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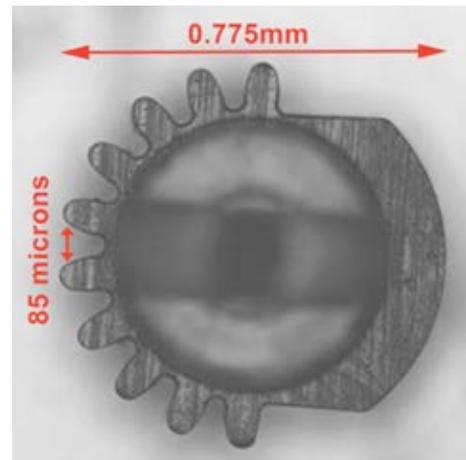
Sumitomo (SHI) Demag to Demonstrate High-Precision Micromolding of 0.775mm-Diameter Medical Part at NPE 2015

- **POM gear, with just 85 microns between teeth, controls blade for cataract surgery making precision of extreme importance**
- **Exceptional molding precision achieved by Z-Molding capabilities and SL Screw assembly**

[Strongsville, OH – January 15, 2015]...Sumitomo (SHI) Demag announced today that one of the injection molding solutions it will feature at NPE 2015 ([Booth W623](#)) will be a micromolding demonstration of a POM gear that plays a vital role in a unique new cataract surgery device developed by Eye Care and Cure (ECC) of Tucson, AZ (eyecareandcure.com).

An SE30DUZ direct-drive all-electric equipped with the SL Screw assembly will mold a 0.524-gram gear that rotates the surgical blade in the new I-core Capsulorrhesis Instrument from ECC. The gear will be molded in a Sansyu FineTool (Takahama City, Japan) single-cavity cold-runner mold on loan from micromolder Makuta Technics of Shelbyville, Indiana (makuta.com). A robot from Yushin America, Inc. (NPE Booth W763) will remove the micro-sized part.

[MORE]



A microscope and 23-inch display monitor will assist visitors in viewing the precision of the micro-sized part.



The micromolding demonstration will be run on a direct-drive all-electric SE30DUZ C50 equipped with an optional 16mm SL Screw assembly.

Sumitomo (SHI) Demag Micromolding of Medical Part at NPE 2015...continued

“We appreciate the opportunity to partner with these companies in presenting this innovative product and challenging medical molding demonstration at NPE,” said John F. Martich III, V.P. and Chief Operating Officer of Sumitomo (SHI) Demag’s U.S. operations. “When you consider the micron-measured precision requirements of the gear teeth on this part and the importance of the function they perform — it’s hard to think of a better way to showcase the precision capabilities of our equipment.”

The I-core device is used to create a capsulotomy, which is a circular opening in the human eye’s capsular bag that holds the lens that focuses light onto the retina. When a cataract forms, it clouds the lens so that vision becomes impaired or even blocked. The surgical procedure that removes the clouded lens material requires a uniform opening into the capsular bag. Many different devices have been developed to create the opening but often are difficult to use and are typically slow. While certain laser systems can perform the process, these systems are very expensive and not suited for easy portability.

Specifically designed for small facilities, third-world countries and other remote locales, the I-core device provides a fast, cost-effective and portable solution. The single-use, pre-sterilized device is compact and performs a uniform circular opening in the capsule in a matter of seconds. The device fits through a micro incision and gives the surgeon better skills than many of the older techniques. It operates by transferring motion from a lever arm to the tiny gear that rotates the blade attached to it.

“In a part weighing just a half gram, a stable process and shot-to-shot consistency are even more important than in typical molding applications,” said Tony Marchelletta, Sumitomo (SHI) Demag Regional Sales Manager. “The SL Screw assembly, together with the Z-Molding capabilities of the SE-DUZ, meets all of the challenges this part presents.”

[MORE]

Sumitomo (SHI) Demag Micromolding of Medical Part at NPE 2015...continued

In traditional injection molding, shear heat develops due to dragging resistance of the resin between the screw flights and the barrel. This causes fluctuation of the molten resin density and various other problems. The SL (Spiral Logic) Screw assembly avoids these problems by eliminating shear heating instability.

“With the SL Screw assembly, the GS loading system matches the speed of the screw and can feed or meter the material even pellet-by-pellet,” Marchelletta said. “The screw is designed with no compression zone and the problem of stagnation or degradation of the melt in the barrel is eliminated. Additionally, the GS valve, which replaces a check ring, is a positive-locking non-return valve that prevents back-flow of material into the barrel. The result is even resin pressure stability the entire length of the screw, a highly stable process and shot-to-shot repeatability.”

Some of the other features of the SE-DUZ Series that also contribute to the precision of this micromolding demonstration include:

- Z-Molding’s Flow Front Control (FFC) System takes advantage of the energy in the flow front of the resin to complete filling in an even fashion as opposed to forcing material into open areas and thus flashing the areas that were already filled.
- Z-Molding’s Minimum Clamping Molding (MCM) System allows the machine to automatically detect the minimum point at which the mold halves are completely parallel and defines the threshold where flash-free molding can occur and the optimum point at which the best cavity venting exists.
- Advanced direct-drive motors that provide fast response, high speeds, pressures and torque for the most demanding applications and ensure superior energy efficiency, precision and repeatability
- Unique clamp force correcting system that compensates for thermal expansion of the mold. Working together with a control device and high

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precision rotary encoder, this patent pending system keeps clamping force stable.

Sumitomo (SHI) Demag's worldwide group of companies is dedicated to helping plastics processors compete more effectively in the global market. The company manufactures a wide range of high-precision IM machines for diverse applications. Its all-electric platform (SE and CL series) spans from 8 to 935 U.S. tons, including micro to mid-sized, high-speed, packaging, high-duty, vertical, insert and high-speed multi-shot machine series. Ultra-high-speed hybrid machines (EI-Exis SP and Systec SP series) are offered in models from 165 to 825 U.S. tons for packaging and other thin-wall applications. Configurable, high-performance hydraulic and toggle machines (Systec Series), including multi-component models, are also provided for applications from 39 to 2248 U.S. tons. Equally important, Sumitomo (SHI) Demag has an extensive worldwide network, ensuring customers of sales, parts, training, service and processing support when and where it is needed.

Information on the North American operations of Sumitomo (SHI) Demag can be found at: www.sumitomo-shi-demag.us

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