We Optimize Your Supply Chain

DEMATIC

Sortation Solutions

EFFICIENT, ACCURATE PRODUCT FLOW FROM RECEIVING TO SHIPPING

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Increasing volumes, shorter processing times, and rising operational costs are driving the use case.

Every day, distribution centers and hubs worldwide have the task of sorting millions of different loads according to their destinations. Order fulfillment accounts for up to 90% of distribution center cost. It is often a labor-intensive task that requires a combination of good system design, excellent process management and the optimal interface between staff, technology, and information technology. Productivity, throughput, and accuracy are maximized with automated sorting systems.

Most automated intralogistics systems are designed to meet customer requirements for an average use of 10 to 15 years. What is desired are modern solutions that will still meet the requirements of tomorrow. This applies not only to new installations. The logistic environment, logistic processes and the IT landscape may also change in existing distribution centers.

Dematic designs and implements a comprehensive line of sorters and sortation systems designed for the diverse product handling and throughput requirements of today's warehousing and distribution centers. We pioneered the development of low, medium and high-rate systems with standardized controls and software that optimize warehouse operations.

Key Attributes:

- Low, mid, and high throughput configurations
- Productivity, efficiency, and accuracy
- Balanced, synchronized flow
- Improved operational control
- Modular design supports future reconfiguration
- Scalable controls architecture for future growth
- Operational effectiveness

The Sliding Shoe Sorter with parallel divert maximizes throughput rates.

Induction to the Sliding Shoe Sorter is optimized with the eight belt carton gapping conveyor.

The Split-Tray Sorter is an ideal solution for order consolidation applications.

Sorting Technology for Every Application

DESIGNED FOR HIGH PERFORMANCE

Activity profile analysis and solution development engineering creates the appropriate solution for your application.

APPLICATION EXPERIENCE

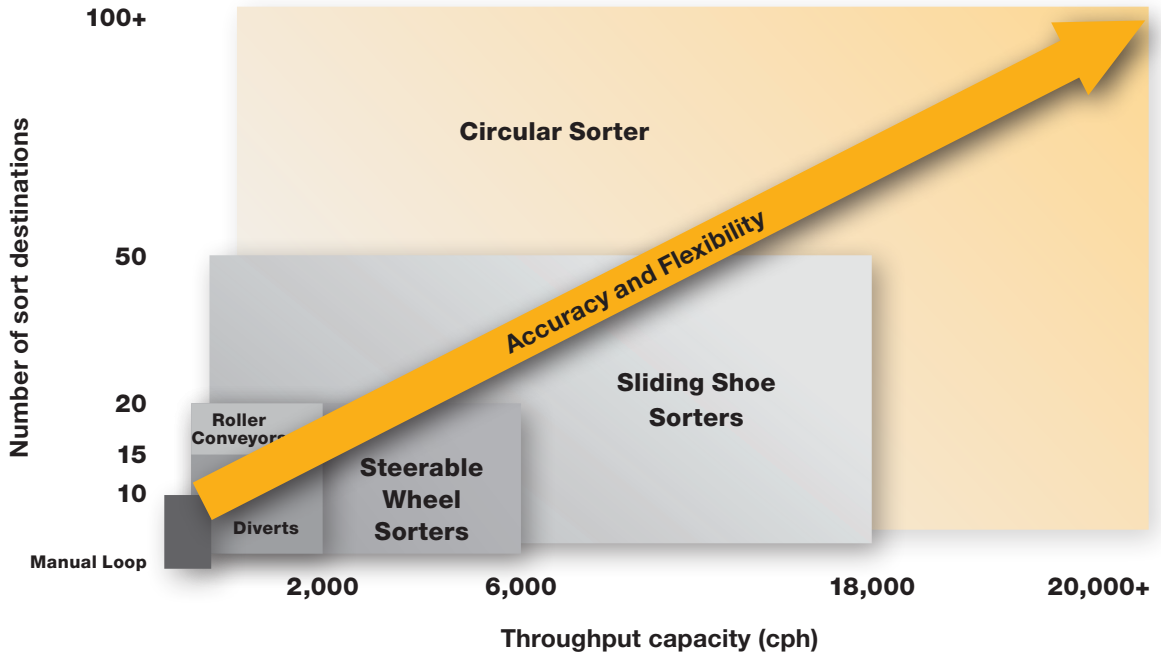
We have a team of solution architects who seek to understand the operational requirements of each application. Previous project experience enables us to focus on the development of system designs that meet and exceed your business goals. Dematic provides an analysis of your data to determine the ideal system layout to support the operational requirements of the distribution center, warehouse, or production operation.

Activity Profile Analysis Sample Questions:

- What are the system management objectives?
- How much throughput is required?
- What is the anticipated growth over the next five years?
- Experience seasonal fluctuations in throughput?
- How much floor space can be dedicated to this function?
- Is a reduction of human resources a factor?
- What execution software is appropriate?

The Steerable Wheel Sorter diverts order cartons to packing workstation.

