

# Turning it up in the UK

**Volume manufacture was the UK's yesterday, right? Wrong. It is possible to be internationally competitive today with the right technology. Andrew Allcock saw and heard how**

**T**hese days, UK manufacturers often talk about moving towards specialisation and moving away from volume manufacture, observes the Engineering Technology Group's (ETG) chairman, Paul Rhodes. He voiced a passionate defence of volume UK manufacturing at the end of November sitting in CNC Speedwell's new 10,000 m<sup>2</sup> factory at Brownhills in the West Midlands.

"We seem to have got ourselves into a mindset in the UK that says volume manufacture is yesterday; we must move into niche markets, R&D, make small batches and accept that volume production will go to China. There seems to be a defensive strategy with many companies getting rid of volume machining, installing a couple of 5-axis machines and chasing microns. But CNC Speedwell has actually concentrated on the work that others believe they can't keep. The story here proves that if an organisation is lean, well managed, efficient, focused on its own objectives and its customers' objectives, meets quality and delivery requirements; if it's backed by its board, supported financially and invests in technology; if decision-making structures are short and management has its finger on the business pulse, then we [the UK] can still be a significant player in the manufacturing sector, irrespective of the type of product."

CNC Speedwell focuses on the prismatic machining of relatively low tech automotive and truck parts – chassis, engine and gearbox parts, taking in bracketry, gearshift forks, and manifolds. Made predominantly from



Mathew Dartford: DebutArt

SG cast iron, for the most part that means drilling, spot facing, tapping or milling flat surfaces. Now, even brackets are becoming more complex and feature tighter tolerances, while new truck diesel engine inlet manifolds similarly are becoming more sophisticated with EURO 4 emission rules requiring engine gas recycling ports, explains CNC Speedwell

managing director Mark Lewis, but overall the component features machined are relatively simple and not of tight tolerance, in the main.

## **CAST OF MILLIONS**

The 171-employee sub-contractor (101 at the beginning of 2006) produces such parts at the rate of several thousand each

## From toolmaker to successful volume machinist

Since 1996, CNC Speedwell has been a member of the Castings plc Group, which also takes in William Lee at Dronfield, Derbyshire. Annual turnover for Castings plc for the year ended 31 March 2006 was £77 million. It supplies ductile, malleable and grey iron castings up to 25 kg (including Si.Mo and ADI) to all

international specifications, totalling some 1,500 to 1,600 tonnes/week.

To support growth ambitions CNC Speedwell recently moved from a 5,500 m<sup>2</sup> facility to a 10,000 m<sup>2</sup> facility just across the road from Castings plc's HQ in Brownhills.

CNC Speedwell undertakes all castings machining for its parent – because it is competitive, not because it is a subsidiary. Contracts are won by both companies – the recent Toyota order came via the foundry, while the £1.2 million order was won by CNC Speedwell. But CNC Speedwell also machines aluminium castings not made by its parent, supplied by customers.

The company was purchased by Castings plc in 1996 after it had become a supplier to the foundry in 1993. Mr Lewis had already grown the company on the back of investment prior to the acquisition. When he joined CNC Speedwell in 1990, the company was turning over just £11,000/month, had a workforce of 11 and was a toolmaker. Prior to acquisition in 1996, it was a £85,000-£90,000/month concern based on production machining of castings.

company processes almost only free-issue material, turnover is not inflated by material purchase and resale, but is almost entirely added value.

This turnover has been bolstered by work won from Eastern Europe and by winning back parts previously lost to China. Most recently, the company has won a contract from Toyota to supply its plant in Poland with parts for its new 2.2 litre diesel engine: it is supplying 4,500 parts/week. And recently the company successfully competed against Slovakia for a £1.2 million contract placed from a UK company – this part is being supplied at the rate of 5,000-6,000/week. CNC Speedwell is also about to engineer a part that has been won back from China, although the company was not the original maker here, says Mr Lewis.

But CNC Speedwell is not only providing competitively priced machined parts. In the case of the £1.2 million order, it contributed a design input, working with the Motor Industry Research Association (MIRA – just a couple of miles down the A5, in fact) to develop a solution. This represents the second time that the company has worked with MIRA. (Re-engineering existing parts to help drive down costs is a common undertaking, too.) The company also undertakes assembly operations – which is a growing area – for the likes of BMW, so it is following industry trends in respect of providing value-added services to its customers, even though its business is based on volume machining.

### TWIN-SPINDLE PRODUCTIVITY

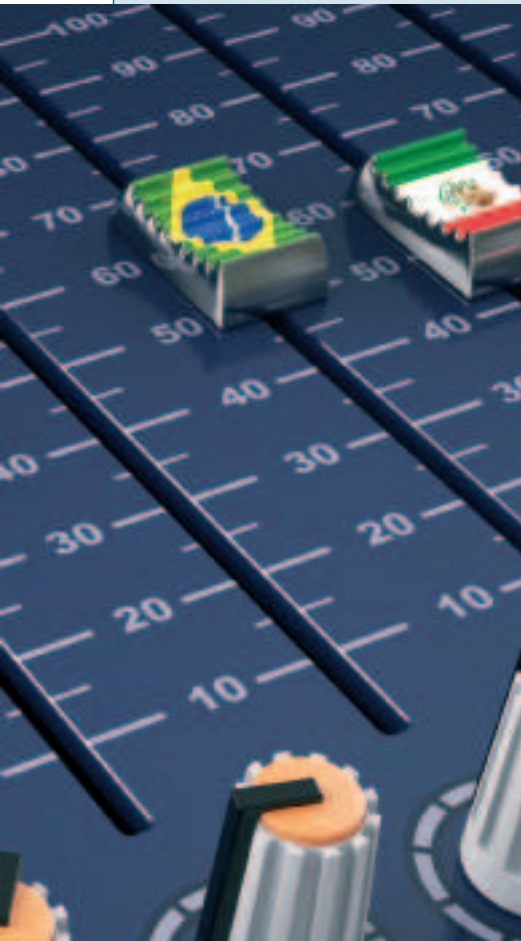
For some six years, the company has built its growth on continued investment in, predominantly, twin-spindle machining centres – the first single-spindle Chiron arrived in 2001 and the first twin-spindle Chiron in 2002 (Chiron Werke UK is a member of the ETG). These machines have progressively replaced the previous approach which

