

**COMPERE**



SYSTEMS LIMITED

## *Ardo UK Limited*



## *Palletising and Pallet Distribution System Case Study*

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Start with a product that has to remain frozen during all packing and processing operations. Change its size, shape and weight depending on the growing conditions and add a highly demanding supermarket customer base and you get an insight of the challenges of the frozen vegetable packaging world

The Ardo group, headquartered in Belgium, is the most successful producer of high quality frozen vegetables, fruit, pasta and rice in Europe.

Ardo UK, the British arm of the group, famous for its Ardo and Shearway brand food lines. Had operations split between a leased production site in Headcorn and an Ardo owned cold storage facility in Ashford. Although there was only 9 miles between sites, the ever increasing cost of shuttling between the two facilities was becoming a hurdle. The solution was to extend the Ashford facility and have production and storage in one place.

The Headcorn facility had a number of automatic bag fillers and case packing equipment but all bulk materials delivery and palletising was manual. For the new facility, Ardo wanted to make operations as automated as possible.

Compere were originally approached to provide a centralised palletising solution designed to suit a future requirement of 6 production lines but initially furnished with 4. On careful consideration of the product to be handled and the relatively small area available, Compere proposed a robotic solution – a significant departure from Ardo group standard.

Historically the Ardo group had standardised on conventional layer palletisers. Robotic palletising had been tried before but the wrong type of product gripper had given robots a bad name. The initial challenge was to convince Ardo group that good quality pallet stacks could be achieved using a robot coupled with the correct manipulator.

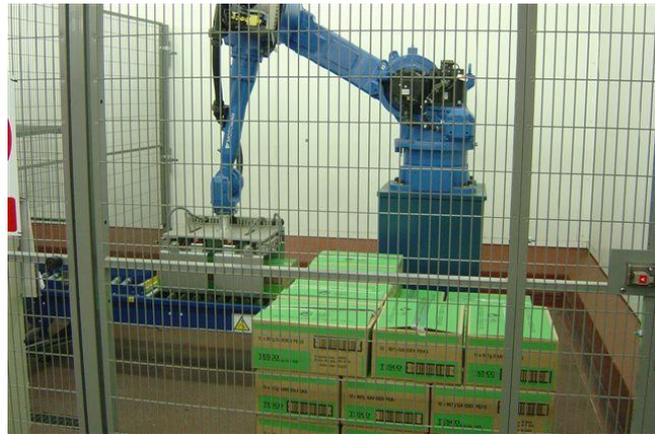
### **Compere Started by building a pilot cell**

Handling trials with two different tool types were conducted off site using product that had been in storage for some time. This demonstrated the robots ability to handle the product but, as the product was not new, could not replicate the stack quality expected with freshly packed cases.

## Ardo UK Case Study

To prove the robot capable of delivering consistent build quality in a production scenario, Compere installed a pilot palletising plant on the end of one production line at the Ardo facility in Headcorn. If the pilot plant was successful, Compere would win the order for the new palletising system. If not, Compere would remove the pilot cell and Ardo would not pay a penny.

Originally designed to allow Ardo to assess the robots ability to create acceptable stack quality with live product over a period of two weeks, the pilot cell was so successful that it remained in operation for 9 months before being moved to the new plant.



Following the success of the pilot robot plant, Compere were asked to consider expanding their remit to include the pallet distribution system on the first floor. Ardo HQ was keen to ensure that equipment installed in the UK was compatible with that in their mainland Europe facilities, particularly around the pallet handling machines where they had an excellent relationship with Atelier Dumon, a specialist supplier based in Brugge.

The problem here was that Dumon had never supplied to or installed in the UK and were not conversant with UK safety regulations, electrical standards and CDM requirements.

Compere were able to offer full integration of the Dumon equipment including engineering design meetings at their facilities in Brugge, full mechanical and electrical installation and plc controls using Mitsubishi Q Series – Ardo UK preferred PLC.

## Ardo UK Case Study

The new plant is spread across 2 floors linked via a pallet elevator.

