

SOLUTIONS

Pyramid Director WES

Pyramid Controller Software Suite

INSTALLATION SCOPE

Pyramid Director WES integrates with WMS and the Pyramid Controller Series (control hardware and software) to supervise and direct MHE throughout the entire facility to manage a variety of processes:

- Wave Staging: RF terminals and marquee display boards
- Wave Release/Sequencing: 2 check points
- Wave Routing: 1 high-speed pop-up wheel sorter
- 3 Identical Packing Sorters: Each sorter consists of 16 induction workstations (2 arrays of 8 each); 1 bombay loop utilizing Pyramid's Loop Sort Controller; 430 chutes equipped with RF terminals and light-directed packing
- Value-Added Sorting: 2 pop-up wheel sorters
- Automatic Label Print/Apply: 2 lines utilizing Pyramid's Auto-Print/Apply Controller
- Outbound Sorting: 2 pop-up wheel sorters



Matthews
AUTOMATION



Women's Intimate Apparel Retailer

Pyramid Director WES interfaces with the Pyramid Controller Series (control hardware and software) to direct picking and routing of inventory to retail stores.

THE APPLICATION

To better support store replenishment, a leading women's intimate apparel retailer needed a powerful, flexible warehouse execution system (WES) installed and customized. The company also required new material handling equipment (MHE) with Pyramid Controller Series control hardware and software for a retrofit and upgrade at its sole existing store replenishment distribution center (DC), in the Midwest.

THE CHALLENGE

To retrofit and update a longstanding customer's existing DC to align core distribution processes (picking, packing and shipping) with:

1. Future volume growth projections.
2. Significant distribution shifts and trends within the business.
3. The need for supply chain performance improvements relative to throughput, accuracy, productivity and store deliveries.

THE SOLUTION

Pyramid Director WES and Pyramid Controller Software Suite of Control Hardware and Pre-Engineered Software for MHE.

KEY FUNCTIONAL HIGHLIGHTS

Picking

Using a Manhattan Associates' warehouse management system (WMS), unitized cases are picked and staged by wave in pallet form for processing. The WMS downloads the waves to Director WES for processing throughout all subsequent DC operations and communicates pallet/cases/articles by wave to WES.

Director WES manages all forward staging of the waves relative to wave status (such as staging or releasing) and inventory status/location by wave, pallet, case and article. The WES features integrated display board marquees that broadcast vital, up-to-the-second wave information to users to facilitate and coordinate their tasks.

Conveyance

The WES drives the case throw-on to package conveyor operation via radio frequency (RF) terminals and the controlled release of waves (one at a time, or in groups called "super-waves") from forward staging. This ensures that individual cases are scanned, tracked and controlled in order to maintain wave sequence integrity. As the inventory shifts from staged to released, the WES continuously updates the WMS about inventory status and location.

PYRAMID DIRECTOR WES



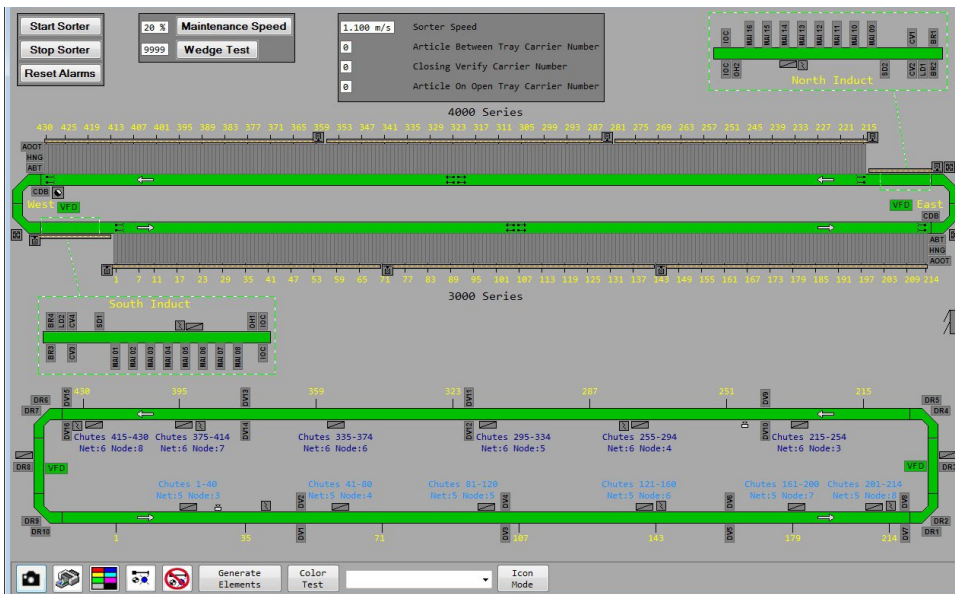
Director WES provides a comprehensive suite of simple, easy-to-use graphical screens for management and users, as well as a central control dashboard. The dashboard's powerful, intuitive and functionally complete dashboard tools support up-to-the-second status assessments of DC processes, wave execution, inventory status/location and MHE operations.