Application Selection Guidelines



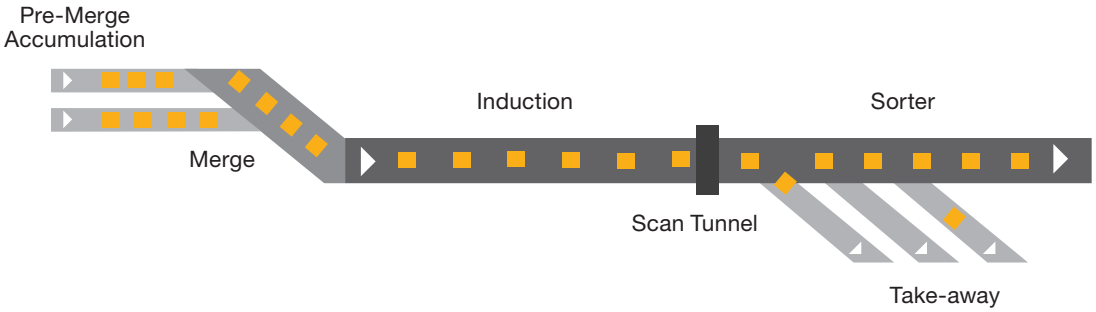
Sorting Systems

LINEAR AND CIRCULAR CONFIGURATIONS

LINEAR SORTATION

Linear systems consists of Steerable Wheel, Horizontal Belt, Narrow Belt, and Sliding Shoe Sorters and share these common elements:

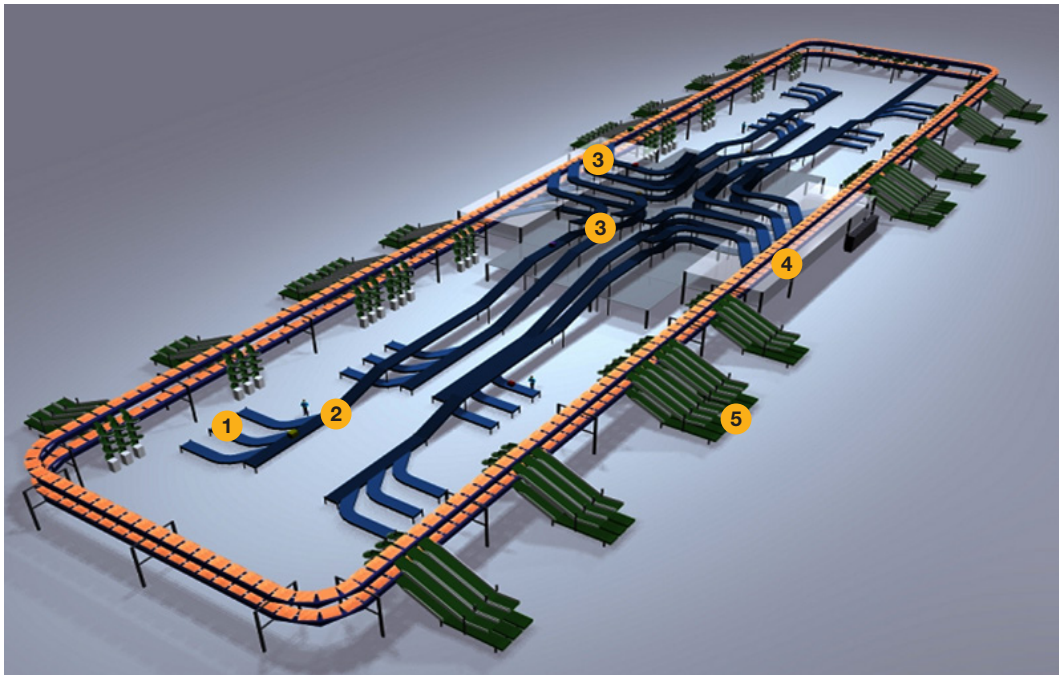
- **Merge:** Facilitates a steady flow of loads
- **Induction:** Creates minimum gaps between loads and maximizes the flow onto the sorter
- **Sorter:** Diverts items to one or two sides
- **Take-away:** Moves items away from the sorter
- **Controls:** Tracks items and ensures accurate diverting



CIRCULAR SORTATION

Circular systems consist of Split-Tray Sorters and Crossbelt Sorters and share these common elements:

1. **In-Feed:** Weighing, measuring, assigning
2. **Preparation:** Aligning, separating, merging
3. **Identification:** Recognition, defining of destination
4. **Distribution:** Onloading and throughput
5. **Discharge:** Buffer, chute & workstation



The operating strategies, the organization, and the sorter control are among the essential elements of the system.

Sortation Controls

MODULAR ARCHITECTURE SUPPORTS FUNCTION SPECIFIC STRATEGY

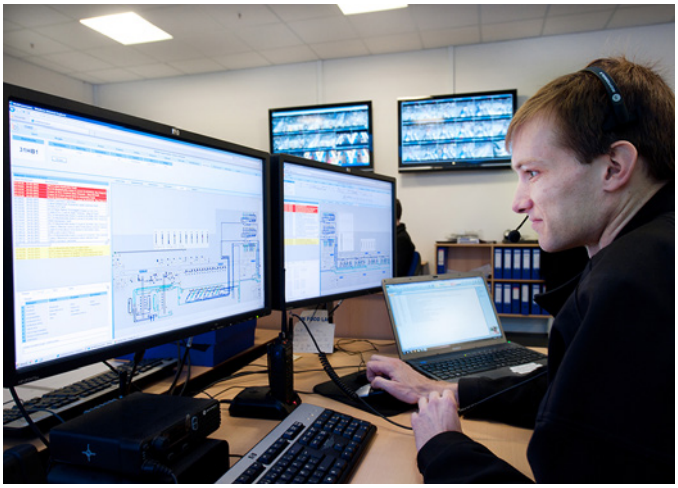
The Integrated Sort System Controller manages the entire sortation system including pre-merge accumulation, merge, induct, sort, and take-away. It is managed and controlled as one integrated machine with a single point user interface. The tasks performed include carton gapping, scanning, divert control, and accountability. Automatic speed control allows the entire system to speed up or slow down depending on the amount of activity on the system.

