Press release
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IntElect production cell: All-electric precision injection moulding with continuous process monitoring

Implementing zero-defect production of precision parts economically

The fact that all-electric IntElect injection moulding machines can fully meet the targets of achieving production both in an economical and also defect-free manner will be demonstrated by Sumitomo (SHI) Demag Plastics Machinery GmbH, headquartered in Schwaig near Nuremberg, at Fakuma 2011. With a fully automated cell, , for producing plug casings, including a quality assurance sequence, the German-Japanese exhibitor is travelling to Lake Constance to demonstrate a prime example of such a machine. In addition, Sumitomo (SHI) Demag will go into more depth on the topic of "Highest precision and zero-defect production" in a colloquium taking place over two afternoons at the exhibition centre.

With this year's 2011 colloquium on "The future – reaching the limits of what can be done", Sumitomo (SHI) Demag is offering a second series of Fakuma Colloquiums, following its successful 2009 premiere round. On 18 and 20 October 2011, participants taking part in the meetings in the Liechtenstein Room (West Foyer), which are scheduled to last about an hour and a half, can look forward to three short and interesting presentations by customers and staff of the injection

moulding machine manufacturer, with each being followed by a discussion round. Boris Linke and Robin Kemter from Fischer GmbH & Co. KG, Sinsheim, among others will be reporting on their experiences in achieving the highest levels of precision with the switchable activeLock backflow barrier in the all-electric IntElect machines.

Fischer GmbH & Co. KG has been a long-term and loyal customer of what is today Sumitomo (SHI) Demag. At least 80 % of the company's 65 injection moulding machines, originate from Schwaig and Wiehe. The company, which specialises in processing connector systems, has now been working with all-electric injection moulding machines since 2004 and today operates 15 IntElect machines. It is the high reproducibility of the IntElect machine that is an important aspect of assuring high quality levels for Fischer.

Fully automated IntElect cell will be producing plug casings at Fakuma 2011

Those attending Fakuma can experience a demanding zero-defect application drawn from Fischer's production range by visiting the Sumitomo (SHI) Demag stand. For this purpose, Fischer provided a four-cavity hot runner mould used to manufacture two-pin plug casings for the automobile electronics sector. The components, weighing a mere 3.5 g and made of glass-reinforced PBT, present the highest challenges in terms of precision and reproducibility: a total lack of burrs is required within the area of the contact pins; in addition, the narrowest tolerance limits of 0.05 mm must be adhered to. With a Cpk value of greater than 2.0, the process capability has to be ensured. At the same time,

Fischer requires zero-defect production with 0 ppm, as well as a high output performance.

Sumitomo (SHI) Demag has economically implemented all of its customers' wishes in a fully automated cell in all aspects of an all-electric IntElect machine with continuous process monitoring and selection of start-up and reject parts. At the heart of the production unit is an IntElect 100-340 (1,000 kN), which produces the two-pin plug casings.

The parts are removed by an SDR 22 linear robot from Sumitomo (SHI) Demag's product range, with the robot operation being directly integrated into the machine control. The gripping system places the plug casings, separated according to cavities onto a conveyor belt. In this way, any part that is identified as defective can be separated as a reject.

"active" components increase production efficiency

A large part of the production efficiency of the cell is due to the "active" components built into the electric IntElect injection moulding machine. By means of "activeDynamics", short scanning times are achieved and even complex injection profiles are adjusted dead-on in the ms area. The switchable "activeLock" nonreturn valve eliminates the effect of the switching cycle of the nonreturn valve and almost totally eliminates shot weight deviations. The new "activeFlowBalance" function ensures balanced filling operations for multi-activity moulds through melt pressure adjustment. As part of the “activeEcon” function, it is possible to produce a detailed energy consumption analysis of all machine movements for each shot and for this to be optimised. In addition, "activeRemote" extends its integration potential: via Virtual Network Computing (VNC), the control surfaces

of the partner systems (such as those by Kistler and T.I.G.) and of the robot are integrated into the NC5 plus control and can be operated from there just as easily as through the actual control itself. In general terms, Sumitomo (SHI) Demag offers an extensive catalogue of products for increasing production efficiency, with a total of twelve components.

