Press release
17 October 2012

The Systec hydraulic multifunction series from Sumitomo (SHI) Demag features a combined IMD-IML display, demonstrating a completely new application in the high-tech segment

Decoration and function in only one step

The highlight exhibit at the Fakuma 2012 is based on the versatility of the Systec series from Sumitomo (SHI) Demag Plastics Machinery GmbH based in Schwaig near Nuremberg. A hydraulic Systec 210 in a compact production unit produces a multitouch display that combines both IMD and IML technology. This newly developed technology opens up completely new possibilities for the control elements.

With a clamping force range from 350 to 20,000 kN, the injection moulding machines in the Systec hydraulic series cover Sumitomo (SHI) Demag's widest range of applications. Up to a clamping force of 1,200 kN, the closing unit is fully hydraulic, while machines from 1,300 kN are equipped with a knuckle-joint closing system. Thanks to its modular structure, the virtuoso machine can be individually adapted to any production process.

active components make full use of the efficiency potential offered by hydraulic machines

Numerous production efficiency modules are now available for the Systec, and provide a real advantage to the processing company in achieving the best

possible production efficiency. The first step on the way to optimum process settings is to display the energy consumption by means of the activeEcon energy consumption analysis. activeEcon helps to evaluate the influence of process settings on the machine's energy consumption. A before/after comparison makes it possible to ascertain the machine's optimum energy setting, and activeEcon calculates the effects on production costs automatically. Peripheral devices can also be included in the analysis.

The activeDrive energy-saving drive is a pump driven by a servomotor. It guarantees that the power will be dynamically adapted to the particular requirement, thus ensuring optimum efficiency levels and minimum losses, especially in the part-load range and when running with no load. The combination of a variable-speed electric motor and highly dynamic regulating pump makes it possible to achieve savings of 10-50 percent compared to the standard hydraulics. The activeCool&Clean filter system ensures optimum oil quality and long oil service lives of up to 40,000 hours.

The active mould protection concept from Sumitomo (SHI) Demag makes an important contribution to availability and durability. The tried-and-tested activeQ function stops the closing movement of the mould in case of an unusual increase in movement force; now, it has been supplemented by the new activeQ+ function for controlled opening of the mould. This prevents damage to the mould in the event that the injection-moulded parts stick when opening.

The knuckle-joint drive on the closing unit reduces the energy requirement compared to fully hydraulic

systems. The knuckle-joint closing unit also offers convincing performance with its high rigidity and optimum kinematic design. These factors permit the fastest possible movement speeds and positioning accuracy. Short cycle times, high precision and high machine availability offer our customers maximum efficiency combined with an optimum price/performance ratio.

The trend is for function foils

Touch sensors are becoming more and more popular as a replacement for mechanical buttons and adjusters. A new process makes it possible to combine capacitive keys and control elements with a user-friendly design; this is proving to be very highly appreciated in electronics, mobile phone and automotive applications. It is made possible by transparent, conductive foils for PolyTC® technology from PolyIC GmbH & Co. KG, Fürth, which can be combined with IMD foils. These function foils are multitouch-capable and register several points of touch at the same time. This means capacitive multitouch screens can also be implemented.

The foils used for PolyTC® technology are made from PET with a thickness between 36 and 100 µm, to which it is possible to apply conductive structures with a size of 10 µm upwards. The surface resistance of a foil can be adjusted by PolyIC for specific customers. The combination of IMD and IML processes by integrating foil functions using PolyTC® technology is a new, ground-breaking and innovative step which has been made possible by many years of development work undertaken by the companies PolyIC and LEONHARD KURZ Stiftung & Co KG., Fürth.

Thanks to the new PolyTC® technology, the surface of IMD-IML components is no longer disrupted by mechanical buttons because the control elements are completely integrated in the body of the component. By using non-conductive metal IMD foils, it is even possible to create metallic surfaces. This technological leap permits a new freedom in design which goes well beyond the bounds of conventional electronics and gives greater importance to graphical aspects. In addition, the new procedure reduces the multi-stage gluing process of glass surfaces and function foils that previously needed to be done; now there is just one production step which is both quick and economical.

