Better quality, lower energy consumption

Categories : Conveying & Filling, Packaging, Labeling & Storage

Tagged as : GKD, trending

Date : March 20, 2020

The name Nestler is not only an institution in Lahr, but also in the world of corrugated board. As one of the largest and most efficient corrugated board plants in Germany, the company regularly sets new benchmarks. Innovation and sustainability are the drivers behind the success of this long-established company, which is part of the Palm packaging group. In the heating and traction part of the corrugated board plant (CBP), a heating belt from GKD - Gebr. Kufferath AG contributes towards this success.

With around 400 employees, Nestler Wellpappe produces 140 million square meters of corrugated board per year. Founded in 1871 as a brewery in Lahr, Nestler started afresh in 1923 as a corrugated board plant. In 1999, the Palm Group acquired the family company, which has deep roots in the Black Forest region and has retained its original name to this day. The company's affiliation with the Palm Group is reflected in the exceptionally broad range of services it provides. The different categories of corrugated board include fine, medium and coarse corrugation with single to triple walls ranging from 0.8 to 15 millimeters in thickness and with different corrugation profiles or corrugation combinations - all made with paper from the Palm Group. The paper used is almost exclusively recycled paper. Virgin fiber is only added to increase stability for special applications such as for frozen food. The range of high-quality printed packaging, displays and exacting packaging constructions also includes many variations. From the size of a cigarette box to the size of a pallet container: As packaging for transportation or shelf-ready packaging, as collapsible boxes, die-cut, heavy-duty, hazardous goods or combination packaging - customized products from Nestler can fulfill any such challenging tasks. This versatility of production in large and small batch sizes for countless special applications and maximum value creation makes Nestler the partner of choice for around 1,400 customers in the south of Germany, Switzerland and the Alsace region. More than half of these customers are companies from the electrical engineering, mechanical engineering, chemical, paint and varnish, rubber, wood and paper industries - often with very complex requirements.

In addition to the extensive production range and decades of expertise, a further USP of Nestler is its extraordinary service capabilities. Large customers from industry and the mail order business benefit from a warehousing and delivery service with which they can receive their products within 24 hours. "More and more customers are counting on this adherence to desired delivery dates," explained Nestler CEO Andreas Jung. He added: "For us, OTIF (On-Time-in-Full) is therefore one of our most important strategic

goals." This is guaranteed thanks to the fleet of 30 company-owned trucks. If desired, Nestler can also provide complete assembly and optimization of packing processes as a service. The company is continuously striving to improve productivity, cost-effectiveness and sustainability of the solutions. "We optimize products and processes based on the STEAM principle, **S**ave **T**he **E**arth **A**nd **M**oney, to reduce their carbon footprint," explained Andreas Jung. Three core areas are given particular attention: The optimized interaction of area, weight and stability reduces the material consumption of conventional constructions. Improved layout reduces clipping, processing time and energy costs. Resource consumption and the CO2 impact are also reduced thanks to cleverly devised truck loading, which results in fewer trips.

On course to save energy in the CBP

Nestler also puts these ideas into practice in the heating and traction section of the 120 meter long corrugated board plant of BHS. The CBP has a working width of 2.50 meters, with two one-way machines as well as pull strips and reinforcement fibers. It works at a speed of 350 meters per minute and, thanks to an optimized steam system, enables cooler corrugating. This means it is possible to reduce the steam pressure to 0.5 bar - whereas minimum values of two to three bar are usual in the industry. As a result, it was possible to reduce the specific energy consumption by ten percent, which is also reflected in an eight percent reduction in glue consumption. The 16 meter long heating and traction section is equipped with 18 heating plates and works with a plate-roll clamping system, which combines contact shoes and rollers. For optimized point loading, however, the first three heating sections have only rollers. Whatever the product, the heating belt transports an average of 30,000 square meters of single and double-wall corrugated board an hour. Depending on the product mix, the board is exposed to a steam pressure of up to 16 bar - with surface weights of up to 1,400 grams. Nestler's expectations of its dimensional and tracking stability are correspondingly demanding.

