

## Press Release

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Increased production efficiency and reduced changeover thanks to intelligent modules

### **Well on the way to fully automatic extrusion lines**

*Easy operation combined with maximum efficiency in production, reproducibility and high product quality are the goals of artificial intelligence, fully automatic line components and Industry 4.0. The extrusion specialist battenfeld-cincinnati offers specific modules for sheet, film, pipe and profile extrusion lines that support exactly these goals. The company's CTO Dr. Henning Stieglitz is confident that: "Even though fully automatic extrusion lines are still a dream of the future; we are already offering many intelligent modules that clearly simplify every day's production routine".*

Fast product changes have long been an integral part of the daily routine in all segments of plastics processing. Extrusion companies must respond to specific demands from customers, be able to deliver smallest orders and minimize setup and cleaning times in order to operate economically. battenfeld-cincinnati offers the right automation components to meet precisely these requirements. In pipe extrusion, the fast dimension change (FDC) system has been well established, by which pipe dimensions can be changed during production within a wide range of different diameters. Virtually at the push of a button, this system changes the melt gap on the pipe die as well as on all downstream aggregates, from the calibration and cooling units right down to the haul-off and automatic cutting saw. In addition to very easy operation without time-consuming machine setup work, the reduced amount of production scrap is another significant advantage. Only a short cone piece is produced, before the good quality is produced again.

There are also some practical helpers for sheet and board extrusion lines: for example, the combined operation system for the extruder, melt pump, roll stack and downstream equipment in sheet extrusion makes the start-up significantly easier. This is a big advantage especially in complex multi-layer lines. Once the start-up sheet has been inserted, all machine components can be started simultaneously by pressing one button. The entire start-up process can be carried out by a single operator. This saves both time and costs and reduces

start-up scrap as well, to enhance sustainability. In addition, battenfeld-cincinnati has developed a module for sheet extrusion lines which adjusts the selected sheet thickness automatically when changing products. Without the operator intervention, the roll stack and line speeds are adjusted accordingly via the control system. Another module for the production of the smoothed semi-finished products is the roll compensation system. During the production of sheeting, adjustments of the roll temperature may be necessary, which invariably also leads to a minimal change in the roll diameter. The roll compensation system corrects this change and handles the continuous automatic readjustments of the roll nip.

In PVC processing, the auto-stop for semi-automatic rinsing of the extruder and die has repeatedly proven itself. This process is triggered by the operator in the extruder's control system. In this process the feeding of the production material is stopped, and the melt pressure at the screw tip is monitored. As soon as the pressure falls below the set limit value, which means that the extruder has been emptied, the second dosing device with the detergent mixture is started and this mixture is fed in until nothing but detergent comes out of the die, at which point the extruder can be switched off. For PVC extrusion, battenfeld-cincinnati has also developed Steady flow, a device to minimize pressure fluctuations which, as part of the process, always occur in counter-rotating twin screw extruders. Steady flow continuously measures the pressure at the screw tip as well as the pressure difference from one screw rotation. During one screw rotation, the screw speed is then altered to almost completely compensate pressure differences. This minimizes pressure fluctuations and consequently pulsations in the melt flow to ensure a significant improvement in the quality of the semi-finished product.

"In addition to the modules, which make handling much easier in everyday production, we have also revised the operation of the control system once more and implemented animated videos to assist all operators regardless of their native languages", says Dr. Henning Stieglitz, pointing to yet another example of modules by which the extruder specialist supports its customers and is paving the way to fully automatic extrusion systems.

### **About battenfeld-cincinnati**

battenfeld-cincinnati has production facilities in Bad Oeynhausen and Kempen (Germany), Vienna (Austria), Shunde (China) and McPherson, KS (USA) and is a leading manufacturer of energy-efficient, high-performance extruders and complete extrusion lines according to customers' specifications. Our customers' end products can be found in infrastructure and construction (pipe, profile, sheet), packaging (thermoforming sheet), pelletizing, as well as calendering and lamination equipment. battenfeld-cincinnati's customers benefit from an extensive global sales and service network.

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