

SOLVE FOR X.

Introduction to Conveyors

Presented by:

**Boyce Bonham – Chief Engineer
Hytrol Conveyor Company**

**Scott Bridger – Senior Director of
Sales Operations, FMH Conveyors**



Agenda

- Speaker Introductions
- Inside the Distribution Center
- Benefits of conveyors
- Types & applications of conveyors
- The future of conveyors

Speaker Introductions

- Boyce Bonham
 - Chief Engineer – Hytrol Conveyor Company
- Scott Bridger
 - Senior Director of Sales Operations– FMH Conveyors



Boyce Bonham

Chief Engineer, Hytrol Conveyor Company

- BS in Engineering from Arkansas State University
- Over 30 years of experience in the conveyor industry and specializes in providing technical solutions to the company's integration partners and end users. Boyce's knowledge spans the entire process from conveyor product design to complete conveyor system design and application.
- Boyce led in the development of Hytrol's ProSort® line of sorters as well as other industry leading technologies such as EZLogic®, Hytrol's accumulation control, and E24®, Hytrol's 24 volt conveyor product line.

Hytrol:

- Largest network of industry experts with over 100 locations around the world
- 70 years of experience, which helps us have the most recognized brand in the industry
- Unmatched lead times
- Comprehensive product line including:
 - E24™ (24-volt product line)
 - ProSort® 100 & 400 (High-speed sortation)
 - EZLogic® (zero pressure accumulation)
 - Connex™ (plastic chain conveyor)
 - Pivot™ (warehouse control system)
- 24x7 customer care
- Technology Center dedicated to innovation



Scott Bridger

Senior Director of Sales Operations, FMH Conveyors

- BS in marketing from Arkansas State University
- Over 20 years experience in the conveyor industry and specializes in providing fluid loading and unloading solutions to the company's channel partners and end users.

FMH Conveyors:

- Formerly known as Flexible Material Handling and Best Conveyors, FMH Conveyors designs, manufactures and supplies products and services for truck loading and unloading applications.
- An early innovator in fluid and loose loading/unloading, FMH Conveyors has over 87 years of expertise and resources to deliver higher value to material handling customers with a robust product portfolio, applications-focused team of design and configuration experts and an unparalleled service and support network.
- Trusted Product Brands including:
 - Nestaflex®
 - BestFlex™
 - BestReach™
 - MaxxReach®
 - BestConnect™
- 24/7 FMH Care™ Customer Service

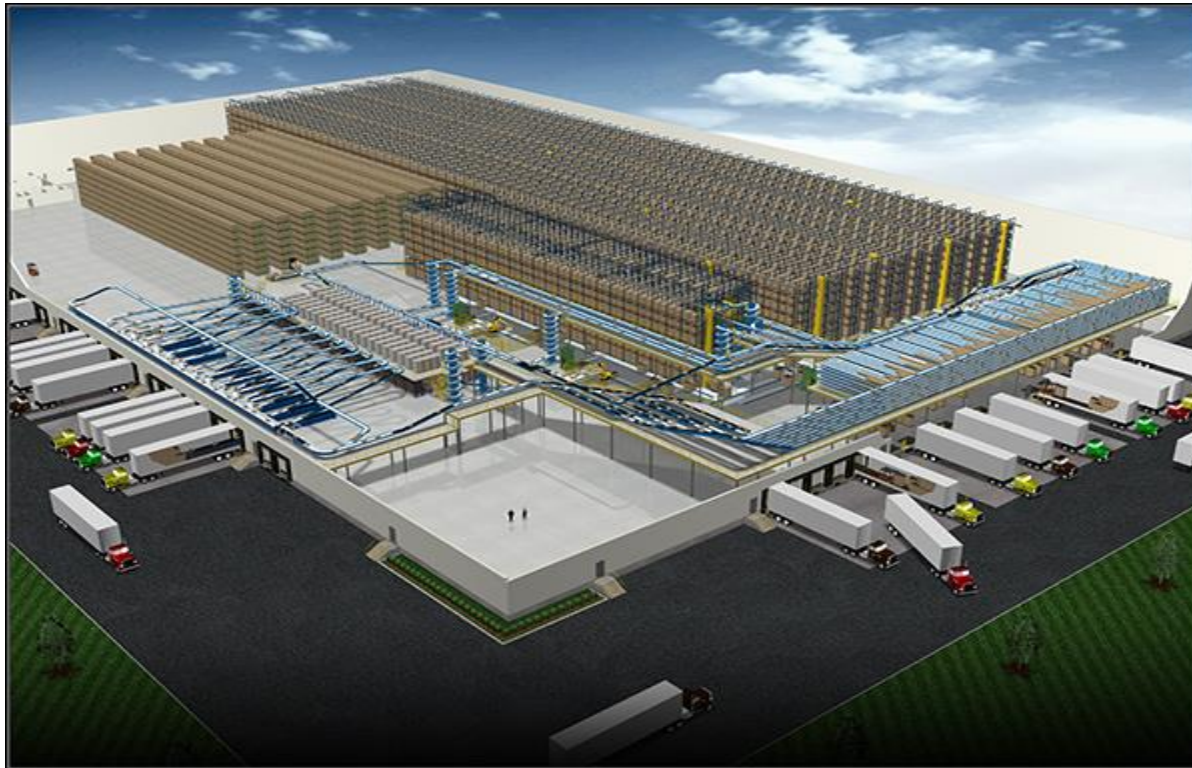
Agenda

- Inside the Distribution Center
- Benefits of conveyors
- Types & applications of conveyors
- The future of conveyors

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The Distribution Center

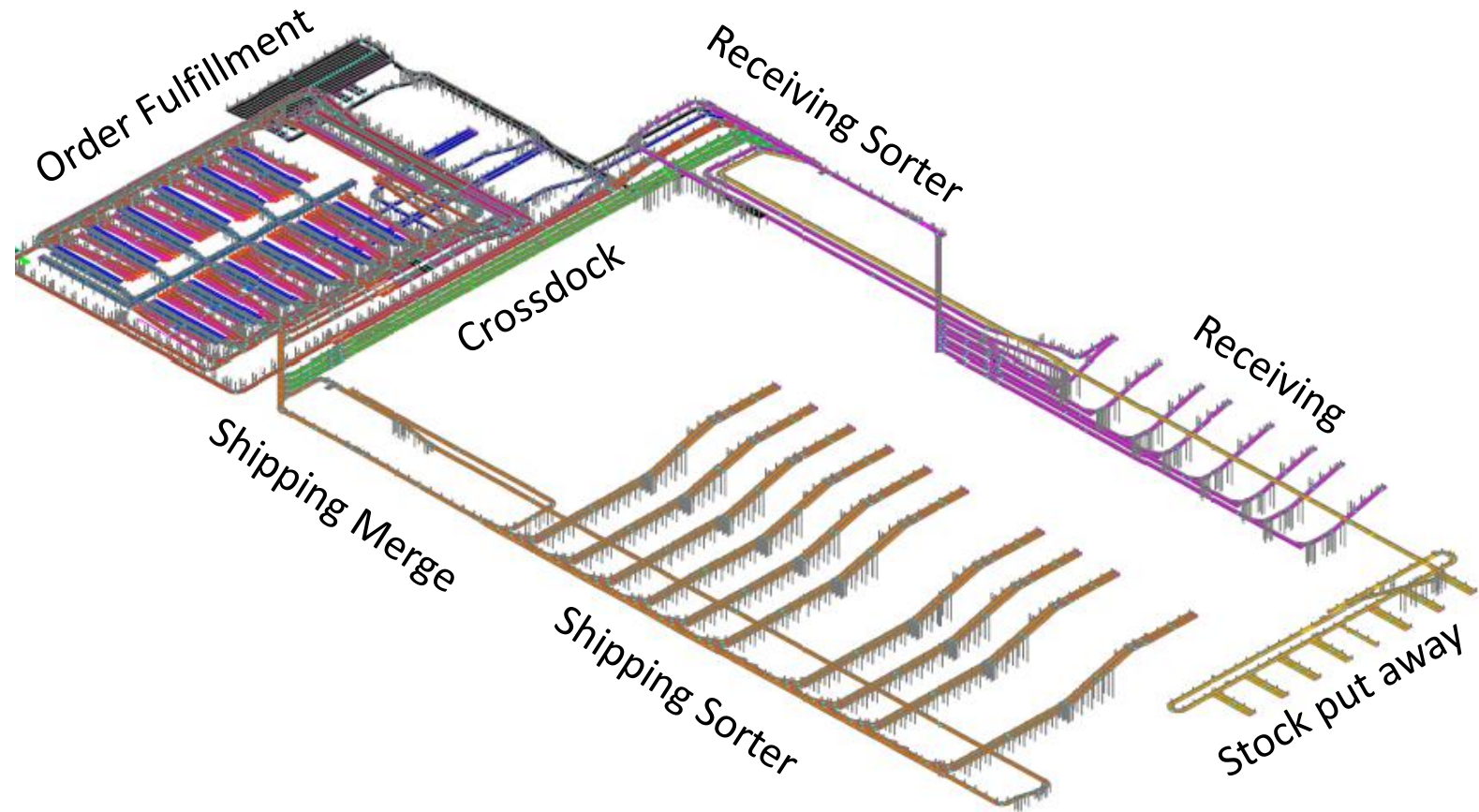
Receiving



Shipping

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Conveyor System Inside the DC



