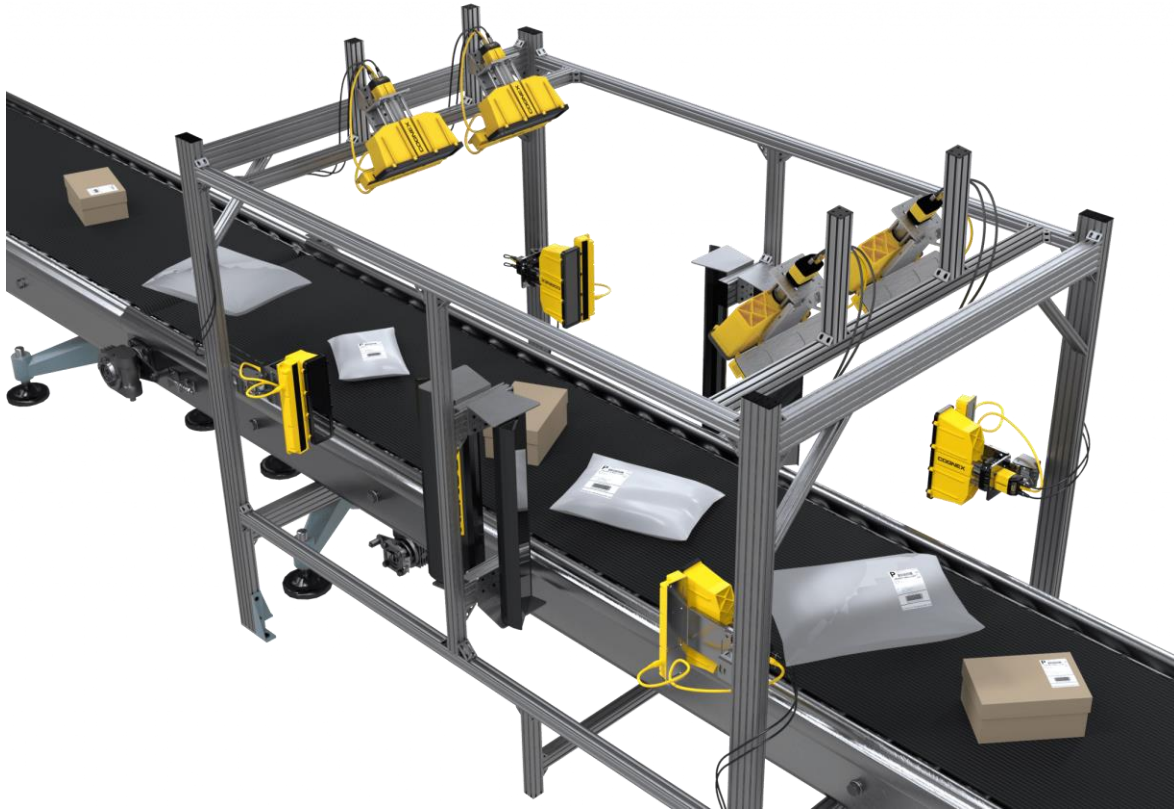


Industrial Robots for Inbound Logistics Tasks



How Manufacturers Use Robots for Inbound Logistics Tasks

Manufacturers utilize robots in inbound logistics to enhance efficiency, accuracy, and safety in the movement and handling of raw materials and components. Inbound logistics involves the processes related to the procurement and transportation of materials from suppliers to manufacturing facilities. Here's how manufacturers employ robots in this area:

Automated Guided Vehicles (AGVs)

- **Description:** AGVs are mobile robots that transport materials within a facility without human intervention.
- **How They're Used:**
 - **Material Transport:** AGVs move raw materials from receiving docks to storage areas or production lines.
 - **Load Handling:** They can carry pallets, containers, or bins filled with components, reducing the need for manual labour.
 - **Route Optimization:** AGVs follow pre-defined paths or use sensors and maps to navigate dynamically, optimizing transport routes.
- **Benefits:** Increases efficiency, reduces labour costs, and minimizes the risk of injuries associated with manual handling.

Autonomous Mobile Robots (AMRs)

- **Description:** AMRs are advanced mobile robots capable of navigating and operating independently within complex environments.
- **How They're Used:**
 - **Dynamic Navigation:** AMRs navigate through warehouses, avoiding obstacles and adapting routes in real-time based on the environment.
 - **Order Picking:** They can assist in picking raw materials and components from shelves and delivering them to production lines or staging areas.
 - **Inventory Management:** AMRs can scan barcodes or RFID tags to update inventory levels automatically.
- **Benefits:** Provides flexibility, enhances productivity, and improves accuracy in managing materials.

Automated Storage and Retrieval Systems (AS/RS)

- **Description:** These systems integrate robots and computer controls to automatically store and retrieve materials in warehouses.
- **How They're Used:**
 - **Storage Management:** Incoming materials are automatically placed in designated storage locations based on an optimized system.
 - **Retrieval:** When materials are needed, the AS/RS retrieves them and delivers them to the production line or staging area.
 - **Inventory Control:** Automated systems track inventory levels in real-time, ensuring efficient stock management.
- **Benefits:** Maximizes space utilization, increases speed in retrieving materials, and enhances accuracy in inventory management.

