

## Honing

# Delapena hones in on emissions

Since the emissions scandal in 2015, automotive manufacturers have had renewed vigour in their commitment to achieving the emissions levels required with the latest specification of engines. Honing is a key process in achieving these levels and Martin Elliott of Delapena explains how honing head reconditioning supports this endeavour

Reconditioning of honing heads is a service that has seen continuous demand for many years. However, in more recent times, honing has moved into the spotlight and is now rightly recognised for its pivotal role in supporting automotive manufacturers to build engines of a specification to meet emissions targets. Consider this with the good news that automotive production volumes hit a 17-year high in March 2017, thanks to the weak pound encouraging exports, and it's clear that as production is booming, so too is demand for a complete service for hone head refurbishment.

We now work with seven of the major engine manufacturers in the UK and our approach starts with thorough inspection of the honing head to find any current failures and then to identify, in advance, any potential issues for the future. Our focus is on maximising safe lifespan and optimising performance, so we consider both short term remedial work and longer term preventative maintenance.

The right abrasives are central to this refurbishment process and, in developing the right honing sticks for the head, we carefully considered the ideal match of diamond powders and other super abrasives (each having their own cutting characteristics) with the right choice of bond, so that an ideal wearing characteristic could be achieved. This ensures that the geometric integrity and exact surface finish are achieved, plus the lifespan is optimally managed. Exacting quality assurance is built into the process, with every batch of honing

sticks measured for specific gravity, to a tolerance of 99.7 per cent accuracy. Full traceability is an essential feature of the process, which includes the ability to track every honing stick back to the powders used, along with the sintering cycle data from the time of pressing. Beyond these replacement honing sticks, we also replace carbide wear parts and grind the required geometry onto carbides and diamonds.

Calibration is an important part of the process and following remedial work, we recalibrate honing heads so that they hone the cylinder bores right first time. This has time saving advantage for the engine manufacturers and ensures that the honing head is ready for immediate deployment.

Beyond the standard support of specialised reconditioning, we are often asked to assist engine manufacturers with process improvement initiatives. We recently manufactured some new honing heads to replace a customer's worn out product and this brought a 40 percent tool life increase, not only saving refurbishment costs but also reducing production downtime for the customer.

Automotive engine reconditioning is a new growth area for Delapena and we have recently added valve guide honing mandrels to our portfolio, plus a new hone head drive adaptor. The valve honing adaptor is



precision-made and differs from other mandrel adaptors currently on the market, as it has been designed without any 'finger traps' to address the Health and Safety issues that currently exist with many products. They are also fitted with a modified standard mandrel, giving a cost saving of 60 percent.

For honing machines used to recondition cylinder blocks, we offer a range of super abrasive honing sticks. These fit with a modified standard mandrel to keep costs low and provide a cost-effective option for this work.

According to the Society of Motor Manufacturers and Traders (SMMT), automotive companies are now looking at ways to boost UK-made components going into the cars built here, which is good news for British engineering that services this market. The Automotive Council estimates that around £4 bn of business could be returned to the UK by boosting domestic parts makers and in a recent report, PA Consulting recommended "Increased investment in UK parts procurement, production and supply chains to offset increased import costs, aiming to reduce the impact of tariffs imposed on component parts moving between the UK and EU".

We are well placed to capitalise on this macro-economic influence and expect demand for honing and all its associated products and services to continue to grow.

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