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Benefits of Conveyors

- Automation of the flow of products
- Continuous flow of materials
- May be set up almost any place
- Can be utilized to move almost anything
- Improve safety, order accuracy, labor cost
- Shorten time from order to shipment

Types & Applications of Conveyors

- Case Conveyors
- Pallet Conveyors
- Truck Loaders & Unloaders
- Accumulation Conveyors
- Merge Conveyors
- Sortation Conveyors

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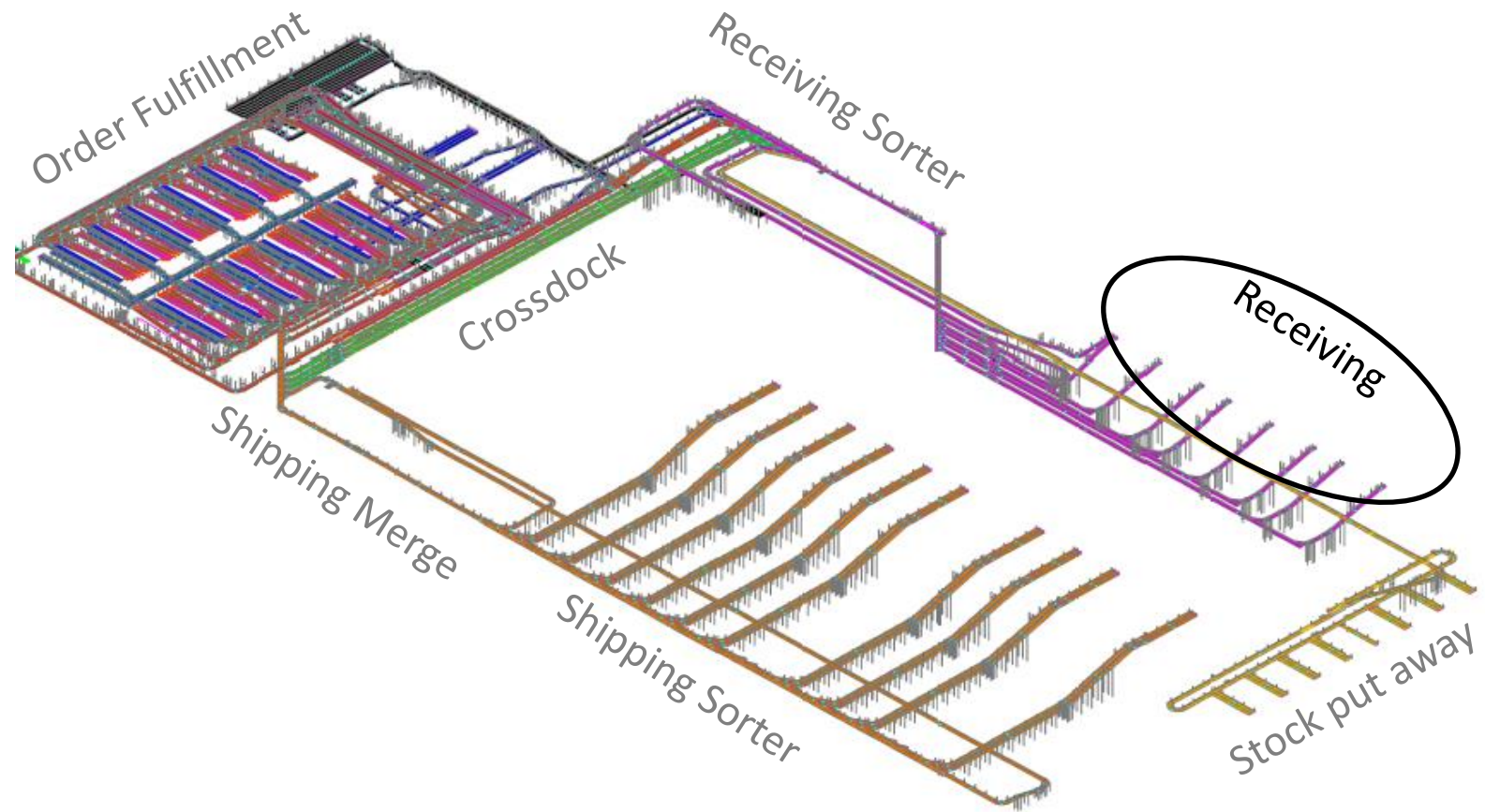
RECEIVING



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Conveyor System Inside the DC



Fluid Unloading

A continuous flow of product moving on a conveyor without interruption as it transfers into or out of a trailer.



Unloading

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Receiving

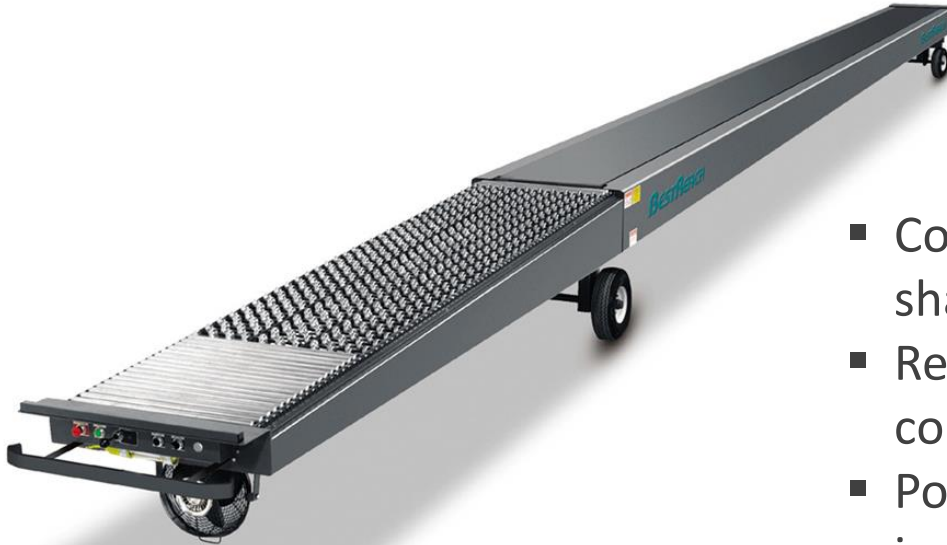


Powered Roller Extendable



- A flexible powered roller conveyor
- Expand, contract and flex side to side and move around obstructions in the dock area
- Requires no decline angle
- Portable conveyor capable of servicing multiple doors
- Optimal utility and versatility for distribution centers, manufacturing, packaging, assembly, and processing facilities
 - ✓ Distribution Centers
 - ✓ Trailer loading and unloading

Rigid Belt Loader



- Conveys a variety of product shapes and sizes
- Reaches from stationary conveyor into trailers
- Powers in and out of trailers for improved ergonomics
- Capable of servicing 53' trailers as well as pup trailers

Telescopic Belt

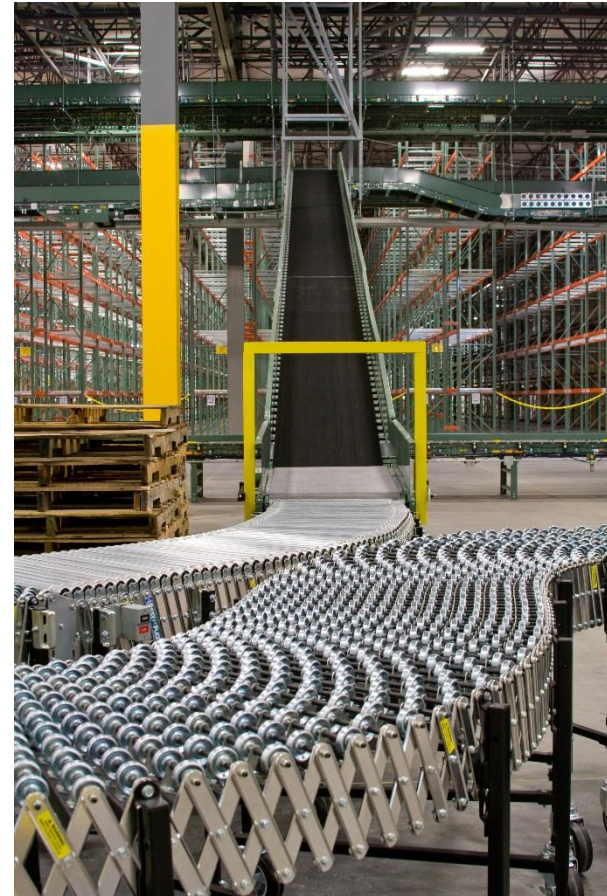


- High volume truck loading
- Very ergonomic
- Capable of moving from the smallest to the heaviest, unique shaped packages including tires and loose bags
- Never touches the trailer
- Maximizing floor space when stored

