Changing times

What a difference two years makes – the global machine tool industry has seen many changes since MACH 2004, as Andrew Allcock highlights in this snapshot

Illustration: Debut Art: Oliver Burston

In 2004, Boston Consulting Group said: "High-cost countries can now source virtually anything on the other side of the globe at much lower cost and get equivalent quality." No major industrial category will be immune from "the globalisation of cost structures," it added. In a matrix of industrial categories, in the 'moving early, growing fast' quadrant, unsurprisingly, it placed 'computers and [computer] peripheral equipment'. In the 'globalising slowly' quadrant was placed 'metalworking machinery'.

But, since MACH 2004, the globalisation of machine tool companies seems to have accelerated or become more explicit. There have been three basic themes in *Machinery*'s coverage of the industry since then: acquisition of one firm by another; organic growth of some large players; and the return/recovery of established UK brands.

BUYING SPREE

The most high profile acquisition must be that of Bridgeport machine tool intellectual property by Hardinge Inc, in late 2004. (Hardinge only recently acquired the Bridgeport knee-mill intellectual property rights, however). The Bridgeport Machines, Leicester, vertical machining centre manufacturing and assembly facility closed, but a new Hardinge-Bridgeport facility was subsequently created at Whetstone Industrial Park, Leicester, and is Hardinge Inc's global centre of milling product R&D. It is also the global operations centre for all sales, spares and service for milling products.

All Hardinge-Bridgeport machine manufacturing is undertaken in Taiwan, where Hardinge has its own manufacturing operation – but Bridgeport knee mills are still built in the US. Leicester undertakes machine customisation, this especially important with its Viper-process nickel alloy turbine blade grinding machines.

Hardinge had already acquired grinding brands Hauser, Tripet, Tschudin and Kellenberger, and Hardinge Inc president J Patrick Ervin explained last year at EMO, Hanover, how its 'globalisation' began in the mid-1990s (*Machinery*, November 2005, page 24), with the Kellenberger acquisition.

An additional high profile takeover spree has been started, but not yet finished, by investment firm Maxcor, with operations in America and Israel. *Machinery* reported in April last year that Maxcor had set up MAG Industrial Automation Systems as the vehicle for the acquisition of Cincinnati Lamb from Unova. In the UK, this includes vertical machining centre manufacturer Cincinnati Machine, Birmingham, of course. But then in August 2005 Maxcor's MAG took on board Germany's ThyssenKrupp MetalCutting Group, which includes Cross Hueller in Prescot, Merseyside. And as if that wasn't enough, this year it went on to buy German group

IWKA's Ex-Cell-O business, which like ThyssenKrupp MetalCutting has a distinct automotive flavour. In this country, Ex-Cell-O's representative office is located in Bridgnorth, Shropshire.

In the UK, 2005 also saw Switzerland's Bystronic Group acquire Pullmax sales operations in Leeds and also in Sweden – both had been outlets for Bystronic products. Edwards-Pearson, Chard – already responsible for the sale of Bystronic's Beyeler and AFM press brakes, additionally took over the Hämmerle range, sold through Pullmax, Leeds. The two UK operations have subsequently been renamed Bystronic UK.

Mori Seiki, with its established global ambition (see next section), consolidated its UK presence first with a new technical centre in Slough, opened in early 2005, and then with the purchase of Fredk Pollard, Leicester, in October that same year. The new UK sales operation goes under the MS Pollard name and will move from Leicester to new premises soon.

And most recently, (see last issue) XYZ Machine Tools has been acquired by ProtoTRAK control developer Southwestern Industries, California. XYZ founder Nigel Atherton remains at the Burlescombe, Devon-based firm's helm, however.

On the international front, two South Korean machine tool giants got together with Doosan Heavy Industries & Construction and its units buying Daewoo Heavy Industries & Machinery last year. Daewoo Heavy Industries & Machinery has subsequently been renamed Doosan Infracore by Doosan and appeared as such at last year's EMO where it bagged $65 million in machine tool orders. But here in the UK, the two product lines remain separately marketed by Ward Hi-Tech, Sheffield (Doosan) and Mills Manufacturing Technology, Leamington Spa (Daewoo).

