Leistritz Extrusionstechnik GmbH is known worldwide as a manufacturer of twin-screw extruders. For more than 40 years, efficient complete systems for plastics processing have been built at the company’s Nuremberg headquarters. Leistritz has also been successfully producing machines for the pharmaceutical industry for several years.

**Leistritz’s showpiece**

In accordance with the slogan “refreshing extrusion technology,” the extruder generation of the ZSE MAXX series offers refreshing and innovative machine technology that to date is unique on the market: high torque and high volume are combined in one machine. Entirely new possibilities open up for the user, including a significant increase in throughput and an extension of the process window. To put it another way: while engineers previously needed to decide in favor of either a high-volume or a high-torque machine, they now get both advantages in one machine. Due to its flexibility, this product series creates new opportunities for increasing productivity. For production, this means an increase in efficiency, providing for a sustainable future. The ZSE MAXX series offers extruders with screw diameters of 27 mm to 180 mm. With the modular screw and cylinder systems and a sophisticated drive kit with a large selection of gears and motors (screw speeds of up to 1,200 rpm), the machines are used in a wide variety of applications.

**Intelligent control**

Control of extrusion plants is a very broad and important topic because this control is the only way to ensure cost-efficient and optimally coordinated interaction between material feeders, extruders, and subsequent aggregates. With the data that converge and are input on the operating unit, the HMI, the entire extrusion process is controlled, monitored, documented, and analyzed. For its automation solutions, Leistritz makes use of proven Siemens hardware components that are individually programmed based on the machine and customer requirements.

“Particularly in regard to good quality, fast response times, and high availability ensured through a globally active service network, Siemens represents exactly the right partner for us,” declares Dr. Hubertus Schulte, CEO of Leistritz Extrusionstechnik GmbH.

**Real-world example**

The Plastics Technologies department at the University of Wismar, Germany, headed by Prof. Harald Hansmann, has added a real “all-rounder” to its facility: the ZSE 27 MAXX. Using a wide variety of additional aggregates, this laboratory can compound polymers, nanofillers, or wood fibers at a high throughput rate. The machine can be fed with the...
individual components of the formula using gravimetric proportioning and a side feeder. Depending on which formulation or material is involved, the melt is distributed and granulated as a strand using a discharge conveyor with an integrated air shower or processed into granulate using air or underwater granulation.

The plant is controlled using a Simatic S7 controller. Leistritz uses the newest control generation here: the hardware basis for easy operation and monitoring is an IPC (industrial PC) 477. The integrated 15-inch touchscreen allows visualization. Programming is based on Simatic WinCC flexible with Soft-PLC WinAC RTX. All setting and control procedures on extruders and additional aggregates can be carried out and monitored on the operating unit, and all existing proportioning is controlled using this unit. For underwater granulation, the start-up valve can be controlled, for example. The start-up process is optimized in this way, allowing any start-up waste (melt that escapes from the extruder) to be minimized. The innovative Simatic controller allows up to 20 variable-speed drives and up to 32 temperature zones of the heating and cooling to be controlled and monitored. The derived process data are archived and saved with up to 256 customer- and product-specific settings (such as formulas) on an integrated flash card.

Another relevant feature in this context is the Leistritz Chart Pilot. This software allows the user to display process data from the Simatic S7 on an office PC system. Using this software enables clear and easy analysis, filtering, and integration of measured data. It supports the user in the creation of graphs for process data analysis. Another plus: the measured data can be imported into Excel, for example.

This combination of advanced control technology and excellent mechanical engineering provides Leistritz customers with a highly flexible, state-of-the-art extrusion line.