

MD Foods

Tyrstrup Terminal: Order Picking System



*"1700 crates picked and assembled for order per hour
- with no heavy manual handling"*

Order picking and load assembly of dairy products

The need to reduce heavy, monotonous manual handling in cold stores and a requirement to rationalise distribution created the background for a liaison between the companies UNIVEY-OR, ABB and the MD Foods terminal in Tyrstrup. The result is a newly developed, very compact and highly efficient order picking system. At MD Foods, Tyrstrup, the new order picking system distributes the 60 fast moving dairy products to more than 600 customers all over the southern part of Denmark. All orders received before 6.00 p.m. are delivered to the customer the following morning. Picking for these orders takes place between 11.00 p.m. and 7.00 a.m., and within this period approximately 10,000 whole crates and 35,000 items (picked manually to approximately 4,000 crates) are picked and assembled to order. Apart from obtaining a very high picking capacity and accuracy, the system has substantially reduced the man-power required and the manual handling, as full crates are handled automatically.

Products

The system is capable of handling dairy products in crates and stacks of crates.
 2 different types of crates are used:
 D-27 = L x B x H = 400 x 300 x 270 mm
 D-9 = L x B x H = 400 x 300 x 90 mm

Incoming products

There are 2 ways in which products enter the picking area. High frequency products enter from the cold store in the dairy on steel pallets via pos. 1. Here they are de-palletised and distributed by shuttle car pos. 2 into stacks of crates (8 in the height, 4 stacks at a time) to conveying system pos. 3. Products from other dairies and external suppliers are delivered on roller containers to pos. 4 and are removed and stacked by robot pos. 5 to shuttle pos. 6, which distributes the products to conveyors for slower moving products pos. 7.

Automatic picking

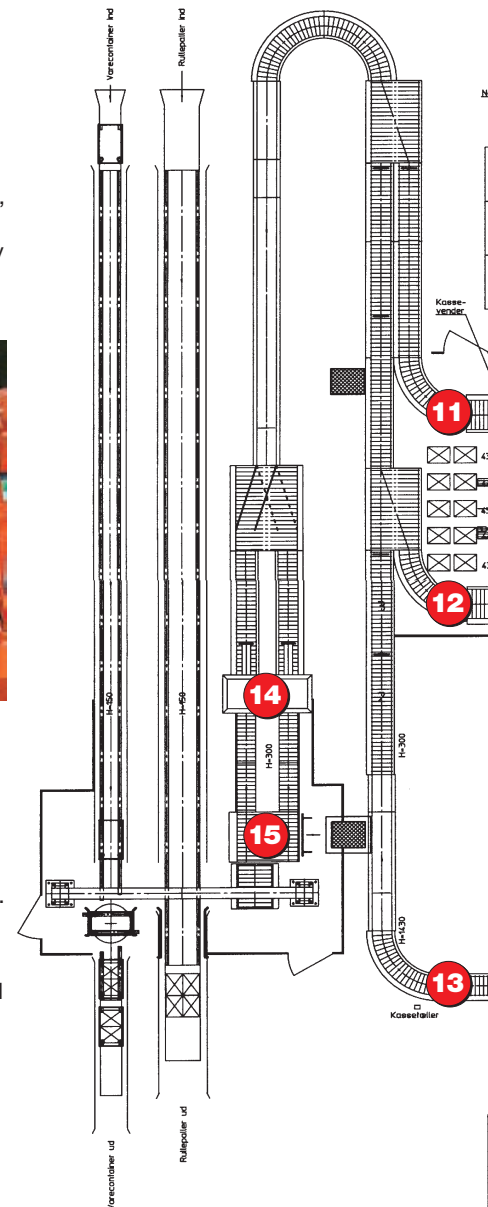
3 picking robots pos. 8 run on rails and carry out automatic picking from conveyors pos. 3 or 7. 1 or 2 crates are picked at a time and they are placed on order conveyor pos. 11 or pos. 12. Each order conveyor holds a maximum of 30 crates at a time.