SORTER SOFTWARE

- Provides strategic transport & sortation of bar coded cartons/totes/bags/envelopes
- Manages & collects load IDs
- Sends sort/divert commands
- Reports actual delivery to the destination
- Visualization and reporting
- WMS downloads: wave, order, line
- Batch or discrete strategies
- Controls flow of order containers to pick zones
- Interface to scanners, print & apply labelers, scales, case sealers
- Sortation logic examples:
  - Standard
  - Geographic region
  - Truck delivery route sequence
  - Door per store
  - E-Commerce order
  - Click & collect

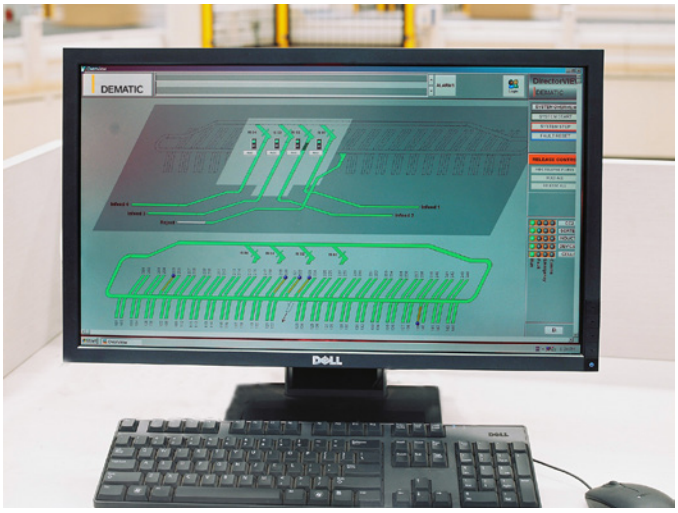
SORTER CONTROLLER

- Manages carton induction and tracking
- Carton gapping, scanning
- Translates carton ID into divert assignment
- Divert control, sort accountability
- Optional weighing & dimensioning
- PC platform with robust QNX real-time operating system
- Mid to high throughput
- High data transaction capacity
- Extremely stable
- Proven technology: 30 years, 2,500 systems
- Standardized: Easy tech support
- User Configurable:
  - Size of gap between cartons
  - Set window for carton gap
  - Set distance between electronic sensors
  - Set divert locations
  - Set speed: auto or fixed



The Dematic Operations Management Center provides supervisors with a comprehensive, real-time view of the sortation system.

Operations and maintenance staff use software with a current state view that includes actionable information.



Dematic iQ Optimize warehouse execution software provides real-time visibility.

Merge & Induction

OPTIMIZE INBOUND FLOW AND MAXIMIZE THROUGHPUT

Merge

High Rate Merge

The merge coordinates and monitors all infeed and funneling functions to ensure constant product flow. Cartons are consolidated and moved from the merge area onto the induction conveyor leading to the sorter.

Multiple lines are consolidated onto a single output conveyor.

- Modular design
- Minimum gap between slug release
- Mid to high rate versions
- Single output conveyor
- Automatic speed control

Induction

Single Line Induct

- Precise gapping
- High throughput
- Product stability and safety
- User interface and visualization
- 4, 6, or 8 gapping belts, variable frequency drives (VFD)
- Horizontal array sensors

Cartons accumulate and merge prior to induction to the sorter.

Batch picked items are manually inducted onto the Crossbelt Sorter.

Cases, bags, and envelopes can be automatically inducted onto the Crossbelt Sorter.

Split-Tray Sorter

FOR ORDER CONSOLIDATION APPLICATIONS

THE DESIGN

The Split-Tray Sorter is most often implemented as a batch pick and sort solution for order consolidation. It serves as a method that brings multiple pieces of a customer order to a single point. In addition, the Split-Tray Sorter can be used as a returns processing solution or can be configured as an outbound shipping sorter that handles small cartons, envelopes and bags. Sort destinations may represent retail stores, e-com orders, postal codes, parcel carriers, etc.