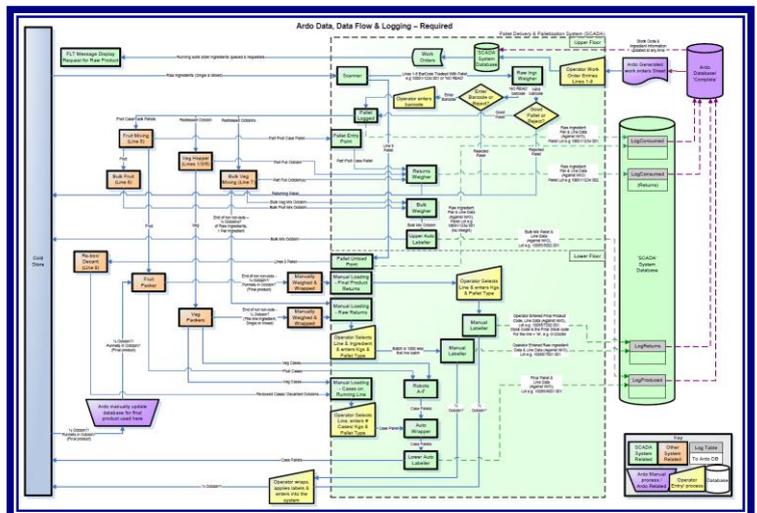
The first floor is the heart of raw product distribution and routes bulk raw product from the cold store (via the elevator) to three vegetable packing lines, one fruit mixing system and one bulk vegetable mixing system. The lines are all fed from a central pallet distribution system utilising four laser positioned transfer cars.



The ground floor houses all case packing and palletising operations. Compere supply starts post packer and comprises 4 spiral elevators, slat and roller conveyors, 4 articulating arm robots, empty and full pallet distribution, stretch wrapping and labelling.

Total capacity of the plant is 60 Tonnes of raw product translating to a finish cased rate of 80 cases per minute

To marry everything together, Compere were asked to provide a SCADA system that not only controlled the routing of product around the plant but also linked in with Ardo existing database to provide logging data, traceability and a degree of stock management.



The SCADA system allows the operator to select the SKU required for any given production run. The operator need only enter the finished product code which may comprise a single SKU fed to a bulk bag line or up to six ingredients SKU's fed to fruit or vegetable mixing. Delivery of ingredients is controlled through the SCADA which delivers individual ingredients at varying rates to suit the mix profile required.

A message display located in the cold store instructs FLT drivers to load a specific bulk raw ingredient pallet by SKU. The pallet is scanned on entry to the system confirming the product. The pallet is then weighed and its weight logged within the SCADA.

This weighing process allows Ardo to log product tonnage in to the packing hall and, based on quantity of finished product out, accurately define the volume of product lost in the packaging process.

Every pallet is tracked through the system and operators can interrogate the pallet data for any pallet in any position on the system.

As the database contains all details for every product, once the production run SKU is selected, the operator need have no further set up activities on the Compere system. The bulk container routes are known, the palletising pattern and number of layers are also held within the SCADA so the palletising robots are automatically set up to receive the cases.

The new SCADA provides Ardo with an immensely powerful stock allocation tool

Timing of the installation would be critical as building works would not be complete until September and the lease on the production facility in Headcorn, the only means of producing saleable goods, expired at the end of December 2009.

Compere worked closely with Ardo and their civil contractors to develop and agree schedules. From a start date at the end of September Compere provided Ardo with a fully functioning system by the end of the year enabling Ardo to meet their customer commitments and the shut down of Headcorn to proceed on plan.

## Ardo UK Case Study

### System Specifications

Pallet Distribution	Palletising	Software & Controls
3 level Pallet elevator	Four spiral elevators	Mitsubishi Q Series PLC
Bulk product drilling machine	Slat transportation conveyors	Compere SCADA using Mitsubishi MX4
4 single deck transfer cars	Roller accumulation conveyors	Database hosted on the same server as the SCADA. db engine is "Microsoft SQL Server 2008 Express"
6 bulk mixing tippers with pre-lifts	Four EPL80 5 axis robots fitted with twin paddle side clamps	
3 bulk bag tippers with pre-lifts	Four build stations with hydraulic lift and pneumatic pallet datum	5 plant based SCADA terminals
Chain driven live roller transport conveyors	Twin deck transfer car	1 Office based SCADA terminal
	Four pallet dispensers	VPN Link
	Octopus Compact stretch wrapper	
	2 face labeller	