Receiving

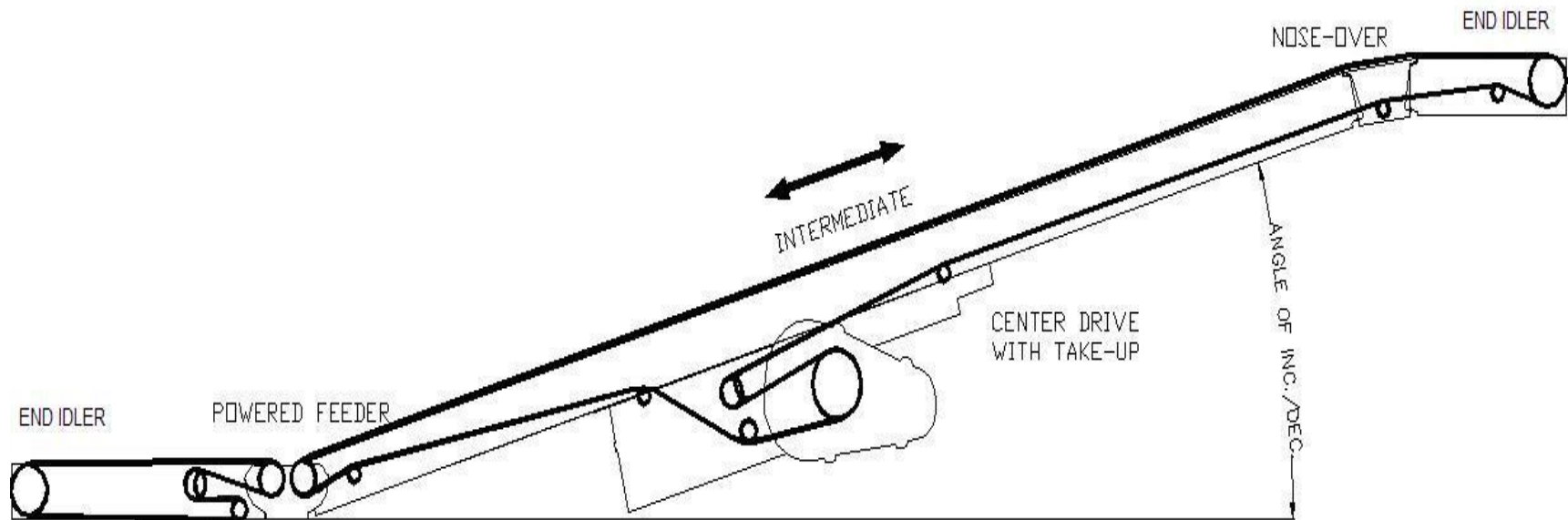
Incline Belt Conveyor

- Slider Bed - declines
- Roller Bed - inclines



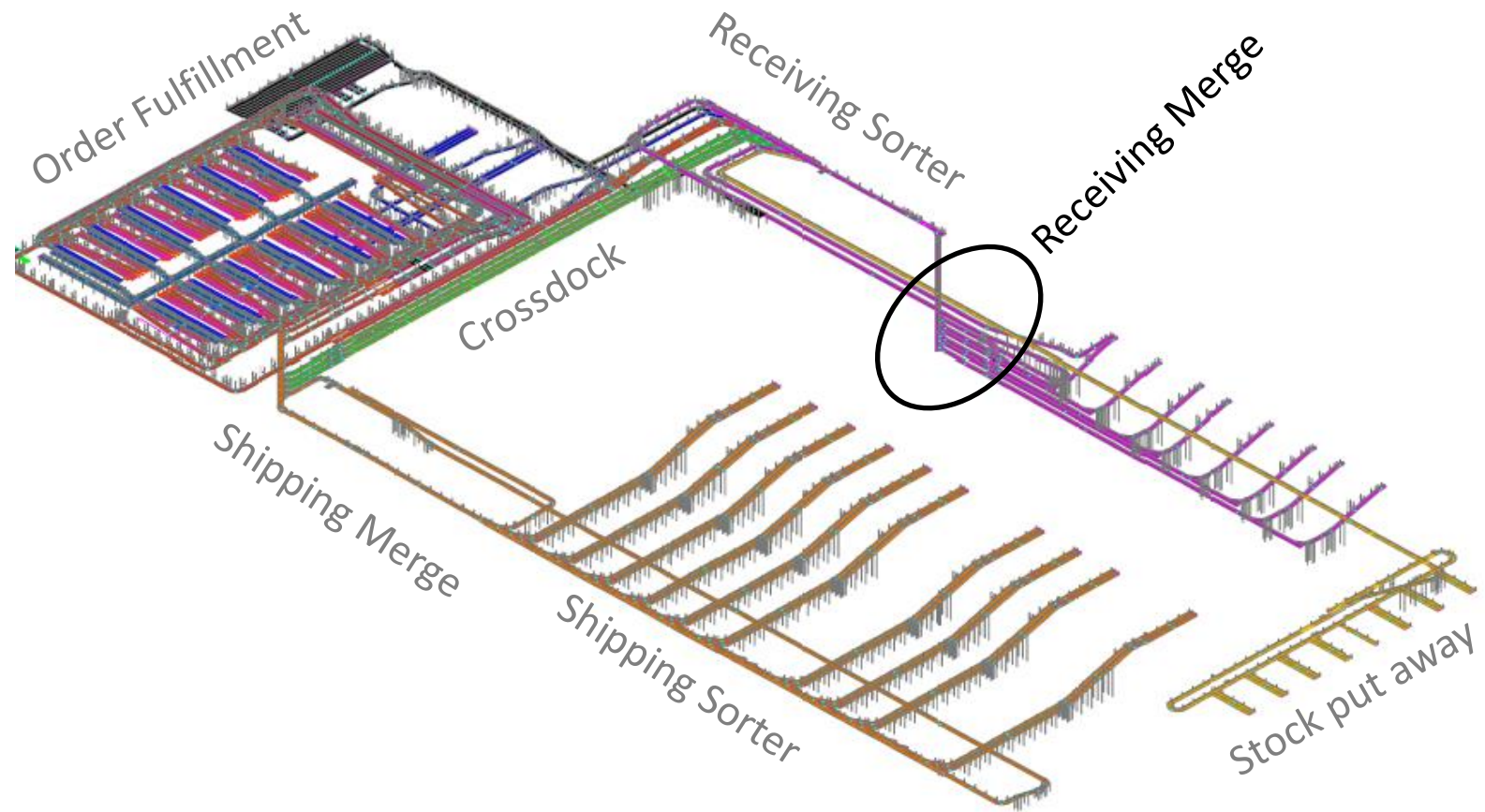
Belt Conveyor – Incline or Decline

- Slider Bed – decline applications
- Roller Bed – incline applications



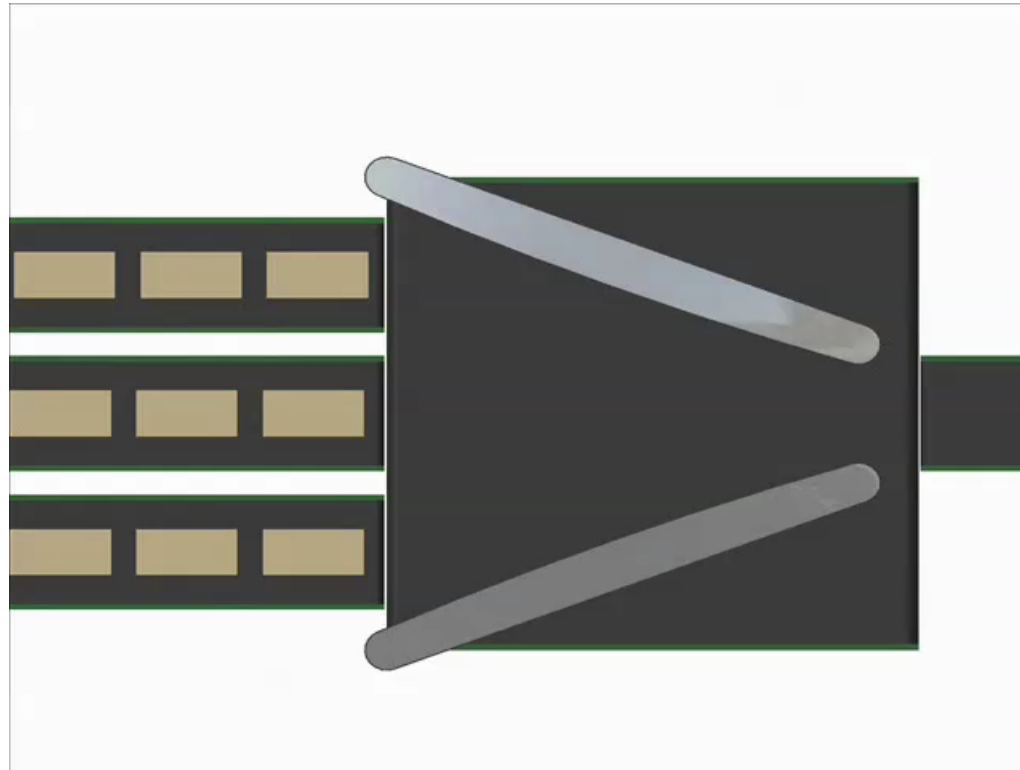
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Conveyor System Inside the DC