Back in 2004, acquisitive German grinding group Korber Schleifring acquired cutting tool grinding machine maker Walter Maschinenbau, while most recently, *Machinery* reported in March this year that Switzerland-based StarragHeckert had purchased fellow Swiss company SIP (Societé Instruments Physiques SA) Geneva, Switzerland, and subsidiaries American SIP and SIP China.

CHINA OUTREACH

And speaking of China, that country is extending its reach into the world's machine tool enterprises. In late 2004, *Machinery* reported that Germany's Schiess had been taken over by Shenyang Machine Tools, and in May 2005, China's largest machine tool company, Dalian Machine Tool Group, purchased a 70 per cent stake in German machine tool maker Zimmermann AG. Zimmermann makes 5-axis gantry milling machines for aerospace and automotive firms and has a strong customer base in China's aircraft and automotive industries. Access to technology and the German market were the result in both cases.

Consolidation in related sectors is also ongoing. In February, Belgium's Metris, headquartered in Leuven, announced it had purchased the UK's CMM maker LK, Derby, as well as non-contact scanner developer 3D Scanners, London. Metris designs, develops and markets a range of 3D hardware and software inspection systems for the automotive and aerospace sectors.

Again in the measurement technology arena, preceding Metris' activities, Sweden-headquartered Hexagon Metrology recently acquired Leica Geosystems having already acquired the CMM business of LS Starrett of the US last year. And quality equipment business Faro Technologies has also been snapping up firms, acquiring German distance laser scanning specialist iQvolution last year, for example.

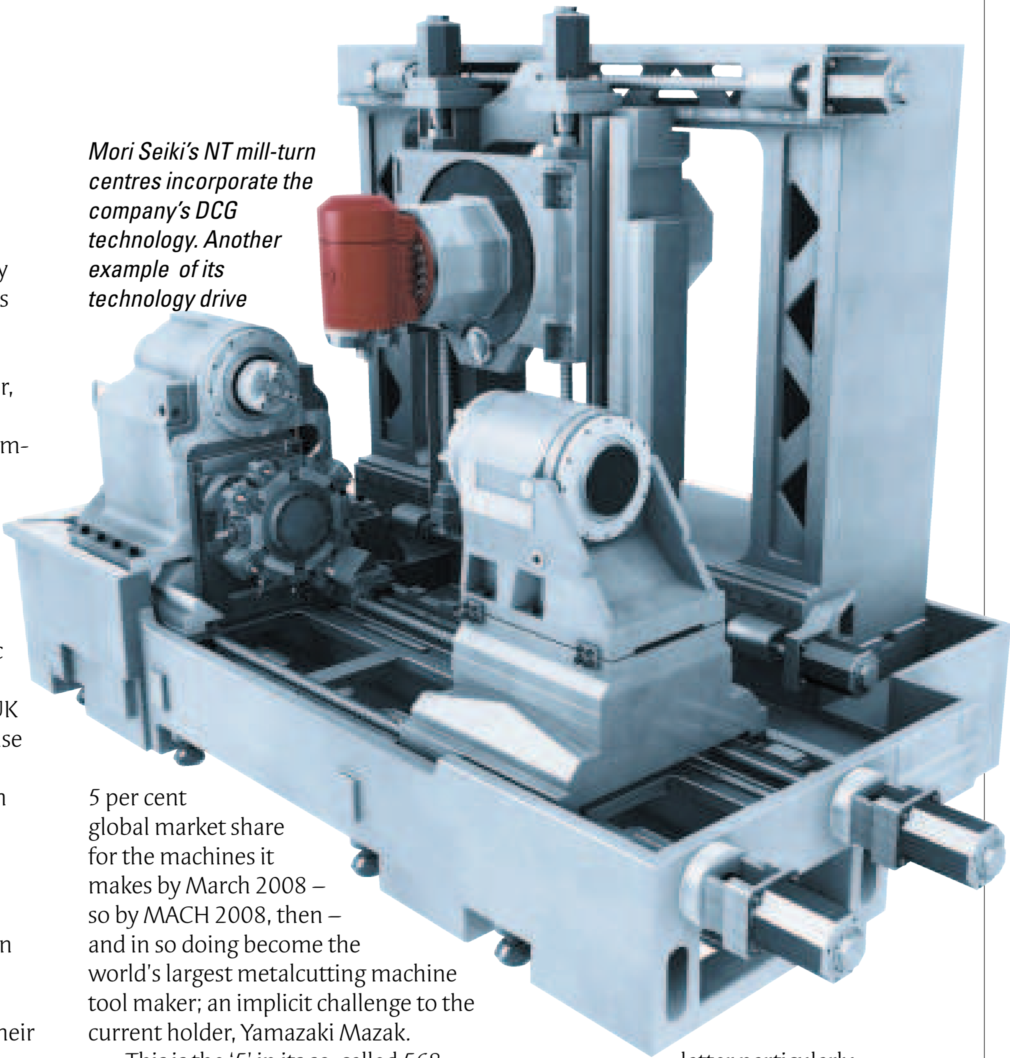
In the CADCAM arena, Birmingham-based Delcam purchased US headquartered Engineering Geometry Systems (FeatureCAM product) just over a year ago; UK headquartered VI International (Vero International Software's parent) bought American firm SMIRTware Inc last year and Ashford, Kent-based Plannit Holdings added to its tally of UK CADCAM firms with its recent purchase of Pathtrace (EdgeCAM developer), which joined Licom/Alphacam, Radan and production control software firm HRS in the group.

