



A Rockwell Automation Company

City of San Diego Miramar Treatment Plant Upgrade

The Client:

Built originally in 1962, the Miramar Water Treatment Plant is located in the northeast part of the City of San Diego and is the sole source of drinking water for nearly half a million residents. By the end of the 20th century the plant facilities, structures, and operating

equipment were approaching the end of their life spans and the population had grown so rapidly that the plant required a major upgrade.

The Requirement:

The goal was to increase capacity from 140 MGD to 215MGD and to meet current the EPA Safe Drinking Water Act regulations along with California's water quality standards. This was achieved by adding new high efficiency flash mix splitter boxes, flocculation/sedimentation basins, de-aeration systems, ozonation

facilities, high rate media filters, a chlorination facility and a series of chemical storage with chemical delivery systems. The existing flocculation and sedimentation system was modified as part of the complete upgrade.

The Design Solution:

Hinz offered a comprehensive solution using process and instrumentation diagrams to develop the process measurement and control needs. Equipment components were carefully selected from leading vendors to provide the best value for the client that fulfilled the project specifications. The scope of supply for Hinz included analytical instruments and process instruments along with PLCs, HMIs, and various electrical enclosures for the Ethernet-based SCADA system.

Analytical instruments were used to measure total organic carbon (TOC), Chlorine concentration, turbidity/particle count, and free hydrogen concentration (pH). The instruments were located in various locations throughout the facility. All analytical tools had bus communication capability enabling direct connection to the SCADA system. Particle counters were linked to computers in the control room via serial RS485 Modbus protocol.

Hinz also procured the non-analytical process measurement equipment used for corrosive and high

density chemicals such as acids, coagulants, flocculants, and disinfectants including: high precision transit-time ultrasonic flow meters, level gages, flow meters, rotameters, thermal flow switches, float switches, pressure gauges, pressure transmitters, pressure switches, and more than 1500 control lights, switches, potentiometers and push buttons.

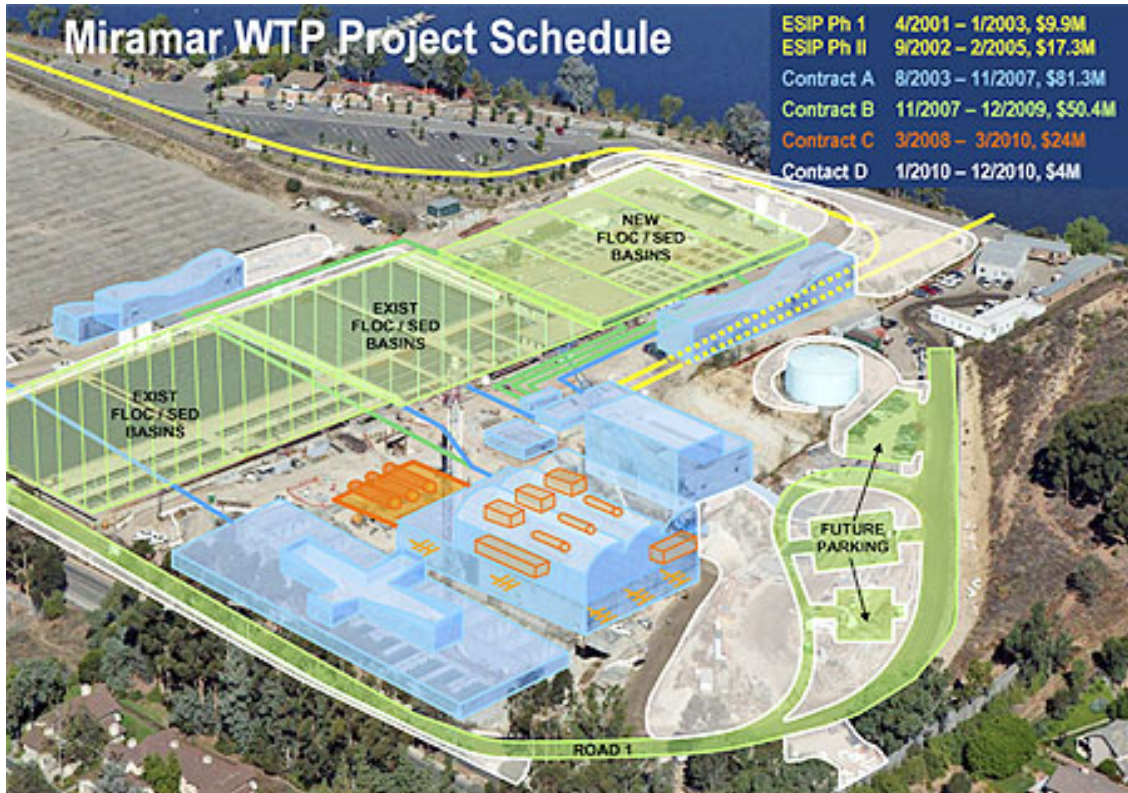
The PLCs and remote PLC I/O were housed in 9 enclosures while the local equipment required 64 enclosures. Fiber optic connections were used to link remote I/O racks with individual PLCs and SCADA computers. More than 700 drawings were created to detail field wiring and panel fabrication.

Data and system control is handled by a distributed network of PLCs and remote I/O cards. Four (4) Quantum controllers with 246 card slots controlled PLC processor inputs and outputs exceeding 5700.



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System Specifications:

- **Flow meters** (Electromagnetic, Ultrasonic, Insertion Venturi, Rotameters) – 75; Thermal flow switches – 19; Ultrasonic level monitors – 48, Float switches – 62; Pressure gauges – 76; Pressure transmitters – 28; Pressure switches – 62, Temperature sensors – 4; Chlorine analyzers – 4; Low range turbidimeters – 27; Particle counters – 15; pH analyzers – 5; TOC analyzers – 2; Electrical cabinets – 73
- **PLC Type** – Modicon Quantum series; Total slots installed – 246; Processor cards – 4
- **Analog Inputs** – 746, Analog Outputs - 202; Discrete Inputs – 3106; Discrete Outputs – 1650
- **Communication** – Modbus serial and Modbus Ethernet, Ethernet TCP/IP

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

www.hinz.com