Robotic Palletizing For Food Manufacturers

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Robotic palletizing is an effective way for food manufacturers to ensure proper palletization when preparing pallets of varying shapes and sizes.

A robotic palletizing system can palletize multiple SKUs simultaneously and can be configured to handle cases, bags, and other products at the same time. Robotic palletizers have the ability to either palletize mixed unit loads or palletize multiple SKUs simultaneously on separate homogenous pallets (each pallet has the same size and shape case but can have different flavors).

True mixed load palletizing will palletize different shapes and types of products on the same pallet. For example, mixed loads would be needed by a grocery distribution warehouse, sending inventory to grocery stores to fill their shelves. However, food manufacturers in general would palletize using homogenous loads as each production line is set up to produce the same or similar products (these may consist of flavor variations, different brand labels, etc). Robotic palletizers are an ideal choice for centralized palletizing systems, taking the output of multiple production lines and palletizing with one or more robots.

For proper palletization, the robot’s End-of-Arm Tooling (EOAT) must be designed to handle the manufacturing plant’s range of product types and package types. For example, Line 1 may be producing 50lb bags of a food ingredient for wholesale while Line 2 may be placing the same product into small pouches or cartons which then may be placed into trays, cases, spot packs, or other type of secondary packaging. The EOAT can be designed to handle all the different types of packaging that the plant produces, allowing multiple shapes and sizes to be palletized with the same robot.

To maximize throughput, manufacturers should work closely with machinery builders such as Schneider Packaging Equipment to optimize the palletizing solution to fit their facility (optimize floor plan), handle their current products and planned future products, maximize ergonomics, minimize labor, and maximize Overall Equipment Effectiveness (OEE). All of this combined will yield a solution that has the quickest Return on Investment (ROI).

Another factor to consider is the unit loads (full pallet) stability and strength during transportation. Whether bagged or in some other secondary package, it is important not to overload a pallet to the point where the bottom layers can be crushed. Although there is a strong desire to maximize a trucks ‘cube out’ (maximize trailer weight or completely fill its volume), care must be taken to ensure that the unit loads can withstand the shock and vibration of travel.

To improve stability, the use of stretch wrapping or banding can be implemented. For very unstable products such as bundles of diapers, the use of simultaneous

palletizing and stretch wrapping can be employed, as with our Stack & Wrap palletizer.

Another method that can be used to stabilize a unit load may be simple string tying, where a string is tied around every layer as might be done in bulk bottle palletizing. The type, method and process for unit load stabilization is product dependent, and an experienced palletizer builder can provide a wealth of knowledge and expertise.

As production requirements continue to evolve, both production volumes and the number of SKUs continue to increase. This requires current floor space to be utilized to the fullest. The flexibility of robotic systems accommodates these increases without adding additional lines. In some cases, production lines that were SKU specific can be eliminated, thereby gaining usable production floor space.

An automated packaging system can be laid out to be compatible with almost any current plant layout to minimize the distance to transport consumable materials. This kind of spatial economy can significantly reduce handling costs and work in process by eliminating double handling, buffering, and daily inventory.

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