

WAREHOUSE MANAGEMENT

BA4055

UNIT IV

TYPES OF CONVEYORS – REFRIGERATED WAREHOUSES- COLD CHAIN- AGRISCM

TYPES OF CONVEYORS

There are three main types of transportation conveyors: gravity conveyors, belt conveyors and live roller conveyors. Gravity conveyors are made up of a frame, rollers or wheels and are pitched so gravity can move product or allow product to be moved manually down the line.

MATERIAL HANDLING CONVEYORS: TYPES, USES & OPTIMIZATION **THREE Main Types of Conveyors Used in Material Handling**

1. Transportation Conveyors

Transportation conveyor systems move pallets, cartons, or other material handling products from point A to point B. They can be used for a variety of applications from heavy full-pallet loads to lightweight items that vary in size. Transportation conveyor options are available to accommodate requirements such as desired speed and product handling procedures.

There are three main types of transportation conveyors: gravity conveyors, belt conveyors and live roller conveyors.

- **Gravity conveyors** are made up of a frame, rollers or wheels and are pitched so gravity can move product or allow product to be moved manually down the line. Gravity conveyors are ideal for applications such as assembly lines, where products need to be smoothly transitioned from one station to the next without the need for powered assistance, or for shipping areas to expedite the movement of packages from the packing area to the delivery truck.



Gravity Conveyor System

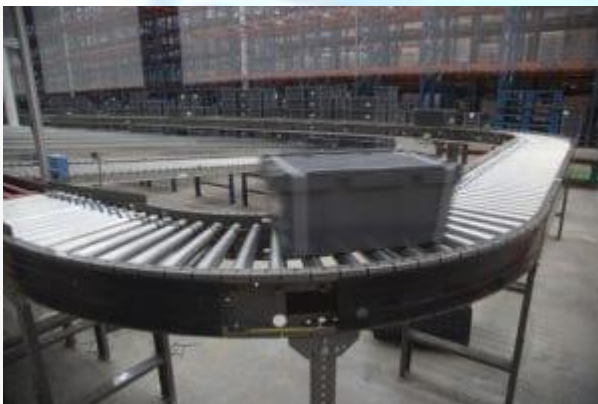
- **Belt conveyors**, one of the most commonly used material handling conveyor types, uses pulleys and a wide belt that are supported by rollers or a flat pan along its path to move product. Belt conveyors are commonly utilized in the food industry for the transportation of packaged goods or raw materials from

one processing area to another, as their flat and smooth surface makes them easy to clean and maintain.



Belt Driven Conveyor

- **Roller conveyors** push loads by applying power to either some or all the rollers. Live roller conveyors are perfect for heavy or irregularly shaped objects that require additional support and control during transportation, such as in the automotive industry where components of varying sizes need to be moved along the assembly line.



Roller Conveyors

2. Accumulation Conveyors

Accumulation conveyor systems simultaneously move loads from point A to point B, while allowing them to accumulate when necessary to allow time for equipment or other material handling resources to become available.

Once these resources become available, the system gives a signal to release the next queue of products. There are three main types of accumulation conveyors: zero pressure accumulation conveyors, zero contact accumulation conveyors and minimum contact accumulation conveyors.

- **Zero pressure accumulation conveyors** allow for light contact between products when the system signals that queue to accumulate. Zero pressure accumulation conveyors are well-suited for applications involving fragile or sensitive products, such as electronics or glass items, as they minimize the chance of damage by allowing for light contact between items when queued to accumulate.



Zero Pressure Conveyor

- **Zero contact accumulation conveyors** leave space between products when the system signals a queue to accumulate. Zero contact accumulation conveyors are ideal for situations where product spacing is crucial, such as in the food and beverage industry where contamination needs to be prevented, or for products with irregular shapes that may get entangled if they come in contact with each other.





Zero Contact Conveyor

- **Minimum contact accumulation conveyors** maintain a light but constant drive force on products waiting to accumulate. Minimum contact accumulation conveyors are useful in scenarios where products need to be kept in a specific orientation or alignment while waiting in a queue, such as in the packaging industry where items need to be in the correct position for labeling or sealing.



Minimum Contact Conveyor

3. Sortation Conveyors

Sortation conveyor systems are used to direct products from one conveyor line to another. These conveyors integrate an induction system; system merges and sortation diverts. These are tailored to each operation to properly identify, track and transport products to expedite the order fulfillment process. These conveyors are best suited for high throughput operations that require products to flow to numerous locations.

There are seven types of sortation conveyors: shoe sorters, pop-up wheel sorters, right angle transfers, arm/pusher sorters, narrow belt sorter, tilt tray sorter and cross-belt sorter.

- A **shoe sorter conveyor system** supports produce on tubes or slates and a “shoe” positively diverts product to either side. Shoe sorters are ideal for sorting a wide range of product sizes and weights, shoe sorters are commonly used in retail distribution centers to organize products for specific stores or regions.
- **Pop-up-wheel sorter conveyor system** utilizes a belt conveyor with added rows of angled wheels at divert areas. Pop up wheel sorters are suitable for medium-speed sorting of lightweight, small to medium-sized packages, and often used in e-commerce fulfillment centers to sort parcels to specific destinations.



