

# MOULDING EXPECTATIONS

WITH INNOVATIVE SOLUTIONS ON OFFER AND A VIEW TO PRODUCE FOR GLOBAL MARKETS, THE INDIAN DIE & MOULD INDUSTRY IS POISED FOR THE EXPECTED RISE IN DEMAND.

BY BINDU GOPAL RAO

1. Molten metal being poured into the sand mould.

**THE DIE & MOULD INDUSTRY IN INDIA HAS** evolved through the years, which has ensured that it is in a position to be able to compete on an international front. The demand for die & mould has been fueled primarily by the automotive, auto components, packaging, plastics, electronics, electrical, healthcare and machine tool industries, and the growth of these has created a huge opportunity for the die & mould making industry in India.

In fact, with the globalisation within the industry, there has been a clear bent towards quality in the

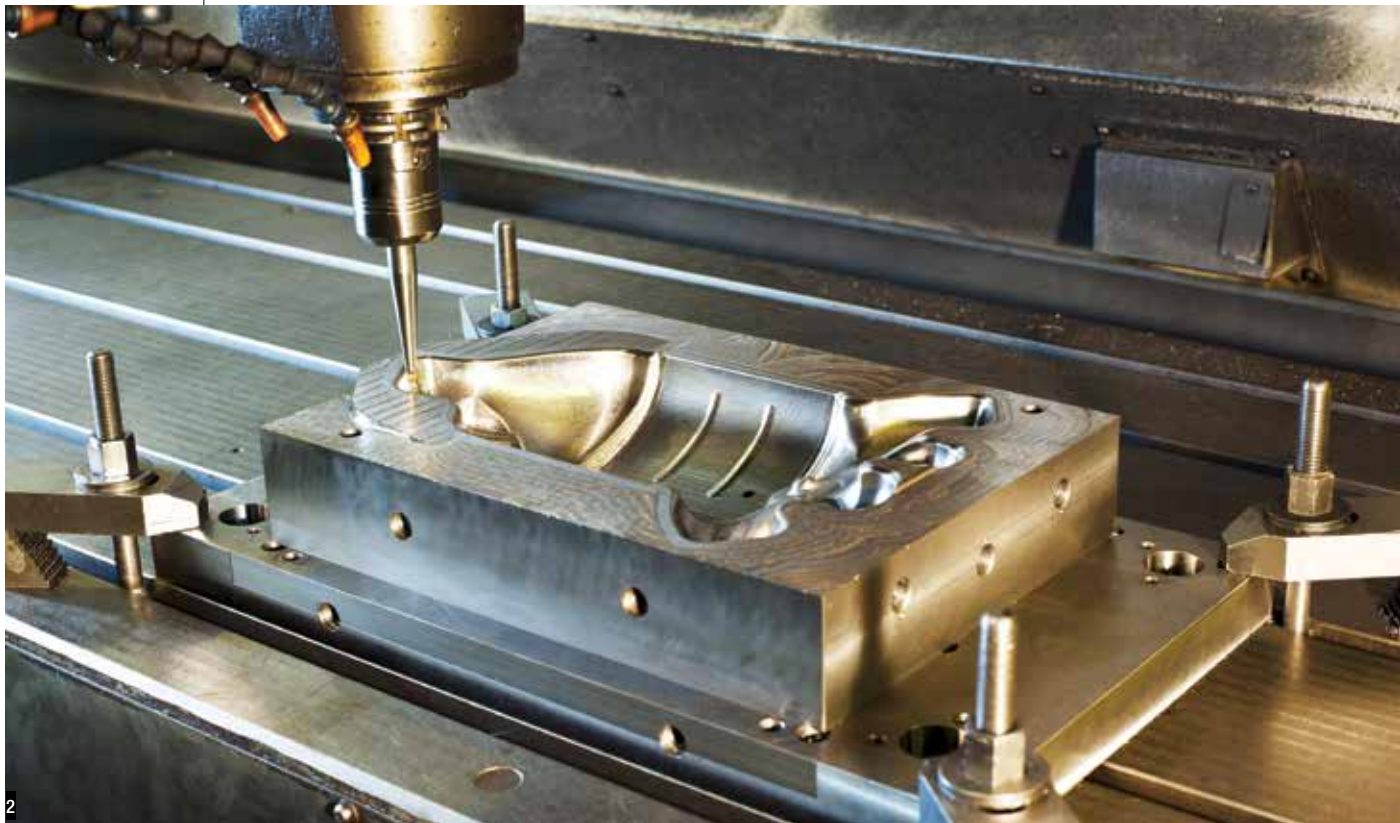
kind of moulds being used across different industries. The Indian tool room is also changing quickly as the sector is veering towards using CNC machining to manufacture. With precision and quality being the cornerstones of the business, the switch to CNC is all set to give the industry a competitive edge as well. **DK Sharma, executive VP & business head, Godrej Tooling**, explains, "The Indian die & mould making industry is currently at a stage where it has to come out from the cocoon of being a 'mom & pop shop' that was started by



