



# EMO in overview

**Andrew Allcock walked round every hall and aisle at EMO in September and has recovered sufficiently to give this overview of Europe's most important manufacturing technology show**

**E**MO in Hanover in September was, by general agreement, the most positive show there for some time. DMG, with the largest stand at 4,000 m<sup>2</sup>, taking up most of hall 2, demonstrated exactly why. The company sold a record 526 machines, with order intake worth more than €162 million (£116 million). To this was added 9,100 enquiries from international visitors from small sub-contract machinists, through the mould and die sector to blue-chip OEMs.

"Gildemeister broke all records for exhibition orders and enquiries, and the wide range of equipment available, coupled with the new design and presentation of the machines, drew high levels of interest and comment that is set to generate a lot of future business from new as well as existing customers," said Tim Hatley, managing director of DMG (UK) based in Luton.

According to the exhibition organisers, this year's EMO show generated an order volume of €4 billion. More than half of all exhibitors were anticipating a "positive influence on subsequent German and European sales", it added.

This business was generated by 166,000 visitors, which represented an increase of 4 per cent over the previous event two years ago, when EMO still ran for a total of eight days (this year it was seven). Even the number of exhibitors 2,118 from 42 different nations was up 5 per cent, and the amount of occupied floor space was also up by 12 per cent, reaching a total volume of 180,000 m<sup>2</sup>.

Apart from unveiling 14 new machines (see our separate EMO Product Launch Review for details from some 90 companies), DMG was making something of a fashion statement at the

show. With technology and machine capability almost taken for granted these days, such things as a complete design makeover really matter, indeed, the new design is intended to offer uniqueness and deliver brand recognition, says the company. For this purpose, all machines with the same characteristics were united under the same brand. Among other features, the DMG Lightline stands out with its "superior surface materials in matt white and sections in high-gloss black".

## TECHNOLOGY ON VIEW

Another striking element is better work area visibility, leading to greater transparency of the machining process. This is delivered by a 40 per cent enlargement of the safety-glass viewing windows (up to 80 per cent in some cases). Whereas other manufacturers increasingly appear to want to close off the machining process behind ever-larger amounts of sheet metal, the operator can once again experience the chip-removal process on DMG machines, it is explained. And this experience of the machining process leads to greater identification with what occurs in the work area, and leads to improved quality, it is suggested.

Finally, there's the new DMG ERGOLine control with an enormous 19 in screen. It looks more like a high-end flat screen TV than a control.

Trying to pick out any technology trends this year at EMO was difficult. Linear motors are a non-issue now; people like DMG and Sodick (Sodi-Tech EDM) use them on a wide range of machines, while others apply them more sparingly. Certainly this show probably

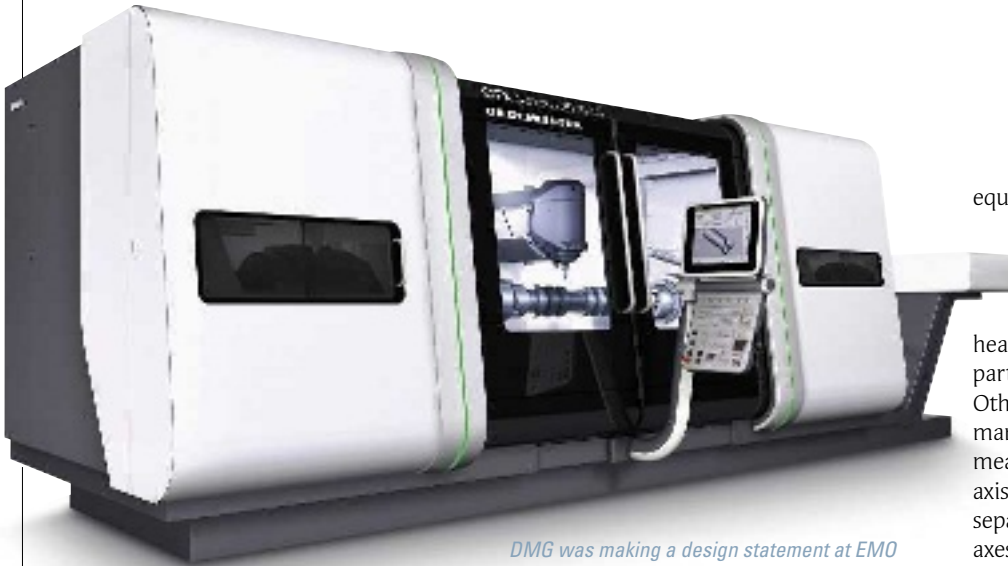
underlined the fact that the rotary linear motor – torque motor – is being found to be very useful in delivering a turning capability on vertical machining centres.