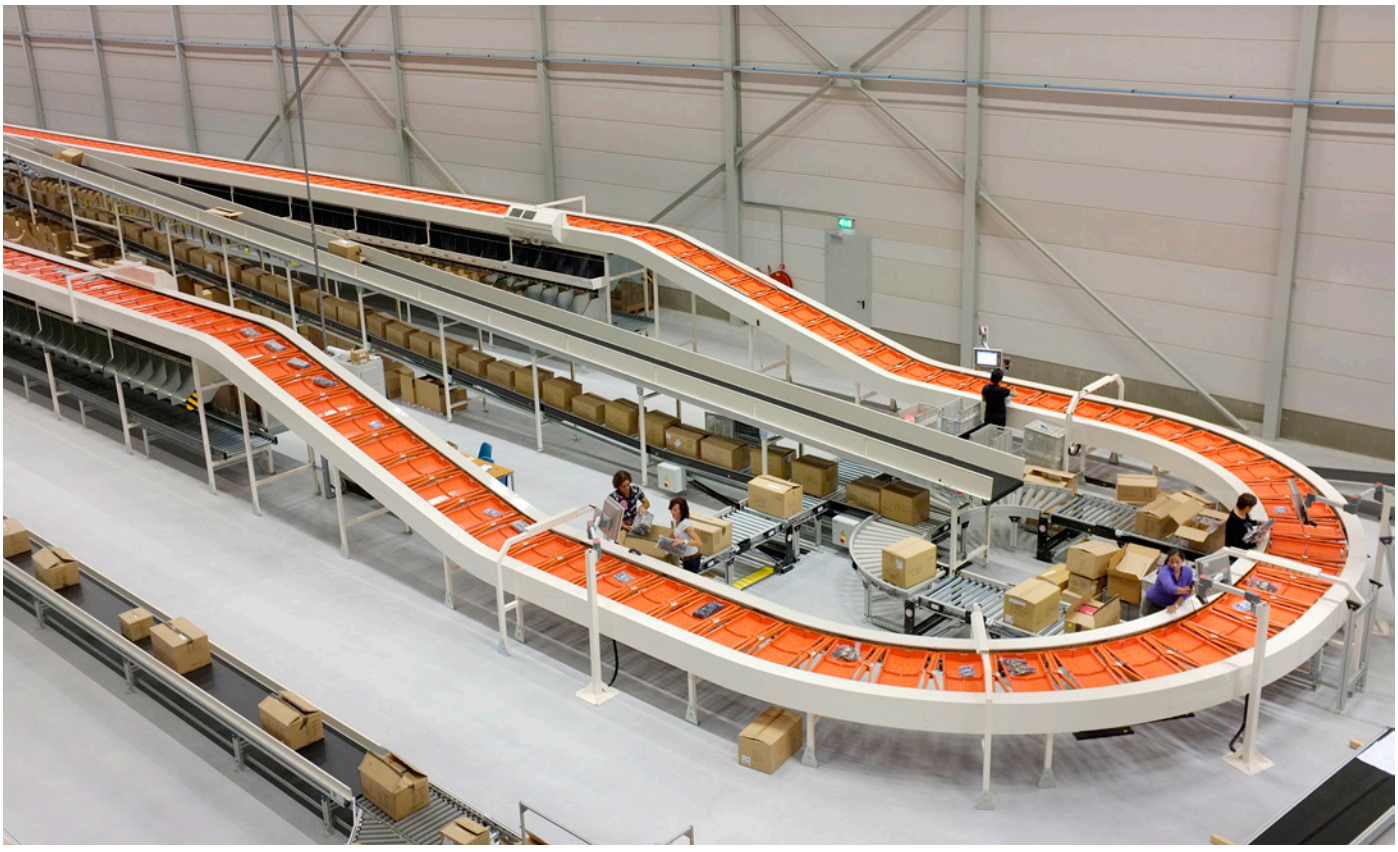
Key Attributes:

- Single item sorting
- Automatic scanning
- Automatic and manual in-feed
- Sort to tote or bag
- Bomb-bay/dual-tray technology
- Items for sorting: apparel, accessories, shoes, books, parcels
- Accommodates cylindrical items, unstable items, and items not in poly bags

OPERATIONAL FLEXIBILITY

The sorter delivers each item directly into a shipping container, usually a tote box or bag. The mechanical sort mechanism uses bomb-bay/split-tray release technology to off load. This direct-drop into the shipping container eliminates the need for additional touches and packing workstations, thereby minimizing the amount of labor required in the distribution center. Furthermore, the direct sort method supports ultra-high order accuracy.

The compact sorter footprint minimizes the use of floor space. The 180 degree tight-turn configuration is ideal for applications where warehouse floor space is limited. The Split-Tray Sorter is designed to accommodate elevation changes. Sort points can be elevated on the circular sorting loop to support the direct-drop to shipping container configuration, while the induction workstations can be mounted at floor level omitting the need for operator platforms.



The Split-Tray Sorter implemented with workstations at floor level.

The Split-Tray Sorter enables high rate sorting of single items.

Apparel items are sorted into a plastic tote by the Split-Tray Sorter.

Crossbelt Sorter

FOR ORDER CONSOLIDATION, INTERLINK, CROSSDOCK & SHIPPING APPLICATIONS

THE DESIGN

Items to be sorted are tracked and controlled through the induction, transport, and off-load process with precision. The items are sent to different destinations according to the business rules established for each application. The bar code on each item is scanned — a "look up" table in the Dematic iQ software is referenced to determine off-load location. Alternatively, the sort controller can directly link to a host system for real-time destination confirmation.