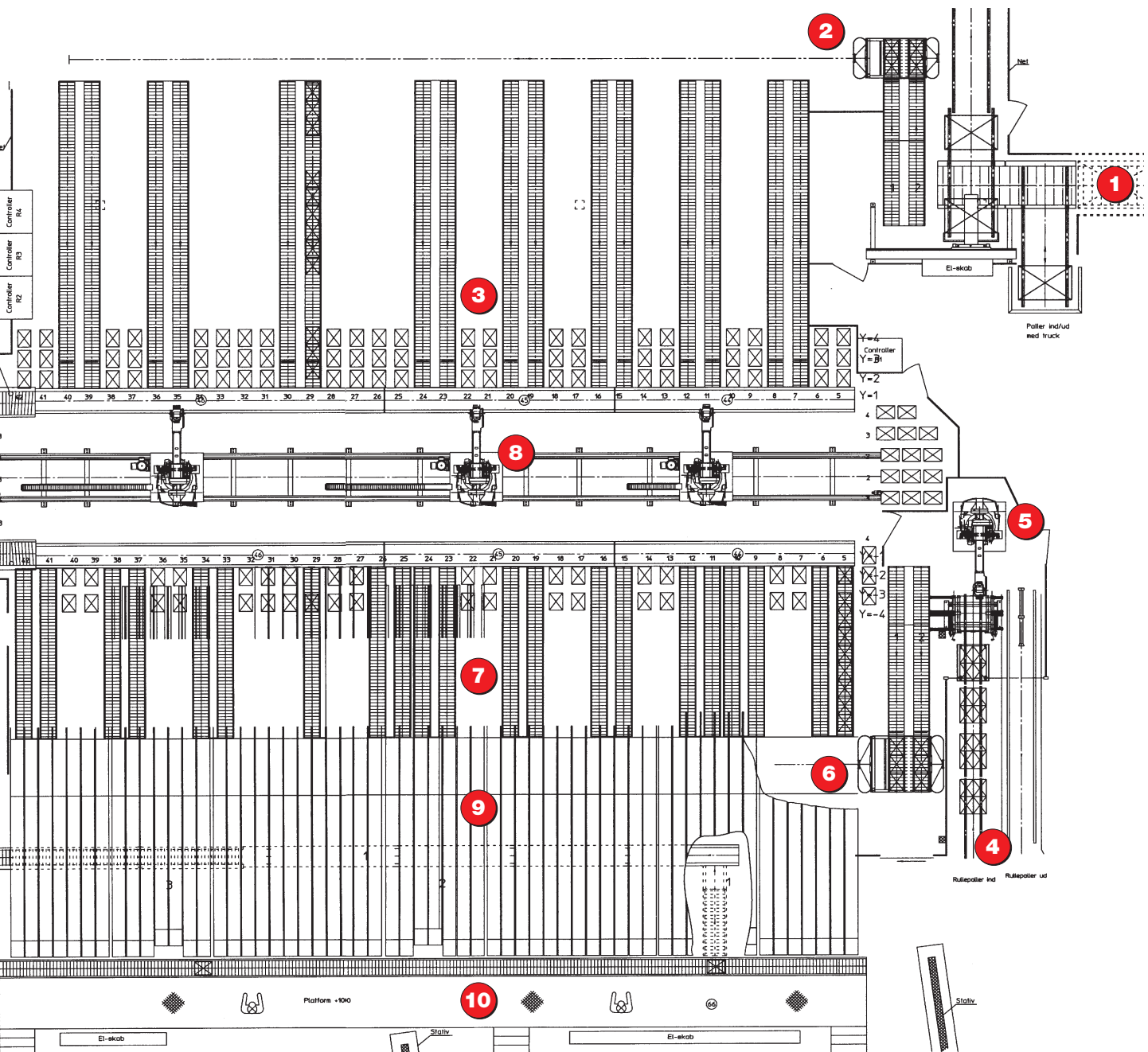
Manual picking

Orders less than 1 crate are picked manually at pos. 10 by 2-3 operators. Products for manual picking are collected by the 3 robots at pos. 8 from conveyors pos. 3 and 7. They are placed on gravity conveyors pos. 9 immediately above conveyors for less frequent products pos. 7. The picking operation is organised by a pick-to-light system, and crates with picked products are taken away by order conveyor pos. 13.

Order assembly

Order conveyors pos. 11, 12 and 13 convey the picked orders to stackers pos. 14. A record is kept of the number of crates in each order, and a block control system matches orders from pos. 11 and 12 (automatic picking) with orders from pos. 13 (manual picking). Crates are stacked in stacks of maximum 6 D-27 crates by stackers pos. 14. The crate flow is





divided between stackers by a divider placed immediately before pos. 14. As a spin-off, the system is capable of controlling the number of crates in each stack and form even layers in the despatch units (roll containers).

Loading unit

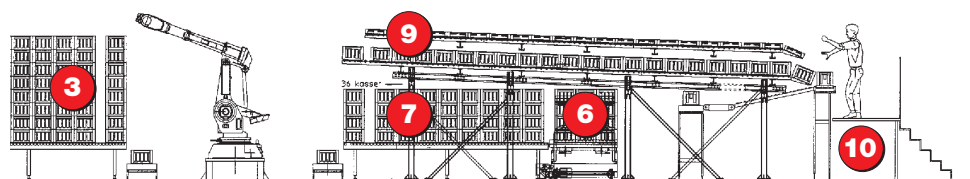
Products are formed in units by pos. 15, where a pusher loads the products onto empty roller containers; 4 stacks with 6 crates each for shop containers, or 2 stacks with 6 crates each for

product containers. When a roll container is completely loaded, it is moved to floor level and equipped with label and subsequently moved manually for further picking or hooked on a floor chain conveyor and pulled to the marshalling area.

Control system

The conveying system is

controlled by 2 plc's with a comprehensive fault message system. Both flow and picking operations, storing and ordering of products are carried out by a PC-based system operating as server for all operations, and all information and statistics are communicated to a host system.





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