

Honing hard materials

In recent years, ceramics, chrome and carbide have provided a challenge for the honing process, due to the increased surface hardness properties of the newer grade materials. To address these harder materials, Delapena Group created Delapena Sintered Products Ltd to develop a new range of super abrasive bonds with great success.

Honing of hard chrome

A customer of Delapena was using a Delapena Powerhone to resize the chrome plating in a cylinder using a conventional silicon carbide abrasive. The downside to using conventional abrasives is that they wear quickly and the honing machine needs constant adjustment to maintain size. The customer's honing process averaged 60 minutes depending on the depth of the chrome layer. A new chrome bond developed by Delapena Sintered Products was then introduced and reduced this honing process to 10 minutes. Another advantage that the customer gained was that traditionally the worn chrome plating was stripped overnight in chemical tanks. Using a rougher chrome bond abrasive allowed the cylinder to be honed prior to the plating process in a little under 20 minutes, negating the need to chemically strip the cylinder.

Process	Cycle time	Advantages / Disadvantages
Honing (Powerhone)	60 minutes	Higher production costs
Honing (Powerhone)	10 minutes	Environmental – no chemical stripping required

Ceramic bore honing

Advanced ceramics are a special type of ceramics used mainly for electrical, electronic, optical, and magnetic applications. The industry has shown significant growth in recent years and quite often adopts the internal grinding process to machine the bores. Delapena was recently set the challenge of honing 2 mm out of a ceramic component with a target time of no more than 60 minutes. Delapena Sintered Products created a new abrasive bond that completed the honing cycle in 55 minutes against an internal grinding process cycle time of four hours.

Process	Cycle time	Advantages / Disadvantages
Internal grinding	4 hours	Operator required to redress wheel
Honing (EAS Speedhone)	55 minutes	Machine left unmanned

Cylinder bore honing

Delapena has been involved with OEM Engine manufacturers for over 50 years and has seen many changes to the cylinder block



honing process with the phasing out of conventional abrasives, introduction of diamond bonded abrasives, and, more recently, the need to hone with soluble coolant rather than the traditional neat mineral oils.

Using a soluble coolant without the advantage of pressure additives found in mineral oils requires a different type of super abrasive bond. These bonds can now be found at Delapena Sintered Products Ltd along with the traditional Plateau honing abrasive variants.

Combining the introduction of the new abrasives together with a honing tool service package for the OEM Engine manufacturers has led to the Delapena group increasing the sales in this value stream by 300 percent.

As well as servicing engine OEM's, Delapena can also provide slotted diamonds for the engine refurbishment industry to hone the traditional cast iron bores as well as Nikasil bores. These slotted hones are readily available on the shelf and competitively priced.

Lower cost super abrasives

To address the high cost of super abrasives, Delapena was keen to investigate all the sintering technologies available with the intention of driving manufacturing costs down, making it an affordable option compared to conventional abrasives. This has been achieved by investing in the best technology available as well as optimising the process flow in manufacturing using best practice lean principles.

To penetrate the market with new abrasives sales, Delapena Sintered Products had to achieve quality, delivery, price and service targets. Delapena has announced that it has achieved all the aforementioned targets with customers saving an average of 30 percent against competitors' products.

Celebrating its 90th year, managing director, Martin Elliott is in no doubt about the company's strength: "Our success is built entirely on the efforts of the team. That begins with our talented workforce and extends to our strategic partners and 25 distributors and agents around the world. They should all be proud of what we have achieved together and excited about what is to come."

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