The Pyramid Director WES dashboard gives users complete, DC-wide visibility and control of inter-process routing of cases and totes. All screens are customized to provide:

1. Real-time visibility into all aspects of the DC's operational activity.
2. The ability to directly control the flow of inventory through the DC by wave, tote, case and more.

Views include:

- Process status performance metrics
- Exception reporting
- Inventory status and location
- MHE status and performance
- Communications status and statistics configurable security
- Parametric and diagnostic portals
- Up-to-the-minute information about vital aspects of the DC



Pyramid Director WES tracks and reports the status of all MHE equipment, and provides a color graphics interface for KPIs, diagnostics and alarm management/reporting.

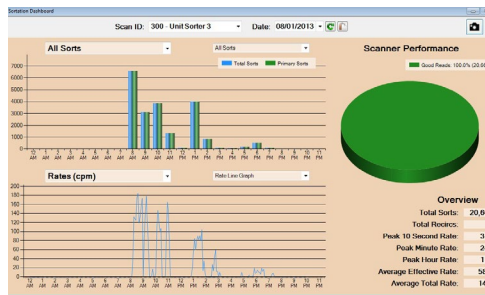
KEY FUNCTIONAL HIGHLIGHTS

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Sortation

The WES supervises case routing across a high-speed pop-up wheel sorter to three separate bombay packing sorters (or other destinations within the DC). Routing decisions are based on a highly-intelligent, complex sorting algorithm developed by Pyramid to meet the facility's requirements. Sorting logic incorporates many variables, including the optimal distribution of inventory based upon store demand profiles, wave processing restrictions, MHE status, processing capacity and more. As cases are routed to the packing sorter (or other points within the DC), inventory status and location is communicated to the WMS.

When the cases arrive at the packing sorter induction area, the WES directs the de-casing and induction of individual articles across 48 induction workstations spanning three bombay loop sorters. This process identifies both cases and article stock keeping units (SKUs) based on individual wave and store requirements. It simultaneously considers key variables, such as expected and unexpected, as well as overages and shortages. The WES updates the WMS about case and article movement into the sorting process, ensuring all inventory status and location is tracked and controlled.



The 'Sortation Log' provides a detailed view of transactions. The table includes columns for Transaction ID, Item Type, Quantity, Case No., Carton No., and various status indicators. It shows a list of items being sorted, including their item numbers and associated data.

The custom screen view displays 'Remaining 199' in a large green font. To the right, a 'Rating' of 15.8 is shown in a yellow box. Below this, 'Current Rate' is 0 and 'Average Rate' is 2.9. The 'Current Item' section shows Case Nbr: 00000003519819315368, Article Nbr: S01521998778, Barcode: 667532763089, and Color: TUTM. The 'Inductor Performance' section shows Single Trays: 2714, % Single Trays: 1.0, Double Trays: 8, % Double Trays: 0.0, and Cases Opened: 21.

Real-Time Reporting

Director WES tracks all sorter and scanner KPIs and provides up-to-the-minute statistical reporting in both graphical and tabular form.

Full Diagnostics

Director WES's diagnostics for WMS, PLCs and more record complete, user-friendly transaction logs with advanced filter/find capabilities.

Custom Screen Views

Pyramid's expert software engineers design custom screens to meet unique application requirements.

TOTAL ORDER WAVE CONTROL

Pyramid Director WES—not the WMS—directly supports all wave initiation, execution, administration, exception management and closure from the point of staging all the way through the pack-out process at the packing sorter.

This includes all levels of inventory accountability, including grouped and individual waves, pallet, case, shipping carton and individual article. In addition, the WES supports the continuous correlation of inventory in its raw state (the originally received case), all the way through its allocation life cycle to 1:n shipping cartons. This provides management with full supply chain life cycle visibility for source-to-store accountability.



Pyramid's Auto-Print/Apply Controller in action.

KEY FUNCTIONAL HIGHLIGHTS

(continued from page 3)

Operators using mobile RF terminals position shipping cartons for stores at the packing sorter chutes as directed by the WES. Controlled by the Pyramid Loop Sort Controller, articles are automatically identified on the bombay loop sorters and directed to required chutes. This is accomplished with Director WES's dynamic allocation algorithms, specifically developed to meet the company's unique store distribution requirements. Both Pyramid Director WES and the Pyramid Loop Sort Controller seamlessly integrate to supervise and direct bombay sorter control in real-time across all three sorters in parallel.