The bar turning vertical machining centre, an area of development a couple of years back, has fallen out of favour with some but is still being developed by others; notably Chiron at this show with its FZ 12K S VMC for bar machining with swivel head and turning spindle for 65 mm bar. Stama (Matsuura), a major exponent of this art, is continuing to add more complex machines to its stable – a two-column, two spindle VMC this year for complete parts turning and milling – the MC 726/MT-2C.

There seems to be renewed development in tool coatings, however, with companies like LMT Group and Seco prominent.

Claiming to be offering a revolution in tool grinding is Michael Deckel's Flexus (Deckel Grinders). This machine features an automated loading module that can feed either one or two separate





*DMG was making a design statement at EMO*

processing modules. With two modules, overlap processes are possible. So, for example, deburring, polishing, drilling or milling are possible in parallel with tool grinding – as could be any other operation, including assembling, measuring and cleaning functions, says the company.

Flexus is targeted at the machining of highly complex tools such as reversible carbide tips; drill bits; tool cutting segments; spherical tools.

But two machines at EMO did jump out as offering new technology – one each from Monforts (Leader CNC Technologies) and Hermle (Geo Kingsbury).

From Monforts comes the Unicen 504 Kombimasch turning and milling centre which offers soft-turning, laser treatment for hardening, coating and alloying (additive processes), and hard turning carried out in a single machine. The unit features a modular system for machining and laser treatment, including a main and sub-spindle; upper tool carrier designed as a motorised milling spindle with Z-, X-, Y- and B-axis; a toolchanger and tool magazine; a lower tool carrier designed as a tool turret with Z- and X-axis; a tailstock and steady rest; and processing heads with HSK accommodation for laser and laser hardening.

The system is based on the company's MultiTurn 504 machine, which has a 600 mm swing over bed, a turning diameter

over cross slide of 280 mm and a turning length of 900 mm.

Hermle's approach was also an additive manufacturing one combined with traditional metalcutting, but on a machining centre base not a lathe. The company's C40 Alchemy combines milling with what it calls metal powder micro-forging to allow for the manufacture of parts "not previously



*Insert coating technology is once again a prominent area of development*

possible" – injection moulding dies with coolant channels close to the contour in combination with a heat conductive copper core and a tool steel exterior, for example.

Until now, says the company, additive

production processes for manufacturing metallic components have been based on hot-melt welding or sintering powder with a laser or electronic beam. In build-up welding, no complex geometries, such as relief cuts and cooling channels close to the contour, can be realised.

Sintering does not allow for the economic processing of material combinations, as this would require mixing of the expensive sintering powder, rendering it unusable. So the company offers micro-forging as a more acceptable alternative.

Another technology unveiled, although not a product launch, came from Hexagon Metrology. The company released details of its TesaStar-cr lw 5-axis probe. Hexagon Metrology CMMs

equipped with TesaStar-cr lw feature a special control system and software that simultaneously control the five machine axes based either on feedback from the scanning probe head (closed-loop scanning), or on the part program (open loop scanning). Other probing systems available on the market offer 3+2 axis probing capabilities meaning they have no simultaneous 5-axis control of probe orientation, only a separate control of the three machine axes and two probe head axes, underlined Hexagon. No official launch date was given for the technology at the show.

Elsewhere, there seemed to be much filling out of ranges, adding a smaller machine here, a larger machine there, while the trend of established manufacturers of medium to high technology machines to introduce lower cost machines is still noticeable – Okuma, Hardinge and Heller all followed this trend.

