

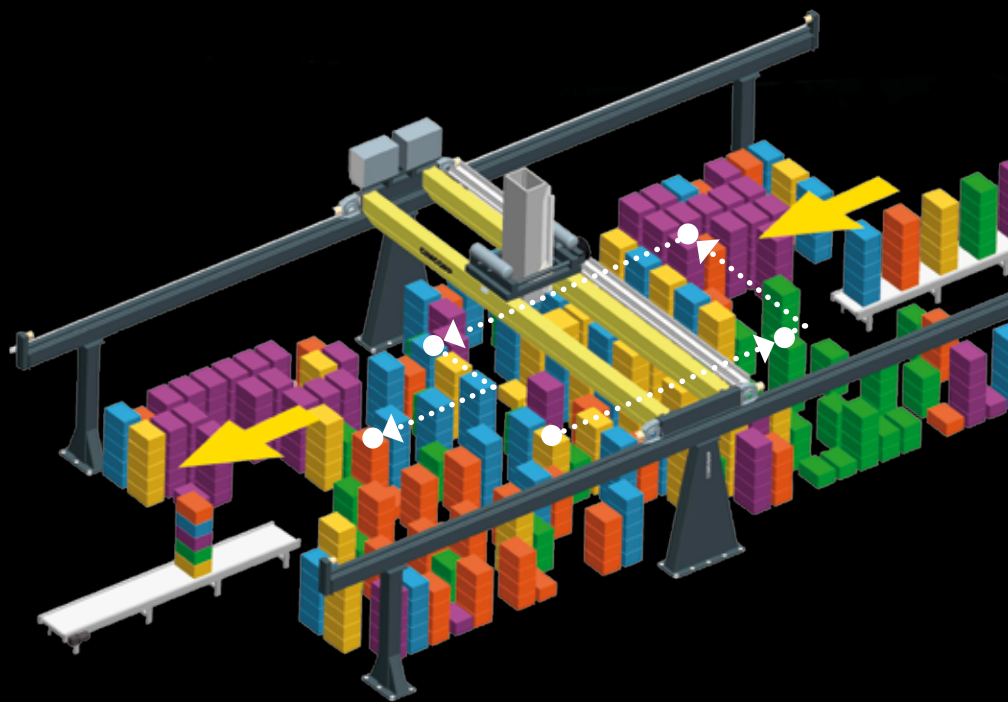


Benefits are improved efficiency and reduced space requirement

Gantry robots make a dream factory

More compact, efficient, and safer plants can be achieved when order picking and storage of products is handled by a gantry robot with its dynamic grip working at material flow junctions.

The superiority of the gantry robot compared to conventional logistics systems is largely based on working on high guide beams above the storage area. Only the robot support legs extend to the floor, so the floor space under the robot stays free for product order picking and storage. Thanks to innovative product development, a larger proportion of the factory floor area can be designed for effective use in production.



The MultiPick order picking concept

- The robot picks the first product from a pure product stack.
- The robot moves to the next product and picks the required amount. The order picking cycle continues for other products, until the tubular stacking gripper of the robot is full.
- The robot delivers the customer stack onto the outgoing conveyor.
- The stack moves on to palletizing, roll containers, dollies or for loading as such onto the delivery vehicle.
- The robot returns either to store a new product stack from the incoming conveyor or to continue order picking customer stacks from the warehouse.

Normally two linear gantry robots operate on the same horizontal guide beams but have their own working envelopes where they manage the material flows in four different directions. The robots can pick up and deliver products to any storage point in the storage area. According to its use, the robot can pick up one or more units at a time from the product stacks by means of the purpose-built gripper, and form customer stacks that include different products.

The TyrePick robot is at its best for buffering and distribution center tasks at tire plants, whereas MultiPick handles plastic crates and is ideal for order picking tasks in the food and beverage industry. Both robot applications are based on the same linear robot family.

Efficiency for tire flow junctions

The journey of the tires to the robot's working envelope may start from the process and testing machinery as a flow of single tires or in stacks on pallets from the warehouse. TyrePick sorts individual tires into stacks on

the floor by type and if necessary by grade, and unloads pallets stack by stack. When the tire's journey continues for example to the curing presses, testing machines, to be stored or dispatched to the customers, the robot picks the ordered tires from the stacks and delivers them for transportation to the following process.

