

VFDs saving labor and equipment in Cherokee RWD 1

In a recent issue of The Kansas Lifeline I wrote about the replacement of the hydro-pneumatic water system in use at Cherokee Rural Water District 1. If readers recall, I discussed the possibility of Cherokee RWD 1 replacing the system with a set of variable frequency drives, or VFDs for short.

Cherokee RWD did indeed install two Hitachi L300P VFDs in its water plant. Greg Ulmer with Ulmer Electric, Asbury, MO did the installation for the district. The VFDs cost \$3500 each. After recently speaking with Bret Warstler, operator of the system, I thought it would be of interest to do a follow up article on the VFDs. Bret has nothing but praise for the system.

The article in the November 2008 KRWA magazine (see "Upgrade options do not mean an entirely new system", pp. 82-83) outlined the benefits of replacing the old and antiquated air tank system at Cherokee RWD 1. This system had fallen into some disrepair and had been costing the district a significant amount in both labor and maintenance. As it turns out however, I did not even begin to scratch the surface of the benefits of changing to VFDs.

One of the primary concerns of any water system is to contain daily operating costs. In order to keep the price of water to the consumer as reasonable as possible, water system operators, managers and elected officials strive to keep daily operating costs as low as possible. That allows customers to have water at rates as reasonable as possible. The customer should be the beneficiary. At least that's the policy how publicly-owned utilities ought to be managed and operated.



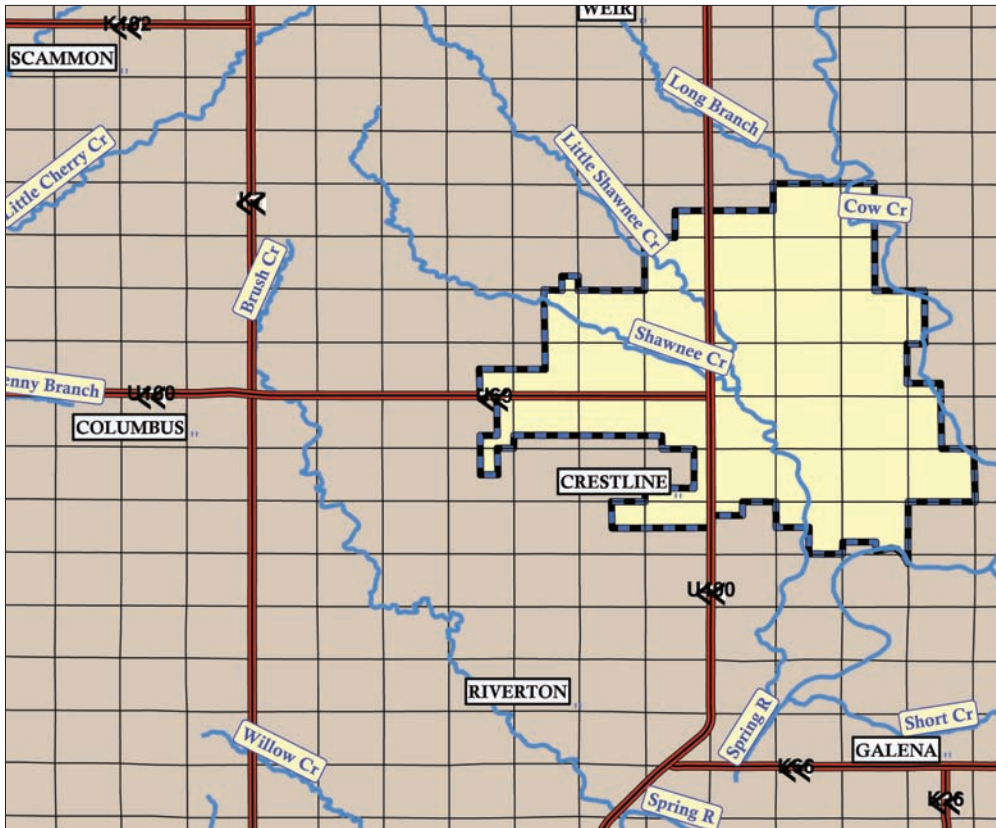
Cherokee RWD 1 installed two VFDs on one of its pump stations a year ago. Costing about \$7,000, the units have eliminated the need for the district to maintain a deteriorated hydro-pneumatic system. The new controls also provide early warning notification of pending problems in the plant.

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Maintenance costs reduced

Cherokee RWD 1 has benefited from reduced maintenance costs as a result of the installation of VFDs on the one pumping station. The removal of the air compressor and the air tanks has resulted in a decrease in time needed to maintain the system. District maintenance personnel have also reduced the need for "midnight runs" to

the plant to troubleshoot some failure; such trips were frequent prior to the installation of the VFDs. Additional maintenance costs have been avoided by the removal of the electrical equipment that controlled the hydro-pneumatic systems. The district's pumps that are controlled by the VFDs have also benefited. These pumps now have "soft starts" which allow the pumps to ramp up slowly. That



Cherokee RWD 1 provides water service to 250 rural users north of Galena in extreme southeastern Kansas. The district operates two wells and has approximately 55 miles of distribution line.

avoids the high, initial load typical of conventional installations. The VFDs greatly reduce wear to the pumps, extend life of the equipment and decrease maintenance costs.

The VFDs installed at the plant are also capable of troubleshooting an electrical problem both from the incoming lines from the electrical supplier and in the pumps that are controlled by the VFDs. The VFDs have the capabilities to check for amperage and current irregularities, thus allowing the operator to quickly troubleshoot any problems that may be developing in the system. This saves valuable time in the event of a malfunction and allows for a quicker response for any repair. Additionally, this should reduce the need for an outside electrician.

Auto shut-off during an electrical event is another major advantage to the system. If the VFD detects a change in

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voltage or amperage to the system, it will automatically shut down, preventing further damage. This feature can be incorporated with an automatic dialer that allows the operator or others to be notified and allows for faster response time. Faster response time often means the difference between keeping the water flowing or losing pressure.

The Cherokee RWD 1 installation is also equipped with a built-in event recorder. This is similar to the check engine light on an automobile. It flashes a code that alerts the operator to the problem. The operator only needs to look in the manual that comes with the VFD to see what has occurred and then, address the issue.

In conclusion, if reduced electrical and maintenance costs and the ability to gain better control of the electrical equipment in your system sounds like good idea to you, then a Variable

Frequency Drive might be the right solution for your system. KRWA would be willing to discuss these applications with you. No, we are not system designers and do not intend to be; we know equipment manufacturers who however have the practical experience who can address all sorts of situations and needs. Give me a call at 620-762-6266 or email me at eric@krwa.net if you'd like to visit further about this or other water system-related issues.

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