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Sumitomo Unveils 20 and 253 Ton All-Electrics

(Booth #6550, NPE 2000, Chicago, IL)... Continuing its leadership position in the all-electric injection molding machinery market, Sumitomo Plastics-Machinery unveiled two new models of its SES Series: the SE18S and SE230S (20 and 253 US tons respectively.)

With maximum injection speeds of 300 mm/sec and response time of 30 msec or less, both machines demonstrate new levels of high-speed filling, high-speed decompression and molding stability—with exceptional energy efficiency—for a wide range of high-precision applications including thin-wall parts.

The SE18S, delivering injection pressures up to 32,420 psi (2280 kg/cm²), is ideally suited for narrow pitch connectors, small thin-wall parts and micromolding applications.

The SE230S combines the production flexibility of wider tie bar clearance (23.23 in (590 mm)) and injection pressures up to 38,820 psi (2730 kg/cm²) for packaging, cutlery and media case applications.

Fast cycling machines, both the SE18S and SE230S deliver mold/open close speeds of 51.2 in/sec (1300 mm/sec). For example, the SE230S, with a dry-cycle of 1.7 seconds, is demonstrating high-speed, energy-efficient molding of a thin-wall food container. The hot-runner mold is producing eight, PP containers, weighing 0.27 oz (7.6 g) each, on a 4.0 second cycle. This model was also designed with wider tie bar spacing—23.23 in (590 mm)—for greater production flexibility.

The SE18S is demonstrating a micromolding application, running a 2-cavity mold for a POM bobbin used in miniature electrical devices. The part measures 1.11mm x .64mm x .94 mm (overall part size = 0.668 mm³) and weighs 0.00001 oz (0.0003 g). The cycle time, including sprue and parts removal, is 4.8 seconds.

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The two new SES models expand the existing SES Series which includes 33, 55, 83, 110 198, 308 and 385 US-ton models. The SES all-electric was designed to combine the ultra-high precision capabilities and significant energy savings of an all-electric with the high-speed reliability of Sumitomo's field-proven double-toggle clamp design.

Demonstrating actual values virtually indistinguishable from set points, SES performance results for shot weight accuracy and repeatability can yield a typical deviation-to-mean ratio of less than 0.02%. Available with a selection of injection units and screws, the SES provides the precision, power and velocity to meet even the most demanding application requirements.

For injection on models up to 200 tons, two direct-drive, Sumitomo-built AC servo motors with full, closed-loop control and digital sensors provide the SES's outstanding speed, precision and energy efficiency. The motor for injection uses a load cell to provide feedback that dictates the speed and torque required for precision injection pressure; the screw drive motor works together with a position transducer. Using Sumitomo-developed servo motor technology, these beltless motors deliver a substantially higher level of mechanical efficiency, precision repeatability and durability.

Models over 200 tons, including the new SE230S, use belted motors equipped with wide, exceptionally durable belts constructed of polyurethane reinforced with a tough, proprietary synthetic material.

Other features that contribute to the SES's precision injection and repeatability include:

- Unerring velocity control from 0.1 mm/sec up to the maximum injection velocity
- Ramping control of injection fill and hold
- Three selectable programs for plasticizing
- Peak pressure control during injection
- V/P switchover selectable by position, time or pressure
- Hold pressure settable and accurate to 1kgf/cm²
- PID temperature control settable to 0.1°C with 2 sec. sampling

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For models up to 200 tons, the SES clamp unit uses two, Sumitomo-built, direct-drive AC servo motors for digital control of clamping and ejection. With full closed loop control, monitoring by optical encoders, low pressure mold protection settable to 0.3mm and digital mold open/close positions settable to 0.1mm, the SES ensures precision control of mold open/close with maximum mold protection even at high speeds. Mold open stop position accuracy of 20 microns protects robots and 3-plate molds.

As with the injection unit, belted motors with highly efficient power transmission are used on models over 200 tons.

Other special features of the SES clamp design include:

- Selectable auto-ramping modes for fast cycles with shock-free movement
- Graphite-impregnated bushings and an automatic grease supply system using easy-to-load grease cartridges

The SES's cost-efficient operation is due to several factors. The machine's four, highly energy-efficient, servo motors draw power only as it is needed for significant, quantifiable energy savings. Additional cost savings result from lower demand on cooling systems, reduced expenditures related to hydraulic oil and filters, reduced oil clean-up and disposal costs, and precision repeatability that ensures less scrap and more good parts.

All SES Series machines are equipped with the full-color N-VII control offering everything from easy, prompted setup to full QC/SPC capabilities. Additionally, SES machines carry Sumitomo's comprehensive 24/48 Warranty that covers everything except brake pads, filters, fuses and bulbs.

Sumitomo Plastics-Machinery provides a complete line of injection molding machines, from 20 to 716 US tons, including general purpose, all-electric, hydraulic, ultra high-speed toggles and disc molding systems.

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