Hotmelt adhesive application

Crate bonding with full service

Author: Bernd Neumann, Leverkusen, Germany

Recently, FrieslandCampina converted the entire configuration of hotmelt adhesive application for transport crates and clip packaging at the German Gütersloh location, which specialises in the production of yoghurts, desserts and related dairy products, to new filling systems and dispersing guns from Nordson. A similar replacement had already been made at the Cologne plant, which processes mainly fresh milk, curd cheese, cream and yoghurt. The new gluing units will be used in this facility of the company mainly for high-output production of outer packaging.

Nordson, adhesive application technology specialist, has been providing equipment for both FrieslandCampina production sites for many years. The current upgrade was part of a recently completed full service contract which provides advantages in several respects. The "all-round carefree package" includes not only equipment rental but also a maintenance contract and a flat rate for spare parts. This eliminates high procurement costs for systems while also reducing spare parts stocking to a minimum.

Very content with the recently installed hotmelt application systems : Thorsten Führ (left), Head of Filling Sections with FrieslandCampina in Gütersloh, and Norbert Bökamp, Maintenance Department

100,000 crates per day

The replacement at the location in Westphalia affected 16 processing lines, where mostly Gasti, Ampack Ammann and Hamba plants are used. About 100,000 solid and corrugated cardboard crates of various types are needed daily to hold the wide range of products. For example, cups with diameters of 68, 75, 95, 112 and 130 mm and various heights and shapes must be transported. One traditional variant is the 24-unit tray with 68-mm cups. However, an arrangement of just six cups 130 mm in diameter is also very common.

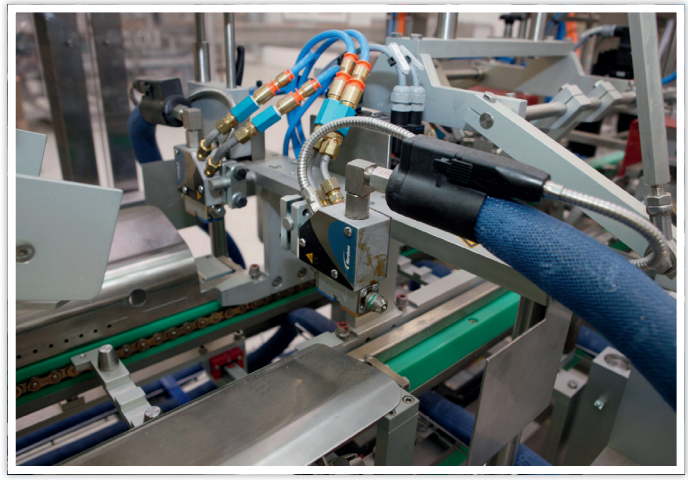
A total of 20 gluing machines are used in different lines to produce this varied assortment of crates together with clip packaging (outside packaging for two-packs). With widely different conveyor speeds, between 10 and 40 crates are glued per minute. Six glue spots are set in each cycle.

The dispersing guns that were previously used have now been replaced by ultra-modern, enhanced-performance modules from the Nordson MiniBlue II and SureBead series. Both machines work pneumatically and are designed for either bead gluing or point gluing, which saves material. In some cases four individual modules are now responsible for the throughput previously covered by two double-nozzle modules.

A superb "endurance sprinter"

The MiniBlue II is used in FrieslandCampina processing lines mainly for end-of-line applications. Significant technological

Three MiniBlue II hotmelt applicators built up in a row



Two opposite arranged SureBead hotmelt applicators

features of the hotmelt application include the patented frictionless bellows sealing concept, the optimised air-opening/air-closing ball-and-seat modules and the innovative Saturn SP solenoid valve with a minimum switching time of approx. 2 ms, depending on the adhesive used.

The applicator head, which is just 16 mm wide, not only ensures exact adhesive separation, even at high speeds, it also features an extraordinarily long service life of more than 100 million operating cycles. By its fully insulation, the applicator not only reduces surface temperature to increase surface safety, but also achieves energy savings at a level of about 50 per cent.

Problem-free operation

The SureBead pneumatic hotmelt applicator head, which is used especially for gluing high-viscosity hotmelt at the Gütersloh dairy processing plant, works with self-cleaning needle-and-seat modules and exchangeable Saturn nozzles of type RC (Reduced Cavity). This combination ensures that no clogging or other problems occur during operation, making the applicator head a natural choice for packaging and assembly applications with aggressive hotmelts.

The applicator heads are fed through hoses from automatic, sensor-controlled ProBlue Fulfill 7 or 10 hotmelt filling systems. The typing in litres refers to the relevant tank capacities. The granulate is also supplied through a hose from a 60-kg storage container. This is therefore a closed system, which eliminates error sources such as interruptions in the supply of hotmelt, formation of threads or cracking of the hotmelt.

The optimum fill level height in the tank is continuously ensured by sensors. A constant processing temperature is also ensured and a large assortment of different hotmelts can be used over a wide temperature range. A display of operating states with an automatic switching-off function or fault display for error messages also further enhances process safety and reliability.

Good experience in practice

On the FrieslandCampina side, Thorsten Führ, Filling Manager, and Norbert Bökamp from the Maintenance Department were substantially involved in implementing the planning. They especially point out the operational reliability and safety of the gluing systems and hotmelt applicators.

"Malfunctions on the gluing machines have decreased significantly" says Thorsten Führ while Norbert Bökamp adds: "In addition to greater availability and reduced downtimes, we also give an especially positive rating to the low cleaning work required". Both emphasised that the conversion to the new Nordson technology was not so much motivated by operating speed as by the compact design of the dispensing guns. (All photos: Kimberly Wittlieb)

Automatic, sensor-controlled hotmelt filling system of ProBlue Fulfill series