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Dual or Triple Lane Merge

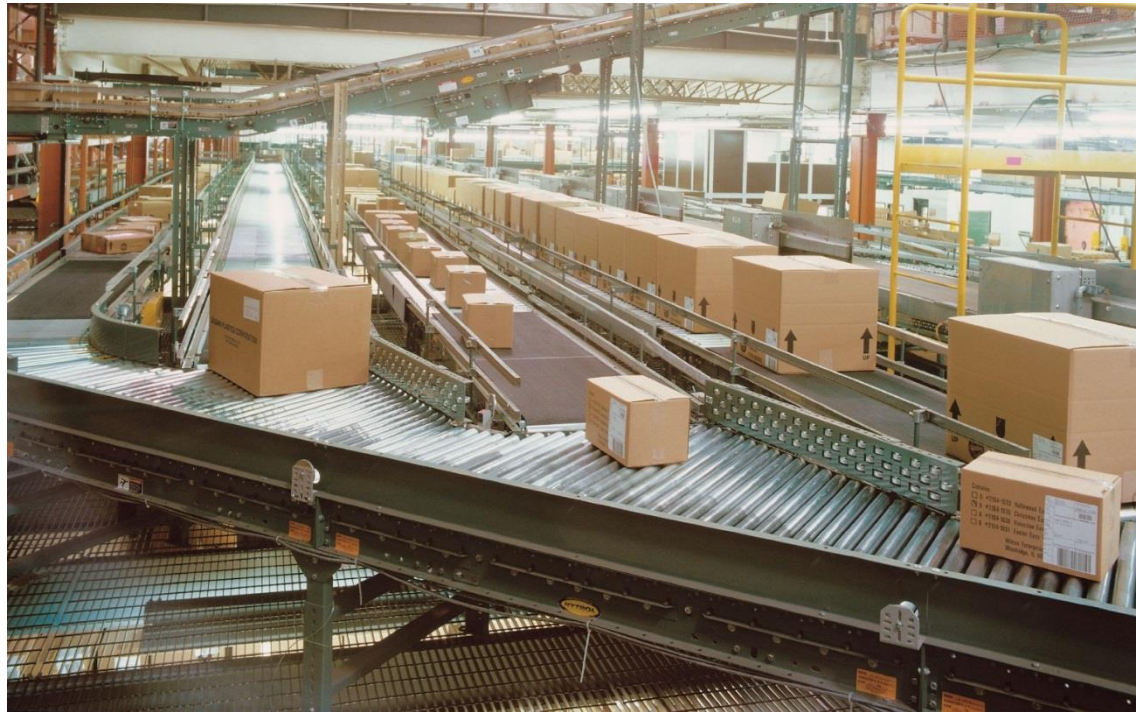


Dual or Triple Lane Merge



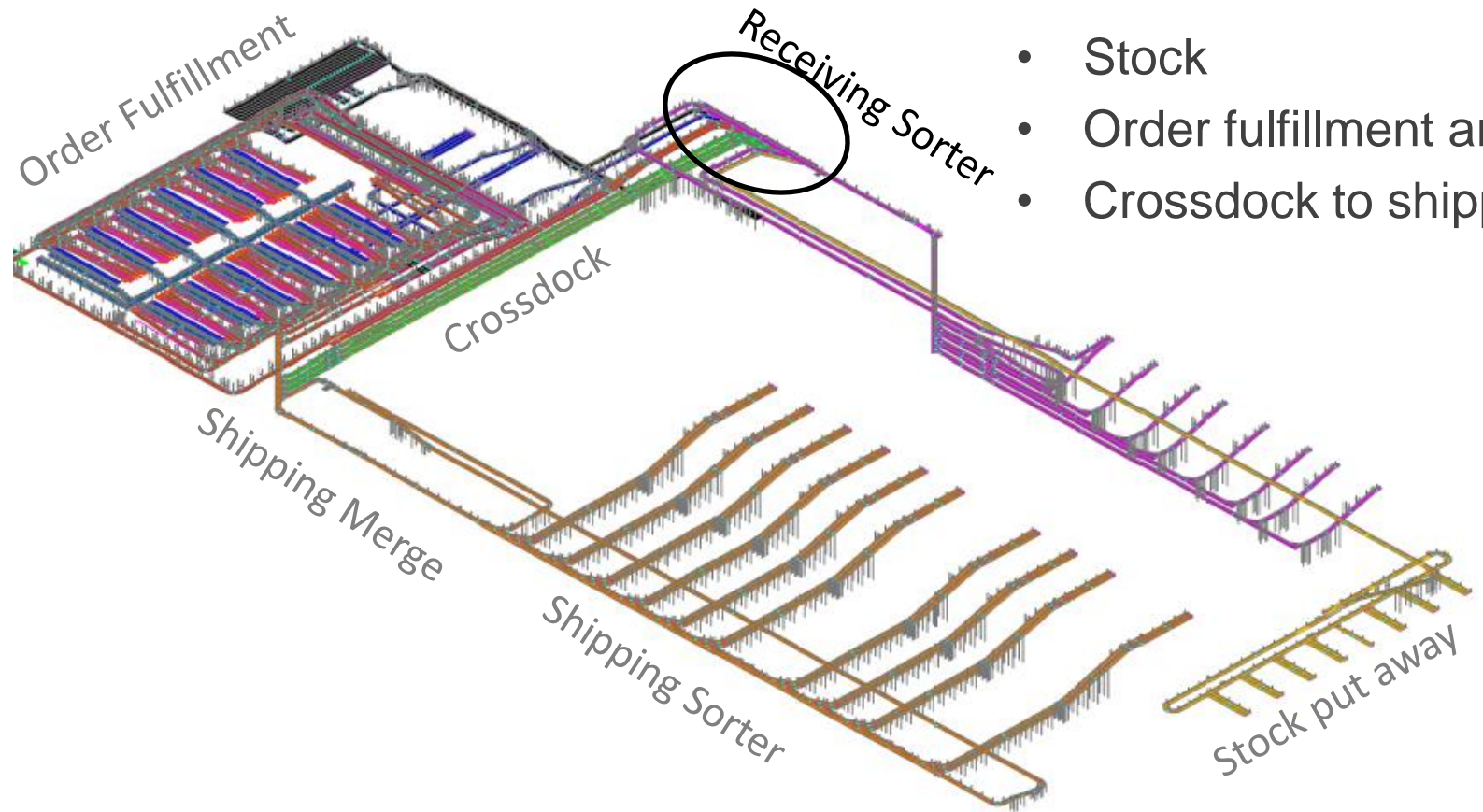
- Cartons exiting are not justified

Multi-Line Belt or Roller Merge



- Cartons exiting are justified

Conveyor System Inside the DC



Sorter Selection

- Carton rate
- Type of carton
- Space requirements
- Pivot Divert
- Belt Sorter – pop up or pivot wheel
- Narrow Belt – 90 degree or 30 degree
- Sliding Shoe Sorter

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Pivot Divert – 24 volt



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Belt Sorter with Dynamic Plows



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Belt Sorter



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Narrow Belt Sorter



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Narrow Belt Sorter



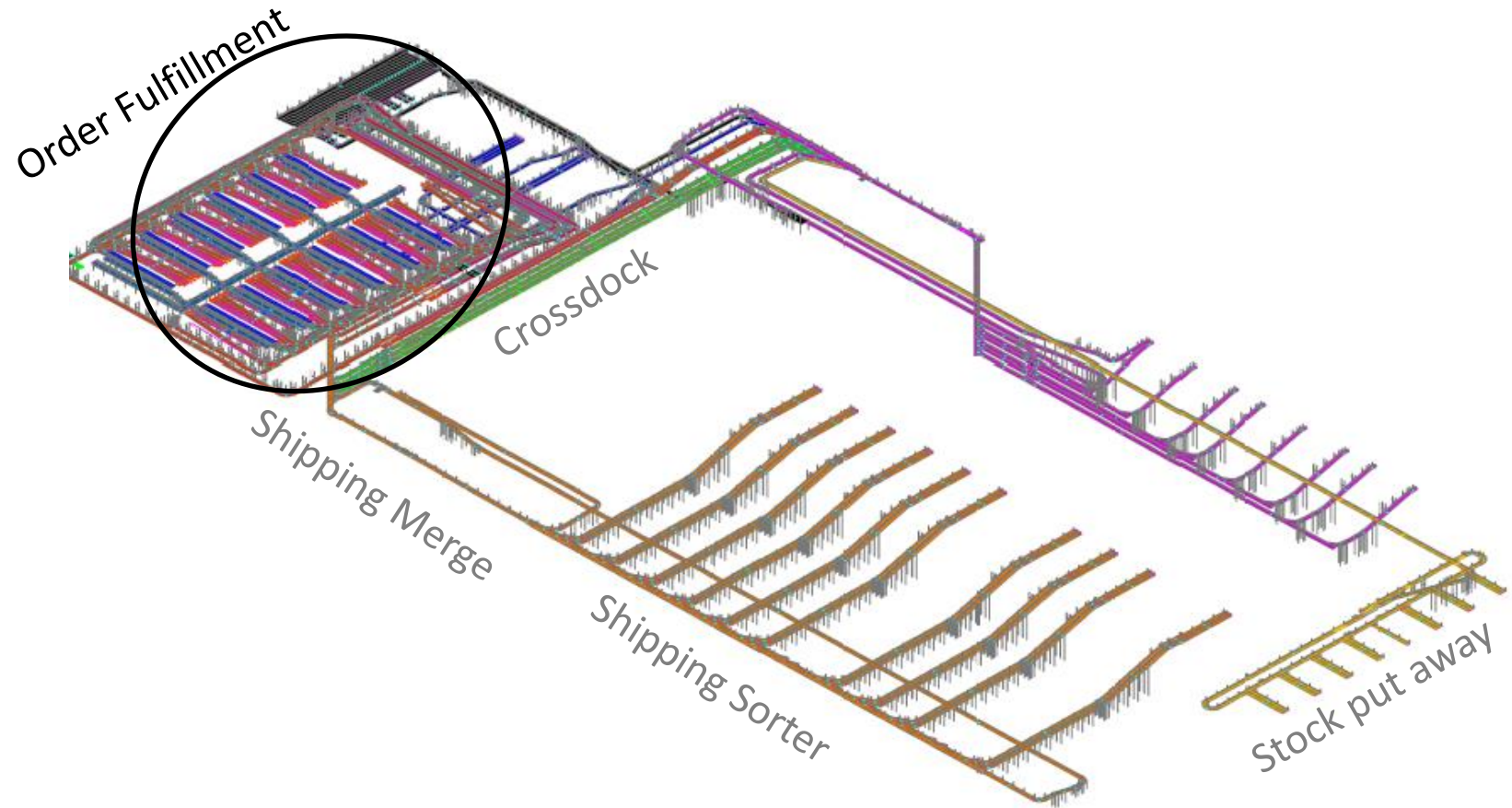
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Sliding Shoe Sorter



