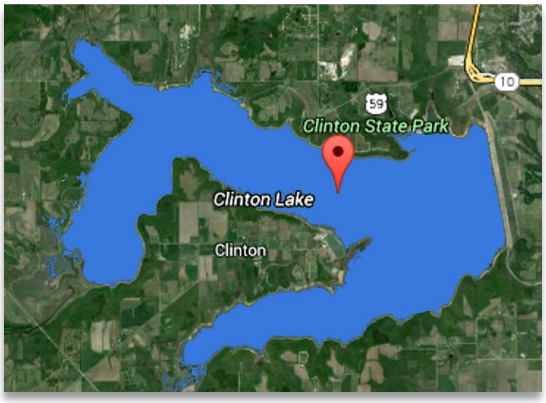
City of Lawrence
A Smart Combination:

ABB Drives and Baldor Motors

Industry: Water / Wastewater

A Logic, Inc. Customer Success Story

Background



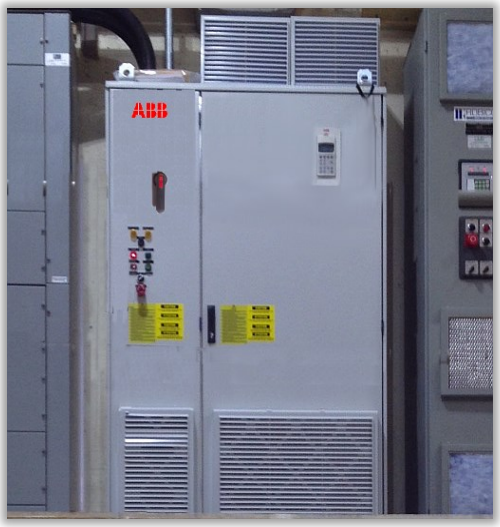
City of Lawrence's Water Department had a drive/motor system that could not support full capacity of their fourth pump. A solution was needed not only to meet the water demands of the city's residents, but also the high-quality equipment standards of the water department.

Not many cities with a population of 100,000 can boast two water treatment facilities, but the City of Lawrence, Kansas has taken progressive steps to ensure an abundant flow of water to its residents. One of the treatment facilities, Clinton Water Treatment Plant, receives its raw water from the Clinton Lake Reservoir. Water from the Lake is pumped to the water treatment plant near the reservoir, where it is treated for home use. In 2001, a fourth large capacity pump , capable of producing 12 million gallons a day, was added to the existing pumping system to accommodate the increased population of Lawrence.

From day one of the fourth pump installation, its 300HP drive could not run at 100% speed. The drive would run hot and the motor would often fail as a result. Efforts were made to get the drive to run at full speed by adding fans and cooling. Ultimately, in order to avoid complete failure, a clamp was applied to keep the drive running no more than 85%. The result was a less than fully functional drive and an unreliable pump system, which reduced the city's redundancy strategy, limited the capacity of intake, and increased the cost of maintenance. For Lawrence, a city dedicated to meeting the escalating demand for clean water, the reduced production and reliability were not aligned with their standards of high-quality equipment and efficient water production.

Dave King, Maintenance Superintendent with City of Lawrence, didn't realize that the lack of performance was caused by debris loosened during installation, which blocked the drive's vent and a motor that barely met the required specifications. Most frustrating to Dave was the lack of accountability from the manufacturers of the drive and motor. "I would call up the drive's manufacturer and he would tell me the motor was causing the poor performance, then I would call up the motor manufacturer and he would say the drive is causing the problem," asserted King. Rather than continuing to struggle with the inefficient drive and motor combination, in March 2014, King decided to contact Logic, Inc.

A Smart Combination



The ACS800-37LC drive installed on the mezzanine at the City of Lawrence pump station

The Baldor 350HP motor installed next to City of Lawrence's pump #4

Don VanLandingham, sales engineer at Logic, Inc., quickly assessed City of Lawrence's drive/motor inefficiency. With 25 years of water/wastewater experience as a trusted supplier of industrial automation products and solutions, VanLandingham recommended replacing the struggling drive and motor with an ABB/Baldor solution. Since 1981, Logic, Inc. has been committed to working with top notch, vetted manufacturers to ensure the best technically-viable products and solutions for their customers. He contacted John Schuh, President of the local Baldor office, and provided a specification for Dave King's review.

Logic, Inc. and Baldor recommended the ABB ACS800-ULH (ultra-low harmonic) drive, which has an active front end that reduces harmonics on the power grid and is a cost-efficient solution to meet the pump's speed demands. The most common applications for these drives are pumps, fans, compressors, and conveyors. The ACS800-ULH is a cabinet-built drive that is equipped with dedicated module and cabinet fans to stay cool, which was in stark contrast to City of Lawrence's previous drive that ran too hot even with added fans and cooling. "I looked at the FLA (full load amps) of the motor and the maximum temperatures of Lawrence, KS and sized the drive to meet the city's needs," says VanLandingham.

Also recommended with the ABB ACS800 UHL 350HP drive was a 350HP TEFC (totally enclosed fan cooled) Baldor motor with a 5 year packaged warranty that included parts, additional labor, and travel. The City of Lawrence needed a more robust motor, with features to match the VFD to ensure a longer life and better performance than the existing 300 HP motor. The new drive/motor package better met those needs and also provided precision balance, special seals, ground brushes, insulated bearings, grease reliefs, and a NEMA 449T extended frame. This extended frame added several inches to the length of the motor with more active material to reduce the chance of overload. The Baldor 350 HP motor matched the frame size of the previous 300HP motor and the existing motor conduit connection points. This was significant because a larger frame size would have required the City of Lawrence to modify the existing base, resulting in more installation costs for the project. Finally, the drive and motor's five year warranty demonstrated the manufacturers' commitment to product reliability.

Delivering the Value

To Logic, Inc., success is providing a technical solution to improve automation for customers while adding value, such as knowledge, accountability, ease of use, and support. The ABB drive and Baldor motor combination for City of Lawrence's fourth pump is performing optimally through efficient use of energy and the ability to run at full capacity. Of course, success to most customers is the bottom line. City of Lawrence will see a typical 30% -60% energy saving , and because the specialized motor fit the existing frame , the city will see an increase on its return on investment. Another important value for King is the steadfastness of the products, solution and supplier. "It's a relief to know that on a hot August night, I know my system will work, and if I had a problem, someone would answer my call." Each organization is committed to helping customers by supporting the entire solution.

Effective partners aligned with the same goals of quality and responsibility

...and the Results

From source to tap, reliable equipment means reliable drinking water

Since installation of the ACS800-ULH 350HP drive and custom 350 HP motor, the drive runs seamlessly at 100%, ensuring City of Lawrence's goal to provide the appropriate amount of water to meet the demand of its residents. Ultimately the efficiency and speed control of the ABB drive and Baldor motor combination can minimize the life cycle cost of the pump, save energy, and reduce maintenance needs making it a smart combination for this pump application. For Dave King the value added to this solution is the service of his supplier. He says, "Over the last eighteen years Logic, Inc. has provided many solutions and the services to back them up. Although I have had the luxury of dealing directly with Don on many projects, Logic, Inc. is the only place I know where any of my staff can contact any of Don's staff and get the same quality of service that I get when dealing directly with Don." For Logic, Inc., providing high quality ABB and Baldor products is only half of the solution – the other half is excellent service, which ensures real customer success.