Taking care of the detail

A small cutting tool specialist is expanding on the back of the design, manufacture, supply and support of top quality cutting tools and underpinned by attention to detail. Andrew Allcock reports

Established in 1982, Braintree-based Fenn Tool is the exclusive UK agent for a number of prestige cutting tool brands (see box item). In addition, it manufactures its own range (Fetoga) of solid carbide cutting tools – end mills, thread mills, drills, reamers and countersinks. The focus for the 27-employee firm is predominantly on live spindle tooling – milling, drilling, threading (taps); although it does offer a range of specialist turning tools from Dümmel. It is also the UK agent for Zoller presetting machines.

Room for three more in the expanded shopfloor

"We only offer top end, highest quality products," explains managing director Gary Ridgway. And to underline the point he opens up one of many drawers in the company's stock room and pulls out a standard ER collet chuck. "Our standard Haimer ER collet chucks are ground and balanced to 25,000 rpm, G 2.5. Even the nut is balanced," Mr Ridgway explains, highlighting the uneven length slots machined into the nut which support this performance, and he adds: "We also have facilities here that allow us to offer G 2.5 balance at 50,000 rpm."

Supporting the £4.8 million turnover company's activities is a stockholding approaching £2 million, and as at *Machinery*'s visit in early November, the managing director was able to point to an 18 per cent year-on-year sales increase, with an increasing novel international element playing its part. There is no sign of any major slow up in consumption of cutting tools, he advises, adding that the company is currently recruiting additional sales people – the company intending to add to its 10 regional sales engineers; it also boasts a three-man operation in County Kildare, Ireland.

Fenn Tool's business success is what lies behind the company's recent expansion of its manufacturing activities. Already having six automated ANCA tool and cutter grinders and one Rollomatic machine (<6 mm diameter tools), the expanded manufacturing area is ready to receive a further three machines – the locations are already set up with FSE equipment fed high pressure coolant services (350 bar), for example. The machine shop itself is staffed by just three people, incidentally; automation supports extended, unmanned running at the company.

OWN BRAND OF SUCCESS

Although the company only started manufacturing own brand cutters in 2000, this now accounts for some 30 per cent of its turnover. In 2000 it manufactured only 15 per cent of its own-brand Fetoga catalogue of products but now it is some 96 per cent. Own manufactured product also underpins its export business, which today stands at around £250,000/annum.

Just as the company targets high value manufacturing such as motorsport and aerospace in the UK, its export business is similarly targeted but even more narrowly, at high volume, specialist applications such as either new turbine blade machining or repaired blade machining.

It pursues such business by exhibiting abroad (since 2003) and also through a Singapore-based agent, in partnership with other technology suppliers such as Hermle (machine tools) and TTL (software). Mr Ridgway highlights a particular contract with Singapore Airlines for cutters to machine blade tip repair weldment – 10 mm diameter six-flute end mills for Trent 500 blade repair are being supplied at the rate of 800/month. The company supplies other companies and cutters, too, with a new contract in Thailand in partnership with a UK firm setting up a turbine blade manufacturing plant there set to bear additional fruit.

A further important element in its success with its own range is its flexibility to design and make tools to customers' requirements – special lengths or radii, for example. "These specials represent a small amount by volume but people then tend also to buy their standard tools from us because we offer variants." In fact, by value, specials represent between 15-20 per cent of its own manufacture turnover figure.

So where does the company's expertise in cutting tool design come from? "We all here have shopfloor application experience, so we know what

works and what doesn't; plus we work with our customers. It isn't really rocket science. End mill geometry is well known, for example, while we are also able to reverse engineer designs using our Zoller presetter," explains the managing director. The company's SmartCheck 450 unit will allow all cutter parameters to be measured with programs generated for its ANCA machines. The presetter is also used to comprehensively inspect its own cutters, too.

This reverse engineering aspect is a seemingly common, and legal, practice. Mr Ridgway highlights a cutting tool flyer from another company which contains products that are, he explains, clearly copies of part of its Fetoga range. Nothing new, though, as he explains, the cutter that prompted the establishment of its own range – a 55° helix (FA geometry) end mill for aluminium cutting – has subsequently been much emulated.

This borrowing of design approach can further be exampled by the wide availability of variable helix cutters, which are a relatively recent phenomenon. Fenn Tool also offers these – two flutes set at 35° and two set at 38° – but it also offers a new development, variable flute index cutters. These have a consistent helix angle and so do not suffer the same limitations on length of the fluted portion; in variable helix, the flutes obviously get closer together. "Variable index cutters are selling four-to-one over variable helix," it is underlined.

It is this constant tweaking of designs that leads to progress. Indeed, the company is currently developing a new design of FA end mill for high speed cutting of aluminium and Fenn Tool has a Hurco VM1 machining centre on which it performs cutting trials during such development work.

But within this tweaking, it is Fenn Tool's attention to detail that is amplified. For example, while its 55° helix (FA geometry) cutter has been much copied,

Just three people run automated machinery

the managing director highlights that the way the flute edge is ground by Fenn makes it superior to those offered by others. This sees a radius ground on the inside edge at the very start of the cutter helix – "padding the radius" – which leads into the small witness radius on the outer edge of the flutes. The company also does the same with its ballnose milling cutters.

GOING THE EXTRA MILE

And with the new FA geometry cutter under test, it is flute edge grinding that is likely to be key with the company trying primary-plus-secondary grinding versus a witness approach. Variation in witness width is a further factor, too, while a new coating will also be pivotal. Incidentally, cutters for harder materials feature cam ground helix edges – these are more time consuming to produce but offer better machining results, observes the company's managing director. Again, others do not go the extra mile here.

Yet another example highlighted during *Machinery*'s visit is that of a 45° helix, three-flute end mill. The Fenn Tool design features a six-facet grind on the flute end versus others' three-facet approach. The six-facet route relieves the cutter at its centre allowing better swarf control.

An increasingly successful extension to the company's core operations now takes in consignment stockholding plus single-source tooling supply incorporating third party tooling. The company earlier this year scored a big success, scooping a two-year, single-source contract with Fin Machine Company, Seaham, Co Durham. The central focus for the service is driving cost down by reducing cycle times rather than by through reducing the price of tools.

Top quality products, in-house product development and manufacture, flexibility, the chasing of high value export opportunities and the offer of value added services are clearly a winning combination for Fenn Tool and they make the description 'cutting tool supplier' seem rather inadequate.□

'Only top end, highest quality products'

Apart from its own Fetoga brand, Fenn Tool offers: Hahnreiter machine taps; Haimer spindle tooling, including shrink-fit technology; Maykestag HSCO milling cutters; Millstar indexable milling cutters for die and mould applications; Dümmel grooving, threading, boring and chamfering tools for turning or milling through circular interpolation; Miltec end mills; and Zoller tool presetters.