No compromises: an all-round approach to zero-defect production

"This exhibit shows a manufacturing cell, like one that can be found with a leading producer in the plug manufacturing sector – and that even has an entire quality assurance sequence", says Bernd Tröger, Director of Marketing at Sumitomo (SHI) Demag, considering the high standard of the demonstration.

All four mould cavities are equipped with Kistler sensors for measuring the mould cavity pressure. The mould temperature is monitored by the injection moulding machine. The high process consistency of the production unit is shown by inline statistical quality analysis being carried out, including calculating the process capability analysis Cpk. To this end, Sumitomo (SHI) Demag implemented the production monitoring system of the company of T.I.G. (Technische Informationssysteme GmbH) via Virtual Network Computing (VNC) directly into the injection moulding machine control. All production and processing data of the machine are collected in the T.I.G. main computer, allowing for detailed monitoring and recording to be carried out in every individual production phase.

Sumitomo (SHI) Demag intends to make use of the advantages of main computer technology for process checking in its Wiehe plant in the future as well. This is why the injection moulding machines deployed in the

application technology division of the centre for competence for all-electric injection moulding machines will shortly all be networked via a permanently installed T.I.G. main computer.

Sumitomo (SHI) Demag Plastics Machinery GmbH

Sumitomo (SHI) Demag Plastics Machinery GmbH, Schwaig/Germany, is one of the world's largest manufacturers of injection moulding machines for the processing of plastics. The Japanese-German company was formed in the spring of 2008 by merging the injection moulding activities of Sumitomo Heavy Industries (SHI) and those of Demag Plastics Group.

The global development and production network of Sumitomo Heavy Industries and Sumitomo (SHI) Demag consists of four plants in Japan, Germany and China with more than 3,000 employees. The product portfolio encompasses all-electric, hydraulic and hybrid injection moulding machines with clamping forces of between 180 and 20,000 kN. With almost 100,000 machines installed, Sumitomo (SHI) Demag is present in all important markets throughout the world.

With more than 4,200 machines sold each year, Sumitomo Heavy Industries counts as Japan's largest manufacturer of injection moulding machines. The main Sumitomo plant in Chiba produces machines with low and medium clamping forces. Around 95 % of all machines supplied by Sumitomo Heavy Industries have an all-electric drive.

The main Demag facility in Schwaig/Germany focuses on the hydraulic Systec and the hybrid high performance, high-speed El-Exis machines.

Recognising the increasing importance of electric drive technology for injection moulding machines, Sumitomo (SHI) Demag has expanded the former Demag factory in Wiehe/Germany into an international centre of competence for electric machines. Thanks to the new production capacities, Wiehe now supplies all electric injection moulding machines for the European and American market with its IntElect and SE series and also the hydraulic Systec series with clamping forces of up to 1,200 kN.

Sumitomo (SHI) Demag continues to operate the former Demag plant in Ningbo/China which has been active since 1999. Since 2007 the subsidiary located there, Demag Plastics Machinery (Ningbo) Co., Ltd, had its own, newly built plant and after reaching full capacity, moved to a larger factory with a production area of 11,000 sqm. Injection moulding machines from the Dragon and Systec C product lines with clamping forces of between 500 and 8,000 kN are produced here for Asian markets.

In addition to injection moulding machines, Sumitomo (SHI) Demag offers customised and standardised systems for the automated handling of moulded parts, technical solutions for special applications in process engineering, tailor-made service concepts and various forms of financing for investments in injection moulding machines.

With its seamless sales and service network of subsidiaries and representations, Sumitomo (SHI) Demag is present in all major industrial markets.

www.sumitomo-shi-demag.eu

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Contact

Stefanie Lauterbach, Marketing
Sumitomo (SHI) Demag Plastics Machinery GmbH
Tel. +49 911 5061-2915
Fax +49 911 5061-750
E-mail: Stefanie.Lauterbach@dpg.com

<IntElect_100-340>

A fully automated cell for plug production, including a quality assurance sequence, for achieving zero-defect production is one of the highlights at Fakuma 2011.
Photo: Sumitomo (SHI) Demag

<Stecker>

These two-pin plug casings made of glass-reinforced PBT are produced using a four-cavity hot runner mould made by Fischer GmbH & Co. KG, Sinsheim.
Photo: Sumitomo (SHI) Demag