

Valued service

Success in any industry relies on a valued product or service. One UK mould maker is showing it is possible in this sector, too. *Machinery* reports

Buckinghamshire-based injection mould tool specialist Precision Moulds & Tools Services (PM&T) has recently invested in a new Mikron VCP 800W DURO and four Mikron HSM 800 high speed milling machines from GF AgieCharmilles.

Four of the new machines have been installed at the company's 10,000 ft² facility in Aylesbury, while one HSM 800 has been installed at the company's overseas manufacturing facility, in Sri Lanka.

All the machines are helping the company manufacture high precision, complex and competitively-priced mould tools (single through to multi-impression and twin-shot tooling) for its increasingly diverse, international customer base.

PM&T, established in 1991 by joint managing directors Michael Rush and Paul Newton, is not a typical precision

toolmaking company.

At a time when many UK and Europe-based toolmakers have, in the face of intense global competition from Asia and the Far East, either contracted or diversified away from toolmaking to precision component manufacture – or have gone out of business – PM&T, has bucked the trend and is experiencing significant growth.

NO ACCIDENT

This is not an accident or down to luck, but instead is explained by recent strategic and prudent investments made by the company across its entire business operations, including design, manufacture and sales and marketing.

"The pressures facing precision mould toolmakers are well-documented but



PM&T liked its Mikron machine so much it bought three more of the same

they are not insurmountable. On the contrary, our mindset and response to the challenges we face is always positive and proactive," says PM&T managing director Michael Rush.

Mould making manufacturing technology update

□ Aimed at companies producing smaller moulds and tools as well as stockholders specialising in supplying blocks and plate up to 1,060 mm long by 680 mm wide by 600 mm high, a new, vertical bandsaw has been introduced by the German manufacturer, Kasto, and is available through its UK subsidiary in Southampton.

Unlike other horizontally-acting block and plate saws in the company's range, which have a stationary table and moving saw head for cutting lengths up to 13 m, the KASTOvertical model has a stationary saw head and two moving tables. They shuttle on four backlash-free linear guides in and out of the working area at 3 m/min in rapid motion. This allows the operator to clamp and unclamp material safely, away from the point of cutting.

□ Simultaneous 5-axis tool positioning is a feature of the Dugard Eagle X-5 vertical machining centre (pictured, right) which is

controlled by a Heidenhain iTNC 530 CNC unit.

There is a choice of options to suit different machining scenarios and customer needs. For instance, while the standard spindle is 10,000 rpm via a belt drive, high speed 18,000 and 24,000 rpm units are available.

The trunnion style rotary-and-tilt table accepts loads up to 600 kg and features torque motors. Travels are 500 in X, 600 in Y and 465 mm in Z, while the A-axis can be tilted between +95° to -95°. The fully programmable 360° C-axis can be positioned or rotated at up to 100 rpm.

□ Another 5-axis machine tool release with mould making applications is available from Hermle, via Geo Kingsbury Machine Tools. The entry-level B 300 vertical machining centre (picture, page 34) has fourth and fifth axes provided by a rotary table



"We study macro- and micro-market trends, we analyse customer behaviour and we benchmark ourselves against the competition. When we consider the time is right, and when we're convinced that the benefits outweigh the risks, we act decisively and make telling investments."

These investments include advanced, high performance machine tools; a new manufacturing facility in Sri Lanka; a new purpose-built mould validation shop at the company's Aylesbury site, and, in the near future, appointment of a Germany-based sales representative to exploit business opportunities across Europe.

All of these strategic investments, reinforce PM&T's customer-focused approach to business, and have helped the company increase sales and share.

PM&T provides a total systems solution service for its customers. This does not just include the design, manufacture and supply of complex, high precision tooling – but also involves working in close co-operation with customers to develop and design products from concept and prototype tooling, through to single-impession, pre-production and multi-impession production tooling.

MOULD VALIDATION

In addition, rigorous pre-production testing and sampling will be extended over the next few months through a brand new 2,000 ft² in-house mould validation facility, with twin-shot and three-shot capability, which will be housed at its Aylesbury site.

PM&T's 'concept through to completion' business approach is not

essentially unique – but it has helped differentiate it from a significant proportion of its competitors.

"We consider ourselves to be a 'partner' rather than a supplier or sub-contractor," says PM&T sales director Joe Boscarini. "We work in close collaboration with customers, and this approach means that we share expertise which in turn improves the design process; helps shorten lead times and minimises risk. Our approach is proving to be successful and has been a major reason why a large number of OEM customers (especially in the medical and electronics sectors) deal directly with us."

Investing in advanced manufacturing technologies is nothing new for PM&T. State-of-the-art die-sink and wire-cut EDM machines, which are housed in a fully temperature-controlled environment, have ensured that the company can meet (and exceed) its customers' quality (accuracy; surface finish, etc) and delivery requirements.

