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FRONTLINE CASE STUDY

Multiple Small Time-Outs Add Up To Big Inefficiency

Overview

Systems Interface, Inc., provides clients with state-of-the-art product solutions engineered from an extensive collection of industry experience. They received a trouble-call from a client concerning slow performance of a complicated manufacturing process that threatened the entire production process.

The Challenge

During the manufacturing process, cranes pick material off of a conveyor then lower the product into a series of chemical baths. Three PLCs control the active cranes with two held in reserve for the backups. Plant personnel noticed that active cranes occasionally hesitated a few seconds before picking up the next part for treatment. The longer the system ran, the more frequent the delays. This resulted in an increase in cycle times and a decrease in total production.

Plant personnel spent hundreds of hours investigating the hesitation problem, but could not identify the root cause. They finally decided to call in Systems Interface, Inc.,

The FTE Solution

During their initial investigation, Systems Interface consultants learned that comprehensive inspections indicated that all hardware and software seemed to be in proper working order. Therefore, attention turned to the communication network.

Systems Interface consultants connected **Frontline Test Equipment's FTS4Control** industrial communication Data Highway Plus (DH+) analyzer to the network during routine production. They saw the crane hesitate while monitoring and capturing the network communications. A wealth of information was immediately available for evaluation.

A review of the capture file by Systems Interface and Frontline personnel revealed that Devices 036 and 037 never responded to commands sent by other devices on the network. Since the devices never appeared on the network, more than 200,000+ messages that were directed to those devices received no response. All messages directed to device 036 were retried three times. Each retry timed out before the system sent the next command. This situation overloaded the communications network and used valuable network throughput time. Once the communication culprit was exposed, the next step was to come up with a solution.

Based on the analysis of the DH+ gathered using **Frontline Test Equipment's FTS4Control**, the consultants from System Interface's and Frontline recommended not one, but three solutions:

- The first method required PLC logic changes to the Rockwell MSG instruction blocks.
- The second method called for installing a proper heartbeat logic timer based off an incrementing number to prevent a lockout
- The third method hard wired an output from the crane controller to inputs on the two devices commanding the cranes to use this as the lock out.

System Interface's use of FTS4Control as an industrial communications analyzer revealed the control network problem that had stubbornly evaded detection. Using the software's comprehensive **DH+ stats** and built-in **Frame Display** features FTS4Control exposed the core issue and gave the client clear insight to several real-time solutions.