



### The Company

SANDALO (Sociedad ANdaluz De Almacenerias LOGisticas) is the company that runs the high bay warehouse (HBWH) and distribution centre (DC) for RENDELSUR. Rendelsur is one of the largest independent Coca-Cola bottlers in Spain with two plants located in Seville and Malaga (Comesur). Sandalo was founded in 2003 with two goals: to improve Rendelsur's distribution operations, and to be a third party distributor of finished products.

### The task

The purpose of the project - developed by the customer in tandem with System Logistics - was to eliminate the regional DCs by serving local distributors directly from a single warehouse. System Logistics designed the new plant, which consists of two main areas: one for the storage and shipping of full and mixed pallets, and one dedicated to the management of goods-to-man picking operations.

### The Solution & the Result

The plant contains 19 double-masted, double-pallet, single-depth stacker cranes 30.5 meters high - of which two are located in a chilled environment for the handling of dairy

products - as well as 65,000 pallet locations on a self-cladding HBWH. Two feeding conveyors on separate levels at the goods entrance manage incoming pallets from production and suppliers, as well as from other production facilities.

Pallets coming from both production and external locations must pass through several controls before entering the warehouse, of which the most important are: weight and profile check, pallet integrity control and barcode reading. After these control measures, a "slave pallet" is inserted if needed. The system's automation is able to deal with different pallet sizes (including the half pallet and Coca-Cola pallet size) thanks to the automatic insertion and extraction of a "slave pallet" extracted from the system just before the shipment handling area. The area dedicated to picking operations, guided by the goods-to-man concept, was developed after the warehouse was built. The characteristics of a goods-to-man picking solution include Steady Picking Locations (SPL) and SVL buffers to manage about 60 class-A SKUs. The picking area, comprised of six picking bays, is served by two single-mast, single-pallet, and single-depth stacker cranes 14 meters high to serve approximately 2,500 pallet locations in a separate picking warehouse. It is also equipped with two System Vehicle Loops (SVLs), with buffer stalls dedicated to high-moving SKUs.



Both full pallets and order pallets use the main warehouse as a meeting point in order to be shipped jointly.

Thanks to the SVL system, developed exclusively by System Logistics, the customer can easily manage a high rotation of SKUs while processing a large number of picking lines per day with only two additional stacker cranes. Automatic picking bays designed according to the goods-to-man principle are equipped with all the necessary applications: automatic empty pallet feed-in, reverse picking availability, scales for pallet weight control and lifters for better ergonomics. The picking area is directly refilled with full source pallets from the main warehouse. Once the mixed pallet (the order pallet) is created, a Laser Guided Vehicle (LGV) system brings the pallets to an automatic wrapping machine. Next, the customer's pallet is automatically reintroduced into the warehouse, ready for shipment. Picking operations also involve preparations of very large orders for local distributors which serve customers within an average 30 km radius.

The dispatching area is connected to the warehouse by two loops of 20 SVL shuttles to deliver pallets to 19 shipping docks. It is equipped with 19 bays, all with a pair of chain driven conveyors, for just-in-time shipping operations.

One of the most important features of the shipping area is how the trucks are loaded. Each truck is recognized by the system via the truck's license plate number and other information. Once the connection between the dock and the truck is made, the truck driver receives an SMS on his mobile phone and starts to approach the dock. The SYSTORE™ Warehouse Management System (WMS), developed by System Logistics, is connected to the truck's management software and when it recognizes the truck approaching the docks it begins preparing the pallets for that truck. When the loading operation begins, the truck is associated with a particular dock and the system starts to feed the pre-loading bay for that dock. The total number of pallets ready for the shipment at the moment that

the truck approaches is half of the total quantity. The WMS system gives the correct pallet sequence to make sure that the last pallet delivered is the first to be loaded onto the truck. The system is coordinated so that the remaining half of the shipment is delivered to the loading area during the loading operations that are performed by the truck's driver. The SVL enables the second half of the shipment to be delivered to the loading bay in real time and in the correct sequence. With this system, Sandalo is able to deal with 20 trucks simultaneously and with the supervision of just one person.



As a result, Rendelsur was able to: concentrate production, warehousing and picking activities for local distributors into one center; continue to use local distributors for picking activities and local warehousing; and serve customers from local distributors.

#### Technical data

##### Main warehouse

19 double-masted, double-pallet, single-depth stacker cranes  
Height: 30.5 meters  
Storage capacity: 65,000 Pallet Location  
Inbound from production: 460 P/H  
Inbound from other sites: 150 P/H

##### Picking area

2 stacker cranes  
Height: 14 meters  
Storage capacity: 2,500 PP  
SKU number: 1,200  
140 picking lines/hour  
18 cases lines/hour on average  
2,500 cases/hour  
900 mixed case pallets/day  
Reverse picking

##### Shipment area

2 SVL loops with 20 shuttles for 19 docks  
650 pallets/h  
250 trucks/day  
7,000 pallets/day