The TyrePick robot can also sort and store wheels from the wheel mounting line and pick them for delivery to the car assembly lines in the right order and at the right time.

The TyrePick robot can stack tires using horizontal palletizing or palletizing cells can be attached to the robot connection, whereby tires can be palletized in storage cages vertically, or rick-rack. Special stackers and destackers can be used to assist.

Quicker material flow to distribution centers

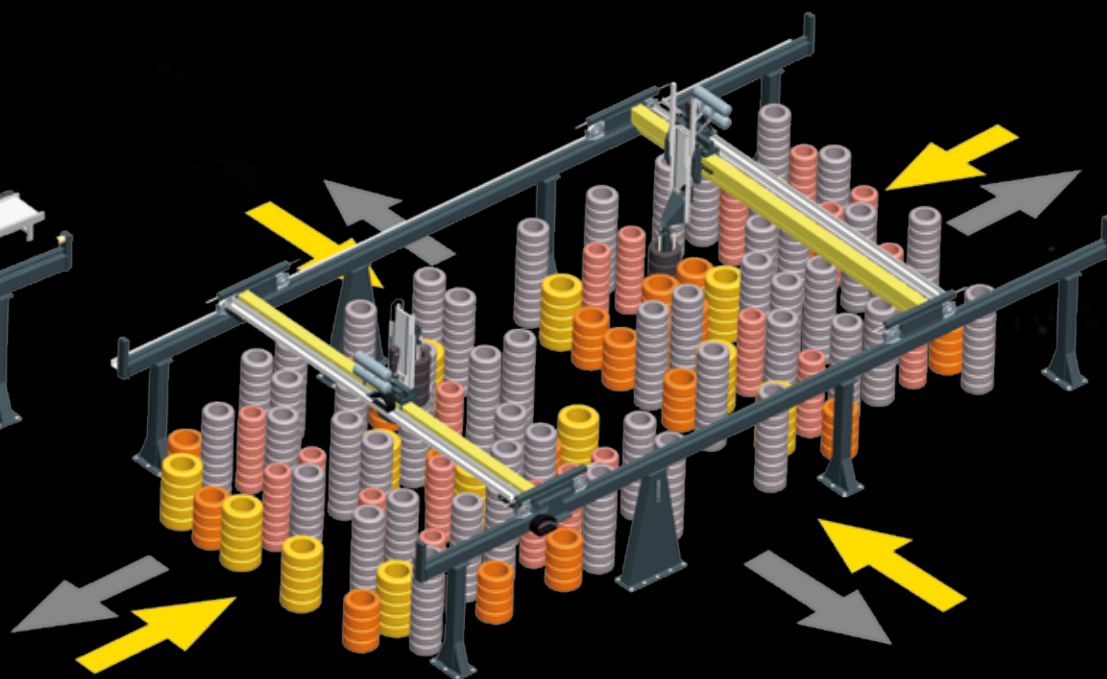
The other member of the product family, MultiPick, manages material flows in distribution centers just as efficiently as its relative in the tire plant. The products to be sorted

could arrive in the robot's working envelope from any direction, which gives an extremely flexible basis for plant design.

Products are transported from the robot's working area in plastic crates that the robot transfers to the storage and order picking area located beneath. The robot picks customer stacks from these stacks according to the order.

MultiPick is able to take products to any storage location and pick them up from any place e.g. on the FIFO (first in, first out) principle. Like TyrePick, the robot can transport finished customer stacks flexibly in every direction.

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The TyrePick concept for the tire factory:

- Tires can come into the robot's working envelope from any direction, individually or in stacks, by conveyor, pallet or in cages.
- Tires can leave the robot's working envelope in any direction, individually or in stacks.
- At one time the robot can handle a single tire or many tires in a stack.
- The robot can take a tire or a stack of tires to any storage position in its working envelope and bring them from any storage position in its working envelope.
- Various palletizing cells, stackers and destackers can be attached to the robot connection.