Selecting a mouldmaker is never an easy task. But it is the crucial last step before a part is actually moulded in the press. Tooling is the linchpin to a smooth product launch or one hobbled by expensive downtime and delays.

What should designers, processors and OEMs keep in mind when evaluating a mouldmaker for their particular project?

Established domestic toolmakers in the USA have earned a reputation for quality, which they have maintained through investments in technology to keep their mould shops competitive. “Over here, anybody that’s left is probably pretty good,” says Walter Schaub, an owner of Pro Mold & Die, a mouldmaker in Roselle, Illinois. “When you walk into a mould shop, you expect it to be modern, with up-to-date software, its own FTP site and T1 lines.”

Dick Laverty, vice president of Chicago Mold Engineering, St. Charles, Illinois, says that his company has always invested in new technology to keep its shop competitive. Those investments have allowed the shop to produce high-quality moulds on short delivery times, as well as handling all of the mouldmaking tasks in-house, with the exception of heat treating, plating and texturing. “Other than that, we control our own destiny,” he explains.

While a successful track record on the part of the mould shop is certainly important, potential customers should also try to match the particular experience of the mould shop to the job at hand. This is the advice of Glenn Beall, a former mouldmaker who is now president of Glenn Beall Plastics, a product design and consulting firm based in Libertyville, Illinois. “No one mouldmaker is good at everything,” he explains, adding that potential customers should take a hard look at the types of jobs a mould shop has handled in the past. Beyond that, a fair price, delivery time and the financial stability of the company are important criteria, he says.

Match the job to the shop
Wayne Hertlein, chairman of Tooling & Design Technical Group at the Society of Manufacturing Engineers, agrees that when choosing a mould shop, it’s advisable to seek a toolmaker with experience in a particular industry. “If a mould shop builds automotive tools, they are going to be able to help you with some of the idiosyncrasies of that type of specialty tool,” he explains.

Hertlein works for Harvard Resource Solutions and is presently assigned to the International Automotive Components automotive interiors plant in Hermosillo, Mexico. When negotiating a new job with a mouldmaker, Hertlein always tries to work out as many terms as possible before a job begins. “If you do as much homework up front, you should have an easier launch when it comes to trying out a mould,” he says.

Industry standards can help. The Society of the Plastics Industry has created mould standards that are designed to get OEMs and mouldmakers on the same page when quoting a job. Yet those standards only go so
far, because not everyone in the plastics industry follows the agreed criteria, Hertlein notes.

When working out the terms of a job, Hertlein makes sure that the OEM and mouldmaker agree on mould design requirements down to the location of the gating, identification of critical areas of the mould, and the mould finish. If flow analysis has been done on the part design, he makes sure that all parties have the data. He pays special attention to the plastic resin that has been specified, because it affects gating and part ejection.

The right price
Hertlein also recommends that the mouldmaker gets involved in the tool design process. Early involvement and making sure all parties are on the same page can help to eliminate costly mistakes later on.

Price is important, but should be considered along with delivery time and quality. Hertlein advises mould purchasers to get quotes from at least three mould shops. “You want to make sure a mould shop can handle the program management and has the capacity to complete the job successfully, particularly with multiple-mould packages”.

Right-sizing a mould for a job is also important, he advises. “You don’t want to build the ultimate tool for something that doesn’t have a long program life,” he explains. “And if you need to mould millions of parts a year, you don’t want a tool that is going to wear out after the first month.” Mouldmakers should understand a customer and their needs for a particular tool, he says.

Laverty of Chicago Mold Engineering believes that the mouldmaker can play an important role during the tool design process, especially if the shop is brought into the project early. “The engineering side of the business is very important,” he says, adding that the cost of the tool is driven by both the quality of the mould and the expected annual volume of the plastic parts. He notes that his shop builds plenty of aluminium tools for short moulding runs.

The mouldmaker also has the knowledge to trim the tooling cost by eliminating unnecessary complexity in the tool. If anything, the mouldmaker plays a bigger advisory role today, because those charged with purchasing moulds are less likely to be tooling engineers than they were in the past.

Laverty, who has been with Chicago Mold Engineering for 44 years, observes that it used to be far more common for OEMs to have a tool engineer as part of their team that would specify the mould shop to build the tool. That is still the case with some automotive customers, he says, but many OEMs have eliminated that step.

“We used to deal totally with tool engineers. They understood injection moulds,” explains Laverty. “They understood that, if they have a part with a 10-year life cycle and they are going to mould millions of parts, they had better have a high-end, first-class hardened steel
tool.” Tooling knowledge is crucial, because moulds are one-of-a-kind items, he adds.

