Growth prospects brightening for global MIM market

Metal injection moulding (MIM) is experiencing a worldwide boom, with an estimated market worldwide of more than US$1 billion per year, and compound annual growth rates estimated to be as high as 20%. [1] The American MIM market is estimated at US$250 million, with 40 manufacturers in contract manufacturing and more than 10 original equipment manufacturers (OEMs) running captive operations. European demand is approximately US$350 million, while the market in Asia, with China leading the growth, is approximately US$550 million. [2]

This booming demand for MIM is primarily attributed to the technology’s significant cost savings compared to the use of machining or electrical discharge machining. The explosive growth rates have been escalating as the technology receives increasing acceptance for high volume manufacturing of small metal components tight tolerances.

Among those applications are firearms and medical devices – two main segments of MIM demand. Firearms OEMs made the transition to broad sourcing in MIM more than a decade ago, and they continue to have growing interest in containing costs and expanding production. Despite (or because of) the recent economic downturn, the US firearms industry has grown, and background checks for gun sales reached a record high in 2011. Domestic MIM players say they have a significant advantage over international players in firearms due to ITAR regulations, and those with an ability to respond to the recent ramp up in firearms demand have made significant strides in organic growth.

For example, Parmatech Corporation’s unique MIM capabilities give manufacturers the ability to make weapons from a range of materials using the same tooling – a feature not possible with casting or forging. Parmatech offers a MIM process that can use 4140 and MIM-4605 carbon steel, and 17-4 and 420 stainless steel, all with the same tooling.

By using this MIM process, firearms manufacturers can form several separate parts into one, consolidating a weapon’s mechanical components and reducing the component count. This significantly reduces development time and effort, and improves supplier tracking. Producing multiple component parts that operate smoothly together is key to the modern firearms manufacturer. As modern weapon manufacturers design sophisticated firearms with numerous interlocking moving parts, they are turning to MIM to produce high volumes of components that can be assembled together without the need for costly machining and gunsmithing.

Medical MIM applications are also on the rise, primarily driven by a macroeco-

| Table 1. Global sales of MIM components (powder) by region in 2014. |
|-----------------|-----------------|-----------------|-----------------|
| Region         | 2009            | 2014            | CAGR%           |
|                | ($ millions)    | (% share)       | ($ millions)    | (% share)       | 2009-2014 |
| Asia           | 460.8           | 48              | 959.0           | 51              | 15.8      |
| Europe         | 279.7           | 28              | 484.0           | 25              | 11.6      |
| North America  | 231.0           | 23              | 424.0           | 22              | 12.9      |
| Rest of the world | 13.4           | 1               | 33.0            | 2               | 19.8      |
| Total          | 984.9           | 100             | 1900.0          | 100             | 14.0      |

Rest of the world includes South America, Australia, non NATO-Europe (inc Russia)
Source: BCC Research
nomic focus on dramatically reducing health care costs. While the European and US health care markets are somewhat mature, the global aging population creates opportunities for the medical industry. According to The Centers for Medicare and Medicaid Services, health care spending growth in the US will continue to climb more quickly than GDP for the foreseeable future, despite economic downturn periods. [3]

For example, Parmatech Corporation uses MIM for parts used in manufacturing bariatric and laparoscopic instruments, including articulation gear for varying the direction of the working end of the device. The company is using MIM to produce complex, three-dimensional shapes that are difficult or near impossible to manufacture using conventional fabrication technologies. MIM provides complex shapes in a high-volume manufacturing process, and supports the drive towards the miniaturisation of surgical devices and lowered costs for health care equipment. As a result of the trend towards miniaturisation, most of the parts made with MIM technology weigh less than 50g and can be additionally lightened by adding holes or pockets without sacrificing strength.

In addition, as US and European OEMs seek to penetrate emerging markets and the BRIC (Brazil, Russia, India and China) players, cost pressures become the primary success driver; thus, many medical OEMs are looking to cost-saving technologies such as MIM with renewed interest.

Figure 1 illustrates the growth in MIM sales over the past 25 years. The upper curve traces global powder injection moulding (PIM) annual sales versus calendar year, and the lower curve shows the corresponding metal powder injection moulding (MIM) contribution. [4]

Macroeconomic drivers strongly support continued MIM growth. Table 1 illustrates the projected growth rates, with the global MIM market projected to increase from US$985 million in 2009 to US$1.9 billion in 2014, representing a 14.0% compound annual growth rate (CAGR). In North America, the market for MIM product is projected to grow from US$231 million in 2009 to US$424 million in 2014. In Europe, the market for MIM product is projected to grow from US$280 million in 2009 to US$484 million in 2014. [5]

With such clear-cut macroeconomic and socioeconomic growth drivers, strong technical players in MIM can expect to bring more value to customers than any of us ever imagined.

References
1. Powder Injection Moulding
   www.pim-international.com/about-pim

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