first generation entrepreneurs. It has to grow into an industrial outfit for continued growth and sustainability. Challenges are related to huge investments and skills needed. The changing customer demands in Quality Control Delivery (QCD) have made the learning curve steep. As a corporate tool room, we are remodeling to address these challenges. We are all typically limited by the growth of the sectors we serve. Hence, a 10-20% CAGR is the range in which all tool rooms aspire to frame their growth plans."

#### TECH TALK

With rapid globalisation, competition within the Indian industry is intensifying. Naturally, newer technologies and efficient products are the norm as far as market expectations are concerned. "We have addressed it through three steps – closing the loop of technical collaboration for efficient product and better experience, focusing on value creation through digital levers rather than cost cutting, and incorporating a cycle of continuous learning in technology as well as execution," says Sharma.



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2. Milling underway on an industrial metal mould.

As the die & mould industry needs the best surface finishing by machines, there are several new-age technologies being seen. Adoption of high-speed machining and CAD technology enable reduction in the production time and cost of producing high-precision surface finishes. One of these is the SSS of the Super Smooth Surface Technology that provides an optimal speed control function for machining die mould with a smooth surface.

This technology also ensures high machining stability and quality with virtually no wrong impact from the cutting shape or speed. This is why SSS control is sought after, as it ensures both stable and high-quality processing, irrespective of the speed and shape command to achieve high-quality processing. Also, the finishing is smooth as there are no streaks on the processing surface despite the command shape that changes consecutively.

The effectiveness of this technology can be seen in the fact that it reduces processing time. Likewise, with easy parameter setting, no requirement of parameter adjustment for correction of shape and easy adjustment for efficiency-oriented and accuracy-oriented needs, the technology is easy to apply as well. Adoption of high-speed machining and CAD technology enable reduction in the production time and the cost of producing high-precision surface finishes. Since the right design is of paramount importance, the industry is also increasingly using proper CAD/CAM solutions as the risk of error is minimised when the process is automated, giving very less scope for manual intervention. CAM solutions create a machining programme use approximating the minute line segments for the motion curve of the tool relative to the workpiece and any small error is mostly included in the data of minute line segment.

**IN VOGUE**

High-speed machining is another much favoured technology as it helps in reducing the production time and cost of producing high precision surface finishes. This apart, the tool life is also extended, especially if there is good care to tailor and balance the tool.

Likewise, rapid tooling is a technology that aims to reduce cycle times by 40% as compared to conventional machining. This is executed by using conformal cooling, bimetal layering and better mould materials like aluminum, that allow quicker thermal conductivity inside the moulds. These rapid processes also ensure production of inserts and mould tooling in less than 48 hours. Rapid processes are also capable of producing modifications in the tool like undercuts or side-action, easily. Again, investing in research and development activities to cater to the enhancement of value in newer products is a focus area.

"We have dedicated a team of experienced designers and young achievers to explore innovative solutions based on future trends, product performance and customer feedback. In all our lines of business, we have invested through pilot projects related to future customer needs as well as product categories, specific features in dies to enhance productivity, and an extended after sales support, which is a key input to close the loop for efficient products," explains Sharma.

