg, production manager for Hans Nelson and Sons Nursery

Watering trees can take a lot of energy. Just ask the folks at Hans Nelson & Sons Nursery in Boring.

This wholesale grower raises shade, flowering and ornamental trees, and ships them to other nurseries and retailers all over the United States. For a healthy start, the acres of young maples, dogwoods and redbuds sometimes need overhead watering — to settle soil after planting and activate herbicides — when Oregon's natural overhead watering won't cooperate. The rest of the time, the nursery uses drip irrigation in their fields. The grower also needs the flexibility to be able to water their greenhouses one at a time or all at once.

Water, water, everywhere

To help with watering, the nursery installed a 50-horsepower submersible turbine irrigation pump a few years back. It delivered water all right, but always at maximum flow — 300 gallons per minute — even when just light watering was needed.

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Company at a glance:

There are trees growing in yards and parks all over the United States that got their start at Hans Nelson and Sons, a family-owned wholesale operation in Boring, Oregon. The nursery installed a variable speed drive on their irrigation pump that helped cut water and electricity bills down to size.

How can PGE help you?

PGE can assist your business with free energy classes, billing and payment plans, renewable power options and other services. We can also connect you with information about energy cash-back incentives and tax credits. Contact the PGE Business Services Team at **503-228-6322** (Portland), **503-399-7717** (Salem), or **1-800-542-8818** (outside of Portland/Salem). Find in-depth information online at PortlandGeneral.com/Business.

“It was meeting our needs too forcefully, and we weren’t using our water and energy efficiently. Some of our stock got a bit more water than was needed for optimal growth,” explains Clint Bottenberg, production manager for the nursery.

The wholesale nursery needed a way to use the pump at a reduced flow.

VFD adjusts speed to meet needs

To solve the problem, the nursery installed a variable frequency drive (VFD) that adjusts the pump speed. This regulates water flow and cuts operating costs.

Energy Trust of Oregon helped provide technical expertise in identifying the solution and verifying that the new VFD was properly installed and adjusted to maximize savings.

Nursery harvesting savings

Today, the nursery is saving water and saving approximately 19,000 kilowatt-hours of electricity annually. That represents a 52 percent reduction in energy use for the pump.

The company also earned a cash incentive through the Energy Trust’s production efficiency program. The incentive helped offset project costs and speeds up payback on the nursery’s investment.

“We’re really happy with the savings and the flexibility of the VFD. It has allowed us to use the pumping system more effectively,” says Bottenberg. “Before the pump ran wide open all the time. But now, the computer in the VFD adjusts the frequency as needed so we are able to water as few or as many trees as we want.”



The new VFD computer control adjusts irrigation as needed, saving water and energy.

Energy tips for motors and drives

- *Keep irrigation engines serviced and tuned-up. It’s estimated that about 25 percent of energy used for irrigation pumping can be wasted due to poor pump and motor efficiency. Make sure they are clean and free of dirt, insects and bird nests. Ensure connections are tight, and moving parts lubricated.*
- *When a motor needs replacing, consider high-efficiency motors and variable frequency drives. Qualified installations can receive an incentive from Energy Trust of Oregon.*
- *Use an irrigation scheduling method to time irrigations for more efficient fuel and water use. Start irrigation before soils are completely dry.*
- *Explore more energy information for the agricultural industry at **PortlandGeneral.com/SaveEnergy**.*



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