

Application Highlight:

Plating Plant Upgrade - Replacement of Two S7-317 with One CTI 2500-C400 Achieves 90% Improvement in Throughput

In Ningbo, China, a plating facility produces exhaust components for the global automotive manufacturing industry. Built in 2006, the plant includes a plating operation which applies nickel-chrome plating to the formed exhaust components.

Existing Control System Design

The original design of the plant used 200 plating containers serviced by 6 cranes to move the product through the plating process. The control system was based on two Siemens® S7-317 PLCs with WinCC which acted as master controllers for the process. These PLCs communicated, in turn, with S7-315 PLCs on each crane. Although the plant was designed for 3M pieces/yr, it had never exceeded 1.3M due to memory and performance limitations in the control system.



Proposed Control System Upgrade

To allow the plant to achieve its design capacity, CTI 2500 Series™ distributor Automation ApS proposed an upgrade of the S7-317 PLCs with a single CTI 2500-C400 processor and new APT-based control program. The upgrade also included a new iFIX HMI system and reorganization of the Profibus network used to control the cranes.

The main PLC gives orders to each crane, one instruction at a time, based on plating container status, product type, and crane availability. Because of the complexity of the calculation, it formerly took about 2 seconds to compute each move. With the 2500-C400, this time has been reduced to about 60msec.

Upgrade Result

The plant is running today with the new system, OptiGalv®, on CTI 2500-C400 PLC and iFIX. The Siemens® S7-315 PLC's remain to control the internal operation of each crane, but all other I/O for pumps, valves, motors, levels, and temperatures is controlled by the CTI processor over Profibus. Because of the higher speed and memory of the 2500-C400 (specifically the 2M capability for APT programs), the speed of the system has been substantially improved.

A further software optimization, planned for installation in August 2008, is expected to further increase the throughput to 3.3M pieces/yr. Using the 3M APT processor object now available from CTI, the system has good capability for continued process and speed improvements.



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