palletising

Case Story

A cool solution: automatic palletising at -25 °C

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The customer stocks and delivers a wide variety of frozen vegetables. Various SKUs are stored on pallets with each pallet holding one SKU. However customers require a variety of products and therefore pallets have to be de-palletised and reloaded into cases and crates to fulfil customer orders. Cases and crates are then palletised ready for shipment.

Every product is stored by species on a different pallet but the customer's customers want a variety of products when they order. So pallets have to be de-palletised, the new combination has to be created (putting products in crates and open cases) and palletised for shipment. All cases have to be labelled on two sides, with pallets labelled once wrapped. The WMS system coordinates the picking requirement and confirms when orders have been completed. The CSi system is able to work on the forward load batch whilst picking the current order so no time is lost between batches. This requires close communication between the CSi handling system and the WMS.

Together with the customer a highly complex but very flexible system was realised. Products are fed from 7 workstations and combined to the in-feed of one high speed palletiser. The palletiser continuously receives the batch information and automatically resets in preparation for the next batch. CSi's Intelliware SCADA/MES system is used to control all the picking activities on the floor. All products are counted and checked, and the shop floor control is optimised and visualised on the HMI.

A lot of attention has been given to sustainability. Not only did frozen products have to be handled, but also the cases and intermediate sheets had to be carefully stacked for reuse. Pallets are being reused and waste plastic sent to an automatic waste disposal unit via waste conveyors.

KEY DATA

- ✓ Sector: Frozen vegetables (-25C)
- ✓ Country: Germany
- ✓ Complete system to de-palletise and commission products for order preparation and palletising including waste conveyer, labelling and wrapping
- ✓ Capacity: 200 pallets in an 8 hour shift via 7 workstations
- ✓ Cases are open (no lids)

BENEFITS

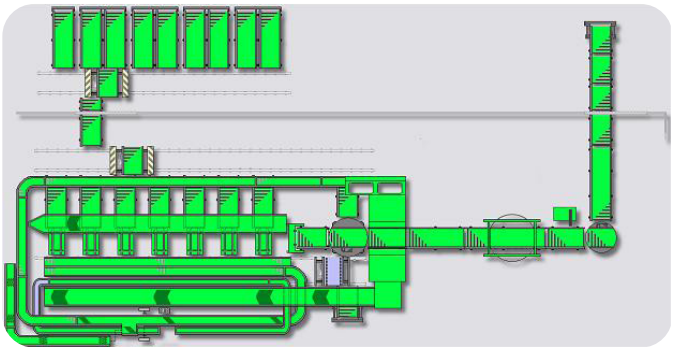
- ✓ Improved ergonomics: from manual to semi-automatic operation
- ✓ Products stay less time out of the freezer
- ✓ Minimum usage of floor space: very compact system
- ✓ Controlled process for zero-defect orderpicking
- ✓ Production output doubles but with the same number of employees
- ✓ Dramatic improvement in safety as fork lift truck movements are minimised

TECHNICAL HIGHLIGHTS

- ✓ Lift table moves up every time a layer is removed
- ✓ Continuous 'next batch' preparation though ERP whilst in operation
- ✓ Pallet conveying and transfer car in deep freeze environment
- ✓ Palletising of open cases containing bags of frozen product
- ✓ Combined fire door and freezer door

The system is semi-automated and therefore a lot has been done to optimise the ergonomics for the employees. As layers of product are removed from the pallet, the lift table adjusts automatically to enable the operator to have easy access to the next layer. Carefully designed platforms are in place to prevent operators having to bend and improve access around the workstations.

A large counter screen centrally located in the picking area informs operators on the status of the products picked and workload. Workstations are able to call for the next batch to ensure a continuous flow of product, resulting in a smooth operation with no errors or damaged product.



System overview

In order that the cases are filled to the correct volume CSi has included a check weighing system. All of these improvements have ensured that operators carry out their work in an ergonomically and friendly environment which has boosted efficiency and reduced the time products are held outside of the freezer.
The products presented a challenge for automatic handling as they are packed into plastic bags and compressed into odd shapes prior to freezing.



This project was not easy from the onset. CSi's initial involvement was to only replace the palletiser, however when the customer learned of CSi's capabilities the scope of the project was widened which resulted in an order for a complete product handling system.

Shortly after the start of the project the teams found a new way of working which would make further improvements resulting in more efficiency and a more compact solution. The complete concept was changed, new layouts were drawn and a new functional specification written which resulted in the system performing at its optimised level. This is at the core of CSi's philosophy, *'Creating Solutions Together'*.

The customer, a privately owned company in Germany, had limited experience with automatic palletising and conveying systems, therefore CSi's training and instruction given was invaluable.
This new system was constructed in a new building which required new lighting, toilets, floors and wall paint, with these building modifications being carried out at the same time as CSi was installing and commissioning the system. All achieved within a tight budget, this is another of CSi's successful projects.

INNOVATIONS

- ✓ Semi-automatic orderpick system for ergonomic and efficient handling
- ✓ Transfer car with adjustable height
- ✓ Intelliware coupling with ERP: everything is counted and visualised on a central screen
- ✓ Pallet conveyors integrated into warehouse racking