In 2015, the corrugated board manufacturer switched from a conventional heating belt to the Conducto 3313 heating belt, which at the time had been newly launched by the technical weavers GKD - Gebr. Kufferath AG. This decision was taken due to the claim that this belt would enable significant savings in terms of drive energy. "This is not insignificant where the CBP is concerned," said Eva Labusga, Head of CBP, Planning and Production Control, explaining the motivation for the switch. The construction of polyester monofilaments with aramide reinforcement in the edge area and bronze wires interwoven in the running direction makes the Conducto 3313 significantly lighter in comparison with other products on the market. Thanks to special thermosetting, it is also permanently dimensionally stable. Despite the low weight, the belt's robust design guarantees the required even pressure for optimal contact between the corrugated board and the heating plates. The open mesh structure ensures immediate full-surface moisture evaporation of the corrugated board. Due to the faster drying and resulting

improved flatness of the corrugated board, Nestler was able to increase the process speed by eight percent. "We are able to run the system faster because the condition of the board allows it," said the Head of Production.

The GKD belt also surpassed the previously used conventional model by far in terms of running performance: 180 million running meters in three years without a single downtime caused by the belt speak for themselves. "That's really, really good," said Eva Labusga. "The previous belt lasted for a maximum of two years." In addition, this self-cleaning belt exhibited no soiling - neither superficial adhesions of paper and glue nor clogging. Based on targeted measurements on the conventional and new belt, Nestler tested the consumption of drive energy, which was relevant in the decision to switch: Due to its lighter weight, the Conducto 3313 achieved a 15 percent energy saving over the previously used belt.

Top values also with the latest generation of belts

Nonetheless, they stopped running this GKD belt after three years, even though it was not showing any signs of change despite the long runtime. "I actually wanted to keep using it, to see how its end-of-life would exhibit itself," said the Head of Production. "But after these good experiences, we chose instead to test the new belt from GKD, the Conducto 3322." This further developed belt promised two improvements which were of interest for Nestler too: The smooth surface of the 3313 had initially caused problems in terms of traction. This was gradually corrected through the application of silicone strips and grinding. In addition, the operating staff had found the noise level of the 3313 uncomfortable. To check, Nestler took noise measurements: In the comparison, both the conventional belt and the 3313 had the same decibel values, but the frequency of the GKD belt was slightly higher. That's why the noise level immediately after installing the belt was perceived as louder. After a week of running time, however, the level balanced out to the usual level.

With the development of the Conducto 3322, GKD has permanently resolved these two issues. Its construction of two and a half-ply hybrid mesh combines an internal structure of polyester monofilaments and additional bronze wires in the running direction with a warp of staple fiber yarn. The edge is reinforced with aramide, as with the predecessor model. The textile material means grip is significantly better. "We no longer have to roughen the belt," said Eva Labusga. In addition, it is quieter than the 3313 and therefore comparable with conventional belts from the outset in terms of noise level. Its 1.1 millimeter larger thickness (Conducto 3313: 4.6 millimeter, Conducto 3322: 5.7 millimeter) makes no difference in operation. Conventional belts are up to eight millimeters thick. The smaller belt thickness makes it significantly easier to handle during replacement, so that assembly is significantly easier and quicker: "The belt can be replaced in three to four hours. That's half the time you need for conventional belts," said Eva Labusga. The thinner format of the GKD belts also had a positive effect on the

seams, which are much finer as a result. Having said that, some improvements were required at the beginning: "A non-marking seam is generally very difficult, and with fine corrugation on white paper, it comes down to tenths," explained the Head of Production. That's why choosing the right clip for the seam on the 3322 initially required some effort. But the experienced expert sees this as "all part of the development work." With this new belt from GKD too, she sees the fast, even evaporation as the main advantage: Despite its textile share, the Conducto 3322 is in no way inferior to the Conducto 3313 in terms of air permeability. "It maintains the top values that we have already achieved with the predecessor model in terms of drive energy (15 percent saving), and there are also no differences between the two GKD belts as far as the consumption of steam energy and glue are concerned." For her, one things is for sure: "Both belts definitely represent a quality improvement. The significantly better flatness in all qualities increases the processing quality and therefore also the quality of the end product." However, thanks to its self-cleaning surface, the Conducto 3313 stood out as far as superficial adhesions were concerned. The 3322 requires a high-pressure cleaner to remove adhesions. Unlike conventional belts, however, neither of the GKD belts has any tendency to blockage. Eva Labusga's verdict on the heating belts from GKD is therefore accordingly positive: "Using it as the upper belt has only been of benefit. Not for one second have I regretted taking this path together!" That's why she can also imagine soon testing the Conducto 3322 as a lower belt. "I have only ever had good experiences with the GKD belts. So I'm always open to test new products. GKD has always delivered on its promises."