The new decoration technology opens up many options especially in the automotive industry. When it comes to integrating control elements, it is essential to work within a strictly delimited space; the freedom of design offered by foil technology makes more flexible applications possible. In addition, more and more adjustment options are expected, particularly in executive level cars. These range from the navigation system and the air conditioning through to the seat adjustments, all which are now expected to be operated through multitouch surfaces.

Systec 210 as the core of a ground-breaking, compact IMD-IML production unit

IMD-IML display production takes place fully automatically and autonomously with a compact production cell. The core of the system is a Systec 210-430 (2,100 kN) which uses a 1-cavity mould from HBW-Gubesch Kunststoff-Engineering GmbH, Emskirchen, to produce 2 mm thick display frames from PMMA. The finished displays have a screen diagonal of 3.5 inches.

A laminar-flow module from Max Petek Reinraumtechnik, Radolfzell, cleans the sucked-in external air and uses a filter fan unit (FFU) to prevent particles entering. As a result, an air purity equivalent to clean room class ISO 7 is achieved.

The IMD decor foil for the front of the display is put in by means of a feed unit from LEONHARD KURZ Stiftung & Co. KG, Fürth; this unit is located above the mould installation space. The endless foil also manufactured by KURZ is punched to the correct dimensions in the mould during the closing movement. The function foil for the back of the display is taken from a magazine by a 6-axis robot and is placed in the mould. In order to ensure that the display functions in all respects, the foil is secured in the mould by vacuum with a tolerance of ±0.2 mm. The extensive handling of the foil and display during the entire cycle is accomplished by automation equipment from SAR Electronic GmbH, Gunzenhausen. The finished frame also has wafer-thin contact elements for connecting to the automotive electronics in order to exchange information between the frame and the electronics.

The temperature of the mould is controlled using teco vario technology from gwk Gesellschaft Wärme Kältetechnik mbH, Kierspe. The variothermic mould temperature control ensures that areas of the mould can be heated and cooled independently of the cycle. The active increase in mould wall temperature during the filling phase results in a better surface impression and reduces stresses in the moulded part. The subsequent intensive cooling phase keeps the associated cycle time extension within economically justifiable limits. The cooling controller is linked to the

machine controller by means of a corresponding interface, and is represented in full by the NC5 plus.

The production unit is rounded off by extensive finishing technology from KIST Maschinenbau GmbH, Dresden. The film sprue is cut off using a laser, after which the display is cleaned before having protective UV paint applied to it as a final step. The component is not transferred to a storage position until the paint has fully dried. All in all, the cycle with all production steps takes about 50 seconds.

All the equipment and machines within a line are monitored and controlled centrally by the new NC5 plus controller.

Together with the mould maker, HBW Gubesch (a specialist in the IMD process), Sumitomo (SHI) Demag has played a pioneering role for many years in the field of decoration. This work is now being continued for customers at this year's Fakuma with additional partners and a new, innovative technology that is ready for use in series production.

Two fully electric IntElect machines on partners' stands

An IntElect 100-340 can be seen in action on the stand of CeraCon GmbH, Weikersheim. In Hall A1, stand 1421-2, it will be producing picture frames from polypropylene, which subsequently have a PUR seal applied to them outside the mould. The 1K-PUR process used means that potential defects such as due to mixing errors or hardening can be avoided. The cycle time for production is about 60 seconds.

Another IntElect 100-340 will be producing a PMMA lens on the stand of gwk Gesellschaft Wärme

Kältetechnik mbH, Kierspe, in Hall B1, stand 1205. This is a thick-walled lens for focussing LED light. The lenses are produced in a 2-cavity mould within a cycle time of about 70 seconds. For the first time, an innovative mould concept will make it possible to draw a direct comparison between two process variants during a live presentation. While one cavity is cooled in the traditional way, the second cavity used for injection moulding will be cooled with the teco vario variothermic cooling system from gwk, which is based on CO2 cooling and heating. In this application too, teco vario improves the surface impression and reduces stresses in the moulded part.

NC 5 plus with additional features

All the equipment and machines within the lines are monitored and controlled centrally by the new NC5 plus controller. The NC5 plus controller introduced at last year's Fakuma is installed on all newly delivered machines as standard. It assists the processing company by providing a very broad bandwidth of functions. In this way, the NC5 plus controller makes it easier to achieve a sustained increase in production efficiency under practical conditions through simple and even more intuitive operation.