The Types of Robots Used for Inbound Logistics Applications

Manufacturers have some flexibility when choosing the type of robot for their die-casting applications. The most common types of robots used for die-casting tasks include:

- Sorting robots
- Delivery robots
- Palletizing robots

Sorting Robots

- **Description:** These robots use sensors and vision systems to classify and direct incoming materials.

- **Applications:**
 - Sorting items on conveyor belts based on various criteria (e.g., size, weight, or quality).
 - Directing defective or excess items to appropriate processing areas.
- **Benefits:** Reduces sorting time, minimizes errors, and increases operational efficiency.

Delivery Robots

- **Description:** Small robots designed for short-distance transportation of materials within facilities.
- **Applications:**
 - Delivering components or raw materials from one area of the facility to another.
 - Assisting in transporting kitted items to production lines.
- **Benefits:** Increases efficiency in material movement and reduces the need for manual handling.

Palletizing Robots

- **Description:** Specialized robots designed to stack and organize pallets of materials efficiently.
- **Applications:**
 - Arranging incoming materials on pallets for storage or transportation.
 - Handling bulk items and organizing them for easy access.
- **Benefits:** Enhances productivity in warehousing and reduces labour costs associated with manual palletizing.

Technical Specifications Inbound Logistics

Forklifts



Technical Specifications of Forklifts

Specification	Details
Type	Electric, Diesel, LPG
Load Capacity	1,500 kg to 10,000 kg
Lift Height	Up to 7 meters
Weight	3,000 kg to 6,000 kg
Mast Types	Standard, Triple Stage, Quad Stage
Turning Radius	1.5 meters to 2.5 meters
Battery Life	4 to 8 hours (Electric)
Speed	Up to 20 km/h
Controls	Electric joystick, hydraulic control
Safety Features	Seatbelt, tilt sensor, safety alarms
Maintenance Requirements	Regular oil checks, battery maintenance

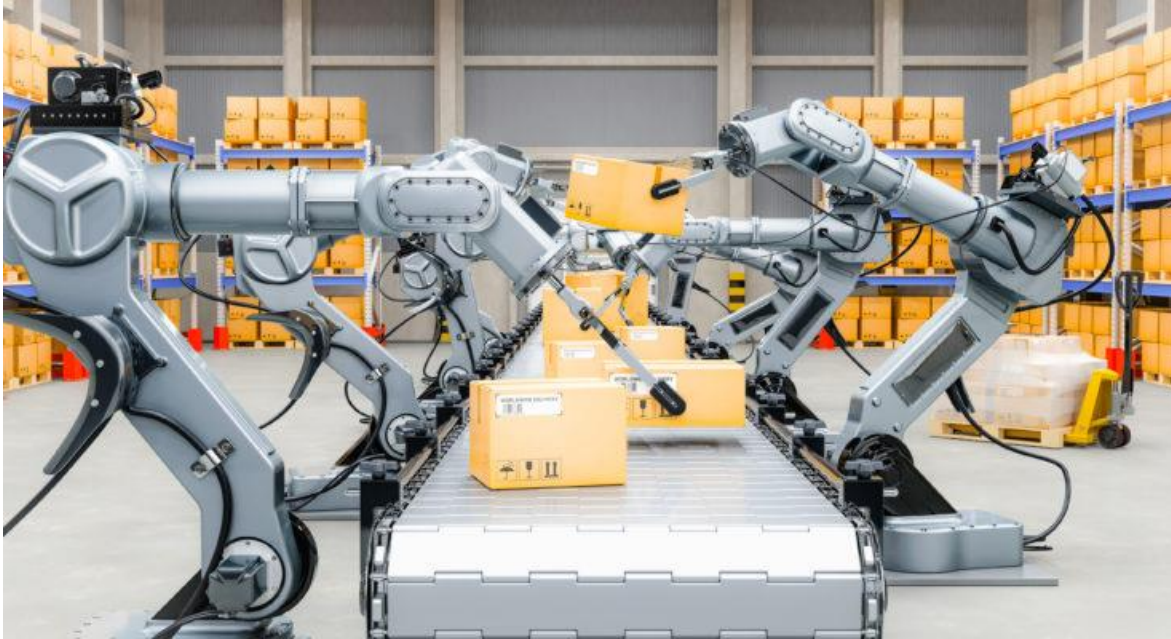
Pallet Jacks



Technical Specifications of Pallet Jacks

Specification	Details
Type	Manual, Electric
Load Capacity	1,500 kg to 3,000 kg
Fork Length	1,000 mm to 1,200 mm
Fork Width	550 mm to 685 mm
Turning Radius	1.5 meters to 2 meters
Lift Height	Up to 200 mm (manual) or 800 mm (electric)
Weight	150 kg to 300 kg
Wheels	Polyurethane, Nylon
Safety Features	Load backrest, emergency release handle
Maintenance Requirements	Regular inspection, wheel replacement

Conveyor Belts



Technical Specifications of Conveyor Belts

Specification	Details
Type	Modular, Belt, Roller, Slat
Load Capacity	Up to 2,500 kg
Belt Width	200 mm to 1,200 mm
Belt Speed	0.1 m/s to 3.5 m/s
Length	Customizable, typically up to 50 meters
Power Supply	110V, 220V, or 400V AC
Motor Power	0.5 kW to 5.0 kW
Control System	Manual, PLC-controlled
Material	PVC, Rubber, Steel, Polyurethane
Safety Features	Emergency stop, guards, sensors
Maintenance Requirements	Regular cleaning, belt alignment checks