This is not to say that there were not numerous incremental improvements evident at EMO; there were and these are included in our separate *EMO Product Launch Review*, but those that really stick out seemed few and far between.

One company that was particularly prominent, however, was MAG Industrial Automation Systems. MAG has been busy since the previous EMO snapping up various companies and this year was the group's coming out ball, so to speak (see box, next page). This also highlighted that

*Hermle's C40 Alchemy combines milling with metal powder micro-forging to produce the previously impossible, it is claimed*





Haas Automation Europe is bringing its successful training initiative to Europe

MAG is moving into the CNC business with its Infimatic business unit located in Hebron, Kentucky, USA.

A final theme to emerge from the show was one that focused on training or skill shortages. For Yamzaki Mazak the issue, to a certain extent, is one of making its machines more intelligent by adding functions. *Active Vibration Control* reduces vibration for high accuracy positioning in all axes and can reduce machining time. Intelligent *Thermal Shield* automatically compensates for changes in room temperature and in spindle speed during operation to ensure high accuracy. Machine heat displacement is less than 8 micron with a room temperature change of 8 °C.

*Intelligent Safety Shield* presents a synchronised 3D model on the CNC display for checking machine interference when the operator manually moves the machine axes for set-up or tool measurement. If any interference occurs, the machine motion immediately stops. *Mazak Voice Advisor* verbally informs the operator which switches have been selected and advises caution as necessary during manual machine operation. *Intelligent Performance Spindle* monitors its own temperature, vibration and displacement conditions, providing information to the operator.

The Mori Seiki and Haas focus was more on training. The building of a Mori Seiki University in Thailand has been

announced by Mori Seiki President Dr Masahiko Mori with the aim of recruiting graduates and training them as applications and service people for the ASEAN region.

#### SKILLS FACTORIES

The university will also bolster the company's Japanese Resident Engineer service, which sees Mori Seiki personnel placed in customers' factories for up to three years to give customers the skills to use their new machine tools. Resident Engineers are likely to become a feature in Europe, as will a Mori Seiki University.

Haas is looking to train the next generation of engineers through an expansion of its US-focused Haas

Technical Education Centre (HTEC) programme into Europe. Haas Automation Europe HTEC aims to create long-term alliances with European vocational training, technical colleges, universities and other manufacturing technology learning institutions. The goals are to make latest manufacturing technology accessible to a very wide range of educational establishments and to provide students with hands-on experience in a real-world manufacturing environment.

HTEC has evolved beyond the Haas' wildest expectations. In the USA and Canada there are already more than 635 HTECs, including almost 100 high schools, 100+ vocational schools, almost 300 community colleges and close to 200 universities, with well over 1,500 machines installed.

Over the next few years, Haas Automation Europe will implement plans to mirror the programme's popularity in Germany, France, Italy, Spain and every other European country (although the UK is not covered explicitly by this).

Peter Hall, Haas Automation Europe's managing director, explained: "Our initial goal is to have 100 fully Haas-certified HTECs in Europe within five years. However, judging by the response, I anticipate raising this number to at least 200 in the near future." □

### MAG Group

MAG Industrial Automation Systems – MAG IAS – comprises numerous well-known machine tool brands – Cincinnati, Ex-Cell-O, Boehringer, Giddings & Lewis, Fadal, Hessapp, Hulle Hille, Witzig & Frank, Cross Huller, Honsberg, Lamb and Turmatic. Many of these brands now feature the MAG prefix, MAG Cincinnati, for example. But all brands are collected under one of five activity areas: MAG Advanced Technologies; MAG Powertrain; MAG Special Machines; MAG Maintenance Technologies; and Infimatic.

The latter is a completely new brand/activity, however. "Infimatic is the realisation of an international effort by a group of machine tool professionals to create the ideal control platform for the manufacturing industries. More than 100 years of practical experience – in the lab and on the shopfloor – form the foundation for a new control architecture," it is offered. That control architecture is called NC200 and features first on MAG IAS' Fadal vertical machining centres.

