What Can You Do at Fall Fairtime, When There Aren't Any?

Injection Molding Machine Builders Are Discovering New Ways to Reach Their Customers

A year to forget is nearing its completion. To brighten up this dreary fall season without a major event like Fakuma, injection molding machine builders have concocted various strategies to compensate for the cancellations of the many industry events that have fallen victim to the corona pandemic.

In early fall, several companies opened up their technical centers to visitors, albeit only on advance notice and in compliance with distance requirements and rules of hygiene. In addition to selected innovations, visitors could view systems in action that were, in fact, originally intended for display at the Fakuma 2020 in October. These attractions were supplemented by web-meetings with familiar contact persons and videos of the exhibits intended for the Friedrichshafen/Germany trade fair on the company's own YouTube channels.

Cutting Costs by Preventing Waste

Wittmann Battenfeld Deutschland strengthened its application technology centers in Nuremberg and Meinerzhagen, both Germany, as well as at headquarters in Kottingbrunn, Austria. The company presented, among other innovations, its new Ingrinder system solution (**Fig. 1**). The Ingrinder is a production cell that consists of a machine, a sprue picker, a granulator, and a vacuum conveyor. The granulator and sprue picker are integrated into the Unilog B8 machine control. This solution was conceived for the relatively small EcoPower and SmartPower series machines. On these machines in particular, molds with cold channel technology are used that produce sprues that either have to be disposed of or recycled.

The Ingrinder's sprue picker has a slewing drive and removes the sprue right during the injection molding process and conveys it via a failure chute integrated into the machine frame to the G-Max 9 granulator which has also been integrated into the system and modified for this purpose. The vacuum conveyor removes the recycled material through a two-component switch to the machine's materials funnel. The two-component switch can be adjusted according to the ratio of new material to granulate and convey them alternately. The result is material that is well-mixed when it drops into the materials funnel.

By integrating the periphery into the production cell, the builder says the customer obtains a CE-tested system that takes up considerably less floor space than an unintegrated solution would. The regrind is mixed in during production. Besides the cost savings from using recycled material, there is a further advantage for hygroscopic materials: since the material is dried in the cycle, it has no time to absorb water and does not have to be redried before reaching the granulator. Viscosity fluctuations are detected during the injection sequence and actively corrected within the same shot by the HiQ Flow assistance tool.

Sustainability Underlined

The applications exhibited at Dr. Boy's technical center in Neustadt-Fernthal, Germany, strongly emphasize sustainability and resource conservation. A Boy 80 E hybrid machine is the mechanical engineering highlight. It is equipped with a newly developed E-Drive injection unit where the injection and metering movements are driven by two servomotors. The rotary and axial movements of this Servo-Plast Unit are performed electromechanically and thus completely independent of the machine hydraulics. According to Boy, the short cycle times and high metering quantities make it especially advantageous. The new twin-pump technology enables synchronized control of the functions "mold close" and "injection" as the mold is locking.

The machine shown here is producing beautiful designer plates from "Ocean Plastic" (**Fig. 2**). The Swiss company Tide Ocean SA has cooperation partners that collect used plastics parts – mainly empty PET bottles – from the world's oceans, islands and coastal areas. The plastics products collected there are sorted, washed, shredded, and then transported to »

Fig. 1. Ingrinder system solution: the sprue picker guides the removed sprue via vacuum conveyance to the integrated granulator © Wittmann Battenfeld

Fig. 2. A Boy 80 E hybrid machine produces beautiful designer plates from so-called Ocean Plastic collected by Tide Ocean SA © Dr. Boy

Fig. 3. With their experts' knowledge, Engel ferrets out potentials for optimizing processes and provides user support for their implementation © Engel

Switzerland. In a multi-step mechanical process without additives, the recyclable material is prepared for reprocessing.

A compact line – consisting of a Boy 35 E type machine, the specially developed linear handling system (type: Boy LR 5), and a protective housing consistent with Euromap 78 – is demonstrating the automated production of 75 % degradable PLA deli display trays. The entire production unit requires a bit less than 4.8 m^2 installation area. A Boy XS with 100 kN locking force and equipped with largest injection unit possible for this series of machines makes egg cups from a plastics-wood composite (type: Fibrolon; manufacturer: FKuR).

The Machine Supplier Becomes a Production Companion

Live exhibits, a diverse lecture series, and one-on-one meetings with experts – with "Engel live e-xperience" the Austrian system supplier pulled all the digital stops to transfer the charm of a real in-house exhibition into virtual space. The event went on web stage from 13 to 16 October 2020. The company was pleased to report a "four-digit number of participants".

Participation in streamed live events and expert talks (with professional image direction), as well as individual meetings via video conference could be booked following prior registration by a simple mouse click in the Fair portal. In addition, Engel's exhibit in the technical center at their headquarters in Schwertberg, Austria, showed seven machines in operation. Insights into new machine concepts and processing technologies were granted via video recordings. Among these were a new generation of the fully electric e-mac series that requires reduced installation space, a new model in the e-speed series of hybrid machines for thin-walled applications, or a new micro-injection unit for liquid silicone.

