

### AWARD-WINNING PROJECT SERVICES

Eastman Kodak worked with Optimization to help replace the warehouse control system at its distribution facility in Rochester, NY. Virtually all shipments from the facility were funneled through one sorting conveyor on the way to trailer trucks. Any downtime in the conveyor could cause catastrophic results, upstream and downstream. Optimization, working with Eastman Kodak's engineers, was asked to find and implement a replacement sorter control system. Though fast and efficient, the existing control system required rebooting to escape communication problems and database corruption. Also, the new system needed a flexible relational database that would reduce downtime by eliminating the need for daily data initialization.

### Overcoming challenges

The most critical requirement of the system was to scan the I/O at least every 10 ms in order to capture every pulse from the conveyor tracking encoder. Missing a pulse meant a tracking error of one inch, and a few inches of tracking error could mean crushed boxes at the diverters. Even after scanning all of the tracking codes and performing database reads and writes, total program execution times were routinely on the order of one ms. A bench style hardware counter was used to compare the actual pulse counts with the PC pulse counts and the two were found to be identical.

### Technology selection

The technology selected for this project leveraged PC-based control software, which turned out to be very robust, flexible, and extensible and a perfect match for this high speed conveyance/sorting operation.



### Control Functions - Every Second

- Induct a variable-sized carton
- Read, track and continuously confirm proper carton length
- Read the serial bar-code scanner
- Send the bar code to the Oracle-based ERP system and retrieve lane assignment information in return
- Read and verify the weight from a scale
- Read tracking pulses every 10 milliseconds
- Track the carton to the appropriate lane
- Divert the carton to the appropriate lane
- Perform all tracking position updates, error checking, and divert confirmation logic
- Insert a tracking history record into the Oracle database



Operator Station on Conveyor System



Product Unload

Cartons on Conveyor

***Despite the challenges, Optimization was able to complete the project on time and budget and to the customer's complete satisfaction, and was named the "IT Project of the Year" through Eastman Kodak Company's Software Excellence Award process.***