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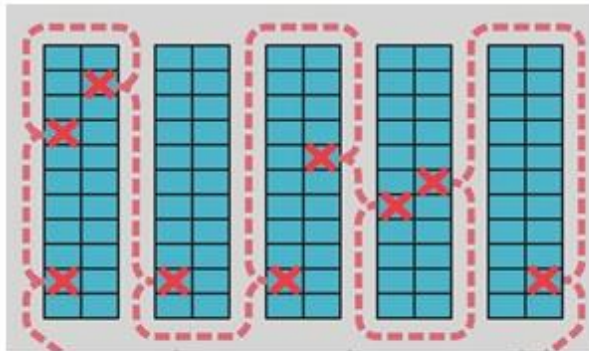
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- Manual pick
- Put-to-Light
- Pick-to-Light
- Voice directed
- Goods-to-Person



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Travel Distance



Remember: Traveling is
60%-70% of labor costs

Understanding Batch Picking



In traditional discrete order picking systems, the driver of picking activity is the individual order. A pick face is visited each time for each order that contains that SKU. With batch picking, the driver of picker activity is the SKU/Location. Orders are combined, typically in a pick wave, so that an order picker visits a location just one time across orders, using the sortation system to break down the cartons into discrete customer orders after the picks, substantially reducing picking labor costs.

Discrete Order Picking

Order	SKU	QTY	LOC
1	A	5	1A
	B	3	1F
	C	4	2D
2	A	10	1A
	B	5	1F
3	A	2	1A
	B	8	1F
	C	4	2D

Batch Picking

SKU	LOC	QTY	Order
A	1A	17	1
			2
			3
B	1F	16	1
			2
			3
C	2D	8	1
			3

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Conveyors in the picking process



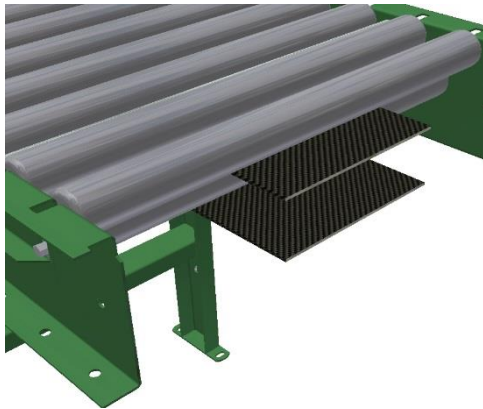
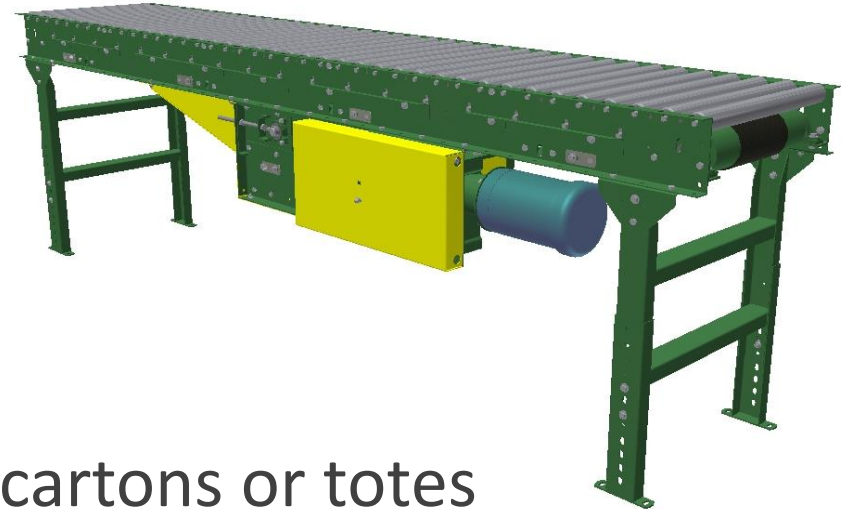
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Conveyors in the picking process



Roller – Belt – Accumulation - Sortation

Belt Driven Live Roller Conveyor



- Conveys cartons or totes
- Low horsepower requirements
- Low or High speed

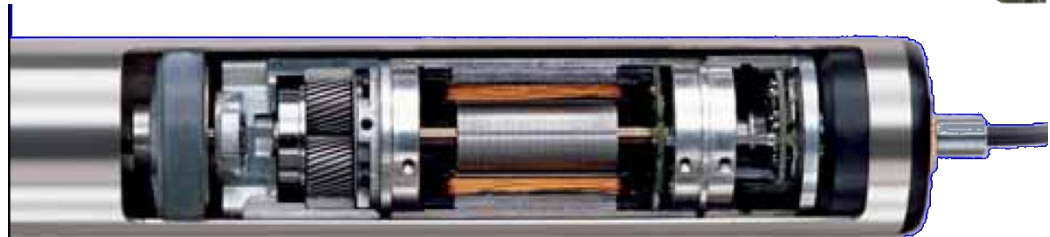
Low Voltage Conveyors

Utilize low torque decentralized drive motors

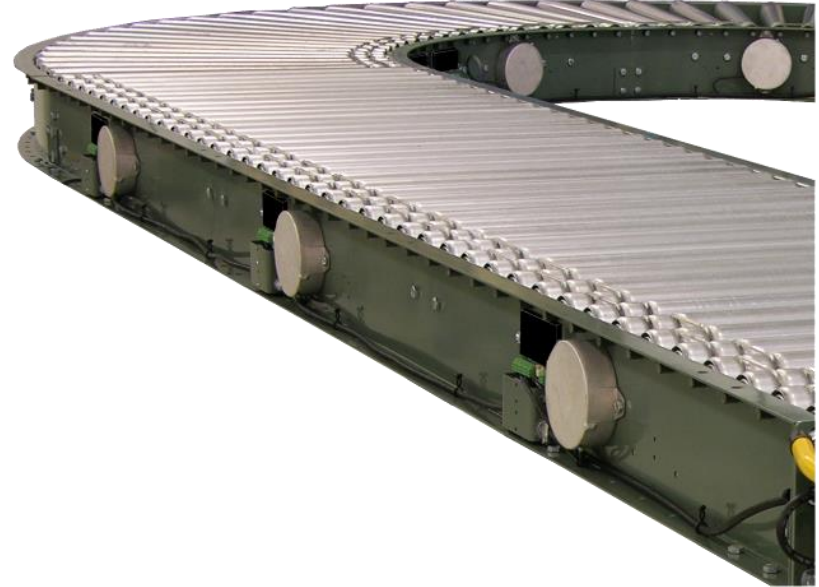


24 volt DC Motor

or

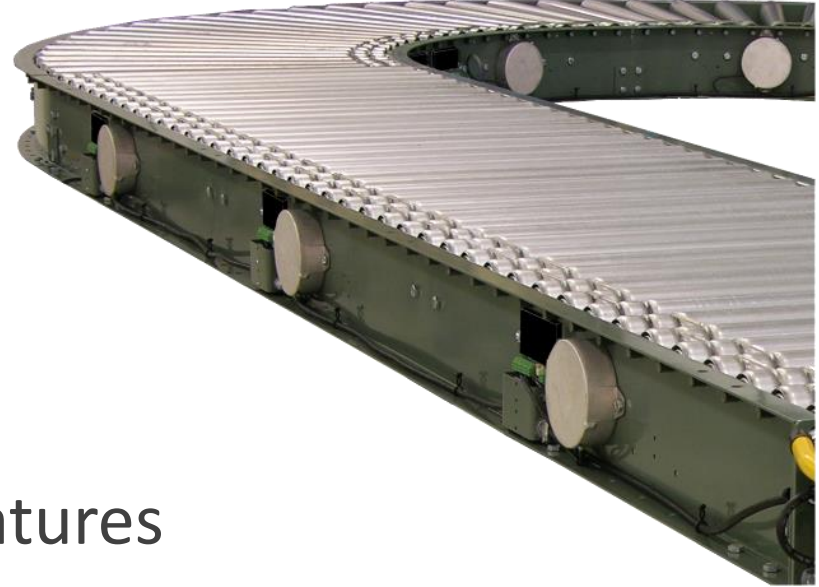


Motor Driven Roller (MDR)



