

PRESS RELEASE

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SE30DUZ Demonstrates Micro Molding of Challenging, High-Clarity, DNA Sample Collection Tubes

[NPE Booth W3045, Orlando, FL – May 7, 2018]...

Sumitomo (SHI) Demag Plastics Machinery North America, Inc. highlighted the exceptional micro molding capabilities of the SE-DUZ all-electric and SL Screw Assembly in its NPE booth today by molding high-precision, high-clarity DNA sample collection tubes.

The parts are being molded using a Sansyu FineTool (Takahama City, Japan) single-cavity cold-runner mold on loan from micro molder Makuta Technics of Shelbyville, Indiana (makuta.com). Molded of high-flow PP, the tubes' wall thickness is just 0.250 mm over the 12 mm length cone and the parts weigh a mere 0.055 grams each.

The collection tubes are used in a DNA sequencing device to detect Legionnaires' Disease and for the analysis of the correct medicines that should be prescribed for individual patients based on their DNA. Excellent clarity must be maintained to ensure accurate read of samples, and the "no-touch" parts must be

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Optical clarity of the barrel is key to the functionality of these DNA sample collection tubes.



The SE30DUZ used for molding the DNA sample collection tubes is equipped with an optional 16 mm SL Screw Assembly.

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DNA/RNA free. This requires extreme repeatability as the parts cannot be visually inspected. Additionally, a vacuum mold is used to eliminate flow marks on the bottom surface (end of fill). An inline vacuum system removes excess air/gas to keep the bottom surface free from issues. In production, the main runner is removed/discarded with a sprue picker, the side-gated runner is removed and the parts are packaged by secondary automation.

Customer Makuta, Inc. chose the SE30DUZ with the SL Screw Assembly to mold these challenging parts for a variety of reasons.

“The repeatability is crucial to our success with this part,” said Tyler Adams, Vice President of Makuta. “Because of the long, thin wall, it is difficult to control the merging of the flow front in the resin. A minimal difference in injection velocity can mean the difference between a perfect part and a nonfunctional assembly. The plasticizing and injection repeatability of this system provides us with enough control to produce conforming parts.”

“Due to the optically clear requirement on these parts,” Adams continued, “we cannot afford material degradation or stagnation in the screw. The SL screw allows us to limit excess heat in the assembly, in turn keeping the finished product free of debris and carbonized resin.”

The optional SL (Spiral Logic) Screw Assembly works together with Z-Molding’s FFC (Flow Front Control) System of the SE-DUZ to deliver defect-free, high-precision parts with unmatched shot-to-shot repeatability. The SL Screw Assembly’s GS loading system precisely meters the resin into the barrel by synchronizing with the speed of the screw. The 14:1 L/D screw, which is designed with no compression zone, achieves a first-in/first-out, even movement of the resin through the barrel. A positive-locking non-return valve blocks backflow and eliminates inconsistencies associated with a conventional check ring. The result is a homogeneous melt and stable process are maintained, and uncontrolled shear heating, material stagnation/degradation, random short shots and black spots are virtually eliminated. Additionally, barrel wear, carbonization and maintenance requirements are reduced.

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“Controlling the resin in the system is paramount to our success with this part. We need maximum control over both the amount of resin in the system and the residence time. The metered feeding system of SL, in conjunction with the locking check ring, allows the operator to reduce the variability in plasticizing time, injection peak pressure, and cushion, resulting in unparalleled process stability,” Adams said.

The SE30DUZ, a true all-electric, also helps Makuta meet their requirements for maintaining a Class 8 cleanroom. The SE-DUZ features:

- Beltless, direct-drive, all-electric motors
- No hydraulics
- Grease-free mold area
- Grease supply system with cartridges

In addition to Sansyu FineTool and Makuta, other contributors to this NPE demo include: Yushin America, Inc. (take-out robot); Productive Robotics (collaborative robot); Matsui America, Inc. (mold temperature controller); Comet Plastic Equipment, LLC (vision system, dryer and loader); and Mold-Vac LLC (mold evacuation system).

The SE30DUZ is just one of Sumitomo (SHI) Demag’s 12 diverse machine demos at NPE highlighting the **Productivity⁺** benefits that expand molding capabilities and increase profitability for molders. To see all of the company’s NPE demos, attendees are encouraged to visit the following booths:

Sumitomo (SHI) Demag	Booth W3045
RJG Inc.	Booth W3383
Yushin America, Inc.	Booth W2173
Gammaflux L.P. (Männer molds)	Booth W763
Canon Virginia, Inc.	Booth W223

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, SR and CL series) spans from 8 to 935 U.S. tons, including micro to mid-sized, high-

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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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