ORGANIC, GLOBAL GROWTH

The three names that spring to mind in this category are Japan's Yamazaki Mazak and Mori Seiki, and America's Haas Automation. All are expanding their output and their presence around the world. Mori Seiki, to be fair, did buy the intellectual property of Hitachi Seiki in 2002, so has gained something by acquisition. But it has set out on a path of energetic product development and expansion, both in Japan and around the globe since then.

On product development, at the last MACH show Mori Seiki unveiled its Driven at the Centre of Gravity (DCG) technology, then used on its machining centres. This delivers benefits in the form of greater acceleration, higher speeds plus better surface quality. At this MACH it will unveil its NT mill-turn machines (above) which similarly make use of DCG. In between came the NL lathe series with its patented, turret-integrated motor for powering driven tools. Again, faster performance and better surface finish are key benefits.

Mori Seiki's explicit aim is to grab a 5 per cent global market share for the machines it makes by March 2008 – so by MACH 2008, then – and in so doing become the world's largest metalcutting machine tool maker; an implicit challenge to the current holder, Yamazaki Mazak.



Mori Seiki's NT mill-turn centres incorporate the company's DCG technology. Another example of its technology drive

This is the '5' in its so-called 568 Global One strategy as covered by *Machinery* in August 2005 (page 12). The 6 and the 8 refer, respectively, to cost of sales 60 per cent of sales (down from a 66 per cent starting point), with 8 being 800 units/month (up from 600).

Moving to Yamazaki Mazak, it is not sitting back and merely observing, as *Machinery* discovered in an interview with its president, Tomohisa Yamazaki, at EMO last year. The company has put in place a €200 million investment programme which is seeing expansion at its factories in Japan and around the world in the form of new Technology Centres, for example. Its Worcester, UK, manufacturing operation is also slated for yet another expansion. The Technology Centres are one of three planks in its global strategy; they underpin the showcasing of both technology and related processes – the latter particularly important with novel machines.

The company has also re-organised its product development activities to bring more focus onto individual product lines. This will deliver more product developments, either to existing machines in the form of upgrades or in the guise of entirely new products, Mr Yamazaki told *Machinery*. Product development is another of the three 'planks' in its global strategy. Investment and development in after-sales service/technology is the third plank – this is reflected in technology developed for remote machine diagnostics as well as physical spares holding facilities around the world.

Haas Automation, California, is without doubt the success story of the past 20 years. From its first low-cost vertical machining centre shown at the 1988 Chicago IMTS show, the company

shipped its 50,000th machine last year, but it also manufactured 10,000 machine tools at its US manufacturing facility in 2005 – already ahead of Mori Seiki's 800 machines a month figure. But the two companies have very different targets with their technology – Haas Automation's is low-cost, stand-alone, low-to-medium complexity machinery for job shops, while Mori Seiki pursues the volume manufacture of more sophisticated, more complex technology with a greater OEM and larger sub-contractor focus. As it happens, Haas is probably one of Mori Seiki's best US customers, as the American firm has multiple Mori Seiki FMS installations.