Low Voltage Conveyors

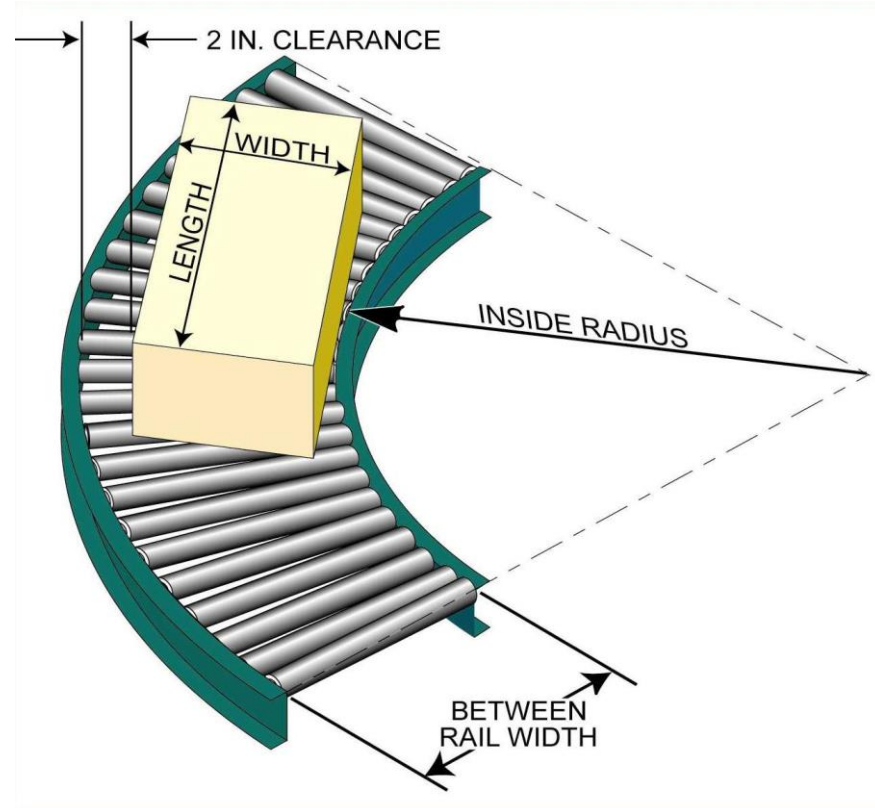
- Quiet operation
- Energy efficient
- Easy installation
- Flexible configuration
- Flexible in operational features
- Reliable
- Basically no maintenance
- Network capable for full visibility and control of system



Belt Driven Live Roller Curve

Roller drive belt

- V-belt
- Round Belt
- 24 volt poly-v



$$\text{Between Rail Width} = \sqrt{(\text{Inside Radius} + \text{Package Width})^2 + \left(\frac{\text{Package Length}}{2}\right)^2} - \text{Inside Radius} + 2"$$

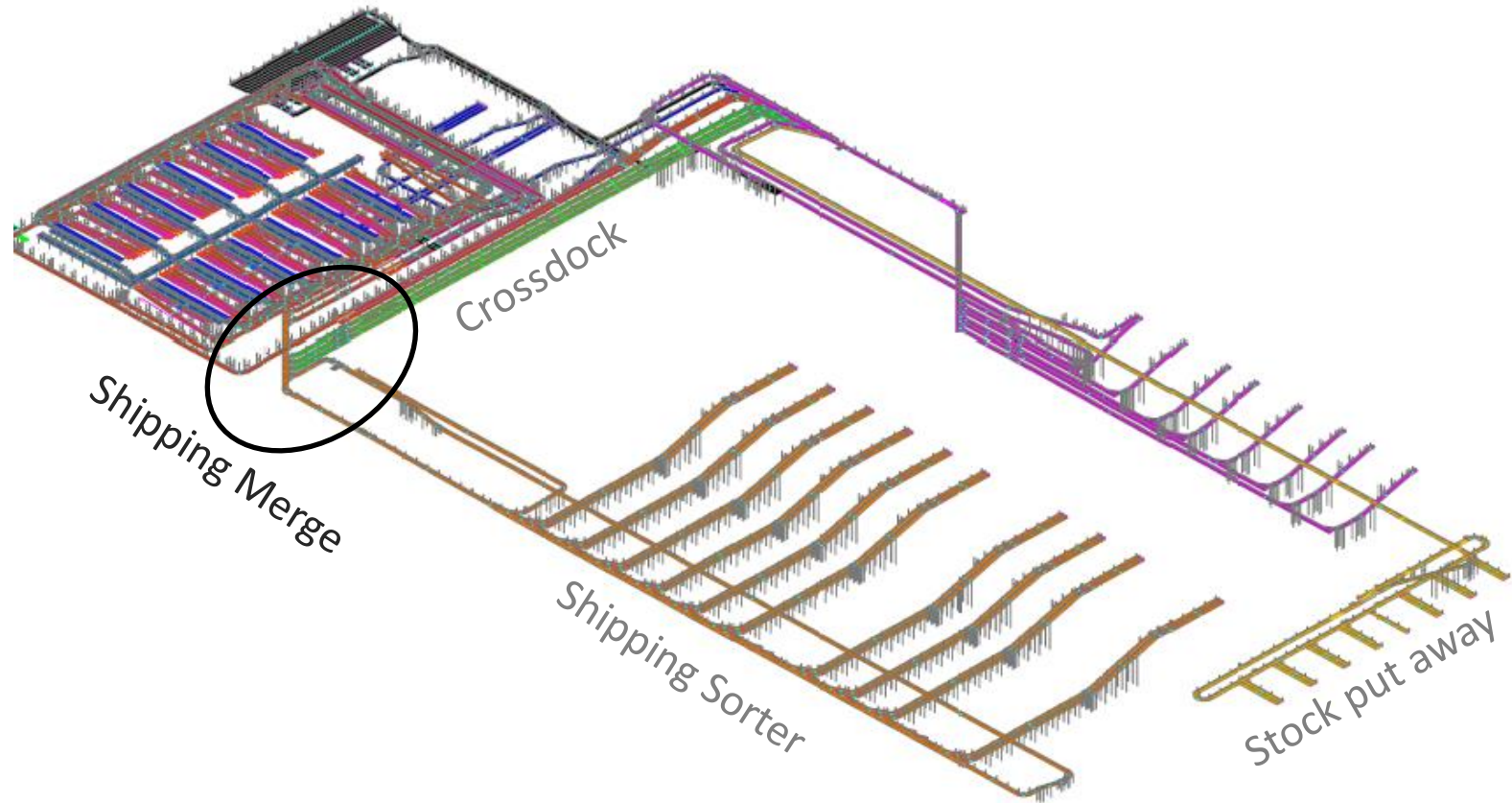
Spiral

- Change levels in minimum floor space
- May be conventional belt, plastic belt, roller or skatewheel
- Incline or Decline
- Multi-level pick areas



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Conveyor System Inside the DC



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Multi-Lane Merge using Gap & Store



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Accumulation Conveyor



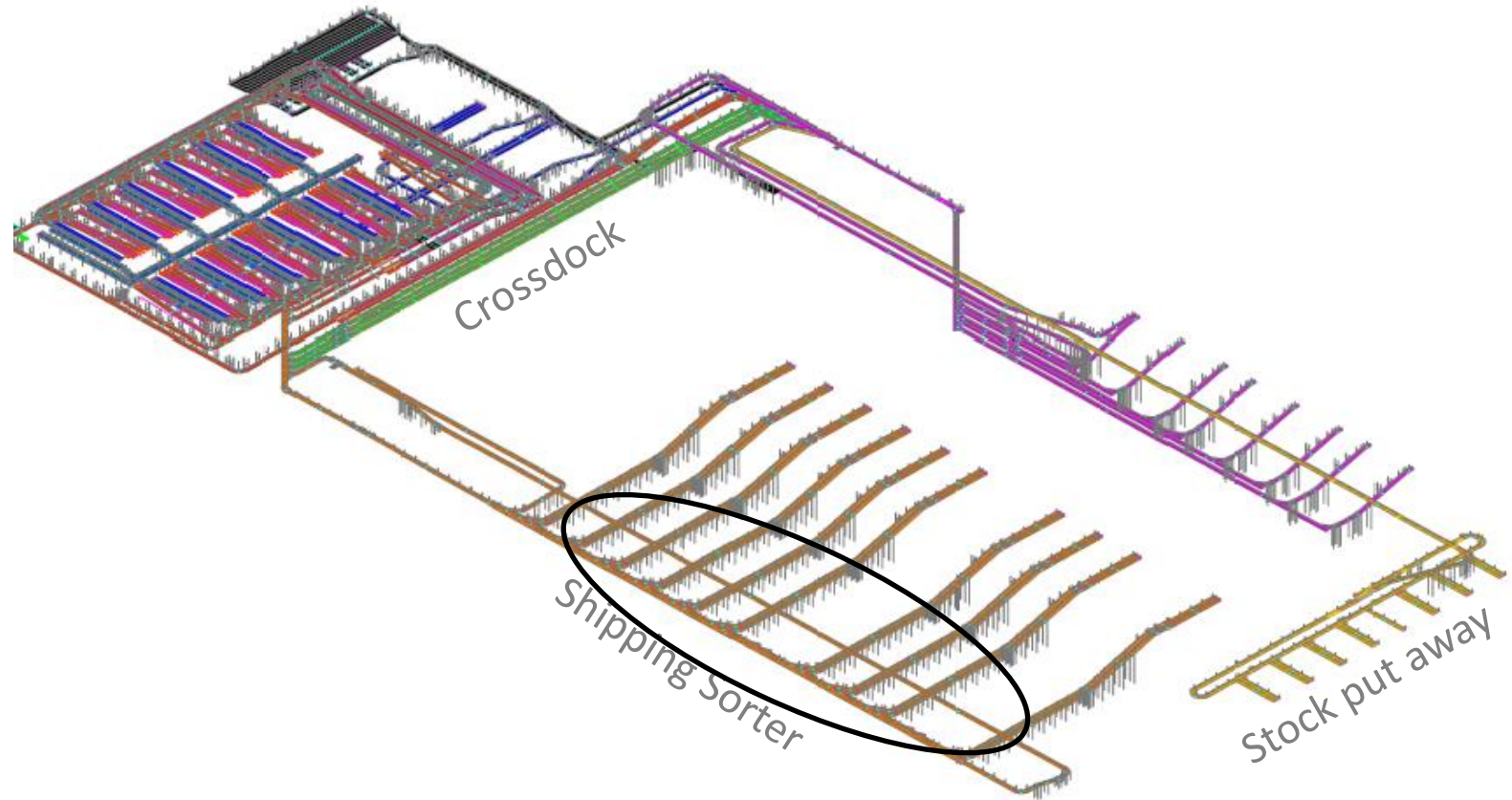
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Merge Buffering - Accumulation