When quoting a job, Laverty says it is important for a purchaser to establish some sort of baseline and compare bids for like tools. He recommends that potential customers fill out a spec sheet for the job. “The more information they can get up front and the more in-depth research they can do will lead them to someone they can trust,” he says.

Laverty has even assisted potential customers in filling out a spec sheet, with the knowledge that the customer will use it when comparing bids of various mould shops. “Education is the best thing we can do for our customers,” he states.

While Hertlein acknowledges that tooling costs are significant, he adds that the price of the tool should be kept in perspective. The price of the tool is relatively modest when compared to the overall cost of a product launch. Profits are made at the moulding press, and there is no cost benefit in a bad tool, regardless of its cost, he argues.

Offshoring moulds

Nonetheless, the lure of lower cost moulds has led many OEMs to seek tooling overseas and most notably in China. Results have been mixed, although the trend has been growing in recent years.

“I know people who buy offshore very successfully, and other people who have had such bad luck that they are placing their tools back in the US,” says Walter Schaub of Pro Mold & Die. As with domestic mould builders, a good relationship is the key to success; yet maintaining a successful long-distance relationship can be more of a challenge, he adds.

Jim Meinert is president of Meinert Market Services, a consultancy that advises American companies in plastics manufacturing and exporting their products. He has toured mould shops in Asia as part of trade missions he has led in behalf of the Society of the Plastics Industry. One observation he makes is that the price advantage of Asian-sourced moulds narrows for OEMs that demand top-quality tools.

However, Meinert and other tooling experts say that top-quality mould shops do exist in China. In Meinert’s view, a single mould does not justify the savings, but offshoring may be a credible alternative for substantial mould packages.

Hertlein has sourced moulds in Asia. Maintaining good communication, preferably with a local representative or broker, is crucial, he claims. “I make sure they know my requirements. I always follow through to make sure that there are no questions left unanswered”. He cautions that mould buyers sourcing tools from Asia expose themselves to currency fluctuations that are beyond their control. Payment terms differ: it is common for Asian mouldmakers to demand full payment for a mould before delivery, compared to more flexible payment terms from US mouldmakers. And of course, a delivered mould with quality problems is thousands of miles away from the mould shop that built it. OEMs also need to make extra sure that their components and steels are what they specified.

Choosing a proxy

One way to avoid the pitfalls of offshoring moulds is to work with a domestic engineering firm to represent
Your interests to mould shops in Asia. Growing numbers of companies in America and Europe specialise in navigating potential pitfalls.

**Global Precision**, based in Milwaukee, Wisconsin, is one such company that splits the toolmaking tasks between America and mould shops in Asia. The company started business in 2003 and opened an office in China a year and a half ago.

“We design and manufacture the moulds, and where the mould is manufactured is transparent when you work with us,” says Gale Pence, Global Precision’s president. Mould design work is handled domestically while tool manufacturing is performed by a network of mould shops in China and Canada, he explains. Global Precision coordinates shipping and delivers the mould to the customer. “We are at the customer’s plant at start-up when they run the mould for the first time,” Pence explains.

One advantage of going this route is that it takes advantage of strong relationships with offshore tool shops that have taken years to develop. Dan Girouard, president of **Fifth Element**, an engineering firm in Austin, Texas, has 15 years of experience working with offshore toolmakers. Before starting his own company 10 years ago he established a supply network of mouldmakers in Asia and Europe to support the factories of a major OEM.

Qualifying a mould shop requires an engineer who has designed and built tooling themselves, says Girouard. He looks for mould shops with established operating standards, which reflect a shop’s level of sophistication and experience. “A good shop is going to have standards for the components they use and for design and engineering practices,” he explains. He visits shops to see first-hand how well staffed they are, the design tools the shop uses and how work instructions are issued to the machining departments. He tours the assembly area to inspect how tools are set up.

On each job, Girouard says that it is necessary to keep a close watch on the materials and components used, and to confirm that design changes are actually made. He looks for certificates of compliance for all materials and components. At the end of a build, he reviews the certificates and he is present when parts are validated on an injection press. He gets assurances from the mould shop that all work will be performed in the selected mould shop, not outsourced, and he has dedicated design teams that work only on his tools. Girouard has long-standing relationships with two mould shops in China that manufacture moulds for import into the US. All of which amounts to a lot of work. Girouard estimates that it takes four or five times the effort to build a tool reliably in Asia than in the US. You can get good tools in Asia, and for significant savings, but not without experience, tooling knowledge and due diligence, he concludes.

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