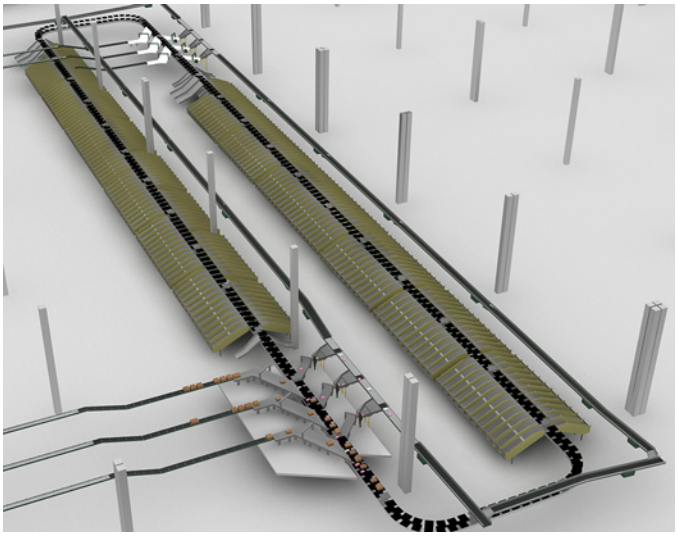
APPLICATIONS

- **Batch Pick & Sort:** To maximize productivity, items for multiple orders are grouped and picked in a batch, typically hundreds of orders in a batch. The Crossbelt Sorter is used to sort the batched picked items into individual orders.
- **Interlink:** Various processes in an operation are connected via use of the Crossbelt Sorter. This may include linking high density storage with pick/pack stations and shipping or linking put-away stations with high density storage.
- **Crossdock:** For flow through operations that receive and ship only, the Crossbelt Sorter serves as the platform to distribute and sort loads to the appropriate shipping doors.
- **Shipping:** The Crossbelt Sorter provides the sort function for the shipping sub-system. Typical sorting logic is associated with a geographical destination for the item or by shipping carrier. The items are sent to their destinations according to a correlation between a bar code on the load and a divert location in the system.

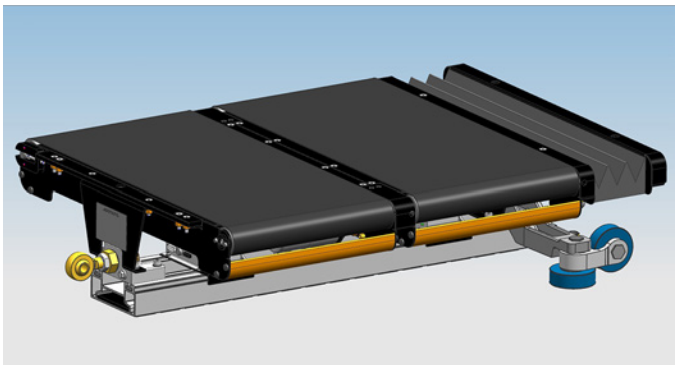
Key Attributes:

- Single item sorting
- Multiple configurations: single, dual, quad cell
- Two level option
- Positive two-sided sorting
- Quiet operation
- Precise & accurate off-loading
- Selectable off-load speed by item size, dimension & weight
- Cells designed for fast removal, thus shorter time to repair (removable in less than 5 minutes)
- Redundant design omits single points of failure

The Crossbelt Sorter diverts to packing chutes on two sides.



Multiple induction points are typical with many Crossbelt Sorter layouts.



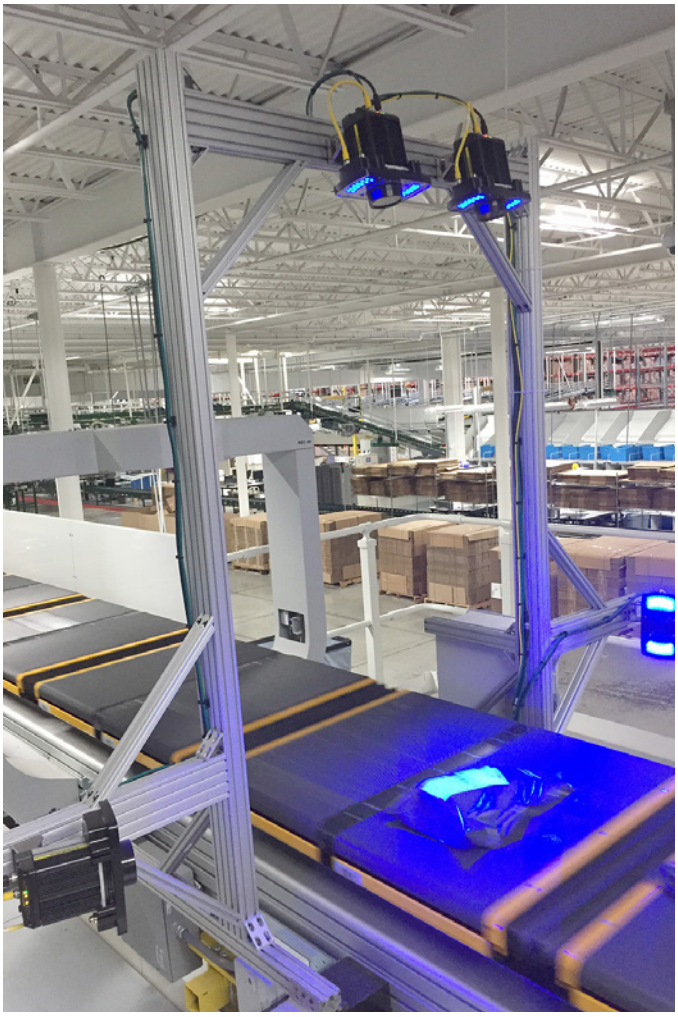
The Crossbelt Sorter can be configured with two load cells per carrier.

The Crossbelt Sorter functions as a shipping sorter.

The Crossbelt Sorter diverts apparel in poly bags to order consolidation chutes.

Apparel items in poly bags are sorted by a Crossbelt Sorter to chutes and then packed.

E-Commerce orders in bags sort to chutes.



The double-cell Crossbelt Sorter moves through a scan tunnel.