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Gapping & Induction to Sorter

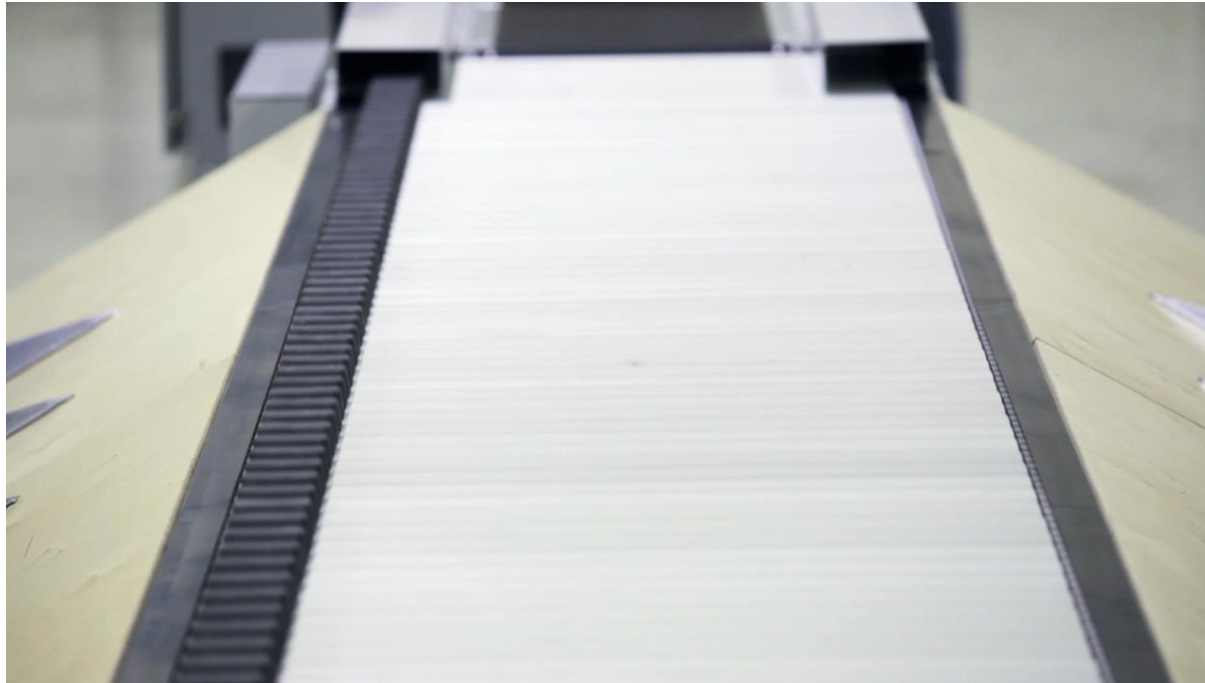


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Sortation

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SLIDING SHOE – PROSORT 100 ELITE



SOLVE FOR X.

Sortation



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Small Item Sortation



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Sliding Shoe Sorter



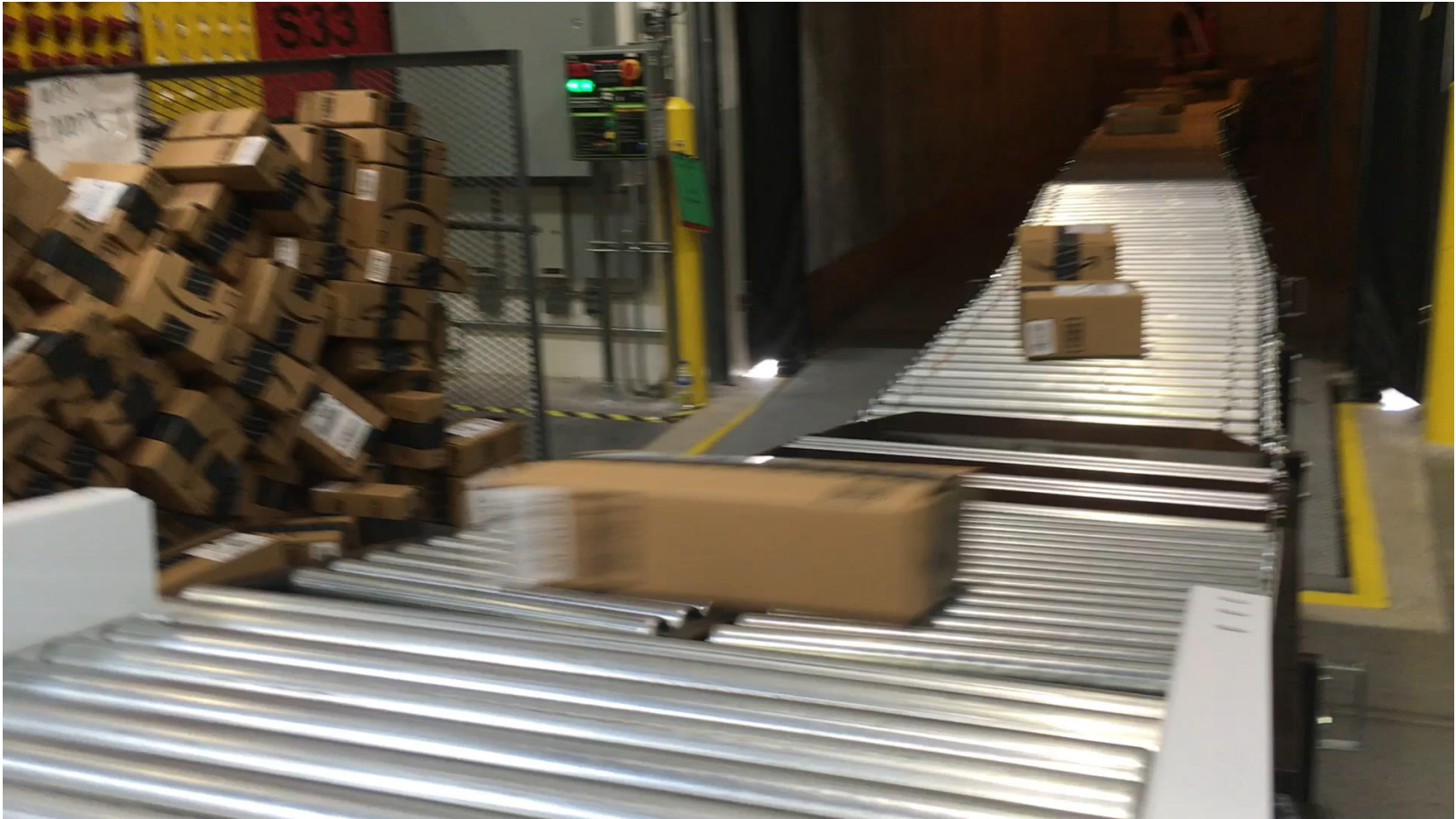
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Shipping Lanes



