



The company

CAFA, based in Merano, is one of the largest fruit and vegetable cooperative societies in Alto Adige for the commerce of apples (brands: Marlene, Pink Lady, Südtirol, etc.). Established in 1933, Coop. CAFA joined VOG in 1945, and under that name no less than 356 members cultivate a total area of 1086 hectares. In 2008 the production of fruit reached 56,409,858 kg.

Last July, the co-op installed its first automatic storage system for pre-graded crop, fully integrated into the grading and packing processes.



The task

One of the issues regarding CAFA's plan to renew its sorting/grading equipment and packing facilities was the graded crop warehouse, where product rotation is very high and requires unitary accessibility - meaning very large spaces.

The processing lines need to be supplied continuously and without interrupting the product retrieval system, so handling operations must run on strict time schedules in order to ensure process continuity.

Furthermore, the system needs to be highly flexible and quick to respond to last-minute variations of retrieval quantities caused by different yields on the processing lines, changes in orders, changes in product varieties, etc. For these reasons the automated warehouses that supply the packing room regularly operate on a quick-response and stop-and-go basis.

This situation required an advanced technological solution capable of handling the goods flow from the apple sorting section all the way down to the packaged orders line-up. Added to that, human intervention should be non-existent or minimal, eliminating all product handling by traditional means, such as forklifts.

The solution and the results

In order to allow the cooperative society to minimize storage space while ensuring unitary accessibility to individual products, an automated warehouse was installed having a height of 20 m and served by 4 storage and retrieval systems, where the pre-graded crop is stored before further processing. The plant has a capacity of 235 carloads (or 7560 bins), all with controlled temperature and humidity, and is provided with a bin distribution system consisting of 12 independent steering shuttles running on a fixed monorail and connecting the warehouse to the sorting machines' outfeed and to the product packing lines.

Since the distribution system is the technological core of the whole installation, the feeding system needed to implement the following features:

- Reactivity
- Speed
- The smallest possible flow time from the moment the production control software launches a request for products to the moment the products actually enter the processing line
- The capacity to accept last-minute variations without affecting overall productivity.



Based on the required features, the solution was centred on taking the bin as the minimum handling unit, i.e., little more than 300 kg of product. This allowed considerable advantages in terms of quantity accuracy that would have been unthinkable with a "manual" logistics organization.



In the case of CAFA, what ultimately determined the success of the new logistics was, as well as the system's capacity, the close software integration between the materials handling system (developed by System Logistics) and the production management system (developed by Top Control, Terlano).

TECHNICAL FEATURES

Warehouse in Merano (Province of Bolzano)

Type of operation

- Turnkey supply (shelving + partitions + automation: storage/retrieval system with bin distribution system and SVL steering shuttles)

Special warehousing conditions

- Storage at 4 °C – 90% R.H.

Year of commissioning

- November 2008

Type of products

- Loose apples in plastic bins

Work shifts/day

- One 10h shift for packing, two 8h shifts for grading

Type of loading units (size and weight)

- Plastic bins (1120x1120xh 770 mm; 350 kg)

Daily handling operations (in; out)

- Plastic bins (1200 in, 1400 out)

Covered area

- 1250 m²

Under roof clearance

- 19.30 m, of which 1 m below floor level

Shelf height (metres); number of compartments

- 19,30; 7776

Handling equipment

- 4 storage/retrieval systems + 12 SVL steering shuttles