



PACKAGING



## Slip-free carton stacking

Future-proof and sustainable solution for transporting stacked cartons

Case Study: PepsiCo, Netherlands





## PepsiCo invests in a future-proof and sustainable solution for transporting stacked potato chips cartons

The food company PepsiCo produces potato chips in Broek op Langedijk. For transportation, the company needed a new system that would reliably prevent cartons stacked on pallets from slipping. The company chose Nordson hot melt technology, which has drastically reduced adhesive costs and the number of customer complaints.

### The Challenge

Potato chips have been produced in Broek op Langedijk in the Netherlands since 1958. The initiative to process potatoes into potato chips came from the farmers in Langedijk, who wanted to find another market for their potatoes. Their courage paid off as the plant grew over the years to become one of the largest potato chip factories in Europe. Today, the plant belongs to the food and beverage company PepsiCo, which has around 300 employees in Broek op Langedijk. The factory produces, among other things, Lays' brand potato chips, fills them into bags, packs them in cartons, stacks them on euro pallets and delivers them. Depending on the size, up to 12-14 layers of cartons are stacked on top of each other.

"We have three palletizing systems that fully automatically assemble and stack the cartons for the transport," says Martijn van Zuydam, Project Manager and SPARK Line Lead Trainer NWE at PepsiCo. "In general, each system loads 50 pallets per hour. If necessary, we can increase this to 100 pallets per hour per system. This means that up to 1,200 cartons of different sizes can be handled per hour."

The cardboard pallets are transported fully automatically in the factory and then by truck via intermediate storage to the wholesaler for delivery. As this can sometimes be rough and extremely bumpy, the cartons need to be stacked securely and, above all, non-slip on the Euro pallet. They also need to be easy to destack.

PepsiCo previously used a cold adhesive system to secure the cartons for transportation. However, there were increasing difficulties. There were repeated uncertainties about the handling of the system and the associated equipment. There were also high operating costs and difficulties further down the supply chain, for example when pallets that had already been stacked needed to be restacked. The cold adhesive system only allows this within a defined period of time. As a result, the cartons were damaged during subsequent restacking and destacking.

Against this backdrop and with a view to the group's goal of manufacturing its products sustainably under the motto "Performance with Purpose", those responsible set about optimizing the arrangement for the safe transport of pallets and to invest in new, future-oriented technology. An internal team – consisting of Darko Despotovic, palletizer system operator,



Manuel Allan, technical expert, and Martijn van Zuydam – developed the basis for a specification sheet as part of a Sigma Green Belt project. The new system had to meet the following criteria, among others:

- Cost savings in adhesive consumption without compromising pallet stability,
- Adjust the amount of adhesive based on the position of the carton on the pallet,
- Individual adjustment of the amount of adhesive if a problem occurs repeatedly at a particular pallet position with a particular carton combination in the supply chain and
- A sustainable solution to reduce the CO<sub>2</sub> footprint.

### The Nordson Solution

They chose Nordson's melting technology because the company was already one of their preferred suppliers, and because they offer their customers comprehensive support in addition to innovative and high-precision application technology. At the Broek op Langedijk facility, one ProBlue® Flex Melter per palletizer was installed in combination with the P4 pressure management system. The MiniBlue® II SureBead® hot melt applicators, PureFlow hoses and RediFlex II Mounts were also installed.



"The ProBlue Flex Melter has a modular design so that it can be individually adapted to the user's requirements," explains Erik van Gulik, OEM & Key Account Manager at Nordson. The device is characterized by a fast heat-up time and can optionally be equipped with an adhesive tracking

system, which allows users to easily measure and monitor the volume and application of the adhesive.

The P4 Pressure Management System allows the electrical control signal and pressures to be changed and the amount of adhesive applied to be precisely controlled. This makes it possible to program the application of glue according to the load of the cartons. This means that less adhesive is applied to the lower cartons, which are more heavily loaded by the weight of the cartons stacked on top of them and are more stable, than to the upper cartons.



The latter can easily swing back and forth on the pallet during shipping, for example, and therefore need to be secured more tightly.

The MiniBlue II SureBead hot melt applicators apply adhesive reliably, even at high stacking speeds, and their precise stitch pattern ensures that adhesive is used sparingly. PepsiCo packs its products in cartons of varying sizes, so four applicators are installed on each palletizer so that they always apply adhesive to the different outer edges, taking into account the different carton dimensions.

PureFlow hoses use innovative technology to ensure the quality of the adhesive used, preventing material degradation such as hardening or coking. They help reduce downtime caused by hose changes or nozzle plugging. They are installed with RediFlex II clamps for optimum adhesive flow.



### Voice of Customer

PepsiCo commissioned the new melting system in February 2023. "We achieved our goals and reduced our carbon footprint thanks to lower adhesive consumption," concludes Martijn van Zuydam. "We are still fine-tuning the system, but this is not because of the hotmelt technology, but because of its integration into the company's overall system. We estimate that we can reduce the cost of the adhesives alone by around 40,000 € per year. In any case, we have drastically reduced the number of customer complaints and rework. This alone should save us around 100,000 € per year.





## PACKAGING

Nordson® application and verification technology helps efficiently apply adhesives to meet both form and function for a wide variety of packaging applications: sealing, attachment, confectionary and small pack, tray making, palletizing, siftproof/tamper evident/braille applications and labeling.

Packaging applications are often judged equally by how they look and how well they perform, so application systems must apply the right amount of adhesive to be structurally sound and without messy stringing, tailing or squeeze out. Whether using hot melt or cold adhesives, Nordson is a world leader in packaging and converting application technology.



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## Why Nordson



### Global

Supporting and collaborating with customers worldwide.



### Business Scale

Extensive capabilities to deliver on customer promises.



### Value Innovation

Consistently creating customer value with innovative technology



### Direct

Direct offices in over 30 countries with local application experts nearby to help.

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