

## SUSTAINING GROWTH & THE ENVIRONMENT



**ONE OF THE LARGEST DISTRIBUTION CENTRES IN ASIA, THE NIKE CHINA LOGISTICS CENTRE (CLC) IS HELPING TO DEFINE HOW LARGE-SCALE FACILITIES CAN OPERATE MORE SUSTAINABLY AND EFFICIENTLY.**

The new NIKE China Logistics Centre (CLC) handles all inbound and outbound shipments of NIKE apparel and footwear for mainland China. The centre has been designed around innovative 'green' technologies which include the use of solar heating and rainwater collection systems, as well as the world's most energy-efficient sorters.

The Crisplant LS-4000 cross-belt and tilt-tray sorters use linear synchronous motor technology to reduce energy consumption by 75%, compared to

conventional sorter technologies, and also reduce the footprint required for sorting.

The integration of the Crisplant LS-4000 sorters and state-of-the-art software controls is helping NIKE to achieve a number of its core corporate goals: increased operational efficiency, shipping flexibility and accuracy, as well as reducing handling costs, energy consumption and the environmental impact of its operations.

# FAST AND FLEXIBLE SORTING



**THE LS-4000CB CROSS-BELT SORTER HAS SPECIALLY DESIGNED CHUTES TO REDUCE THE FOOTPRINT OF THE SORTING AREA**

## THE PRE-SORT PROCESS: COMPLETE CARTONS

The sortation process starts with the inbound pallets being moved by forklift truck, from the Very Narrow Aisle (VNA) warehouse, onto a mezzanine pallet staging area. From here, individual cartons are manually transferred from the pallets onto a conveyor belt which merges the cartons onto a line sorter. The line sorter delivers the cartons to three possible destinations depending on whether the goods are to be shipped in batches, or made up into new cartons containing a number of different items:

- Whole cartons for onwards shipment are delivered to the shipping sorter via three lanes for automatic print-and-apply labelling and one bypass lane
- Cartons with items ordered in whole-carton batches are transferred to the pre-sorter induction area
- Cartons containing items that will be collated into mixed-item shipments are delivered to the storage area on Level 3 of the building.

## COMBINING MULTIPLE ITEMS INTO SINGLE CARTONS

Items unpacked from the cartons sent to Level 3 are placed into storage racks from which operators pick and place the individual items into plastic totes. The operators are guided by NIKE's own Warehouse Management System (WMS) and voice-control software. The conveyor transports the totes, containing individual items of clothing, to the conveyor on Level 2.

The totes containing individual items, and whole cartons containing batches of the same item, are then merged before arriving and manually placed onto the LS-4000CB cross-belt pre-sorter. This automatically sorts the items in the totes into pre-defined hoppers which are manually transferred to and emptied at the hopper tipping area before being manually inducted into the final sorter.

## FINAL SORTING AND SHIPPING

A second Crisplant LS-4000CB cross-belt sorter automatically distributes the individual items into chutes which have been specially designed for the NIKE CLC to reduce the footprint of the sorting area.

The chutes feature dividers which rise to separate items into batches, allowing each batch to be packed into a single carton by the operator below, before being pushed onto a conveyor for delivery to the shipping sorter. The LS-4000E tilt-tray shipping sorter discharges the packed cartons onto braked roller chutes for palletising, or onto extendable boom conveyors for live loading onto the outbound transport.



# OPTIMISED CONTROL

**SYSTEM-WIDE VISIBILITY AND COMPATIBILITY WITH NIKE'S OWN WMS ALLOWS EVERY ASPECT OF THE SORT PROCESS TO BE OPTIMISED FOR GREATER EFFICIENCY**

The controls for the LS-4000 sorters are seamlessly interfaced into NIKE's own Warehouse Management System (WMS). Crisplant's software system integrates three levels of controls:

- Embedded software on the controller boards for each sorter
- Crisplant Machine Control (CMC) system to keep track of items on the sorters including scanning information and sort positions
- Crisplant System Control (CSC) to adjust and optimise the sortation process for each individual sorter.

The ability to combine precise control of individual machines, with system-wide visibility of work flows, allows the system to be continually optimised to avoid bottlenecks and achieve faster throughput and higher productivity.



## LOOKING TO THE FUTURE

A three-year residential service agreement, with Crisplant staff on-site to operate and maintain the sorters, ensures maximum system availability and operational security and allows the systems to be updated as new sorter technologies and software controls are introduced. The initial design for the Crisplant sorters also includes plans to increase capacity to meet a future growth in demand.



## SUMMARY

By combining the highest level of energy-efficiency with the flexibility to sort flats and parcels on the same system, Crisplant LS-4000 sorters enable NIKE to increase accuracy and productivity whilst reducing shipment times and costs, and minimising the environmental impact of their operations.

**CASE STUDY**  
**NIKE CHINA**  
**LOGISTICS CENTRE**

## CRISPLANT SYSTEM OVERVIEW

Complete material handling system including:

- Two LS-4000CB cross-belt sorters for pre-sort and final sort
- One LS-4000E tilt-tray sorter for shipping
- 75% savings in energy-consumption over conventional sorters
- Crisplant software controls for system-wide optimisation. Crisplant's system control is interfaced to NIKE's WMS through a warehouse control system.

The sorting system was integrated with:

- Over 9 km of conveyor, controlled by 5 Siemens S400 PLCs
- More than 90 datalogic barcode scanners
- 2 high speed sliding shoe sorters (line sorters) controlled by 2 Siemens S400 PLCs
- 16 automatic print and apply stations including bespoke HMI controls
- System-wide compressed air supply
- A Warehouse Control System
- A SCADA system.



Watch the Crisplant sorters in action at the Nike CLC:  
[www.beumergroup.com/warehouse-distribution](http://www.beumergroup.com/warehouse-distribution)



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