Energy prices are on the rise and will continue to do so. As a result, the plastic manufacturing industry has set itself the task of finding solutions that reduce energy consumption. This industry operates giant pieces of machinery, and the amount of energy these machines consume will make economical production more difficult in years to come. One company that has decided to take on these challenges in good time is the French mechanical engineering concern Billion S.A.S., based in Bellignat, France.

Energy consumption reduced by up to 70 percent

Billion S.A.S. has been manufacturing injection molding machines since 1949 and is renowned for its expertise in the field of dual-component injection molding. In order to minimize energy consumption during production, the company began developing hybrid machines a few years ago. With the SELECT series, Billion is now offering fully electric injection molding machines that provide exceptional levels of energy efficiency. The SELECT series now comprises a range of energy-saving single- and multiple-component versions, with a clamping force of 50 to 400 tons.

“We have long since met the objective we set in 2007 to reduce energy consumption by 30 to 50 percent,” explains Daniel Bejannin, who is responsible for software and special research projects at Billion. “We are now aiming to reduce this by up to 70 percent, perhaps even more for some applications.”

In addition to reducing energy consumption, the SELECT series machines provide a high degree of precision and unique motion repetition accuracy – a great advantage for the pharmaceutical, medical, and cosmetics industries in particular.

Siemens as the ideal partner

To ensure rapid implementation of the product design phase, the French engineering company selected Siemens as a reliable project partner. According to Billion S.A.S., Siemens was able to offer not only outstanding products but also an exceptional commitment to developing the solution. Additional factors were the easy availability of replacement parts and the support and customer service departments. As a result, Billion S.A.S. had a dedicated and committed team on-site providing support in French.

The SELECT series is currently equipped with synchronous servomotors and high-torque motors from Siemens. As a result of the special machine design, the motor is located directly on the ball thread,
allowing for direct power transmission without drive pulleys or belts.

According to Bejannin, working closely with Siemens during machine development was a sensible move and one that proved very important: “The design phase was based on an intensive analysis of customer requirements from different areas of application. As a result, we were able to define a requirement profile for each function early on, tailored to the user’s specific needs. The drives and motors were then designed and dimensioned according to this profile.”

**Efficient and environmentally friendly**

The SELECT series is equipped with air-cooled synchronous motors. “We wanted to build machines that were as environmentally friendly as possible, while avoiding water-cooled solutions. Such solutions would need a separate, closed circuit and, more importantly, would require maintenance,” explains Bejannin.

With the new drive system, the torque and speed of the motors can be modified for each individual machine motion. “The synchronous motors with power transducers enable the operator to control both the speed the injection unit moves and the contact force of the nozzles with extreme precision. Manual settings, common with hydraulic machinery, are no longer required,” asserts Bejannin.

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**The synchronous motor is one of the components that help enable a high productivity**

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**Extremely energy-efficient: the fully electric dual-component version of the SELECT injection molding machine from Billion**

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**An elegant dual-component dispenser for tablets: this is one example for eco-friendly and clean production with the fully electric SELECT machine series (Production: CMSI_TEXEN; Design: CGL Pack)**