

21st century honing with 21st century super abrasives

In the pre-dawn light of the 4th Industrial revolution, it seems unbelievable that honing is still done 'hands-on', but it's not so long since honing engineers would hold up their hands to show missing fingers, to demonstrate how they mastered their craft. In the modern, legislated world, that's clearly unacceptable, but occasionally still done. So, when presented with the opportunities to make safe the production of components for a wealth of different industries Delapena was only too pleased to introduce the customer to a machine designed with failsafe, interlocking guarding to remove hands from the work area. This means that operators would no longer be anywhere near the spindle when in motion and no longer requires the component to be guided by hand onto the honing mandrel. The operation becomes totally hands free; happening at the push of a button, well behind the auto-stop doors.

However, simply making an accurately controlled CNC honing machine is only part of the solution. The complete solution includes super abrasives honing stones and precision fixtures and it is a mix of all these that provides the customer with a repeatable, stable process. Although Delapena has been in the honing business for 90 years it was missing the expertise of super abrasive hone manufacture. Delapena had relied on third parties to supply honing abrasives for various applications that demanded specific abrasives to suit specific materials. The fact that it could not manufacture its own super abrasives honing stones was compromising the complete solution, according to Delapena managing director Martin Elliott.

In 2015, Delapena took the plunge and invested in a small R+D cell for the manufacture of super abrasives and within a matter of weeks developed its first range of honing bonds. The initial objective for the Delapena range of super abrasive honing bonds was to become self-sufficient and to be able to act quickly with spikes in customer demand. However, the uptake of the new offering soon became a bottleneck on the small-scale production facility, which prompted Delapena to take the plunge and invest in the latest state of the art



equipment. The new equipment was installed in late 2016 and was operational by January 1st 2017.

With all the enquiries for the super abrasives, 2017 was a bit of a blur and by the end of the year, Delapena was supplying its products into six automotive engine plants around the world. One of the reasons for the success was Delapena's ability to manufacture new products within 7 days, as well as being able to offer consignment stocking of abrasives for the larger users with unpredictable demands.

The metal bond super abrasives market was the first target for Delapena. More recently, the company has launched vitrified super abrasives and cork abrasives to complement the range.



Metal Bond - ideal for most general honing applications



Vitrified Bond - ideal for very hard materials



Cork Bond - ideal for plateau honing

What makes Delapena different?

Due to market uncertainty in the UK with Brexit and what the future holds with regard

to trade tariffs, there has been a move to reshore critical products. Delapena has been very active with OEM's in the automotive engine industry and now offers: average costs savings of 30 percent; the ability to replicate any honing bonds within seven days; two-week lead times; consignment stocking; protection from currency exchange rates.

Super abrasives and Industry 4.0

The key message coming from Delapena customers discussing the honing process and Industry 4.0 is to have a honing machine with a stable process that requires little or no operator intervention. Using standard vitrified bonded abrasives does not lend itself to industry 4.0, due to the wear factor of the abrasives. However, when using super abrasives with little wear characteristics, it allows the honing machine to run many hundreds of components before size adjustments are required, thus lending itself to a more autonomous process.

Delapena has now re-engineered the complete range of its honing machines to run with super abrasives and is now in the midst of implementing smart Industry 4.0 technology onto its honing machines. The first of these machines will be displayed on the Delapena stand at the MACH exhibition in April. It will come in the form of a new vertical honing machine that can be adapted to customer requirements.

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