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Truck Loading



Gravity Skatewheel Extendable



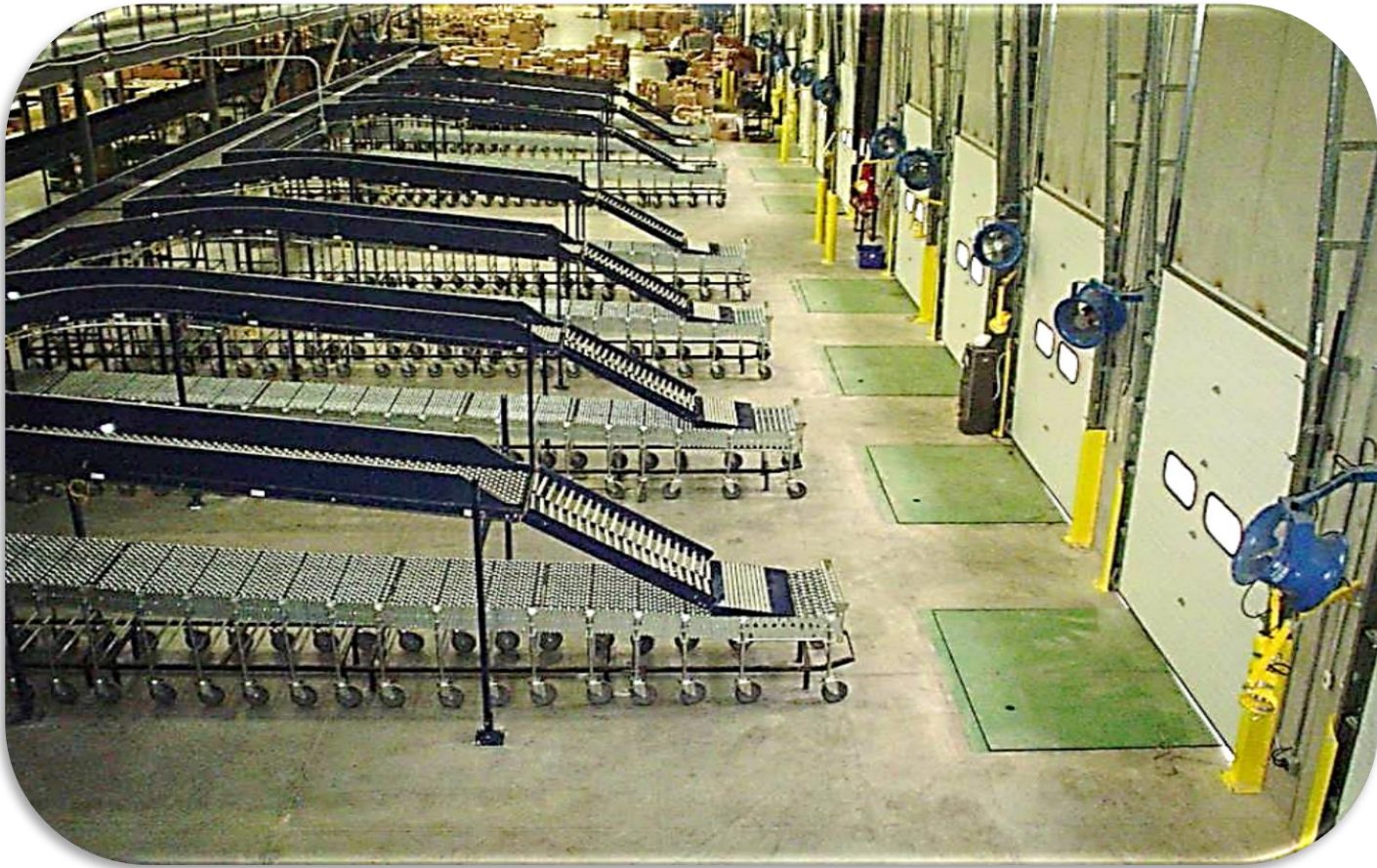
- Flexible gravity conveyor
- Ability to easily move to different locations within the facility
- Portable conveyor capable of servicing multiple doors
- Easily contracts and stores conveniently to save on floor space
- Optimal utility for distribution centers, retail stores, manufacturing and assembly operations.
 - ✓ Distribution Centers
 - ✓ Trailer loading and unloading

Powered Roller Extendable



- A flexible powered roller conveyor
- Expand, contract and flex side to side and move around obstructions in the dock area
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Rigid Belt Loader



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- Reaches from stationary conveyor into trailers
- Powers in and out of trailers for improved ergonomics
- Capable of servicing 53' trailers as well as pup trailers

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Rigid Roller Loader



- Reduces recirculation on the shipping sorter by accumulating from the nose of the trailer back to the feed system
- Provides zero pressure accumulation for full product control
- Allows a single operator to float across multiple dock doors

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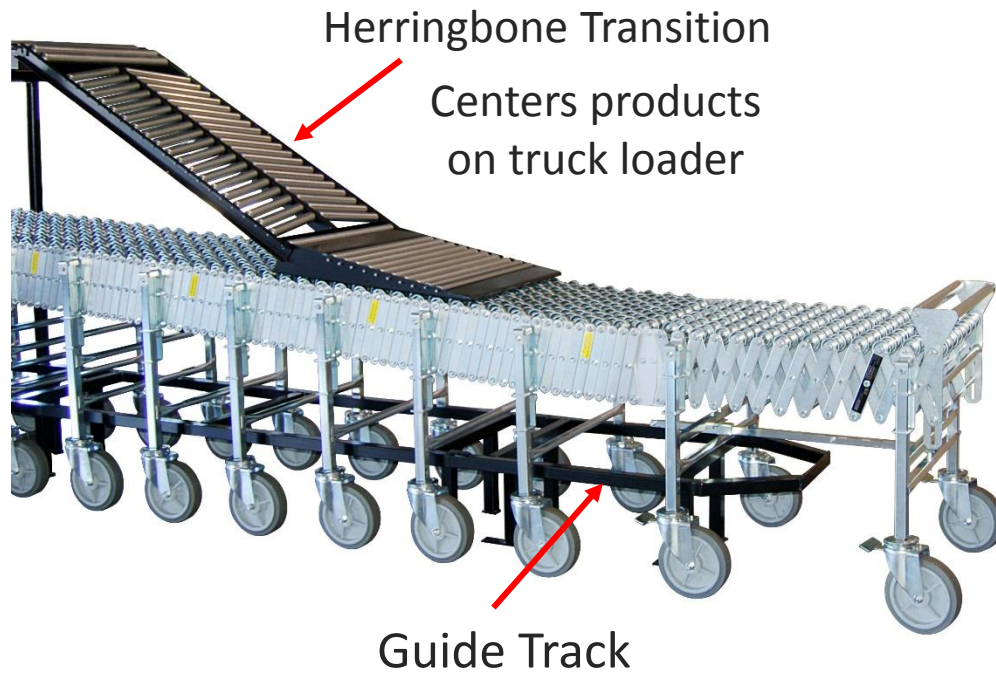
Telescopic Belt



- High volume truck loading
- Very ergonomic
- Capable of moving from the smallest to the heaviest, unique shaped packages including tires and loose bags
- Never touches the trailer
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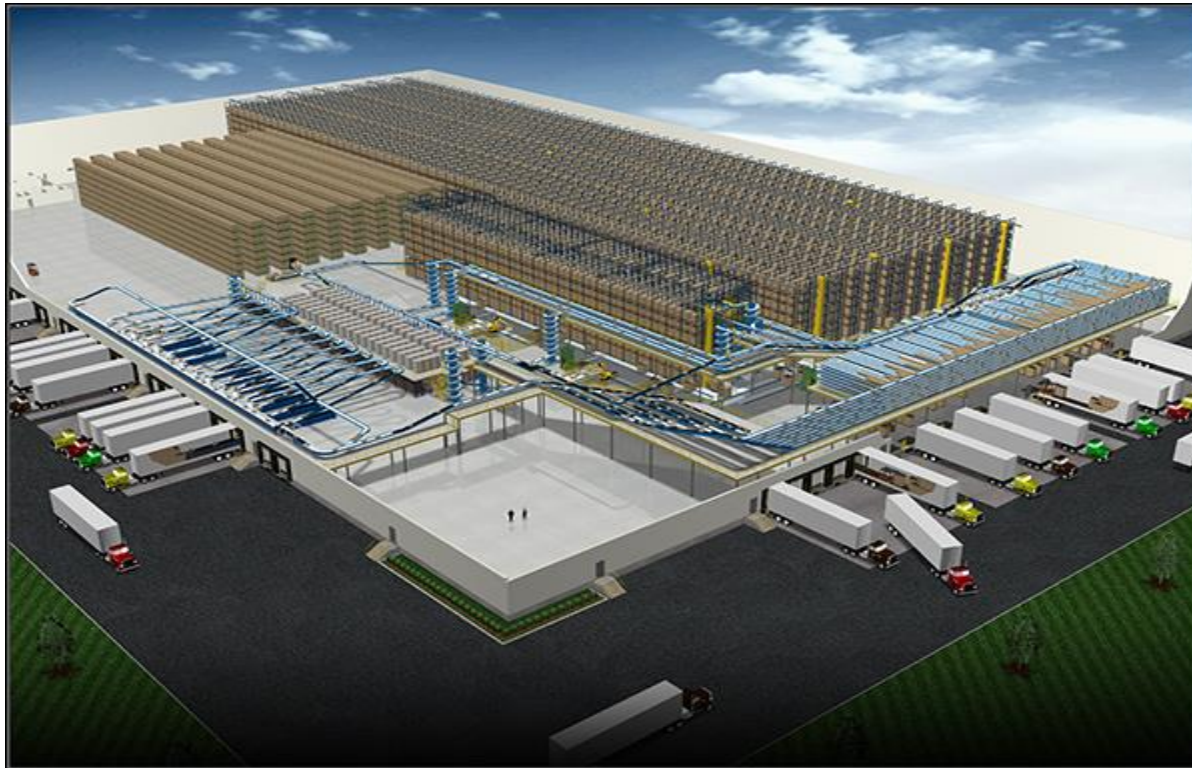
Transition to Truck Loader



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The Distribution Center

Receiving



Shipping

The Future of Conveyors

- More effective in handling broad spectrum of products
- Higher visibility of product flow
- More decentralized drives
- Mechanically simplified
- Self diagnostic

Review

- Benefits of Conveyors
- Types & Applications of Conveyors
- The Future of Conveyors

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Thanks for Attending!

For More Information:

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