Tiny Designs Boost Micro Molding

Here are three molded components that stretch the imagination

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Watch developments in the injection molding of extremely tiny parts made of plastic or metal. The technology seems to evolve almost daily. The most important advances are coming in medical and electronics markets where capabilities to make micro parts with tight and repeatable dimensions are accelerating.

The hardest part about micro molding is getting the players to agree on a definition, such as parts with a mass of less than a gram or parts with a total volume of less than 0.003 cubic inches. At any rate, definitions are rapidly moving to nano scale. Miniature Tool & Die of Charlton, MA has one project in which 525 components are made from a single plastic pellet. New additive tool making technology from Mimotec in Switzerland may take microfluidics parts even smaller.

Most plastics can be micro molded, but best results are achieved when materials have better-than-average-flow properties and can withstand the high pressures and shear rates of the micro process. At least one company, Phillips Plastics, of Hudson, WI, is also offering micro molding of parts made from three grades of stainless steel, iron-nickel and Kovar alloys. Tolerances of ±0.005 inches can be achieved with micro metal injection molded parts, says Phillips Plastics' Tony Pelke.

These three example show current capabilities:

- Accumold's Micro Rotor
- New MTD Filter
- Heart Savers