MuCell keeps moving forward

By Bill Bregar | PLASTICS NEWS STAFF
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SOUTH ELGIN, ILL. (Sept. 24, 7:15 p.m. ET) -- Hoffer Plastics Corp. has started using the MuCell microcellular process to injection mold parts for two hot-selling vehicles from Ford Motor Co. — the Fiesta compact car and the F-150 pickup truck.

Late last year, Hoffer Plastics bought a MuCell-equipped Toshiba molding

machine to run both jobs at Hoffer's South Elgin factory. The mechanical sound of the press molding parts is music to the ears of David Bernstein, president and CEO of Trexel Inc.

Nine years ago at NPE 2000 in Chicago, Woburn, Mass.-based Trexel showed its first commercial MuCell systems. Since then, Trexel has sold more than 400 MuCell equipment systems, but MuCell is far more popular in Europe and Asia than in the U.S., where it was developed.

That fact frustrates Bernstein. He wrote in a *Plastics News* column published Sept. 21 that too many North American processors forgo long-term investments, instead demanding a quick six-month payback on new technology.

Several years ago, Trexel changed its business model to make MuCell more accessible. Trexel eliminated licensing fees, introduced a retrofit system and began offering installment payment plans for customers in the early stages of MuCell use.

"Our evolution has been towards a user-friendly set of business policies," Bernstein said.

Trexel originally required licensing fees, but Bernstein said many customers balked at the idea of signing such a long-term, legally binding agreement to get new technology. Eliminating the licensing fees has helped increase sales, especially in Europe and Japan. "Once you buy it, you own it, you can use it wherever you want, for as long as you want," he said.

Hoffer Plastics has become an enthusiastic supporter of MuCell. "Trexel has made it very easy. They have a very easy point of entry and they're easy to work with," said Jack Shedd, vice president of business development for Hoffer. "They helped us tremendously on the equipment and the design standpoint and have been here around the clock to support on us on any issues that we've had."

Officials of Hoffer and Trexel showed off the Ford applications during a Sept. 10 tour of Hoffer's headquarters plant.

Hoffer's expansion into MuCell came in November, during a period of capital investments. The custom injection molder installed the Toshiba press with 610 tons of clamping force to run the MuCell jobs for Ford. On the packaging side, Hoffer also added four new Sumitomo Demag presses — 462-tonners from the high-speed El-Exis line, to mold closures.

MuCell equipment adds microscopic bubbles to the melt by bringing nitrogen gas to a supercritical state, so the gas has properties of both a liquid and a gas and forms a solution with the melted plastic. To describe

what happens, Bernstein uses the analogy of a bottle of Seven-Up that fizzes when you open the cap. The gas stays in the solution, under pressure, until the melt exits the barrel through the shutoff nozzle.

The sudden pressure drop releases the bubbles inside the mold. Bernstein said MuCell offers significant advantages: lighter-weight parts that use less resin, faster cycle times, lower molding pressure and temperature, lower melt viscosity and parts with no warping.

The basic process was invented in the 1990s at Massachusetts Institute of Technology by Nam Suh, who headed MIT's mechanical engineering department.

Trexel supplies the beside-the-press metering equipment and a specially designed screw and barrel that mixes in the gas and keeps the melt pressurized in the barrel at all times, through injection and short recovery. "It always has to keep the melt behind the shutoff nozzle above a certain pressure, so that the gas does not come out of the solution," Bernstein said.

Makers of 10 injection press brands offer new MuCell-equipped machines: Engel, KraussMaffei, Arburg, Toshiba, JSW, Milacron, Husky, Mitsubishi, Nissei and Dongshin. Engel Machinery Inc. was the first machinery maker to adopt MuCell.

For several other press brands, existing machines and also used presses, Trexel can add MuCell through a modular upgrade.

Hoffer loves those tiny bubbles

Hoffer began molding its first MuCell job — door latches for the F-150 — this summer on a tandem mold. A tandem arrangement was necessary to run all the door latches on the single Toshiba press — front, rear, left and right. The parts are 33 percent glass-filled polyester.

The tandem mold allowed Hoffer to reduce the cycle time to mold the different-sized family parts, said Brian Wagner, project management director. "You save the cooling cycle," he said. The synchronized movement of the tandem mold allows the press to run two quantities of plastic and two injection pressures, among other parameters.

Shedd said Hoffer Plastics is not afraid to use new technology. The

company also is running gas-assisted molding for the first time, for a handle for a washer and dryer that gets plated

“MuCell gives you the cycle-time reduction and weight reduction, and a low-warp part, on its own. Then you throw in this tandem tooling. Now you’re really pushing the envelope,” Shedd said.

After winning the F-150 door latch work, Hoffer Plastics began actively promoting MuCell. That caused Ford to give the molder another job — a door latch presenter for the Fiesta.

Hoffer molds the Fiesta part on the same Toshiba press, this time running a regular injection mold. Plant manager Ken Bird said using MuCell cuts cycle time by about 15 percent, reduces part weight and causes less flash. The door latch presenter is molded from talc-filled polypropylene.

Bernstein said Hoffer has actively sold the microcellular technology to win new business. Too many molders limit the process to a single “MuCell job,” he said.

Shedd said the company has started promoting MuCell beyond automotive, to other markets such as appliances and recreational equipment.

“There’s an opportunity for a company like Hoffer Plastics to go out and beat the band on a great technology,” Shedd said.