

Tooling challenge met

It was with weary resignation that one company gave WNT (UK) a chance to solve an apparently intractable problem machining an EN8 forging. *Machinery* reports

Quinton Major Precision was founded following the recession of the late 1970s/early 1980s. Its two founders, Frank Clark and Rodger Smith, were employed at the time by Brown Brothers Engineering (originally Brown Brothers Aircraft) which became a victim of the

downturn and was closed by Dana, its American parent company.

Seeing a viable business within the remains of the company, the pair came to an agreement with Dana to

purchase the stock and machines that made up the 'gear-lever section' of Brown Brothers. In 1982 they formed a new company, Underfold Ltd, to manufacture nine varieties of assemblies for Land Rovers, Sherpa Vans and the SD1 Rover car.

Within the first year the company had grown and was taking on more work formerly undertaken by Brown Brothers. The result was a first year turnover of £334,000 and a change of name to Quinton Major Precision Ltd.

The Brackmills, Northampton-based company now has a turnover of £3 million and has a workforce of more than 40 skilled individuals operating a range of state-of-the-art machine tools. However, like many other sub-contract manufacturing businesses, Quinton Major is faced with pressures from customers and while it is not being asked, directly to reduce prices, it is faced with inflationary pressures on the business that make cost reductions a fact of life.

An area that presents opportunities to reduce costs, through improved productivity is cutting tools. One particular component, manufactured from forged EN8 had been the subject of many tooling companies' endeavours to improve cutting performance over the years, with none of them successfully

Quinton Major's Daniel Clark (right) discusses the merits of the 2011 milling cutters with WNT technical sales engineer Warren Howard



addressing the poor tool life issues that Quinton Major was experiencing.

"We have been machining this component for nine years," says Daniel Clark, Quinton Major's production manager. "Over this time we have investigated many machining techniques to try and improve productivity, including a variety of cutting tool solutions and even different machine types."

It was at this point, with almost weary reluctance, that Quinton Major offered WNT (UK) its 'one and only' opportunity to solve the apparently intractable problem. "Initially, when we asked WNT to look at improving the tooling aspect of this job our thoughts were focused on price, as we didn't expect any major tool life improvement. Given the volumes involved, if we could simply reduce tooling costs that would have been helpful.

SOFT CUTTING ACTION

"However, with the introduction of the 2011 cutters from WNT, we immediately saw an improvement in the number of components being produced per set of inserts. It was the blend of the cutters' soft cutting action resulting from the combination of insert and cutter body design that delivered an increase from three to four parts per insert to over 30."

Building on this initial success, Quinton Major has continued to work closely with Warren Howard, WNT's technical sales engineer, to further refine the manufacturing method with the staggering result that tool life has increased by 1,275 per cent to 55 parts



WNT's 2011 endmill has slashed costs for a difficult-to-machine EN8 forging. All other tooling companies had failed the challenge

and then a final 5.5 mm cut to complete the process. However, this last cut used the top half of the insert that previously had not been used. This relatively simple change to using the entire length of the insert was pivotal in upping the tool life, but was only possible because of the true 90° approach of the WNT 2011 cutter.

"The level of technical support provided by WNT is not typical within the industry," says Mr Clark. "They are always offering suggestions on how to improve machining applications and on this particular job, once they had delivered increased productivity, they then suggested an alternative system for removing swarf from the work area and keeping the job and tool cool."

This is Cooljet which uses a blast of chilled air to remove swarf and to keep component, tool and machine spindle at a controlled temperature. It also allows the job to be cut 'dry' with environmental benefits.

CARBON FOOTPRINT

"There are other aspects of dealing with WNT that are of help to us in developing our environmental policy," says Daniel Clark. "We are asked more and more by customers for details of our carbon footprint and how we are offsetting it. WNT is one of the very few suppliers making a conscious effort to help the environment. All of the plastic insert boxes are recyclable, as is all of the other packaging that WNT uses. This may seem like a relatively trivial thing but it is becoming more important.

"It is the total package that WNT provides which makes a difference. Its ability to provide high quality, cost-effective tooling when we need it, along with valuable technical support on the shopfloor, is enhanced by the benefits that do not directly relate to productivity or performance but do make a difference to our business," Mr Clark concludes. □

per insert change. Not only that, previously Quinton Major had been going through four to six cutter bodies a month due to insert failure; now it rarely has to replace a cutter body – a major cost saving.

Increased tool life is not the only benefit seen by Quinton Major thanks to the 2011 cutters. "Every other cutter that we had tried left burrs that had to be removed manually after machining. With the 2011 cutter we get no burr, and where we have to step-over to achieve the complete depth of cut we are not getting any witness marks; something that we couldn't achieve before," says Mr Clark.

This process of stepping over to achieve the face depth is another area where Quinton Major has benefited from the technical support provided by WNT. Due to

being restricted to using a

16 mm diameter cutter with an 11 mm insert edge length, three cuts have to be taken to achieve the 16 mm depth of cut required. Taking a fresh, commonsense approach to this, WNT's Mr Howard suggested splitting the cuts into 5.5 and 5.0 mm for the first two cuts

