

Dosing process with weight loss

In plastic film extrusion lines, the dosing accuracy is a fundamental aspect. To achieve a precise mix ratio of plastic granulate, the Italian company Syncro relies on control technology from B&R.

An important element of extrusion plants are the dosing systems, which must be programmed according to the typology of the raw material (color, weight, etc.) in order to achieve the desired product features. As a specialist in this area, the Italian machine manufacturer Syncro, based in Milan, produces powerful dosing, conveyor, measurement, control and cooling systems. „Our company has only been active for about two years, but our employees have extensive experience in this field and provide the best possible support for customers' individual needs,” explains Gabriele Caccia, Managing Director of Syncro. In addition to the headquarters in Milan, Syncro also has subsidiaries in China and Brazil. In 2008, the 20 employees achieved a turnover of 2.5 million euros.

The manufacturing of plastic films requires various steps, such as the blowing, pouring and stretching processes. „Our systems are easily integrated in the various extrusion processes,” adds Gabriele Caccia. „Today, about 90% of our production is exported. Our activities are focused mainly in the American and Asian markets.”

Weight loss measurement method

The Syncro product palette also includes conveyance and handling systems. „Our systems are mainly designed for dosing granulated plastic materials,” explains the Syncro manager. In upstream dosing, the flow of materials and the gram/meter ratio can be controlled with gravimetric weighing. Additionally, in downstream extrusion processes the profile and thickness of the plastic film can be measured and adjusted.

In order to stay ahead of the competition, Syncro has patents for its dosing and measurement system. „Currently we own two patents: One is for a batch dosing system, which operates using the weight loss measurement method, and the other is for an optical measurement system,” says Gabriele Caccia. >>





Each dosing unit is operated using a B&R Power Panel. The Visual Components software allows an optimized visualization system to be created.

Dose and mix multiple batches at the same time

One particular highlight, according to Caccia, is the Sybatch dosing system from the Syncro series of gravimetric dosing systems. This is a gravimetric batch mixer that operates according to the weight loss measurement method. Multiple batches can be dosed and mixed simultaneously. Sybatch overcomes the disadvantages of conventional batch machines that operate according to the weight gain method.

With the conventional method, the various granulates are first weighed one at a time on a scale and then fed into the mixer, but with the Sybatch system the batch goes straight to the mixer. Each hopper, through which the granulate



“Our Sybatch batch dosing system has been very successful thanks to the weight loss measurement method.”

Gabriele Caccia
Managing director
Syncro

passes through into the mixer, is mounted on a load cell. Compared to conventional batch mixers, this system takes about a quarter of the time to process a batch. This considerably increases the over-

all flow of material due to the reduced batch preparation time. The hourly output of the dosing system is significantly increased.

Foil thickness measured by only a transmitter

Another of Syncro's innovations is their optical measurement solution. „The most popular measurement solutions use beta-rays, x-rays or infrared,” explains Gabriele Caccia. „Unlike these solutions, our optical method does not use any dangerous radiation and uses only a transmitter. Other methods require a transmitter and a receiver.” The Syncro measurement device is more flexible, because not needing a receiver means it can measure not only the flat film, but also the plastic bubble before it is flattened. Since this position is closer to the head from which the material exits, both the automatic open-loop control and the closed-loop control can operate considerably faster. In practice this means that the response times and the setup times are improved. „A further advantage compared to infrared technology is that black films can also be read,” notes Gabriele Caccia.

Uniform automation platform

The Italian manufacturer's extensive product portfolio contains mainly niche products, for which adaptation to specific customer needs is extremely important.

„Especially for our business-to-business customers, such as Gloucester Engineering, Brenton Engineering and Morecro Engineering, the adjustability of the machines is a deciding criteria. That is why we have relied on the B&R automation platform since the very beginning. It provides our machines with a uniform control unit, which combines visualization and control in a single device while also serving as the user interface for the local CPU functions,” illustrates Gabriele Caccia.

Each dosing unit is operated using a B&R Power Panel. The visualization application was implemented using B&R's powerful Visual Components. There are no additional licensing costs. The dosing units can be networked with a central industrial PC. Communication takes place via Ethernet. A strain gauge module with 24-bit resolution from the versatile X20 System allows fast and precise dosing.

Syncro is currently working on development of a new application for measuring the thickness of films, which will include not only the Power Panel and the X20 I/Os, but also B&R ACOPOS inverters.. The frequency inverter will move the device cyclically over the produced film and send feedback for closed-loop control.

A particular advantage that Gabriele Caccia sees in the B&R products is how they can be seamlessly integrated in other systems. In addition to that, the customers benefit from the integrated Ethernet interface on the Power Panel, which enables internet based remote

diagnosis. „This means we can quickly access the local customer network and correct errors on the machine,“ emphasizes Gabriele Caccia.

Conclusion

Thanks to the positive experience implementing this uniform control platform, Syncro will continue to rely on cooperation with B&R for future projects. The selection of precise dosing and measurement systems, and the ability to adapt and optimize machine solutions for specific customer requirements are factors that Gabriele Caccia believes will help the company continue to stand out amongst the international competition. ■

High modularity with reduced hardware costs

Increased competitiveness and pressure to reduce costs make product innovations extremely important. To meet these increasing demands, it's important to carefully select the most modern technologies in order to boost productivity and at the same time reduce manufacturing costs.

INEVER is a Spanish vertical packaging machine manufacturer based in Dosrius (Barcelona) that has experienced constant growth in turnover since being founded. Targeted investment in research and development ensure the companies success. The newest product, StickPack, is a tubular packaging format specially-made for granulated and/or liquid products such as coffee, sugar, medicines etc. This format is enjoying increasing popularity. Well-known names from the foodstuffs, cosmetics or pharmaceutical industry such as Nestle, Kraft, Gelos or Almirall Prodespharma are customers.

Searching for a flexible control system

A couple of years ago the management realized that the previous >>

Syncro:

SYNCRO
More than just control

Founded: 2007

Employees: 20

Locations: Busto Arsizio - Varese (IT)

Products & Services: Dosing and measurement systems, gravimetric mixers, automatic profile control

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