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Success built on cast iron foundations

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CNC Speedwell

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The long game

By Andy Sandford

UK companies machining castings in high volumes for the automotive industry are a rarity. One company achieving growth in this tough sector is CNC Speedwell, which being part of a foundry company, means that it can have a joint approach with its castings supplier when winning business.

The general assumption now is that volume work always goes to Eastern Europe or China, and that British companies can only survive by moving into niche markets, producing highly technical parts that nobody else wants to do, and focusing on small batches.

CNC Speedwell in Brownhills, near Lichfield, is the perfect antidote to that kind of thinking. By investing in technology, working with customers to engineer their products, having a willing workforce and hands-on managers, and above all by being very good at what it does, CNC Speedwell is growing at 30% a year and exporting all over the world.

A subsidiary of foundry group Castings plc, CNC Speedwell focuses on machining SG iron castings to produce items such as chassis elements, engine parts and gearbox components for some of the world's leading car and truck makers.

Around 60% of its production is for the truck industry, with customers including Scania, DAF, Volvo, Renault and Mack. It also supplies nine Toyota car plants around the world, as well as BMW, Land Rover and a number of other Tier One suppliers. Direct exports account for up to 80% of production, with regular shipments going to the US, Japan and Europe.

Growth has been consistent and sustained, says Managing Director Mark Lewis. 'Five years ago our turnover was approximately £3.5 million, and today the order book stands at £15 million plus - and we are machining between three and four hundred tons of raw iron castings a week.'

This equates to about eight million parts a year, across 400 different part numbers, and to cope with this growth the company is continuing to invest in further capacity. It has just moved into a new 10,000 square metre facility and has invested more than £5 million this year in machine tools alone.

Mark Lewis says that the company is competing directly with Eastern Europe for this work, and it is winning orders. 4,500 parts per week are shipped to Toyota's new diesel engine plant in Poland, and it has just won a £1.2 million contract for a UK-based automotive supplier where it was in direct competition with a Slovakian company.

'On that particular component, we designed it with the help of MIRA (The Motor Industry Research Association), and took it from drawing through to a finished component that is now being supplied at a rate of 6,000 parts a week.

'We have lost very little work to Eastern Europe. We did lose one part to China for two years, but now it is back with us. You have to assume it went to China because of cost, but it has come back because of quality and delivery problems.'

Being part of a foundry company means that CNC Speedwell can have a joint approach with its castings supplier when winning business. Both the foundry and the machining operation have to be competitive in their own right, but they can also work together to optimise the casting, allow for datum points, and minimise the amount of machining required.

Richard Thursfield, Quality Manager at CNC Speedwell, explains that a lot of the engineering involvement in a project is upfront and driven by the machine shop because this is where the more critical features are produced.

'At one end of the scale this can mean giving feedback on designs and offering suggestions on ways to machine parts more effectively. At the other end of the scale it can mean working right from grass roots, designing the casting, and involving MIRA in development work such as functional testing, fatigue testing, strength testing and durability assessment.'

He says that the company also aims to help customers by offering an end-to-end service. 'We don't just offer machining. We obviously supply castings from our foundry, and after machining we also do the assembly and painting to generate a finished product.'

The requirement to assemble components is constantly growing, says Mark Lewis. 'It is driven by the customers and we are quite happy with that. The more you do and the more involvement you have with a part, then the more difficult it is for someone else to do it.'

But however good the engineering, the price still has to be right. Like everyone else in the automotive industry, the company is on cost-reduction programmes for its customers. 'A big plus for us is that around four and a half years ago we started investing heavily in multi-spindle machining. And I think that this, along with our engineering skills, is key to our success.'

CNC Speedwell has over forty, twin-spindle machines, including 30 Chiron DZ 15 and DZ 18 vertical machining centres and 12 SW EMAG horizontal machining centres. The Chiron machines alone account for around 65% of CNC Speedwell's capacity and, says Mark, give around 75% more capacity than a

single-spindle machine.

To get the highest productivity gains out of these machines, hydraulic fixtures are used for speed of loading and unloading and to hold the parts securely so that they can be machined hard. Nearly all the fixtures are supplied by Hyfore Engineering, with Roemheld hydraulic elements, and are designed to fit as many parts as possible into the usable space.

Together with Hyfore, CNC Speedwell has also developed a common tool base with standard hydraulic fixtures that allows it to run 80 different jobs on any of the Chiron DZ 15 machines.

And if technology has played a role in the company's success, Mark is quick to point to the contribution of the workforce. Indeed, it is perhaps surprising how much of the company's production still relies on people rather than automation.

'On the twin-spindle Chiron machines, where you have an average cycle time of less than three minutes for two parts, if you wanted a robot to load and unload that machine in that time, and check every part, then it would have to be quite some robot.'

Unmanned running is something that the company has started looking at recently though. It has bought a Chiron 5-axis machining centre that it plans to build into a robot cell for a specific new component.

'The part is a gear shift fork with two sets of compound angles on both ends of the fork, so you need five axes to produce them easily. We will put a robot cell on it, but we have to be careful because there is a lot of visual inspection required when you are machining castings. You are constantly looking for porosity and other cast defects.

'However, this job has a longer cycle time than the ones we run on the twin-spindle machines, so there is time for the robot to pick the part up, to gauge it, and load it, and the fixture has already got air sensing which detects that the part is clamped correctly.'

To stay productive and competitive, CNC Speedwell is committed to a continuous investment programme, and over £18 million has been invested in machine tools alone since it became part of Castings plc in 1996.

'We run a rotating programme with our machines, and don't keep them until they become uncompetitive. We invest in new technology and around 90% of the equipment in the factory is less than five years old. We are looking to maximise the return on our investment, we work the machines hard and we work them 24/7 as much as possible,' says Mark.

He adds that standardisation is also important to give flexibility. 'We want as few suppliers as possible, so you will only see around four manufacturers of machine tools on our shop floor, and we try to keep everything to standard setups. Sometimes you will see quite small parts on large fixtures on big machines, but it is all about keeping things standard.'

It is planned that this investment will continue to support further growth. Indeed, one of the great strengths of CNC Speedwell is that it is hungry for more and more business. So how long can it keep growing at 30% a year? There is still plenty of room for growth, says Mark Lewis.

'Castings plc has a highly invested foundry and, together with its subsidiary William Lee, it produces 1500 to 1600 tonnes of iron castings a week, and the percentage of those that we machine has steadily increased. I can remember the first time I turned over £100,000 a month it was a quite a buzz.

'After that £200,000 was boring; even hitting £1 million turnover in a month wasn't particularly exciting. We've now got an order book of £15 million plus and the target is £20 million by 2010.'