



A Rockwell Automation Company

City of Carlsbad Water Recycling Facility

The Client:

The City of Carlsbad Wastewater Treatment Department has 64,000 clients managing 282 miles of sewer lines with an average daily flow of 6.6MGD. Phase-II consisted of the design and construction of a 4MGD advance water reclamation plant on the site of its existing Encina Water Pollution Control Facility. The new plant is fed by the secondary effluent from the

recently built water equalization reservoirs. Water is treated in two parallel streams – granular media filtration or 0.85MGD microfiltration (MF) followed by 0.7MGD reverse osmosis (RO). The resulting water meets the highest quality standards of the California Department of Health Services and makes it suitable for direct body contact.

The Requirement:

The control system consists of three major groups: the MF Control System; the Recycled Water Pump Station and the SCADA system that contains RO control. The Hinz project scope included delivery and commissioning of a wide range of process measurements and control instrumentation for the

Recycled Water Pump Station, RO control system and the overall plant SCADA system. The MF system components were provided by another vendor but controlled by the Hinz supplied SCADA system

The Design Solution:

Hinz offered a comprehensive solution approach based on well defined engineering standards. Selection of the control system components was based on reliability, accuracy and life cycle costs. Electromagnetic flow meters, smart pressure transducers, smart differential pressure transducers, ultra low range turbidimeters, pH process analyzers, in-line chlorine analyzers, conductivity analyzers, process transmitters, sampling pumps, along with pressure gauges, rotameters, and float switches were among the more than 130 field devices procured and commissioned by Hinz. Some of the different plant systems controlled included: automatic and manual rotation of lead and lag pump, RO system – flush sequence, safe shut down sequence, precise control of acids, ferric chloride, flocculants and antiscalants.

The PLCs used were Allen Bradley SCL5/05 while the SCADA software was RSViewSE by Rockwell

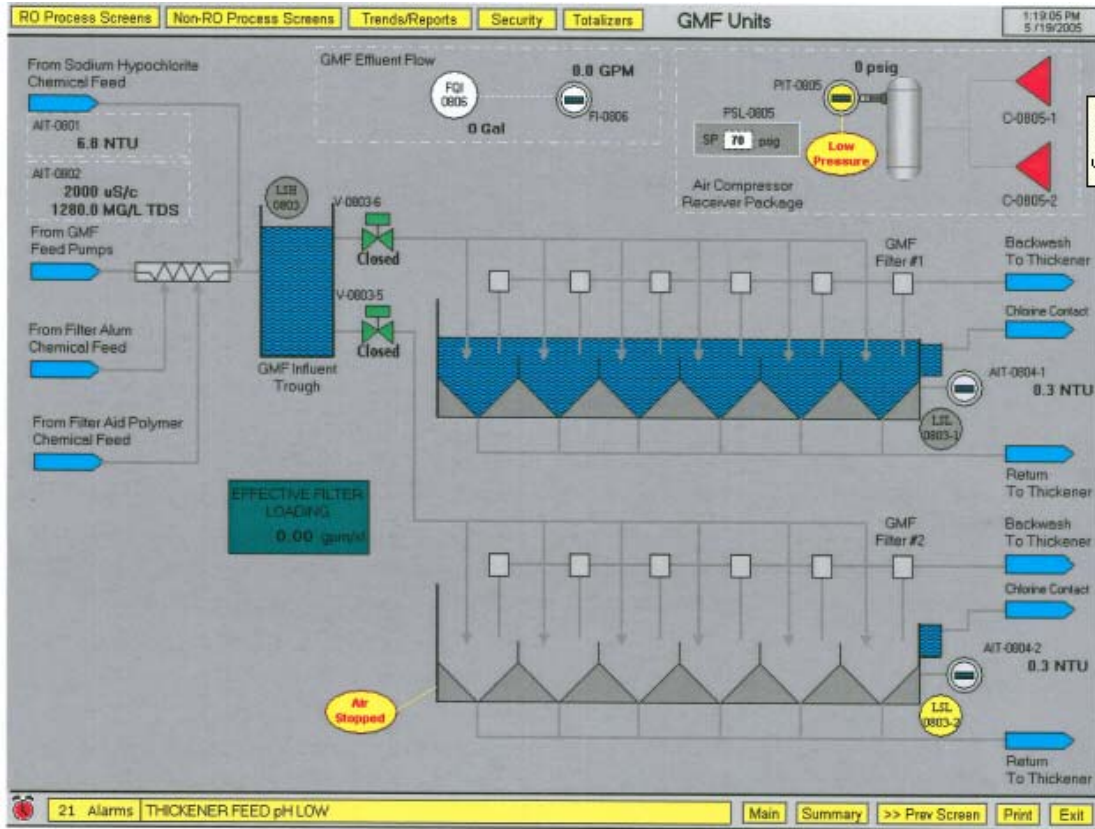
Automation. The electrical panels had networked PLCs communicating with remote I/O racks, touch screen operator terminals and more than 300 I/O points. Ethernet communications over the fiber optic network were used for control of systems in the remote areas of the plant. A set of laptop computers are configured to access SCADA and annunciate alarm remotely from the Internet.

Dedicated server class computers were used for historical trending purposes as well as a file repository for reports. Archived data from the historical server was used to generate daily, weekly and monthly reports of the key performance indicators. A fully redundant pair of control stations were used for the I/O servers and HMI application.



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System Specifications:

- **I/O Counts:** Analog Inputs: 72; Analog Inputs:21; Discrete Inputs: 159; Discrete Outputs:68
- **PLC:** A-B SLC 5/05; Communication protocols used: Industrial Ethernet, DH+
- **Computer Nodes** – Historian/SQL, Primary Operator Station, Backup Operator Station, Touch Screen Operator Panel on the plant floor, Transfer Pump Station View Node, Laptops for public access to SCADA, two network printers. HMI screens: 32
- **Process instrumentation:** Electromagnetic flow meters: 4, Positive displacement flow meter/; 1; Open channel ultrasonic level monitor: 1; Rotameters: 17; Pressure transmitters: 4; Level switches: 3; Pressure switches: 10; Pressure gauges: 17; Magnetic level transmitter: 7; Turbidity analyzers: 10; pH analyzers: 6; Chlorine analyzers: 2; Conductivity analyzers: 5; Temperature gauges: 4

For further information or to contact a Hinz office near you, please check our website at:

www.hinz.com