Packing

As articles are sorted to their respective chutes and shipping cartons, their arrival is confirmed and automatically credited to the store for subsequent shipment. The WES continuously monitors the disposition of both the chute and shipping carton, providing a visual indication of status via pack lights at the chutes. Functions available to the packers include compressing, dividing, closing and moving the carton. All instructions are supported by RF terminals.

The WES communicates all pack-out activity to the WMS, and tracks the closed shipping cartons through the balance of the DC's ship ready processes, such as value-added sortation, automatic compliance shipping label print/apply and outbound sortation. The WCS supervised value-added sortation process (using pop-up wheel sorters), automatically identifies and sorts shipping cartons based on pre-defined, criteria.

Label Print & Apply

From the value-added sortation process, shipping cartons are conveyed to the automatic, high-speed shipping label print/apply area. Director WCS supervises this operation in conjunction with Pyramid's Auto Print/Apply Controller. Open supply chain compliance labeling occurs automatically and on-the-fly, with high precision and accuracy at throughput rates of 100 cases per minute across two lines.



Pyramid Director WCS directs the article induction process.

KEY FUNCTIONAL HIGHLIGHTS

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Shipping

From the automatic print/apply process, shipping cartons route to outbound sortation. Here, the WES supervises sortation over pop-up wheel sorters to selectively cull shipping cartons with special processing requirements, including new store retention, anomaly conditions that prevent shipment, or other peculiarities that put a shipping carton on hold temporarily.

Key Performance Indicator (KPI) Monitoring

Director WES's human machine interface (HMI) has color graphics for diagnostics and KPI monitoring to support packing sorter management, including both inductions and chutes. To facilitate complete visibility into all aspects of MHE operation, packing sorter performance, status, alarms and more are monitored continuously by the WES and the Loop Sorter Controller. Reports include both real-time and cumulative statistics for proactive maintenance, maximum up-time across all related MHE, and prompt reporting, diagnosis and correction of any issues that may arise.

Occupied Packing Attribute Configuration Statistics													
Attribute Staffing Factor		High % Boundary					Low % Boundary						
Color Key		Resource Rich	Optimal	Minimum Load			Ampl						
Attr	Resource	Status	Special	Units	In	Out	In	Out	Scanned	Total	%	Eligible	
Name	Description			Cap	Wkstn	Conv	Minload	Maxload		In Bc	Staff	Cap	For
										Factor		Per	Storage
2D	Second Bag Orders	Retrieving	No	0	0	0	0	1	1	0/0	999	No	
3D	Third Bag Orders	Retrieving	No	18	5	0	0	0	5	200	58	No	
A	Antibagger Multi	Storing	No	0	0	0	0	0	0	0/0	999	Yes	
S	Sanitiser Orders	Storing	No	0	0	0	50	1	51	0	999	Yes	
CP	Clean up	Retrieving	No	0	0	0	0	0	0	0/0	999	No	
R	Rift Wrap	Storing	No	0	0	0	0	0	0	0	999	Yes	
B	Domestic Bag	Storing	No	0	0	0	0	0	0	0/0	999	Yes	
I	International	Storing	Yes	0	0	0	64	0	64	0	999	Yes	
LI	Last pick rate	Retrieving	No	0	0	0	0	0	0	0	0/0	0	No
M	Nonoutbag singles	Storing	No	0	0	0	29	0	29	0	999	Yes	
OB	Next bag orders	Retrieving	No	0	0	0	0	0	0	0	0/0	999	No
R	Regular	Storing	No	100	08	18	222	3	371	27	188	Yes	
U	Antibagger singles	Storing	No	10	5	0	3	0	11	0	88	Yes	
I	Sort to order rates	Storing	No	0	0	0	0	0	0	0/0	999	Yes	
P	Priority Orders	Storing	No	0	0	0	0	0	0	0/0	999	Yes	
3D	International Expedi	Storing	No	0	0	0	29	2	31	0	999	Yes	
Totals				148	100	55	400	11	578				

Print and Apply Visibility

Pyramid Director WES continuously monitors the entire print/apply operation.

Software and Controls for Maximum Distribution and Fulfillment Center Performance

Matthews Automation provides Warehouse Control System (WCS) and Warehouse Execution System (WES) solutions that perfectly synchronize a wide array of material handling systems including motor-driven roller (MDR) conveyor, case sorters including sliding shoe, automated storage and retrieval systems (ASRS) and more.

Fully integrated with your WMS or ERP, our software and controls optimize wave creation logic and paperless pick/sort systems such as pick-to-light and put walls. Along with order finishing system controls for automated bagging, boxing and packing slip/marketing collateral document insertion, Matthews empowers your distribution center's transformation into a successful omnichannel fulfillment operation.

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