



“You can’t argue with the bottom line. Derceto’s Aquadapt is saving WaterOne more than a million dollars a year. That’s around 20 percent of our total annual energy bill.”

Chuck Weber,
Superintendent of Operations,
WaterOne, Kansas.

Embracing change yields major savings for WaterOne

A willingness to change traditional thinking and methods of operation has resulted in annual energy cost savings of more than a million dollars a year – around 20 percent of the total annual energy bill – for Kansas water utility WaterOne.

Serving 400,000 people in Johnson County, near Kansas City, WaterOne draws raw water from the Kansas and Missouri Rivers and distributes a peak supply of 200 million gallons a day of treated water via more than 2,500 miles of piping spanning 270 square miles.

Chuck Weber, WaterOne’s Superintendent of Operations, says that when Derceto approached him with a proposal on how Derceto’s Aquadapt could achieve significant operational efficiencies and deliver energy savings, a lower overall carbon footprint – as well as improving water quality – he was a little skeptical.

“I was taught one of the most important things in operating a water treatment plant is to keep the flow constant. But the Aquadapt solution delivers energy savings and other benefits by occasionally changing the flow. Also, in our industry energy saving has not been given a high priority. We tend to see the energy costs involved in maintaining a constant flow through the system as just a cost of business,” Chuck Weber says.

“But times are changing. Achieving the lowest possible carbon footprint, and

delivering water to our customers in the most sustainable way possible is important. The possibility of doing that, while at the same time lowering our overall operating overhead, could not be ignored – even if it required challenging our traditional methods of operation.”

Derceto’s Chief Technology Officer, Simon Bunn, says the WaterOne implementation presented some special challenges to the Derceto team. With little elevated storage and flat energy tariffs WaterOne did not offer the most immediately productive energy saving options typical in most Aquadapt implementations. Alternative means of energy savings had to be found.

The most productive single area of optimization has come from homing in on the most energy intensive area of WaterOne’s operations: high lift pump stations used during the daily peak kW demand period. These pumps, delivering water from the river up the higher elevations of the distribution system, represent the greatest percentage of WaterOne’s pumping costs.

Despite energy charges being flat, energy providers apply substantial time-of-use

kW demand charges. The challenge for Aquadapt has been to find ways to maintain reduced flows throughout every kW demand period as the demand charge for a billing month is met by its highest 30min power reading. Even more challenging is that the highest power reading in summer can set minimum demand charges for the next 12 months.

Peak summer demand reduced by up to 4MW

With elevated storage only representing less than five percent of peak daily demand, pumping during the on-peak kW period is unavoidable. The Aquadapt solution is to use the storage available at field pump stations throughout the network, minimizing use of the energy hungry high lift pumps. Aquadapt analyzes the various electricity tariff structures at individual sites, identifying the field pump stations as the most cost-effective option during the on-peak kW period. The large below-the-grade storage reservoirs are then replenished overnight when the high service pumps move out of the on-peak kW period. Using this technique Aquadapt has ▶



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reduced WaterOne’s peak electrical demand at the water treatment plant and the two raw water intake facilities throughout the summer months by up to 4MW.

A key part of optimizing the elevated storage has been a complex central pressure zone with 32 pumps and six flow control valves across eight stations affecting a single elevated storage tank. This area of complex hydraulic interaction has required a unique software approach and close work with WaterOne operations staff to be successfully incorporated into the Aquadapt configuration.

Also important has been optimizing WaterOne’s variable speed drive pumps. Technically difficult for any software solution to handle, Aquadapt incorporates these pumps into its solution, taking full advantage of their flexibility without compromising energy optimization.

The dual water source provided by the Kansas and Missouri rivers has also provided important optimization opportunities. Each has differing raw water costs and by optimizing time-of-use demand charges, below-the-grade storage, using the differences in tariff structures and the varying costs of each river source, Aquadapt has delivered savings considerably ahead of earliest estimations.

A phased approach to implementation

Chuck Weber says the changes in organizational attitude required to fully implement the Derceto Aquadapt solution did not happen overnight.

“After about a year of looking at the Derceto proposal we got buy-in from our Board of Directors to do a phased approach. Phase one showed us that if we were serious about modulating our flows we could achieve

savings of hundreds of thousands a year. We moved to phase two and the savings looked like \$800,000 a year. So we moved on with the implementation. Once our operators bought into the concept we were able to make even larger flow changes with even greater savings. We believe we are now saving over a million dollars a year.”

Chuck Weber says Derceto’s Aquadapt also creates challenges, being a unique product that requires changes to traditional water utility operational thinking.

“There’s no other tool out there that can manage and optimize water utility distribution in real time. For it to deliver the benefits we’ve achieved requires a willingness to change current operational thinking – particularly with regard to doing huge flow swings when everything we are taught says you should keep the flow constant at the treatment plant. But seeing is believing. We now have high acceptance of Aquadapt right through our organization.”

“And it’s important to note that there’s been no impact on water quality. In fact, less than 18 months after the Aquadapt implementation we were awarded second place honors for having the best tasting water in North America in a competition sponsored by the American Water Works Association. We’re very proud of that.”

“It’s been a great partnership with Derceto. Right from the get go they always followed through to deliver everything they said they were going to do, on time and on budget. I really like the Derceto service. It’s top notch. I have to say that I get better service from Derceto’s support team in New Zealand than I do from people in our own country. They are responsive and stick with any problems until they’re fixed,” Chuck Weber says.

About Derceto

Derceto is the leading provider of energy management software for water utilities worldwide. Our award-winning Aquadapt software integrates with existing management systems to help utilities make operating decisions that reduce energy consumption – typically one of their highest costs after personnel. Aquadapt also contributes to improved water quality and greater consistency of operations. By applying our smart water software, deep industry knowledge and an outstanding commitment to support, Derceto makes it happen – delivering energy savings of 10-20 percent, along with significant gains in operational efficiency and water quality.



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