**COST FACTOR**

Cost competitiveness through shorter run times and productivity improvement are key deliverables for the industry. Tooling being a project-type business, lead time is a direct function of capacity and project management skills.

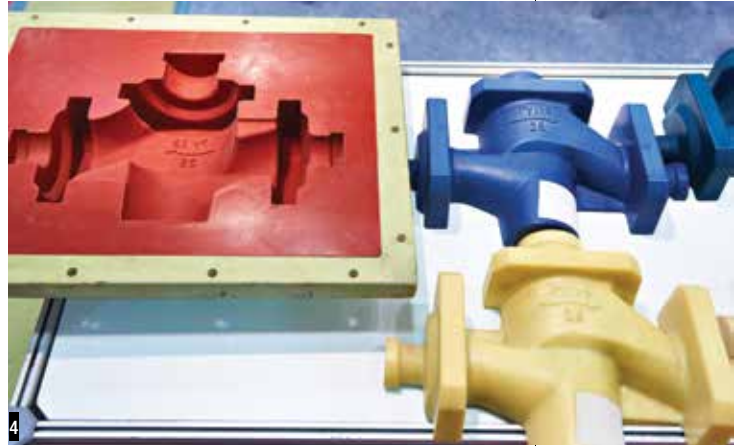
"We have adopted the CCPM (Critical Chain Project Management) route of the Theory of Constraints. We are now on a pilot project – flow improvement across the entire supply chain for a specific product category, expanding further to the entire operations. Our association as a partner is at two levels – new product development through dies, and improvement in running dies to enhance productivity. The partnering for new product launches is most critical, and we have graduated to a level where some of the OEMs in the automotive sector have placed their faith in us for new launches. There are learnings which will help serve this segment better," says Sharma.

**GOVERNMENT IMPETUS**

India's thriving manufacturing sector has always been one of the largest employers, but things are now look-

3. An injection moulding machine in use at a large factory.

4. Mould used for casting, and plastic products.



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"The efficient removal of lengthy bureaucratic processes, and quality training for a skilled workforce, are essentials for long-term success for both the Government and manufacturers."  
— Professor Elliott Weiss

5. An injection moulding machine at work.

6. Machining of a die & mould part by a CNC turning machine at a factory.

ing different for the country's manufacturers. Automation, advanced technologies and robotics are at the cusp of bringing about change in this sector.

"The Government's Make in India initiative is certainly laudable for bringing the sector into sharp focus, but without better infrastructure and availability of basic amenities, the initiative cannot take off as intended. The efficient removal of lengthy bureaucratic processes, and quality training for a skilled workforce, are essentials for long-term success for both the Government and manufacturers. The government's plans to develop industrial corridors and build smart cities with state-of-the-art technology and high-speed communication will all aid in bettering the manufacturing sector," says **Professor Elliott Weiss, Darden School of Business, University of Virginia.**

Despite various liberal government policies, the sector is yet to make a mark globally, and 100% FDI in the tooling industry is certainly attracting steady investors. Consumer industries like automotive are seeing renewed demand, especially in new technology and designs, which has a direct correlation with increased demand for various innovative tools. The tooling industry that includes dies, moulds, jigs and fixtures, plays an important role in the manufacturing process across most industries.

"As an organisation, we welcome these initiatives

## DESPITE VARIOUS LIBERAL GOVERNMENT POLICIES, THE SECTOR IS YET TO MAKE A MARK GLOBALLY.

as they generate huge opportunities. At the same time, they also pose bigger challenges in meeting the expectations of customers who have been used to getting dies from an altogether different eco-system. A bigger task of making manufacturing more attractive to the younger generation, and managing the digital transformation effectively is going to be critical for our industry. A number of things are happening simultaneously and we are constantly looking for opportunities to learn and serve our customers better. Unlike many other industrial products, tool-making is an art. While every product requires passion, tool making takes it a level higher, as it requires highly specialised skills. The challenge would be to maintain the passion and use technology for better tool-making, which the next generations can take forward," says Sharma.

Little wonder then that the focus on dies & moulds is going to remain a key aspect for all manufacturing industries. And this becomes even more important as the number of large-scale industries that need dies & moulds is constantly on the rise. ■