Sumitomo (SHI) Demag Plastics Machinery GmbH

Sumitomo (SHI) Demag has lastingly shaped the plastics industry from the very beginning. Being a specialist for injection moulding machines for polymer processing, Sumitomo (SHI) Demag and its Japanese parent company are among the leading companies in this sector globally. 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 over 100,000 machines installed, Sumitomo (SHI) Demag is present in all important markets throughout the world.

With more than 5,000 machines sold each year, the Plastics Machinery Business of Sumitomo Heavy Industries counts as one of the largest Global 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 Japan 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 worldwide with its IntElect series with clamping forces up to 4,500 kN 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 1998. 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 Systec C product line with clamping forces of between 500 and 10,000 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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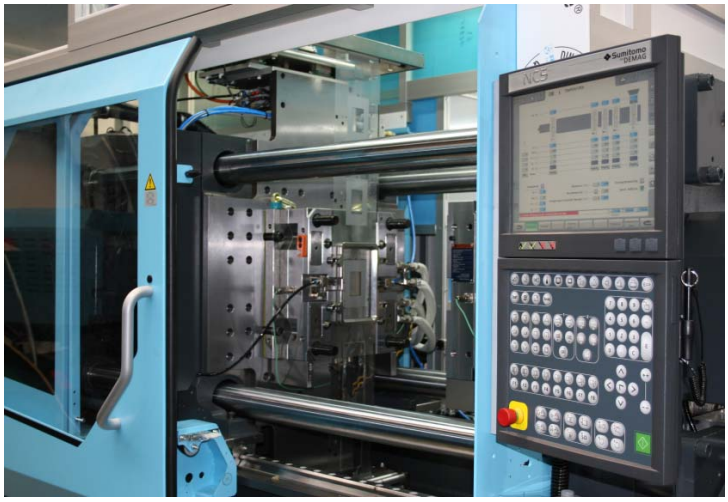

The Systec 210 multifunction machine will feature a highlight at the Fakuma 2012: a compact production unit combines IML for the function foil and IMD for the surface decoration, to produce a 3.5-inch display as a control panel.

Photo: Sumitomo (SHI) Demag

<Systec210_Display_IMD_IML>

The 3.5-inch display is produced in one step and shows the freely definable positions of the control buttons on the front panel; the correspondingly designed capacitive function foil is integrated on the rear via IML, and is connected to the power supply and the signal processing by means of contacts (middle).
Photo: Sumitomo (SHI) Demag

<IntElect100_picture_frames>

Picture frames will be produced on the CeraCon GmbH stand using an IntElect machine; the frames will be rendered waterproof by means of a 1K-PUR seal.
Photo: Sumitomo (SHI) Demag

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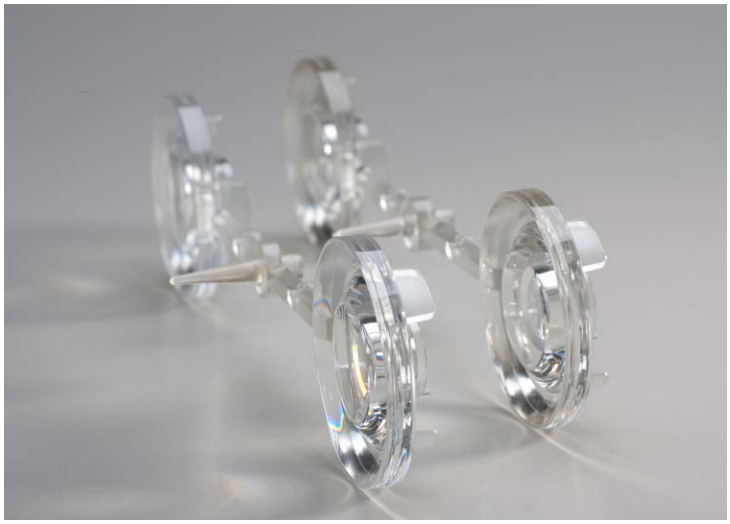

Thick-walled precision lenses are produced on the gwk stand using a fully electric IntElect 100; due to a new mould concept, the influence of the applied cooling process can be rendered directly comparable.
Photo: Sumitomo (SHI) Demag