

The Coca-Cola Company

Retrotech modernized the Automated Storage and Retrieval System (ASRS) at the Coca-Cola Harahan plant to improve performance.



The Coca-Cola Company Harahan, Louisiana

About The Coca-Cola Company:

With a portfolio of over 3,000 beverage products, in over 200 countries, The Coca-Cola Company holds the enviable position as a global leader of the thriving beverage industry. The Louisiana Coca-Cola Bottling Company operates the bottling plant in Harahan, Louisiana. This \$90 million facility was built in 1994 and is one of the most modern Coca-Cola plants in North America. The material handling system at Harahan was installed in 1998 and substantially upgraded in late 2005.

Business Challenges:

- ▶ The main goals of modernizing the facility were to reduce product damage, extend the life of the equipment and improve the performance of the ASRS equipment.
- ▶ Quality control of pallet loads and their stability entering the ASRS varied, some loads caused spills and subsequent wear on machine structure/components of the Storage Retrieval Machines (SRM), rails and floors.
- ▶ The brakes were locking up during e-stop conditions causing skidding, rail wear and flat spots on the wheels.
- ▶ Inaccurate positioning by the SRM was causing excessive product damage and spills that were negatively affecting the system mechanics.
- ▶ The SRMs were unreliable and not functioning as intended, which was actually reducing ASRS throughput.
- ▶ The SRM onboard electronics and control hardware were approaching obsolescence. The single board processor design and custom I/O was an OEM exclusive that was becoming more difficult to maintain. Upgrades were difficult and expensive because only one vendor had the capability to perform them.

Highlights of the Project:

The outdated SR machines at Harahan were showing wear in many of the basic mechanical systems and were at a point that needed to be addressed with urgency. Coca-Cola was concerned that there would be substantial downtime in the near future that would result from the failure of these systems.

Coca-Cola contacted Retrotech, Inc. to upgrade their four-aisle, unit-load ASRS system. The unit loads were H-K Systems 4000C Turbo models, with double-deep shuttles on a single mast, cantilever carriage design. The SR machines utilized a DOS-based MADC interface system for configuration of aisle and machine parameters and bin-map functions. The MADC system was not a true Windows compliant application and did not support the use of a mouse or other Windows features. Coca-Cola used two separate MADC PCs to support the four-aisle system. Communication was the typical 9600-baud, half duplex serial RS232 with HK's proprietary protocol.

To reduce the interference with the site's normal operations Retrotech upgraded one SR crane and aisle at a time. The following enhancements were made on all four cranes/aisles:

- The worn out floor rail was replaced (325 ft. per aisle).
- The worn out drive and idler wheels were replaced and the braking control was improved.
- The existing power bar was replaced with new Aero-Motiv Pow-R-Feed continuous-copper power bar system. The new robust bars are reinforced with guarding to prevent damage from falling product.
- New state-of-the-art, non-proprietary controls were installed in the existing control enclosure.
- A PanelView Plus 600 color screen was added to the enclosure for easy operator interface.

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- The existing horizontal and vertical motor assemblies were replaced with Allen-Bradley Powerflex 700 VF drives and SEW Eurodrive AC motors.
- The horizontal and vertical positioning systems were upgraded with SICK Optics DME5000 laser units.
- The shuttle was replaced with a spare unit, remanufactured at Retrotech.
- The shuttle motor was replaced with an Allen-Bradley Powerflex 40 AC drives and SEW Eurodrive motor.
- The communications over power bar was replaced with SICK Optics ISD-300 infrared data transmission units using Ethernet communications.

In addition to the changes made to the cranes, new end-of-aisle controls were provided, replacing the MADC translators with Allen-Bradley COMPACTLOGIX PLC's and PanelView Plus 1000 color touch screens for operator interface.

Results:

- ▶ The new motor drives are easier and less expensive to support. They have user-friendly features such as keyless shaft locking as well as longer component life.
- ▶ The upgraded power rails are a more robust style, with totally enclosed construction. This system is far more tolerant of impact by falling debris and is safer due to the closed design.
- ▶ The PLC upgrades now take full advantage of the DME positioning system and have substantially improved accuracy of operations.
- ▶ The improved braking control during e-stop conditions has eliminated flat spots from developing on the wheels.
- ▶ Combined with a spill elimination program and regular maintenance, Coca-Cola will experience a significant increase in rail life and machine uptime.
- ▶ ASRS performance improved because the SRMs are now more reliable, more accurate, and are running smoothly, with less downtime.
- ▶ Management and maintenance groups spend less time solving problems, thereby increasing productivity and decreasing employee stress.

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