



## **ENGEL Showcases Advanced All-Electric Manufacturing Technologies In The U.S.A.**

**York, Pa. – July 22, 2010 – ENGEL North America, a world leader in the design and manufacture of injection molding machines and parts-handling automation can now demonstrate the effectiveness of both its “x-melt” thin-wall molding and its “coinmelt” injection-compression technologies on an all-electric, tiebarless molding machine at its ENGEL Technical Center in Corona, CA.**

ENGEL's x-melt expansion injection molding technology dramatically expands the range of possibilities for manufacturing ultra-thin-wall components and micromolded parts by allowing the production of such products on conventional injection molding machines. In addition to enabling the accumulator-free, cost-effective production of parts with wall-thicknesses significantly less than 0.5-mm, x-melt also provides molders with the ability to produce microparts with unprecedented repeatability, but without an unprecedented investment in special-purpose capital equipment.

In the x-melt process the screw pressurizes the melt in front of the screw tip against either a closed shut-off valve, or a closed hot-runner valve gate, to pressures as high as 43,000 psi. Once the appropriate pressure is reached, and following a brief time delay to allow the pressure to equalize throughout the system, the shut-off nozzle or valve gate opens and the melt instantaneously expands into the cavity. Melt flow front speeds can exceed 100 in./sec. And fill time—typically in the 0.02-to-0.05 second range—can be as quick as 0.005 second.

During this entire split-second filling process the screw is stationary and does not assist the filling of the cavity. Once the filling is done, the residual pressure in the system acts like conventional



holding pressure. However, if necessary, a traditional holding pressure profile can be run.

In addition to its ability to produce extremely thin-wall parts, another equally important advantage of the x-melt process is the unsurpassed repeatability it provides. Several studies have shown that x-melt can improve part weight consistency by up to a factor of 10 when compared to conventional molding. ENGEL is prepared to demonstrate its x-melt thin-wall molding technology on an all-electric, 60-ton, 2.8-oz. ENGEL e-motion 200/60 US injection molding machine at its California Technical Center.

On the same machine, ENGEL also can demonstrate coinmelt—the injection-compression technology it has developed for manufacturing small, thick-walled, high-quality optical components. A key to the effectiveness of the injection-compression process, which is also known as “coining,” is the ability to consistently maintain the compression gap. In this regard, ENGEL's e-motion machine's clamping system sets a new industry standard—it repeatably maintains the compression gap to within  $\pm 5\mu\text{m}$ .

As a result, internal uniform pressures are preserved and the internal stresses of the part are minimized. Also, use of the coinmelt process can produce components with microscopic surface structures to create functional molded-in features—features like non-reflective surfaces, self-cleaning surfaces, and anti-infringement markings.

ENGEL's smaller e-motion series of tiebarless, all-electric machines are available in clamping forces ranging from approximately 60-to-190 tons (550 kN-to-1700 kN) and come equipped with the company's easy-to-use, but powerful ENGEL CC 200 machine controller.

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## ENGEL North America

From facilities in the United States, Canada and Mexico, ENGEL North America provides its customers a single source for design and manufacture of injection molding machines for thermoplastics and elastomers, a full range of plastics processing technology modules and a full scope of automation solutions. With eight production plants in Europe, North America and Asia (China, Korea), subsidiaries in 17 countries and representatives in over 70 countries, ENGEL North America provides its customers the global support they need to compete and succeed with new technologies and leading-edge production systems. For more information, visit [www.engelglobal.com/na](http://www.engelglobal.com/na).

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