

Case Study: Chicago Water Purification Retrofit



Quad Plus®



The City of Chicago's South Water Purification Plant receives coordinated pump retrofit.

Objectives

- Install 9 new PCPs for 7 synchronous and 2 induction motors.
- Complete one pump system every 6 weeks to complete retrofit with no shutdowns.

Solutions

- Quad Plus engineered a package that could support a range of field currents so that one system could handle all motors.
- All teams worked together on tightly coordinated schedules to implement their portion of the retrofit, and the work was completed on time with no delays.

Results/Benefits

- Because of the specially engineered package, all spare parts are interchangeable among the motors making maintenance and repairs simple and efficient.
- The improved system does not suffer from delays and downtime.
- Two years after installation, the new system is still up and running smoothly.

Background

The City of Chicago required new pump control panels (PCPs) for seven synchronous and two induction motors. The original system was installed in the late 1940s and was ready for an upgrade. There were several challenges to overcome with this project, starting with the fact that the plant could not be shut down for any length of time to complete the retrofit as the City requires water service at all times. Instead, we were given one pump system to transform every six weeks.

The Quad Plus team also partnered with several contractors to complete the retrofit. MG Electric was the general contractor, Siemens Industry, Inc., supplied the new switchgear and motor starters, Allen ICS supplied SCADA equipment and programming, and the Quad Plus team provided the seven synchronous motor field applications systems. Coordination among the teams had to be tight to meet each deadline.

Quad Plus Solution

The existing motors ranged from 350hp to 1000hp at 2300 vac. During the design phase of the project, the Quad Plus team worked with the supplier of the synchronous equipment (Kinetics from Trenton, NJ) to engineer a package that could support a range of field currents. That way, one system could handle the whole range for all seven motors, which would require only a small amount of tuning at startup.

Every team involved in this \$45 million project had to work together on a tightly coordinated schedule to complete one pump every six weeks to stay on schedule. The teamwork demonstrated by everyone on this project was exceptional, and we completed all work on time. The City now enjoys a state-of-the-art system that experiences no delays in service, and is still running smoothly after two years in operation.

Because of the City's confidence in our service and abilities, Quad Plus is now designing and quoting the replacement of three small VFDs for use on the process water pumps on the City of Chicago's South Water Purification Plant.