

The CMS series electric cylinders from SEW-EURODRIVE are powerful, accurate, integrated servo-motors. Compact in design, they offer cost-effective solutions and high levels of process reliability in plant operations. One such application is in moulding lines that are used to manufacture speciality chocolates. The machine can fill 15 to 22 moulds a minute, enabling the production of up to 2500 kg of chocolate in an hour. The article below has all the details.

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February, 2018



Drive technology

TODAY

Powerful tastes

Electric cylinders from SEW-EURODRIVE for chocolate production systems

► Böhne & Luckau machines are used in several countries all over the world – from Germany, Austria, Switzerland and Eastern Europe to the Middle East and Asia. Their good reputation is based on a high level of demand for their products among customers. The company from Wernigerode in Germany specializes in molding lines that are used to manufacture specialties – chocolate creations in all shapes and sizes – a food and indulgence that is good for the health and makes us happy.

► Chocolate comes in many forms: slabs and bars, pralines and figures – even entire XXL blocks of chocolate for large-scale industrial consumers. XXL is also the designation used for the high-capacity block line from Böhne & Luckau in Wernigerode. It is perfect for filling chocolate in large molds of up to 5000 g, where chocolate is mixed, tempered, dosed, vented and cooled. Alternatively, the machine can also be used to process jelly, toffee or fondant. The machine works with various mold sizes and has a long cooling time so that no tension or cracks form in the large blocks. The molds circulate in the machine and can also be exchanged. Depending on size, the XXL machine can fill 15 to 22 molds a minute, enabling the production of up to 2500 kg an hour.

Cast chocolate

“Our block molding line has a modular design,” explains Ronny Krebs, Head of Purchasing at Böhne & Luckau. “The central function in the casting machine is to fill the mold with the raw chocolate mixture.” The molds are first pre-heated so that they are at the same temperature as the chocolate. This is necessary to ensure the chocolate can be de-molded properly and has a nice shiny surface. The mass is then added via a heated

funnel with agitator. A shaker then distributes the liquid chocolate evenly in the mold. The shaking ensures the chocolate mass has a uniform structure and prevents any air being trapped. A PLC controls all of the processes in the machine. Operation is via a touch panel.

Complex construction

The chocolate is cast using a distributor plate with milled out cavities. Using a lever, an electric cylinder from SEW-EURODRIVE operates a shaft attached to a piston holder – the piston neck. ►

Electric cylinder

The CMS series electric cylinders are equipped with permanent magnet rotors. These integrated servomotors are particularly accurate and powerful. Combined with drive electronics – in this application, the Movidrive frequency inverter from SEW-EURODRIVE – they create cost-effective solutions that ensure high levels of process reliability in plant operations.





Measured build-up of force

"Because of the space requirements of our machine, we value the compact size of the SEW electric cylinder and the high forces it can generate," says the head of construction. He continues, "The motion curve generated by the cylinder means that the chocolate is evenly distributed and uniformly dressed." "This is a huge advantage over a pneumatic or hydraulic drive," adds Volker Schulz. He is in charge of the SEWEURODRIVE technical office in Magdeburg, and has been supporting Bohnke & Luckau for over 20 years. SEW-EURODRIVE not only meets the customer's verified requirements profile, but also carries out development work for customized solutions.

Refined twist

The final step of the manufacturing process is the de-molding station. The entire machine is fitted with a double loosening station, mold turning station and two tapping stations. To make it easier to de-mold the chocolate, the mold is "twisted" using a pneumatic cylinder. This involves twisting the opposite sides of the mold toward each other. Before the molds return to the start of the machine, they also pass through an automatic empty mold check, sorting station and mold magazine. The automatic knockout station transfers the chocolate blocks out of the machine on a conveyor belt. They can then be transported directly to a packaging machine. ◀



Shaken in the mold – the uniform structure of the chocolate mass leads to high product quality without air pockets



MONORIVE® series drive inverters are housed in a control cabinet below the casting machine.



Production machines with complex and automated motion sequences require intelligent and reliable drives.

Bittersweet happiness

Chocolate makes you happy. The reasons for this include substances in the cocoa that have a stimulating and mood-enhancing effect on our bodies. The high proportion of cocoa in dark chocolate contains substances that lower the blood pressure, protect the heart, promote healing and lower the risk of stomach ulcers. The cocoa – not the sugar – even helps to prevent cavities. Chocolate is a food that is primarily made from cocoa, sugar and some milk. Its name comes from an Aztec drink that they called "bitter water". This was a mixture of water, cocoa, vanilla and cayenne pepper.



The MOVITRAC® LT frequency inverter drives the shaker motors.