

Case Study

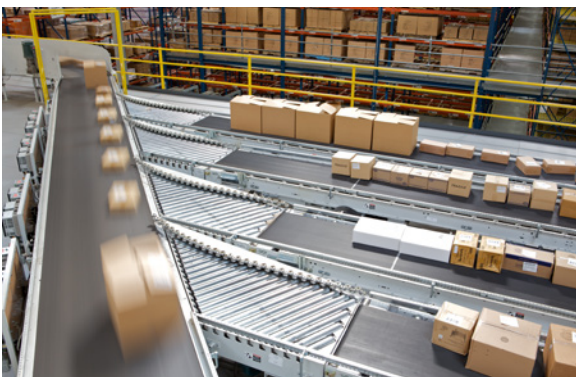
Carl Gelderman - Director of Engineering
Bill Kennedy - General Manager, Stockton DC
Steve Knight, Senior Vice President - Distribution
Cost Plus World Market, Stockton, California

A Showpiece of Engineering Efficiency and Smart Energy Use

Cost Plus, Inc. operates the retail store chain Cost Plus World Market. World Market is a leading specialty retailer of casual home living and entertaining products, operating more than 259 stores in the U.S.



Automatic Variable Speed Sorter



High Capacity Merge

The challenge

As a result of rapid growth and increased capacity demands, Cost Plus operated multiple distribution centers in Stockton, California. Many SKUs were picked and then shuttled between buildings, a time constraint and cost that continued to rise over the years. Cost Plus formulated a plan to consolidate its west coast distribution centers under one roof.

Our solution

Dematic engineered and implemented a high performance order fulfillment system including the integration of WCS software with the Cost Plus WMS. The system configuration optimizes the vertical cube space for picking, conveying, and sorting thus minimizing travel distances and energy use. The Dematic Dynamic Pallet Build software provides streamlined utilization of the distribution center's 25 shipping lanes, further increasing throughput and reducing labor. For Cost Plus, whose business is based on a continually shifting product SKU mix, this DC is the perfect machine to support the 153 stores in the western United States.

"Considering our ever evolving product line, this conveyor system has become a critical component of our success and helps position us for whatever challenges the future will bring."

Steve Knight,
Senior Vice President of Distribution

Single-Point System Control

The warehouse control system (WCS) software package features Dematic System Manager®. System Manager provides a single point of entry and a common graphical user interface, which includes Dematic SortDirector® sort control with capabilities for enhanced pallet building, central visualization with graphical system monitoring, and a service module with drill-down diagnostics to parts and equipment status. System Manager provides real-time reports which illustrate information relating to system alarms, events, and conditions. It also provides a web-enabled single point HMI for total system control, monitoring & diagnostics.



Dynamic Pallet Build



Dynamic Pallet Build Software

Integrated Sortation System (ISS)

The distribution center uses an advanced control system called Integrated Sortation System (ISS). ISS approaches the entire sortation system as a singular unit (pre-merge, merge, induction, sorter, take-away, and recirculation) providing optimized system operation from a single user interface. "The net result is the highest rate of continuous product flow, but at the lowest possible conveyor speeds," says Paul Condon with Dematic. "Rather than running at the same constant speed, the system monitors pick-line volume and ship-line congestion and automatically adjusts the conveyor and sorter speeds up or down to meet required throughput. This method of control provides a smooth continuous flow of product to the dock doors, and is a revolutionary departure from constant speed sortation systems."

Dynamic Pallet Build

The Dynamic Pallet Build software module within SortDirector, translates wave and carton information received from the Cost Plus WMS and provides the capability to make sortation decisions on the fly to achieve optimal throughput and enhanced pallet build opportunities at the shipping dock. Dynamic Pallet Build software has increased the capacity at the Stockton DC by 300 percent, from 1,800 cartons per hour with the old system to 5,500 cartons per hour.

Energy Reduction

"The Dematic Integrated Sortation System reduces energy consumption, as well as wear and tear on the mechanical components, by adjusting the speed of the sorter and merge feed based on throughput demand," Steve Knight, Senior Vice President of Distribution at Cost Plus, explains. "The sortation system ended up being a very green component of the facility."

The building was also designed with high-output fluorescent lighting with motion detectors and ambient light sensors. The DC uses lighting only when it is needed. The lights shut down when there is no activity in an area or when the ambient light is sufficient. "Between the energy efficient lighting and the Integrated Sortation System, we saved 30 percent on electricity and gas in the new site versus our previous multi-building configuration," continues Knight.

The Results

The new distribution center is much more efficient for Cost Plus. "Increased performance, increased agility and shortened replenishment cycles have been instrumental in allowing our inventory managers to improve warehouse turns," Knight explains. "Considering our ever evolving product line, the Dematic system has become a critical component of our success and helps position us for whatever challenges the future will bring."