The company's machining centre investments kicked off in 2006, with the installation of its first Mikron VCP 800W DURO and a Mikron HSM

mounted on a swivelling trunnion, as on the manufacturer's more highly specified C-Series machines. Precision and reliability of the B 300 are equivalent to those of the C-series machines, but cost is 20 per cent lower. Small sacrifices have been made in terms of slightly slower machine movements and a reduced number of optional extras that can be fitted. However, compared with the C 30 model, the X-axis travel has been increased for a 23 per cent larger working volume.

Axis travels are 800, 600 and 500 mm in X, Y and Z, respectively – rapid motion in is 30 m/min. The two rotary axis movements are 360° for various configurations of rotary table and ± 110° for the trunnion, maximum speeds being 15.5 and 10 rpm, respectively. Simultaneous interpolation of all the axes by the Heidenhain iTNC 530 CNC system provides full 5-axis machining capability.

□ A new configuration of 5-axis vertical machining centre, the VMX42SR, has been introduced by Hurco Europe, High Wycombe.

It is based on the manufacturer's 3-axis machine of the same frame size and has a thermally stabilised head with motor spindle that swivels – B-axis. The fifth CNC axis is provided by a horizontal rotary table.

Having a compact footprint of 3.55 by 2.18 m, it is shipped with a special version of Hurco's new WinMax control software and graphics which support 5-axis simultaneous interpolation and simplify programming for 5-sided machining.

The VMX42SR has a 12,000 rpm 24 kW spindle, components can weigh up to 500 kg, and rapid traverse is 35 m/min in the X and Y axes and 30 m/min in Z. Repeatability is ±4 microns.





Hermle's B-300 unit is an entry-level 5-axis vertical machining centre for mould making and more

800 3-axis milling machine, both supplied by GF AgieCharmilles.

"The machines deliver excellent performance on speed, accuracy and surface finish," confirms Mr Rush. "We use these mainly for machining hardened (HRC 58) intricate and micro-feature cavity inserts."

The speed of the machine (36,000 rpm high torque spindle capability and 40 m/min rapids) and its ability to deliver surface finishes of Ra 0.2 micron, and positional accuracies of ± 5 micron, have enabled PM&T to rely less and less on its more time consuming EDM machines to achieve desired part quality and to ensure manufacturing lead times are met. The machine has also eliminated the need, in many instances, for costly and time consuming hand polishing of mould tools.

"We were so impressed with our first HSM 800 that we recently invested in a further three machines," explains Mr Rush, one of which has been shipped out to its Sri Lankan facility.

NO SECOND FIDDLE

PM&T began developing an overseas operation in Sri Lanka in 1998. The objective was to provide PM&T with reliable, low-cost manufacturing capability that supported the company's UK operations. However, over recent

years this focus has changed.

"We made a strategic decision not to allow our Sri Lankan operation to play second fiddle to what we have here in the UK," underlines Mr Rush. "Our intention now is to ensure that the Sri Lankan

facility is as good – technically and commercially – as our UK operation."

Sri Lankan technical engineers undergo thorough training at PM&T's UK facility, while high speed video conferencing keeps the sites 'close'.

"Our two facilities operate seamlessly," says Mr Boscarini. "All of our mould tool design and consultancy work is done here in the UK – as are our sales, marketing and commercial activities."

SAME HIGH STANDARDS

"Manufacturing and production, including mould repair and modification, can be undertaken at either site to the same high standards.

"Our Sri Lankan facility has not only given us improved manufacturing flexibility and increased capability – it has also allowed us to better plan our production schedules and to control our costs. This means faster turnaround and improved delivery times, and more economic mould tool production." □

Moldflow acquisition

Autodesk has signed a definitive agreement to acquire Moldflow Corporation, a leading provider of software that predicts and optimises material flow in mould tools. The transaction was scheduled to be completed in the second quarter of 2008.

Autodesk said: "This agreement demonstrates Autodesk's commitment to provide a comprehensive Digital Prototyping solution to manufacturers of all sizes, giving them the ability to optimise, validate and improve their designs earlier in the process. The acquisition will make analysis capabilities for plastics manufacturing available to manufacturers using Autodesk Digital Prototyping solution. Autodesk is committed to supporting Moldflow customers once the transaction is closed and integrating them into the Autodesk manufacturing community."

Roland Thomas, president and CEO, Moldflow offered: "We see strong synergies between Moldflow and Autodesk and are very excited about this transaction. By combining Autodesk's and Moldflow's complementary product offerings, we can provide a wide and advanced range of software solutions to allow customers to address the challenges involved in the designing and manufacturing of injection moulded plastic parts.

"The combined product capabilities for analysis and simulation will provide a fully optimised digital process for part design, tool design and part production, helping companies to reduce their product development costs and improve their time to market."

Headquartered in Framingham, Massachusetts, USA, Moldflow has research and development offices in Melbourne, Australia, and Ithaca, New York, USA, as well as sales offices in various geographies around the world. Moldflow has 285 employees and reported revenues for its fiscal 2007 of \$55.9 million.