Narrow Belt Sorter

FOR ALL FUNCTIONAL AREAS OF THE WAREHOUSE

The Narrow Belt Sorter is the ideal mid-rate sorting and diverting system for maximizing the flow in and out of the functional areas of the warehouse. Typical applications include:

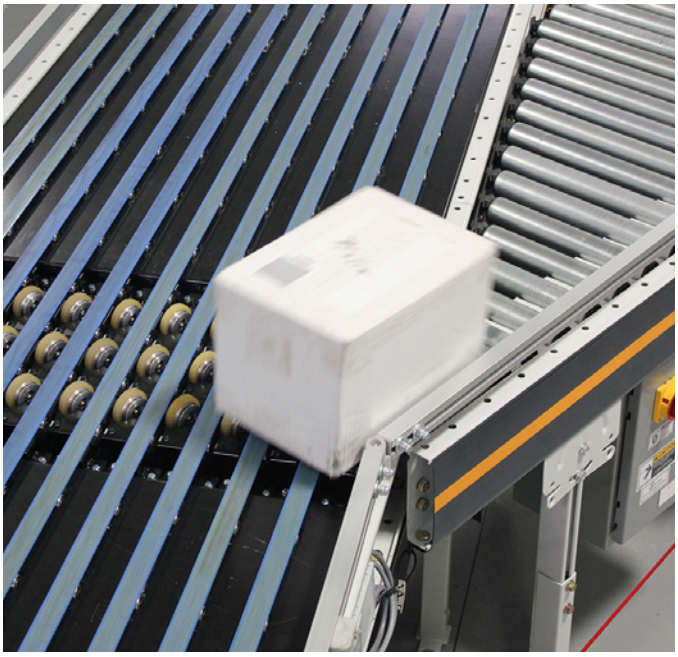
- Receiving sorter
- Inbound/outbound flow to automated storage system
- Inbound/outbound flow to work stations
- Zone route order fulfillment
- Shipping sorter

The Narrow Belt Sorter is a modular, scalable, and flexible technology that enables ease of reconfiguration and re-positioning to accommodate future operational changes and growth. It has a compact footprint and supports 30 and 90 degree diverting. The 90 degree diverts are bi-directional.

It is available with multiple belt versions. The 2 belt version is appropriate for all tote handling applications. The 4, 6, and 10 belt versions are designed to accommodate a wide variety of load types such as totes, trays, cartons, and bags.

Furthermore, the Narrow Belt Sorter is ideal for applications that require longer travel distances — these system can be configured to use a single Narrow Belt Sorter instead of multiple other sorters.

The two belt configuration accommodates totes.



The Narrow Belt Sorter has pop-up wheels to divert cartons.

The Narrow Belt Sorter supports a tote buffer sub-system.

Modular Conveyor System Sorter & Diverter

FOR LOW-TO-MID RATE APPLICATIONS

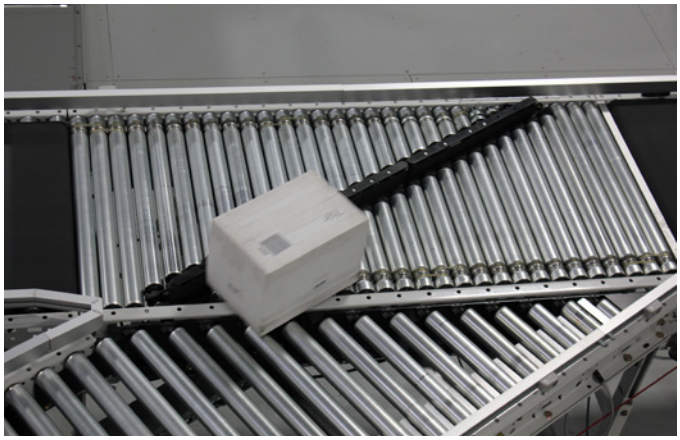
The Modular Conveyor System is an integrated package conveyor technology with a wide range of modules to create a highly efficient material flow configuration. For sorting functionality, the Modular Conveyor System suite of modules includes a Steerable Wheel Sorter and a Horizontal Belt Diverter.

The Steerable Wheel Sorter handles loads with a flat bottom surface. A series of sorter wheels rotate in synchronization to re-direct the load to a take-away conveyor.

The Horizontal Belt Diverter is used when a positive sort method is required. The horizontal belt mechanism becomes a physical guide to positively re-direct the load to a take-away conveyor.

The Steerable Wheel Sorter provides excellent low-to-mid range diverting.

All wheels rotate simultaneously to accomplish the sort.



The Horizontal Belt Diverter provides a positive method of diverting.

Sliding Shoe Sorter

FOR CROSSDOCKING, SHIPPING, AND INTRA-WAREHOUSE ROUTING

THE DESIGN

The linear Sliding Shoe Sorter has a positive diverting method to ensure smooth and accurate performance. Product is supported on tubes or slats, and a positive divert is performed to either side of the sorter by shoes which slide across the tubes or slats.

The Sliding Shoe Sorter diverts cases to shipping doors based on route, store, or carrier.

SORTER & SUB-SYSTEMS

The Sliding Shoe Sorter is a totally integrated sorting system that is engineered as one machine with a single point interface. Most importantly, it operates as one system. The sorting system is made up of multiple modules: pre-merge accumulation, merge, induct, sort, and take-away. For the user, this means a smooth and efficient carton flow between sub-systems, higher throughput rates at a slower speed, and a single control interface.

