



Cover photo: The LWKB plastic machines with servo drives from Baumüller produce bags for various industries and impress with their high production rate / Image: daizuoxin

Bagged - Fast and Safe

State-of-the-art drive technology ensures increased productivity in the production of bottom seam bags

According to a VDMA study, every fourth plastic machine manufactured worldwide comes from Germany in terms of turnover, with an export rate of 70 percent.¹ For over 45 years, LWKB has been developing and building precisely such high-quality machines for the plastics industry, specifically for a wide variety of bag types with bottom seams. Servo drives from Baumüller ensure increased productivity and a guaranteed manufacturing quality of the packaging in the automatic bottom seam machines, e.g. for the food, electrical or packaging industries.

International logistics chains demand a high quality of packaging material in order to ensure a space-saving and safe transport of goods. This is also ensured by a wide variety of bag types from the plastics industry, because they reliably package and protect products from a wide variety of industries. Whether electrical department stores, mattress manufacturers or butchers - they all use poly-based packaging. LWKB Langer Weher Kunststoffmaschinen Bau GmbH in

¹ VDMA plastic and rubber machines: "VDMA: Next record year for the German plastics and rubber engineering industry," at: <https://bit.ly/2WEtcz8>, retrieved 05 Feb. 2019

Langerwehe near Cologne is one of the leading companies in the field of bottom seam welding. It develops and builds machines for the production of bags with bottom seams instead of side seams, such as carrier or packaging bags.

Increased productivity thanks to high-precision machine modules

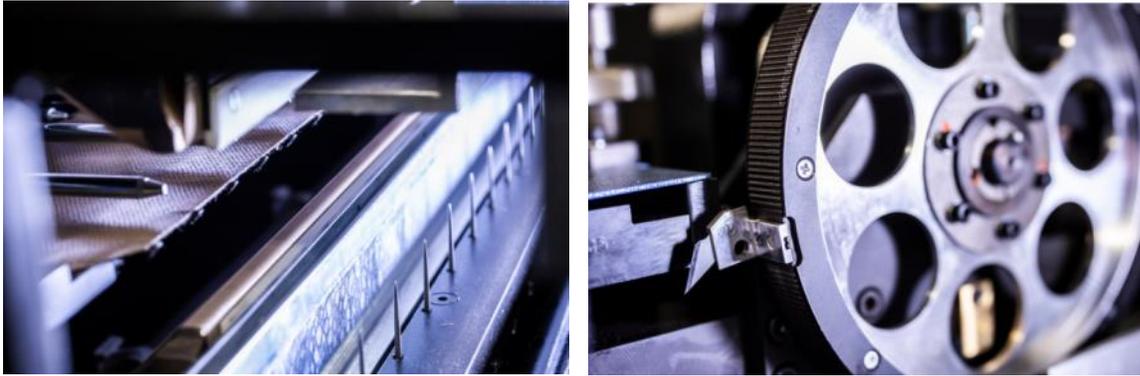


Fig. 1 and 2: Especially when welding (left) and cutting (right) the bags, high-precision and fast processes are required - which is feasible thanks to servo drives from Baumüller

The automatic bottom seam machines from LWKB are used worldwide by clothing manufacturers and impress on the one hand with their high reliability, user-friendliness and long service life. The automatic bottom seam machines from LWKB are also characterized by a high degree of speed and precision - in other words, high productivity. They can process a film with widths from 100 mm to 2100 mm into bags at a speed of up to 220 cycles per minute - for example, they produce 16,000 trash bags per hour. Depending on the width of the film, the machine can process the tubular film between one and five lanes, which increases productivity further.

Highly dynamic applications

The machine consists of four modules: Film feeding, welding, cutting and stacking as well as gripping. All processes require a highly precise and fast application, which can be realized by Baumüller as a specialist for automation and drive systems with high-performance servo drive technology and permanent field synchronous motors. This is ensured, for example, by

Where are the synchronous servo drives used?

- Preference: Two motors ensure that two pairs of rubberized drive rollers pull the film off the feeding compensating roll system at the desired web tension to the exact mm.
- Welding: The third motor ensures high-precision, rapid sealing of the bags.
- Cutting: Another motor ensures that the bags are cut to the correct length in cycles. This is done by a rotating knife. The operator can optimally adjust the cutting speed of this knife to the product thanks to the highly dynamic drive.
- Gripping: In the last step, the bags stacked on a row of pins are picked up, folded and placed on a conveyor belt by a gripper carriage, also driven by a motor.

Baumüller's DSD2 electric servomotors. The motors of the DSD2 series are ideally suited for highly dynamic applications with the highest requirements on acceleration capacity and best start-stop qualities.

Dynamic and space-saving motors



Figure 3: DSD2 servomotors are dynamic and slim in design. They are water-cooled in the film feed, which enables high performance in a very small installation space at the same time

Baumüller's DSD2 synchronous servomotors enable high speeds so that as many bags as possible can be produced per hour. This is because the excellent torque-to-inertia ratio ensures the highest dynamics, i.e. a fast and precise production of the bags. Because they use their own braking energy, servomotors can also achieve energy savings of 15% compared to conventional asynchronous motors. This also contributes to the conservation of resources and the reduction of energy costs.

Thanks to very good concentricity properties, high-precision positioning and controllability are possible: For example, at the draw unit for two pairs of drive rollers. The film must be continuously tight and have a continuous tension. Extreme dynamics are also necessary when cutting. As soon as the film is fed, it is cut within milliseconds. With the synchronous servo drives, the automatic bottom seam machine also has a high overload capability. The drives are very robust and ensure trouble-free production, even under difficult climatic conditions.

Thanks to their slim, integrated housing design, Baumüller motors are flexible in terms of the cooling method. The motors, for example, are water-cooled in the film draw unit, because this is the only way to achieve the required high performance in a very small installation space. In all other machine parts, the motors are air-cooled because the space requirement is not critical.

The DSD2 series offers additional advantages: Thanks to the smooth housing surface, the motors are not susceptible to dirt and are therefore suitable for the high requirements, e.g. in the food industry. Another added value is that the main connection can also be made via rotatable plugs instead of a terminal box, which facilitates installation and maintenance.

Conclusion



Figs. 4 and 5: The LWKB floor seam machine runs precisely and quickly

Highly dynamic synchronous servo motors from Baumüller ensure a precise and high production rate of bottom seam bags such, as carrier or packaging bags, in the machines built by LWKB. LWKB is working closely with Baumüller on the further development of the bottom seam machines, for example to make electrical adjustments and optimizations to the drives. Baumüller not only impresses with automation solutions and state-of-the-art servo drive systems, but also with fast service and personal advice on technical questions.



"We were already familiar with Baumüller's proven drive technology. The fast service and the competent team of sales and application engineers have also convinced us. In Baumüller, we have found a reliable and professional partner who has top delivery times and offers optimum support, even directly on site." Michael Neumann, Technical Operations Manager and Design Engineer at LWKB.

Author:

Rosemarie Kmitta, Press Officer at Baumüller