Haas officially opened its European HQ in Belgium in autumn 2004 and has been pushing hard since. The effect in the UK is not that noticeable, however, as Haas Automation has been installing Haas machines here since 1991 and can claim a population in excess of 2,100. The company is headquartered in Norwich but has a Technical Centre in Leicester with machines under power.

However, with the establishment of the mainland bridgehead, Haas Europe managing director Peter Hall told *Machinery* at the official opening in 2004 (5 November, page 30) that, through the establishment of a network of operations in Europe similar to that in UK, Haas intends to "become the number one supplier in Europe for machines in our niche in five years." And at MACH this year Haas Automation is clearly serious about building on its UK presence by occupying the biggest stand ever taken at MACH – 630 m^2.

There is no let up in the Haas pursuit of affordable machine tools, either. MACH will see the introduction of its Office series of machines – mills and lathes – designed to fit through a standard 36 inch door and run on single phase electricity. As company founder Gene Haas told *Machinery* last year: "I see us bringing machine tools to the masses. If you can get the cost of machine tools down, you'll find them winding up in people's garages."

RECOVERY ROOM

So much for the global leaders, now to global brands. And the UK, with its long machine tool manufacturing history, can claim some, three of which have seen a recovery in their fortunes of late. Matrix thread grinders had new life breathed into it in mid-2004 with the support of Far East finance and the establishment of Matrix Machine Tools (Coventry). It was officially opened in November last year on the site of original Matrix grinder maker, Coventry Gauge & Tool. As at November 2005, the new company had delivered four CNC thread grinders to Taiwanese ballscrew/linear product maker Hiwin Corp valued at £1.2 million. The company has also entered the surface grinding market.

Large capacity lathe builder Dean Smith and Grace, Keighley, has also returned to new machine tool building with a vengeance, as *Machinery* reported last December (page 14). Under new ownership the turnover, which in 2004 was almost entirely derived from spares and rebuilding, is now 90 per cent new machine tool sales. The company expected to put a batch of four or five machines down this year: "That's something that's not been done since the 1980s," managing director and owner Nigel Grainger told *Machinery*. And new machine tool development, including large capacity mill-turn machines – slantbed and flatbed – is in sight.

AsquithButler is, in fact, two UK brands combined. Both have seen their fair share of trouble in latter years, hence their combination, but the company was once again rescued, this time by the Kingsbury Group, in 2003. However, the company had its first official open day this February (*Machinery*, April, 2006, page 55). And it was able to show off its first newly built machine sold to a non-Group company – JCB Earthmovers; two previous machines went to Group firm Forth Engineering, Brownhills. Large gantry and horizontal machining centres are AsquithButler's fortä, of course.

Now no one is pretending that these are volume manufacturers, but it is heartening to see them again build on the global brands created in past years.

Volume manufacturing is very much the 600 Group's game, however, specifically its Colchester and TS Harrison marques. And 600 Group is, as *Machinery* reported in August last year, focusing solely on the manufacture of CNC lathes and electronic centre lathes at its Heckmondwike manufacturing facility – 600 Lathes. Manual lathes are now substantially made in China with some finishing here. There is a new focus at Heckmondwike now, as former 600 Group chief executive Dr Tony Sweeten explained: "Just as we were once world class in the manufacture and assembly of manual lathes, we must now become world class in CNC [and electronic] lathe manufacturing."

It is not just established names that are active in the UK, however. As last month's issue of *Machinery* highlighted, today's big science quest for better knowledge of the universe has driven the creation of new technology and a new UK machine tool firm, Zeeko, Coalville, Leicestershire. Its polishing process and allied machines represent world-beating technology, as does Cranfield University's not unrelated high-precision 3D surface grinding machine, BoX, which will also see commercial exploitation (last issue, page 20). The latter will be at MACH 2006, as will be many of the companies mentioned here.

So behind what might seem an unglamorous exterior, there's plenty of excitement as the machine tool industry adapts to a changing global environment and meets new challenges.□