AUTOMATIC SPEED CONTROL

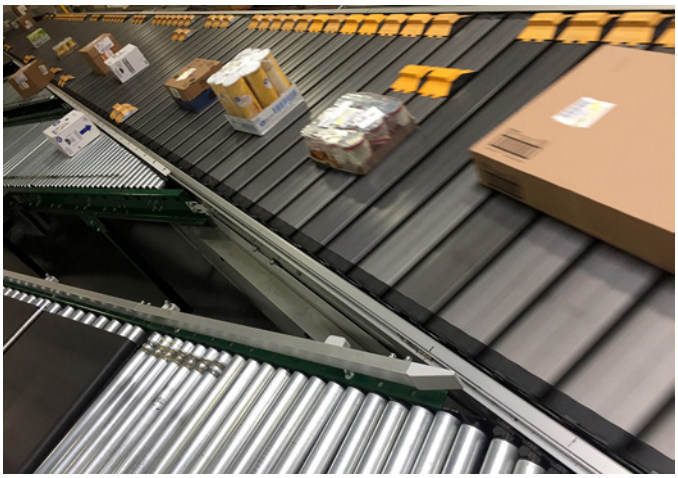
Automatic Speed Control, a patented control solution from Dematic, automatically adjusts the speed of the entire sortation system from merge through the sorter up to take-away conveyors to accommodate actual throughput volume. Automatically adjusting the sorter speed reduces energy consumption, wear on equipment, sound levels and maintenance requirements. Automatic Speed Control extends the life of the sorter and conveyors, improves package control, while reducing the operation cost.

The sorter automatically adjusts to the throughput demand as it changes throughout the day. If there is a surge or decline in flow, the sorter automatically speeds up or slows down to efficiently accommodate the variable rate.

The two-sided sorter is ideal for cross-docking applications.

The Sliding Shoe Sorter accommodates a door-per-store shipping operation.

The Sliding Shoe Sorter provides parallel diverting with minimal gaps between cartons to support higher sorting rates.



The Sliding Shoe Sorter is often applied as a shipping sorter.

Quick release slats minimize the time required to service the sorter.

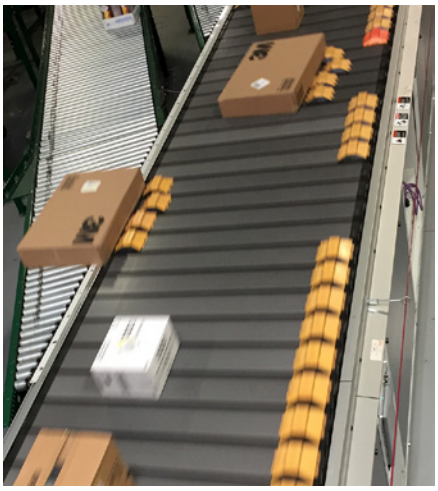
The Sliding Shoe Sorter is available with angle divert.

Take-Away

CONVEYOR AND CHUTES

Take-away Conveyor

Designed to release product from the sorter with the appropriate orientation, speed, and rate.

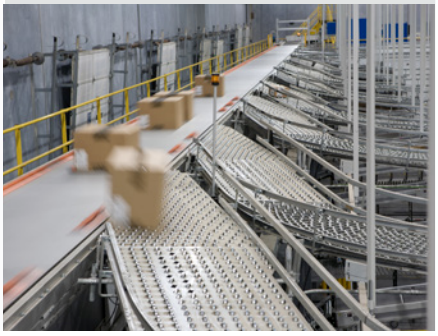


Powered Take-away Conveyors

- Positive take-away
- Wide product mix
- Pull cartons from sorter
- Adjust to downstream speed changes
- Maintain orientation

Gravity Take-away Conveyors

- Used with positive sorters
- Economical
- Smooth speed transition
- Transitions to slower speed conveyor
- Quiet operation



Chutes

Pre-engineered chutes are available as spiral conveyor or with single and multi-level staging compartments. This includes automatic stacking and automatic order totes to carton replacements. This reduces the operator's effort and is tailored to manage a wide range of product types.

Special Designs Chutes

- Auto bag loading
- Integrated staging for packing
- Ergonomic
- Optimize packing operations
- Reduce footprint

Multi-level Chutes

- Multi-level staging
- Upper and lower compartments
- Integrates with packing workstation
- Dense point to point diverts
- Compact design

The Crossbelt Sorter diverts bags into a parcel shipping container at an e-com fulfillment center.

The Crossbelt Sorter is configured as an order consolidator. Apparel items are sorted to a packing chute.

The Crossbelt Sorter handles a broad range of items including plastic totes, cardboard cartons, trays, stuffed envelopes, and poly bags.

General merchandise is sorted into a packing chute at a retail store replenishment center.

The Crossbelt Sorter diverts cases to take-away conveyor.