The organizer pricked up ears with a further announcement: under the label "performance.boost", Engel will in the future offer the competency of its application technicians as a service for process analysis and optimization (**Fig. 3**). It starts with an in-depth analysis of the running production process by the Engel's specialists. They record the process settings and the relevant efficiency and quality performance indicators to identify real potential for optimization. They will also take into consideration what improvements could be made by using, for example, smart assistance systems, condition monitoring solutions, or other products from Engel's "inject 4.0" portfolio.

An evaluation of the automation concept, peripheral devices, as well as the up- and downstream processes integrated into the production process can be taken into consideration in the optimization recommendations. Based on these results, the customer decides which levers to pull to improve the state of his cycle time, part quality, energy consumption, and/or process stability.

Online Direct Sale Cuts Costs and Delivery Times

"Enjoy the Arburg way of infortainment". That was the closing of the trailer at the start of the "Summit Medical" that the Lossburg/Germany machine builder held on the web on November 19th for more than 400 participants connected via their own computers. The announcement was both programmatical and quite entertaining, since all information regarding solutions and visions for medical technology were communicated in various talk formats with live links to running machines – typical for the way the Arburg archive of explanatory videos and other film clips has been constantly growing and kept up to date on the company's website and on its own YouTube channel. Information is available there about the expansion of their arburgXworld customer portal, a top priority topic in the Black Forest, Germany.

One component of their app construction kit also applies to sales: the hydraulic Allrounder 270 S compact model (**Fig. 4.**) is the first injection molding machine by Arburg that can be configured online via their customer portal arburgXworld and ordered directly online with short delivery times. Since October, the machine can be customized even further thanks to further options and functionalities and their application range be substantially expanded.

Besides its 20% smaller footprint, Arburg states that the price of the compact online model is 25% lower than for a standard hydraulic machine.

The machine with energy-saving servohydraulics (ASH)and 350 kN clamping force is also available now with a parting surface unit that can be repositioned for vertical injection. This permits a wider selection of molds and processes. Highly wear-resistant chromium nitride-coated cylinder modules are optionally available to enable the processing of a wider spectrum of materials. For automated application, the Allrounder 270 S compact can be fitted with an Integralpicker V. Previously supplied machines can be retrofitted with a robot interface, if required.

To enter into the digital world of Arburg, a customer starts by registering free of charge in the customer portal, where he activates the Configuration app. This permits standardized machine offers to be expanded by defined options at fixed conditions – simple, secure, and menu-guided.

Customer Orientation in the Digital Age

Under the motto "Hey!Talk", KraussMaffei began in late October by calling a series of webinars to life. In six interactive talk rounds in three days, KraussMaffei succinctly informed its customers about innovations in plastics processing. The topics ranged from digitalization of service and production as well as innovations for injection molding, extrusion and reaction technology down to solutions for advancing plastics compounding in a circular economy.

Beginning in mid-November, the company presented itself at a virtual fair stand at the premiere of the D-Expo Kunststoff. The digital fair format of the Carl Hanser Verlag offered exhibitors the opportunity to interact with visitors in live lectures, videos, and chats. As one of its main emphases, KraussMaffei chose SilcoSet technology (**Fig. 5**) which paves the way for users to achieve zero defect production in silicone processing. Precise temperature control as well as highly precise injection (thanks to minimal holding pressure) and locking behavior are the preconditions for the reliable processing such low-viscosity materials as liquid silicone (LSR).

Premature networking is precluded by constant cooling, thus assuring stable thermal conditions for plasticizing. Process temperature can be controlled precisely from the cylinder to the tip of the nozzle. For example, a water-cooled, pneumatically triggered extended nozzle also seals against the mold to avoid material leakage and provide for reliable materials guidance with every shot. »

Service

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Bild 4. New options for the Allrounder 270 S compact available in online direct sales include a parting surface unit for vertical injection or automation with an Integralpicker V © Arburg

Fig. 5. Two lids for coffee-to-go – one for a thick-walled porcelain mug and one for the well-known Recup deposit system – are made in a single shot on a fully electric PX SilcoSet with uniformly high shot weight

© KraussMaffei

A non-return valve adapted to the respective material also ensures more reproducible closing behavior.

Such precision can be further enhanced by the APC plus (adaptive process control) machine function. APC plus compensates for the usual charge fluctuations while LSR is being processed. This machine function detects materials viscosity in a running process and corrects the filling volume in the same shot. The overall process becomes even more precise, part weight remains constant – even with 256 cavities. KraussMaffei's digital solutions, such as DataXplorer or EasyTrace, offer additional support for retracing and quality control. ■

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