Pop Up Wheel Sorting Conveyor

- **Right angle conveyor system** transfers utilize a transfer head to push the product off a conveyor onto a perpendicular or parallel conveyor. Perfect for operations where space is limited, right-angle transfers can move products onto perpendicular or parallel conveyors, making them ideal for intricate conveyor systems with multiple pathways.



Right Angle Transfer Conveyor

- **Arm/pusher style sorter conveyor system** divert products onto chutes that are 90-degrees from the sorting conveyor. A narrow belt sorter is designed with multiple narrow belts that transport the product. Commonly used in manufacturing facilities, arm/pusher sorters can divert products onto chutes at 90-degree angles, which is useful for organizing products based on different processing or packaging requirements.



Arm/pusher style sorter conveyor system

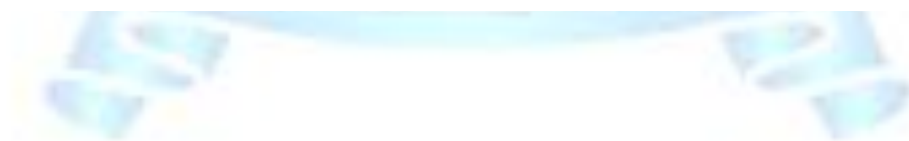
- **Narrow belt sorter conveyor system** consists of a series of narrow belts that span the width of the conveyor, each with its own take-up. At the point of sortation, the belts divert in unison to guide the product towards its designated location, either to the left or right of the conveyor. This type of sorter is effective for handling small to medium-sized products and is commonly used in industries such as retail, parcel handling, and e-commerce.

- **Tilt tray sorter conveyor system** uses a tilting tray at divert points to slide each item onto the proper chute. Lastly, the cross-belt sorter utilizes a series of small, individual belted trays which are activated when an item needs to divert off one conveyor onto another at a 90-degree angle. This versatile solution for sorting a wide range of product sizes and shapes is often used in retail and e-commerce distribution centers for sorting items to specific

destinations or order fulfillment areas.



- **Cross-belt sorter conveyor system** is a high-speed conveyor system equipped with a series of small, individual belts (carriers) mounted on a chain that transports items to their designated locations. Each belt can move independently, allowing products to be sorted and discharged at 90-degree angles to either side of the conveyor, facilitating accurate and efficient sorting for a range of industries, such as e-commerce, logistics, and retail distribution. The system's flexibility and precision make it a popular choice for facilities that handle a diverse range of product sizes and types.





Conveyor Cross Belt Sorter

Benefits of Custom Material Handling Conveyors for Industrial Environments

Custom material handling conveyors are specifically designed to meet the unique requirements of different industrial settings, providing several key benefits:

Adaptability to Different Materials

Conveyors can be tailored to handle various types of materials, ensuring that they are transported safely and without damage. This is crucial in preserving the quality and integrity of products throughout the handling process.

Enhanced Efficiency and Productivity

By accommodating various production processes, conveyors optimize workflow and minimize downtime. This streamlined operation significantly enhances efficiency, which in turn boosts overall productivity.

Automation has significantly transformed material handling conveyors, propelling them to new heights of efficiency. Automated and semi-automated conveyors, outfitted with sophisticated sensors, controls, and artificial intelligence, provide precision in the movement and handling of materials, thereby minimizing human error and maximizing productivity. These smart systems are capable of real-time tracking and monitoring of goods, ensuring accurate delivery and effective inventory management, ultimately optimizing the entire supply chain process.

Scalability for Industry Changes

Conveyors are designed with scalability in mind, allowing for easy adjustments and modifications as the needs of the industry evolve. This flexibility is vital for businesses that anticipate growth or changes in their operations over time.

Integration with Existing Systems

Conveyors can be seamlessly integrated with existing material handling systems, ensuring a cohesive and efficient operation. This integration is essential for

maintaining a smooth workflow and preventing bottlenecks in the production process.

Cost-Effectiveness

While the initial investment in a conveyor may be high, the long-term savings realized through improved efficiency, reduced product damage, and ada

Material Handling Conveyors Services

Design and Consulting Services

Design and consulting services are crucial to developing a conveyor system that meets the unique needs of your operation. At REB Storage Systems International, we offer design and consulting services to ensure that your conveyor system is efficient, effective, and tailored to your specific requirements. Our team of experts works closely with you to understand your needs and develop a system that maximizes productivity and efficiency.

[Learn more about our Material Handling Conveyor Systems Design and Consulting Services](#)

Installation Services

Installation services ensure that the conveyor system is set up correctly for smooth operation and longevity. REB Storage Systems International has more than 60 years of experience installing state of the art systems for warehouses of all different sizes. Our expert team ensures that your system is installed to meet the specific needs of your operation, guaranteeing optimal performance and a smooth workflow

[Learn more about our Material Handling Conveyor Systems Installation Services](#)

H3 Conveyor Systems Project Management

Conveyor systems project management services ensure that your conveyor system installation or upgrade is completed on time and within budget. REB Storage Systems International has a dedicated team of project managers who specialize in overseeing conveyor system projects from start to finish. Our experienced project managers work closely with you to ensure that every aspect of the project meets your specific needs and expectations, providing you with peace of mind and a seamless installation.