

Automated Melter Filling and Long-Life Applicators Deliver Uninterrupted Productivity for Pet Food Maker

Taming maintenance, downtime and production costs

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Although widely known in the U.S. for its candy manufacturing, Mars Inc., is a global producer of pet foods including Whiskas, Pedigree, Chappi, Kitekat, Cesar, Sheba, Frolic and Trill brands.

Mars Pet care has been producing domestic animal foods since 1960 in Verden an der Aller, Germany under the company names Effem and Masterfoods. The Verden facility is the company's largest pet foods production site in continental Europe and also serves as the company's European headquarters. A second factory, manufacturing dry pet food, is located in Minden, Germany.

Verden is the processing site for the half-dry and wet pet foods. Frolic brand, half-dry pet foods are packaged in pouches, flexible packages, cans, and aluminum tins. Wet pet food brands including Cesar, Sheba and Whiskas are produced on three production lines where they are packaged in 150 gram (5.3 oz) aluminum tins.

As part of a planned equipment and technology update, Mars engineers upgraded two of the wet pet foods production lines in April 2012, replacing older hot melt adhesive systems with new Nordson® ProBlue® Fulfill® systems and Nordson MiniBlue® II pneumatic hot melt dispensing guns.

Both upgraded production lines use Paal (Bosch Packaging Technology) case packers to guide the 150g (5.3 oz) pet food tins into 8-pack and 16-pack cartons.

The 8-pack cartons are 200mm (8 in) long and weigh over 1.2 kg (2.6 lbs). The 16-pack cartons are 400mm (16 in) long and weigh in excess of 2.4 kg (5.3 lbs).

Same-size cartons are packaged side-by-side in a transport tray for shipping and delivery.



16-pack cartons (left) and 8-pack cartons (right) in transport trays

Transport trays are made of heavy duty 100g (3.5 oz) board stock capable of holding the weight of the 2.4 kg (5.3 lb) and 4.8 kg (10.6 lb) dual cases.

The trays are constructed by applying hot melt at four adhesive points and two fastening points on each tray.

Both of the Paal case-packing machines have two gluing stations, each with six hot melt adhesive applicators (guns), for a total of 24 applicators.

Accurate placement of the Forbo® (H.B. Fuller®) adhesive and precise, consistent adhesive volume are required to assure the trays' structural integrity and durability during transport and shipping.

The "Endurance Sprinter"

Mars chose to install Nordson MiniBlue II long-life applicators. The compact, 16-mm wide applicators fit easily into the existing Paal packaging machinery and delivered immediate benefits.

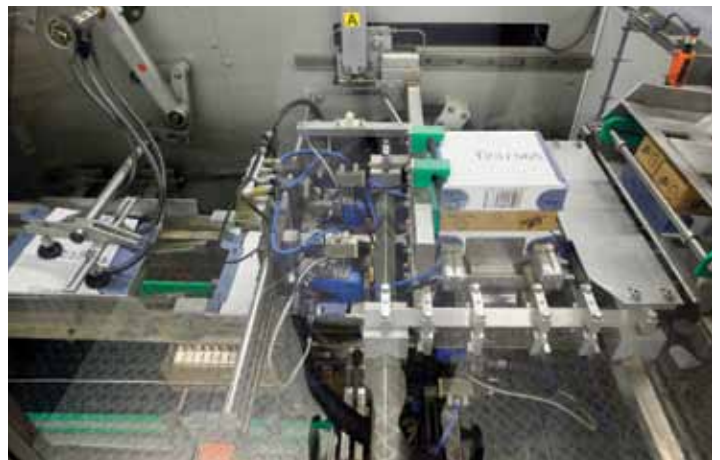


Six MiniBlue II applicators in gluing station

The larger, 400mm (16 in) long, 16-pack production line produces 17 units per minute, while the smaller, 200mm (8 in) long 8-pack production line delivers 26 units per minute.

Winner of the 2010 German Packaging Award, MiniBlue II applicators feature a service life of more than 100-million switching cycles which is significantly higher than conventional pneumatic modules, and in some cases up to twice as long.

Long life is made possible in part by Nordson Reflex™ seal technology. A patented, frictionless, bellows seal optimizes an air-opening/air-closing ball-and-seat within the applicator module.



Gluing of trays containing dual 200mm (8 in) long 8-pack cartons

Applicator air is managed with a Nordson Saturn® SP solenoid valve, featuring a minimum switching time of approximately 2 ms, depending on the adhesive used.

“In terms of the long-life and working speed of the MiniBlue, we call it the endurance sprinter,” said Marc Plücker, technical director, aluminum tray lines at the Verden plant.

“The MiniBlue II works fast and has no problems. The adhesive separation is very clean and there is no mess. We can set more adhesive points than with the old series. We were also able to remove the switch accelerators (electrically spiked solenoid valves), which were necessary with the heads (applicators) we were previously using.”

The Nordson applicators feature a durable, plastic insulating cover that prevent heat loss and reduce energy use and costs by up to 50-percent. In addition, the covers protect machine operators and maintenance personnel from exposure to hot applicator surfaces, improving plant safety. “Full insulation was also a factor in our decision. The insulated covers significantly reduce the surface temperature of the device and minimize the risk of machine operators and maintenance staff incurring burns,” said Plücker.

Automated Melter Filling Feeds Productivity

Verden plant engineers also replaced older melters, that required regular monitoring and manual filling, with ProBlue Fulfill integrated melter and automatic filling systems at each of four adhesive application stations.



Automatic adhesive level sensor

The sensor-controlled, systems continuously monitor melter tank adhesive levels adding small amounts of granular adhesive when needed, via transfer hoses. The continuous supply of material maintains optimum adhesive levels, helping to assure correct temperature and reduce charring. Safety and reliability are enhanced by an automatic-off function and a fault display for error messages.

The integrated melter filling systems are closed, preventing adhesive exposure to ambient air, dust and other contaminants.

“The automatic supply of hot melt is much more convenient than the manual filling we used earlier.”

— Marc Plücker, technical director



ProBlue Fulfill system with adhesive bin transfer hoses and melter on case packer.

Using the ProBlue Fulfill systems, the Verden plant eliminated low and empty melter tanks that impact adhesive integrity, cause adhesive stringing and hot melt cracking, and result in poor tray bonding.

“The automatic supply of hot melt is much more convenient than the manual filling we used earlier,” said Plücker.

With nine months experience and history using the new Nordson equipment, the Mars plant has been very satisfied with the reliability of the Nordson fill systems and applicators.

Summarizing his experience with the Nordson equipment at Mars, Plücker stated, “we carry on production in four-shift, continuous operation and have only about ten hours of down time a week on the systems, so problem-free gluing of the outer packaging is especially important for us.”

“The installation of the Nordson complete system represents a true upgrade for our aluminum tray lines. We were especially pleased that the entire conversion process was completed in just six weeks.”

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