DESIGN 2 PART MAGAZINE

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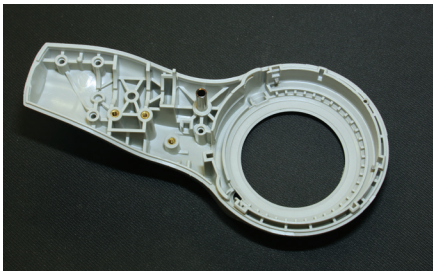
Custom Injection Molder Leads with Engineering

An Anaheim, California-based company masters engineering and the molding process.



This ophthalmic instrument enclosure, molded by Craftech for a precision optics assembly, includes numerous tight-tolerance features and cosmetic requirements. Photo courtesy of Craftech Corporation.

In one case, Craftech was working with a German optics company that wanted to develop an ophthalmic instrument, a precision optics assembly that would let a clinician and patient dial in a lens prescription without having to go through the traditional manual, trial lens exchange process. The part, to be made of PTFE fortified acetal, had to meet several tight tolerances. A ribbed bore had to hold a 0.0020 inch tolerance; the true position from the tubular post to the bore needed to hold a 0.005 inch tolerance; and square inserted pins had to form a diameter within 0.0040 inch

"I told him the part couldn't be made. We took it on, worked through a lot of issues, but triumphed in the end," Butler said.

Scientific Molding and ERP Software Boost Quality

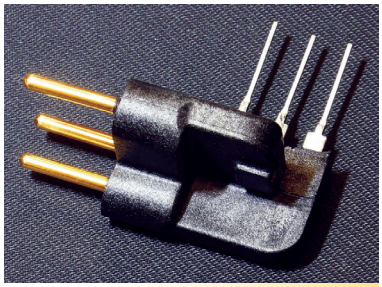
Craftech has trained its employees in RJG Inc.'s scientific approach to injection molding, which was born in the 1960s as a way to manage what happens inside a mold. RJG created sensors to observe the mold, and it offers training on how a manufacturer can use that information from inside the mold to make better parts.

"Oversimplified, the faster you get the material into the mold, the less the viscosity of the material changes. By reducing the viscosity change, the repeatability process is greatly improved, especially taking into account the lot-to-lot variability in raw materials," Butler said. Sensors in the molds tell Craftech the speed of the material, the heat, and its viscosity.

Craftech trained its workers in the IQMS enterprise resource planning (ERP) software, designed to reduce errors, decrease lead time, increase company-wide productivity, improve quality, and increase quantity production. IQMS software gathers detailed production data and delivers it as needed to improve efficiency.

"The data is collected automatically by our ERP system, IQMS," Butler said. "Using this system, we can monitor the shop floor at any time on any computer, but what good does that do if the people who are accountable and responsible for maintaining it are working on the manufacturing floor? We've developed a large format display, visible from anywhere, that displays press status, cycle, scrap, and downtime, and it's color coded so anyone can easily categorize a particular issue. At any time, we can generate a report to review efficiency and reasons for downtime.

"IQMS is the lifeblood of our company, and it would be next to impossible to run our business without it," he added. "More than half our staff are trained to use the system. At regularly held management meetings, we analyze reasons for downtime and if, for instance, machine maintenance is a repeated offender on a particular machine, we engage the team to find out why and resolve the issue. We make proactive decisions to retire machines based on maintenance cost justification from this data.



Craftech molded this part, which includes precision insert molded pins, for an automotive application. The component is inserted into another mold and overmolded. Photo courtesy of Craftech Corporation.

"Our IQMS ERP system lets us seamlessly manage purchase orders and the suppliers we need to procure materials, parts, and other components we need," Butler continued. "And that takes the burden off procurement personnel. Instead of ordering numerous SKUs, they are able to order one assembly or sub assembly—saving time, money, and the hassle of dealing with multiple suppliers."

Another step Craftech uses to ensure quality are various in-line checking devices and manufacturing aids. Butler said that one device lets worker verify that each of the 35 inserts are in place in one part.

"It improves the part quality by verifying all the inserts are installed, and provides the operator an opportunity to verify other part features and cosmetics meet specification. This is done in a fraction of the time it would take to verify the inserts alone," Butler said. "If the operator has to rely on themselves for verification, it opens up an opportunity for failure. This device automatically checks for and verifies the presence of all the inserts in about three seconds. An added bonus: If all the inserts are not in the part, the entire work cell locks out and another part can't be produced."

This first responder electronics enclosure is molded of high heat-resistant polymer. Craftech reported that the 26 threaded inserts are verified within three seconds. Photo courtesy of Craftech Corporation.