



## PROJECT PROFILE

# Modernizing Fresno's water treatment facility

## CITY OF FRESNO WATER DIVISION

### Customer Background

The City of Fresno (COF) operates an expansive drinking water system that serves approximately 142,000 residential, commercial, and industrial customers spanning 114 square miles. The Water Division manages and operates the City's water system consisting of various facilities for treating both ground and surface water as well as a distribution system that consists of a vast network of water mains, water service connections, fire hydrants, valves, and water meters. One unique aspect of the setup is that it solely utilizes pumping zones to maintain pressure rather than using elevated reservoirs and holding tanks.

For over 14 years Enterprise Automation has partnered with the City of Fresno and has been contracted for over \$5 million in projects ranging from routine maintenance and urgent on-call support to major SCADA system transformation. EA was the original integrator for much of the City's automation platform at the Northeast Surface Water Treatment Facility (NE SWTF) and the Distribution System.

### Project Background

The City of Fresno's Northeast Surface Water Treatment Facility can process up to 30 million gallons of surface water per day. However, by 2015, the control system at NE SWTF had neared the end of its supported operational life, posing risks such as inefficiency, downtime, and unsupported hardware. The control system relied on outdated coaxial Modbus+ technology. Additionally, the SCADA platform, which was based on the Siemens FactoryLink software, was no longer supported.

As digital systems become obsolete, their performance degrades and routine servicing becomes increasingly difficult without access to new security patches, dedicated technical support, and even replacement parts.

#### Project Manager



**Derrick  
Malcolm**

#### Project Technical Lead



**Zack  
Gentry**

#### Key Insights:

- Improved speed and reliability by replacing communications infrastructure with a 12-switch fiber ring network
- Modernized main and Actiflo PLCs to Modicon M580s with 12,000+ I/Os
- Conducted all upgrades with minimal disruption to current water treatment options

#### Key Technologies:

- AVEVA PlantSCADA
- Modicon M580
- EcoStruxure Control Expert

## EA Solutions

Enterprise Automation completed a modernization and upgrade project for the Northeast Surface Water Treatment Facility (NE SWTF). The objective was to improve efficiency, address equipment obsolescence, enhance reliability, and ensure seamless integration of the centralized SCADA system with the facility's automation devices and instrumentation. The project began with the comprehensive replacement of the plant networking infrastructure, an update of the PLC software and processors, and a replacement of the SCADA platform at NE SWTF.

Each of the technical challenges of this project required a tailored approach by EA's team of automation experts. Improvement to the communications network included a transition from coaxial cables to a fiber ring structure to improve the speed and reliability of the network infrastructure and virtualizing the systems for greater efficiency and flexibility.

Outdated Modicon Quantum processors were replaced with Modicon M580 processors. Modicon Concept 2.5 software was updated to the latest version of EcoStruxure Control Expert (formerly Unity) to ensure functionality. The team meticulously reverse-engineered FactoryLink and configured AVEVA Plant SCADA (formerly Citect SCADA) to replace it as the main point of visibility and control for operations. By upgrading to current technology, the plant not only improves operational efficiency but also reduces training time, as new hires are more likely to be proficient with modern systems, reducing the learning curve associated with legacy equipment.

The replacement HMI touch screens introduced modern interfaces to the system. The ability for remote management reduces operating costs and accelerates issue resolution, which would lead to shorter downtime. Overall, this upgrade resulted in a more efficient, reliable, and cost-effective plant operation.

The implementation was carefully sequenced and executed in phases, with thorough testing and validation, in the office and on-premises, to guarantee the successful integration of the new systems. Throughout the project, Enterprise Automation worked closely with the City of Fresno to ensure minimal disruption to the water treatment operations.

Enterprise Automation's modernization and upgrade project has significantly improved the Northeast Surface Water Treatment Facility's operational efficiency and reliability by getting their systems back under support and strategically implementing technologies for enhanced redundancy and maintainability. The City of Fresno now benefits from a state-of-the-art control system that ensures its customers' continued delivery of high-quality drinking water without risk of extended service interruption.

---

Enterprise Automation, A Tetra Tech Company (NYSE:TTEK), a nationwide process automation consultant - plans, designs, documents, builds, tests, deploys, and supports critical automation and OT infrastructure for process industries.

All trademarks referenced in this document are the trademarks of their respective owners. ©2024 Enterprise Automation, All Rights Reserved