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How a Fortune 100 CPG Firm Replaced 270 VSDs

A consumer packaged goods manufacturer cut downtime, standardized program logic and more by replacing obsolete distribution-center variable-speed drives.

From Polytron

When the electrical technical engineer responsible for technical support and operations at a Fortune 100 consumer packaged goods (CPG} manufacturing distribution center learned that the variable-speed drives (VSDs) installed across the entire distribution center soon would be obsolete, he knew he needed to act fast.

Unfortunately, the manufacturer's drives installed less than seven years prior were moving to the end of their life cycle in manufacture and support.

Because the manufacturer recently had implemented the large capital project to reconfigure its distribution center with more than 270 of the VSDs, the company was averse to another large capital outlay. However, the distribution center provides consumer products to most of its commercial and residential customers across the northeastern United States.

With no viable replacement from the supplier, the lead engineer was left to determine how he would find a long-term solution for replacing all VSDs.

The CPG manufacturer had a vested interest in continuing with the supplier's products, so Polytron worked with the supplier and a local electrical supplier to design a distributed drive package that would be a feasible solution for the distribution center's conveying network.

Long-Term Sustainability Plan

To manage cost, the design would need to be in the existing distributed-drive configuration with the drive mounted on the side of the conveyors to avoid rewiring all of the power, controls and communications to devices.

A new design called "Drive-in-a-Box" was created to mount on the side of the conveyor and deliver reasonable life expectancy. The new drive provided the similar programming nomenclature as the previous VSDs for efficiency of the design and ease of software updates.

Additional design criteria included an update of the distribution center's industrial control network configuration to upgrade to current manufacturer standards. Polytron updated the existing code to simplify the programming structure for easier troubleshooting and to maximize drive functionality.

Within three years, almost 270 drives had been replaced in the distribution center.

Installation for conveyor sections were broken down to one-week increments from start to finish. This used an alternate product path flow to prevent shutting down converting equipment.

The spare VSDs were stockpiled to use as replacements if needed across the execution of the project timeline.

2020 Unexpected Project Challenge

When the COVID-19 pandemic started, the CPG manufacturer and the Polytron team abided by CDC guidelines and postponed the installation on the 20-30 remaining drives.

Fortunately, with the prior upgrades, the manufacturer had a large stockpile of the previous drives to replace any failed drives until upgrades were complete.

The stockpile lowered the risk associated with drives going down and better positioned the manufacturer to meet the increased CPG demand the pandemic caused.

Successful Implementation

The lead engineer was heavily engaged and committed to replacing the drives, and he was confident the system integrator's team would implement the plan successfully. He also was confident the project was at an appropriate level of capitalization and was comfortable handing over the project to a new department resource as he retired.

The new electrical technical engineer worked with Polytron to install the drives successfully. It was important to take advantage of the programming effort to simplify the program structure where appropriate for easier troubleshooting and drive functionality when replacing the drives.

The distribution center's Ethernet controls network was updated along with the new drive installation. By the completion of the drive replacement project, risk of major downtime was reduced, the communication protocol was updated, and program logic was standardized.

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