Customer Success Story:
Town of Mooresville Public Utility

Markets served
Water/Wastewater

Eaton's variable frequency drives keep water flowing for the town of Mooresville Public Utility

Product:
SC9000® EP medium voltage drive

Location:
Mooresville, NC

Segment:
Water/Wastewater

Challenge:
To design and install a variable frequency drive (VFD) that met the facility's space constraints and would keep the plant's 800 hp pumps moving efficiently.

Solution:
Eaton reduced the overall footprint of the VFD, delivering a system that controlled the water flow of the 800 hp pumps.

Results:
The highly reliable SC9000® EP series of drives helps increase energy efficiency in the plant, and control the pressure from the high-service pumps, keeping water flowing to Mooresville residents

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"Eaton's variable frequency drive solution has performed excellently with no problems, helping us ensure water treatment services for our customers."

Barry McKinnon, public utilities director, Town of Mooresville

Background

In 2008, the Town of Mooresville built a new water treatment plant to meet growing demand. Initially rated to pump 12 million gallons/day, the plant was designed to scale to 36 million gallons/day if needed. However, when demand did not rise as quickly as expected, the plant's two new 800 horsepower (hp) pumps sat idle for several years.

Redundancy is important in water treatment – if one pump or plant goes down, having a backup is imperative to keeping water flowing to customers. With the new plant operational, water flow from both the old plant and the new plant merged in the main pipes. When the town's new 800 hp pumps ran, however, the older plant's pumps could not create enough pressure to overcome the increased pressure in the main pipes, significantly decreasing the efficiency of the old plant.

Without regular use, pumps run the risk of rusting out and becoming unusable, so, in order to preserve the Town of Mooresville's investment, the plant looked for options to get the 800 hp pumps up and running without affecting the operation or efficiency of the redundant plant.

Challenge

Looking to utilize the new 800 hp pumps, the Town of Mooresville challenged Eaton to design and install a variable frequency drive (VFD) that would keep the pumps moving efficiently. The system needed to accommodate the facility's space constraints and meet National Electrical Manufacturers Association requirements.

Eaton's VFD design needed to control the 800 hp pumps, preventing the new, higher-power pumps from overpowering the older facility, and allowing the town to use both new and old treatment plants for increased capacity and redundancy.

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Solution

Eaton worked with the Town of Mooresville and an electrical engineer to deliver a VFD system that controlled the water flow, allowing it to flow at a lower rate of speed, and making it possible to use both the new and old water treatment facilities.

In order to accommodate the VFD, Eaton designed a compact integrated control gear solution that close-couples the new drive with the plant's existing Ampgard medium voltage motor control. By integrating the VFD and motor control with a bus connection, the new drive could be installed without needing to move expensive cables and equipment. The team's design kept the VFD in one room with no modifications and tied it back to the plant's existing communications system.

Eaton also provided engineering startup services, assisting with troubleshooting during installation and startup.

Results

Eaton's SC9000® EP medium voltage adjustable frequency drive was installed in July 2015 and has performed well since, with no issues to date. The highly reliable SC9000® EP series of drives help increase energy efficiency in the plant, with a noticeable reduction in power usage. The drives control the pressure from the high-service, 800 hp pumps, allowing the new and old plants to work in tandem – and preventing the new pumps from rusting away due to disuse.

"As a representative responsible to the citizens of Mooresville, we wanted to find a way to implement the equipment we had on hand," said Barry McKinnon, public utilities director, Town of Mooresville. "Eaton's variable frequency drive solution has performed excellently with no problems, helping us ensure water treatment services for our customers."

Featuring an encapsulated powerpole and modular inverter design, the drives also help reduce downtime during routine maintenance. In addition, the encapsulated powerpole inverter with heat pipe technology reduces overall equipment size and helps protect sensitive electronic components in the harsh plant environment.

For additional redundancy, the team added lock-outs to the 800 hp pumps so that the pumps can run off of the SC9000® EP drives and be backed up with soft starters.

Eaton's variable frequency drive controller

800 hp pumps

For more information, contact your local Eaton sales representative

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