



**ENTERPRISE
AUTOMATION**
A TETRA TECH COMPANY

PROJECT PROFILE

Safe renewable energy storage with Plant SCADA *STANTON BATTERY ENERGY STORAGE SYSTEM*

Customer Background

The Encina Wastewater Authority (EWA), located in Carlsbad, California, serves over 400,000 residents in northwestern San Diego County. EWA's operations are essential for protecting the ocean, maintaining public health, and providing recycled water. Since 2017, Enterprise Automation (EA) has been the exclusive provider of automation and integration services for EWA, on various IT/OT projects including the Agua Hedionda Lift Station (AHLS).

Project Background

The Agua Hedionda Lift Station (AHLS) was constructed adjacent to Agua Hedionda Lift Station (AHPS), with EA heavily involved in the initial construction and programming phases. Partnering with Brown and Caldwell, the project aimed to reduce energy consumption by utilizing lift pumps to create a siphon effect. However, a subsequent performance review revealed several inefficiencies.

AHLS is equipped with four lift pumps and four force main pumps. The force main pumps create pressure in the main for active transport, while the lift pumps move wastewater to a higher elevation for gravity transport to the treatment plant. Despite the design intention for only one lift pump to operate at a time, multiple pumps were frequently used in parallel, resulting in inefficiency and higher costs. It was discovered that the lift pump impellers were clogging over time, which reduced flow efficiency, increased power usage, and drove higher maintenance costs.

As a partner with EWA's best interests in mind, EA returned to address these inefficiencies.

Project Manager



**Matt
Avila**

Project Technical Lead



**Sara
Koehler**

Key Insights:

- Achieved substantial energy savings and efficiency by implementing data-driven control strategy adjustments and avoiding costly upgrades
- Took a collaborative approach and leveraged collective expertise to yield solutions

Key Technologies:

- Modicon M340
- Schneider Electric Magelis OIT

EA Solutions

EA significantly improved pump efficiency and reduced operational costs by integrating advanced control systems and leveraging detailed data analysis. The solution involved several vital actions: swapping impellers for better operation, cycling pumps off when efficiency drops, rotating pumps to distribute wear and tear, and implementing programming changes instead of adding hardware. Additionally, Brown and Caldwell's installation of flow meters during the initial design of AHLS was crucial in monitoring and optimizing pump performance.

These improvements led to substantial cost savings by reducing power consumption. The optimized operation cycles extended the pump lifespan by minimizing wear and tear. The new control strategy allowed pumps to operate more efficiently, often with only one or two pumps running. This avoided running pumps at reduced efficiency, leading to better energy utilization. The optimized system provided significant energy savings and operational efficiency without upgrading the PLC network and SCADA system that was already in place.

The AHLS Impeller Optimization project offered a unique opportunity to optimize a plant rather than retrofit or repair it. The collaboration between Brown & Caldwell and EA was exemplary, showcasing a proactive approach to optimization. This project stands as a notable example of energy efficiency and operational improvement.



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