

CenArk Controls, LLC

"Processes. Controlled."

Case 141203 - Abbreviated

Project: Multiple Pick and Place Replacements

Customer: Multibillion dollar container manufacturer

Location: North America, Europe and Australia

Challenge: Lost product (rejects) and down time due to obsolete material handling equipment.

Overview:

The client is a multi-national manufacturer for the container industry. Over the last several decades they have invested millions of dollars in the design and implementation of automated material handling systems. However, over time these machines have aged and began to lose efficiency due to wear and the increased need for maintenance.

Request:

Quote replacing multiple material pick and place stations with servo driven four-axis motion. Previous received quotes ranged from \$85,000 (USD) to \$112,000 (USD) for each system.

Discovery:

Upon reviewing the current pick and place systems it was discovered that the current methodology was multiple pneumatics cylinders, operated on a timed logic. No location sensing had been designed in to the system. The design and construction of the current systems was sound as well as positionally accurate. Unfortunately, with the older control system and the machine being unable to detect the actual position of the pick and place during operation the machine cycle time was reduced to accommodate variations in air pressure and timing. The facility was all pneumatic.

Customer Perceived Issue:

- Current systems were obsolete and needed to be upgraded to the state of the art technology.
- The current system components were no longer in production, requiring customer orders at a premium and extended lead times.
- A servo-controlled system with a complete upgrade of the control system was expected.
- Anticipated 2014 expenditure to correct the issue corporate wide was more than \$7,000,000 with a lead time of six (6) months.

Actual Issue:

- The current pick and place systems did not have positional reporting ability, slowing cycle time and creating defects from dropped material.
- The current components were obsolete.
- The current machine control system was very large and complex. Replacement would create integrations and operational issues not presented by the previous quotations.
- The Client had no experience in servo controls or robotics.

Office: 501-314-0840

Fax: 501-859-8381

Mobile: 501-554-4465

service@cenarkcontrols.com

www.cenarkcontrols.com



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Solution:

A pneumatic plug and play system was designed to replace the current system. The pneumatics were rod aligned cylinders with proximity sensors (SMC) controlled by a simple transistor type PLR (Siemens Logo). The PLR communicated with the existing machine control system through two (2) discrete output (READY, DONE) and two (2) discrete inputs (SAFE, START).

Results:

- Final replacement cost per station was less than \$10,000 (USD).
- Installation time was reduced to 8 hours per station.
- Machine cycle time improved by 18%. Current limitation is the blow mold process upstream to the pick and place system.
- Defects created by dropped material was reduced by 91%
- Project total savings more than \$5,500,000.
- The Client's staff required no additional training or service equipment.



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