month – indeed it makes some 8 million parts annually taking in around 400 separate part numbers. About 80 per cent of this is directly exported to countries in Europe (including Eastern Europe), the US and Japan.

The company's customer base includes truck makers Scania (its largest customer), DAF, Volvo, Renault and

Mack, which account for 60 per cent of its business, while in the automotive industry it supplies nine Toyota plants around the world, plus BMW, Land Rover and other first tier suppliers – the other 40 per cent.

Over the past five years, its turnover has increased from £3.5 million to £15 million. With the company currently growing at 30 per cent per annum, Mr Lewis' target is a turnover of £20 million in 2010. And he points out that since the



was based around Toyoda horizontal machining centres and some 20 Kitamura machines, mostly vertical. The company's tally of twin-spindle Chiron verticals numbers 33 – Chiron twin-spindle vertical machining centres make up around 65 per cent of CNC Speedwell's machining capacity and give around 75 per cent more productivity than equivalent single-spindle machines, says Mr Lewis. "If our shop was all single spindle machines, we'd need a factory twice the size." CNC Speedwell also has 12 horizontal twin-spindle SW Emag machines.

The company has recently added a single-spindle, 5-axis M800 Chiron machine to tackle a gearshift fork with compound angles on the fork ends, currently manufactured at 1,200/week. Being a single-spindle machine and having a longer cycle than is typical (most are under three minutes on the twin-spindle Chirons), the company will apply robot load/unload to this part in due course. All other machines are manually loaded and have swivelling tables in the case of the Chiron and the SW Emag machines.

The machinist invested £5 million in new machine tools last year alone (10 Chiron, four SW Emag, one Nakamura Tome) – £18 million since 1996. Indeed, some 90 per cent of the company's machine tool fleet of 80 CNC machine tools is under five years old. Its machines are operated on 24-hour production regime across two shifts.

The company also sports a £2.5 million, four-machine, 38-pallet Toyoda FMS with Fastems pallet

## A place for FMS amongst the volume

CNC Speedwell installed the Toyoda FH55S-based FMS, according to the company's managing director, for the cost-effective manufacture of components with a high machining content in relatively low batch sizes or that are larger workpieces. Batch sizes vary from between 30 and 3,000 per week for about 30 different parts for eight or so customers. This work is often associated with other high volume orders from CNC Speedwell's customers who do not allow it to cherry pick – it comes as part of the package. Elsewhere, low volume orders are also a feature of work for buses, military vehicles and ships. Prior to installing the FMS, the company tended to produce larger batches to achieve economies of scale, and store the undelivered parts in its factory. Occasionally it was caught out when components became obsolete before they could be delivered, leaving stock that could be valued at several thousands of pounds. Now the company can manufacture with zero setting time, respond to frequently changing schedules that are a feature of automotive work, while buffer stocks have been eliminated or drastically reduced.

storage/transport installed 2½ years ago (see box, above) for the manufacture of larger parts or those required in lower volumes.

Membership of a plc (see box, page 17) does provide the finance to fund investment, underlines Mr Lewis, but, clearly, the company must provide a market rate payback.

### MORE THAN MACHINES ALONE

But it is not just about the machines, all CNC Speedwell's production units are typically fitted with highly automated bespoke hydraulic fixturing manufactured by Hyfore using both Hyfore-made hydraulic parts and Roemheld standard parts. And these fixtures accommodate multiple parts per fixture to reduce setting between parts. In fact it was Hyfore which first suggested putting a Chiron single spindle machine "on the end of a fixture", quips Mr Rhodes. Subsequently Mr Lewis saw the benefits of twin-spindle machines and he trod that path with a vengeance. (Hyfore is now a member of the ETG, but was not in 2001 when the first Chiron was installed.)

CNC Speedwell is now ETG member company Chiron Werke UK's largest customer. It is also the largest customer of ETG member Hyfore – and it is the

largest UK customer for SW Emag machines and also for Toyoda technology, Mr Lewis confirms. It has latterly become a Nakamura Tome customer – yet another member of the ETG stable – this to support cast iron and aluminium filter body machining won from Parker Hannifin, Dursley.

ETG's Mr Rhodes concludes by saying the multi-spindle concept has not taken off in the UK, due to concerns about consistency between spindles and fixturing: "It all seems too complicated for others". But Mr Lewis persevered, he says, and the consistency issue has never arisen – tolerances of 12 microns are being held on twin-spindle Chirons, adds CNC Speedwell's managing director. And the company's success literally speaks volumes for the technology.

CNC Speedwell's next move, naturally enough, will be to install a four-spindle horizontal machine.

As others have yet to make the first move, the question must be, is CNC Speedwell somehow unique or can the UK succeed in volume manufacture more generally – given some self-belief, determination and investment in appropriate technology? □

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