Dematic Pouch System

FOR OMNI-CHANNEL ORDER FULFILLMENT

APPAREL, SHOES, ACCESSORIES…& MORE

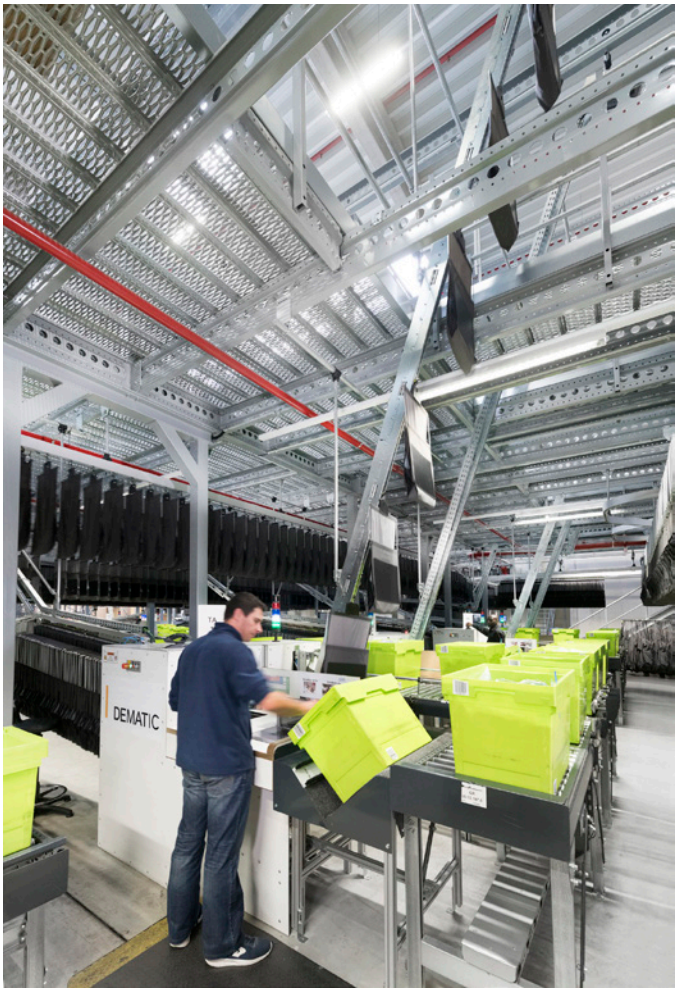
Retailers faced with the growing volume and complexity of omni-channel order fulfillment are finding a critical need to streamline order consolidation. The Dematic Pouch System stores, transports, sorts, sequences, and consolidates individual items (eaches) to turn order consolidation from costly expense to competitive advantage.

Retailers specializing in apparel, shoes, and accessories have been the first to implement pouch systems for their e-fulfillment or store replenishment operations. Now retailers that handle work clothing, personal protection equipment, personal care, jewelry, and electronics are looking to the Dematic Pouch System to bring efficiency to their order consolidation.

SPACE, CAPACITY, AND RATE EFFICIENCY

The Dematic Pouch System uses overhead space effectively in the facility. The storage and buffering process occurs in tight, compact rows. The aluminum rail system allows cost-effective accumulation of inventory.

The system processes items without barcodes — each pouch carries an item and has a barcode and RFID tag for accurate tracking and sorting. In addition, the system can accommodate low, mid, and high volume applications — typical systems range from 25,000 to 150,000 pouches. Common throughput processing rates start at 2,500 items per hour, and the modular design accommodates higher rates according to customer requirements.



Batched picked items in totes arrive at a workstation. An operator inducts items into the Dematic Pouch System.

After induction to the Dematic Pouch System, the inventory flows on inclines up to the overhead dynamic buffer.

FULFILLMENT PROCESSING

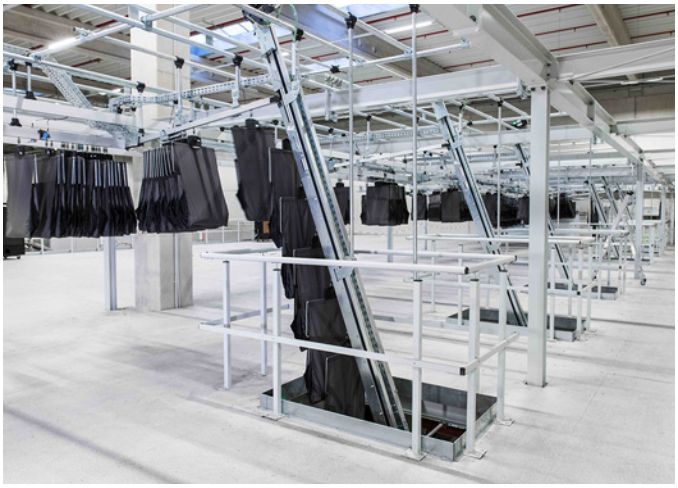
To process e-Commerce or store replenishment orders, the Dematic Pouch System serves as a fulfillment engine. Operators batch pick items and induct them into the system, one item per pouch. Pouches travel on the overhead rail system to a buffer. When needed, the system sorts and releases pouches to packing workstations where operators consolidate items for customer orders.

Dematic iQ Optimize, the Warehouse Execution System (WES) software, manages and synchronizes the workflows for optimized order processing. All items for an order arrive at the exact same time for accurate order consolidation

RETURNS PROCESSING

The Dematic Pouch System is the ideal solution for processing returned items to inventory. After operators inspect and check-in a returned item, it is inducted into the system and is immediately available for resale. The system holds the item in a dynamic buffer. When the system receives a new order for that item, the WES releases its pouch to a packing workstation for an operator to prepare it for shipment.

This process saves the unnecessary time and expense of sending the item back to inventory storage and then having to go through the batch pick process.



The Dematic Pouch System operates on multiple levels. Inventory staging and buffering occur overhead.

Each pouch is sorted and held in a dynamic buffer until released by the WES.

All the items for a customer order arrive at the packing workstation in a precise sequence.

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