

North American Manufacturer of Away-from-Home Tissue Products

Modernizing warehouse operations increases reliability, flexibility and productivity.

About the manufacturer:

This Retrotech customer is one of the largest producers of Away-from-Home tissue products in North America. Away-from-Home tissue products include napkins, bath tissues, center feed towels, dispenser napkins, dispensers, facial tissues, hand roll towels, jumbo bath towels, kitchen towels, multifold towels, single fold towels, soaps, table covers and wipers.

Business Challenges:

- ▶ The Eaton-Kenway ASRMs contained obsolete, proprietary and hard-to-maintain hardware and software.
- ▶ The existing controls lacked the desired maintenance tools and technology causing unscheduled and excessive downtime.
- ▶ The ASRMs were exhibiting excessive errors with the majority of them due to positioning faults. The errors were so numerous that the manufacturer employed dedicated "Crane Chasers" to keep the ASRMs running.
- ▶ Repairs to the ASRMs were expensive and component replacement parts were difficult to obtain. Limited vendors had the capability to perform maintenance.

Highlights of the Project:

The ASRS consisted of nine aisles, aisles #1 - #4 were controlled by Eaton-Kenway-KE8 controllers and aisles #5 - #9 by Eaton-Kenway Century CSUL controllers. The four-aisle portion of the system was originally installed in 1987 and stored pallets single deep in levels 1 and 2 and double deep in levels 3 through 9 for a total of 70 bays. The remaining five-aisle portion of the system was originally installed in 1994 and stored pallets single deep in levels 1 and 2 and double deep in levels 3 through 9 for a total of 77 bays. The ASRMs communicated to a Box Works WCS over power line serial communication links.

In response to the customer's workscope requirements to upgrade obsolete, proprietary and malfunctioning equipment, Retrotech proposed the following for each ASRM:

- Replace the ASRM's microprocessor controller and I/O with a standard Allen-Bradley CompactLogix PLC controller and I/O.
- Replace the horizontal and vertical positioning systems with new SICK DME 5000 laser absolute positioning systems.
- Replace the shuttle positioning systems with new absolute encoder-based positioning systems.
- Replace the serial power line modems with new Infrared (IR) communication units on Ethernet.
- Add a new Allen-Bradley PanelView 600 on-board operator display for all ASRMs.
- Add a new Allen-Bradley PanelView 600 off-board operator display for all ASRMs.
- Add a remote access modem for remote support capabilities.

The advanced age of ASRMs #1 - #4 required extra upgrades. The old drives were replaced with Allen-Bradley PowerFlex 40 VF drives. The obsolete ultrasonic full bin sensors were exchanged for newer models that detect the near and far pallets. The worn out NEMA Size 2, 2-speed contactors and the reversing motor starters for the vertical motors were also replaced.

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Results:

- ▶ The new PLC controller allows the manufacturer to maintain the control system internally and includes many newly enhanced diagnostic features that reduce maintenance time.
- ▶ The new positioning system eliminated positioning errors. The absolute positioning systems compensate for wheel wear, cable stretch and do not need to be "homed" or use "sync bars" to maintain position. In addition, since the positioning systems were placed on an I/O network, diagnostics are available to the control system to monitor each unit's health and operation.
- ▶ The new communication system provides greater bandwidth for faster and more reliable communications, as well as on-line monitoring while the ASRM is in automatic mode and real-time status with diagnostics displays.
- ▶ The on-board and off-board displays provide status information for the ASRM, including I/O status to the device level. The off-board display includes a semi-automatic feature that allows operators to command the ASRM to pick or deposit loads from the aisle.
- ▶ The upgraded control system dramatically reduced downtime, improved the mean time between failures and lowered the cost to maintain the ASRMs by using off-the-shelf, non-proprietary, state-of-the-art industrial components.
- ▶ Removing the obsolete components extended the control system's life.
- ▶ The error rate of the ASRMs was reduced due to new components, better positioning, and communications upgrades. "Crane Chasers" can now concentrate on their normal duties.
- ▶ Productivity improved because the new positioning systems are faster and more accurate.

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