New EDG machine for PCD toolmaking

Engis (UK) has launched of the new Vectaspark electro discharge grinding (EDG) machine, designed for use in polycrystalline diamond (PCD) toolmaking applications. The Vectaspark incorporates many new ideas that have been combined to produce an affordable machine, which is quick and simple to programme. Particular attention has been paid to quick set-up opportunities and the machine can accept most tool types. A fully automated rotary axis can index or machine in the rotary motion, making it ideal for PCD reamer pad production. Report by **Shelagh Morgan**.

Fig 1 The new Vectaspark

PCD tools produce better surface finish, cut faster and last longer than their traditional counterparts. This extended tool-life, which can be 100 times that of tungsten carbide, reduces tool change and set-up times, increasing over-all machine-tool usage. It is no surprise, therefore, that the use of PCD tooling is growing, as customers demand ever more efficient tools.

However, the economic benefits of using PCD tooling depend on the accurate machining of its cutting edge – it is this diamond/bond matrix edge which dictates the quality of the PCD tool – and it is the quality of this edge that the Vectaspark has been designed to optimize. The Vectaspark's generator design is extremely 'friendly' to the PCD material, allowing the production of particularly sharp cutting edges.

There have traditionally been four methods of finishing PCD tooling – mechanical diamond grinding, RAM-type EDM, wire EDM and optical profile grinding, each of which suffers from significant disadvantages. The optimum solution, which is fast and provides excellent surface finish, is EDG.

However, until now, EDG machines have tended to be specialized, complex and costly. The new Vectaspark, however, offers a versatile, reasonably priced EDG system claimed to provide the best edge quality results available.

The Vectaspark system consists of two main parts – the operational work station with integral oil pump system and the control console. The machine head itself has adjustable height and angle settings, offering the greatest range of machine operations and is fitted with a hood which provides good visibility to operators. To maintain its compact footprint, the oil filtration system is positioned directly under the workstation, ensuring a steady flow of high flashpoint dielectric oil through the system during operation.

The control console is home to the majority of the electrical components, including the computer, the spark generator and the touch screen operation system.

The custom-designed software uses real-time positional feed back displays for job set up and as a guide during machine operation, while operator input is primarily through a touch screen monitor, with a remote hand-pad acting as an optional input method for jog functions and job positioning.

A major additional benefit of the Vectaspark is the opportunity to retrofit generators and controls to existing EDG machine designs, including Microspark EDG machines, which prove particularly suitable for conversion. A Microspark conversion can provide up to 40% improvement in stock removal and enhanced edge quality. Exchange machines are also available. ◆

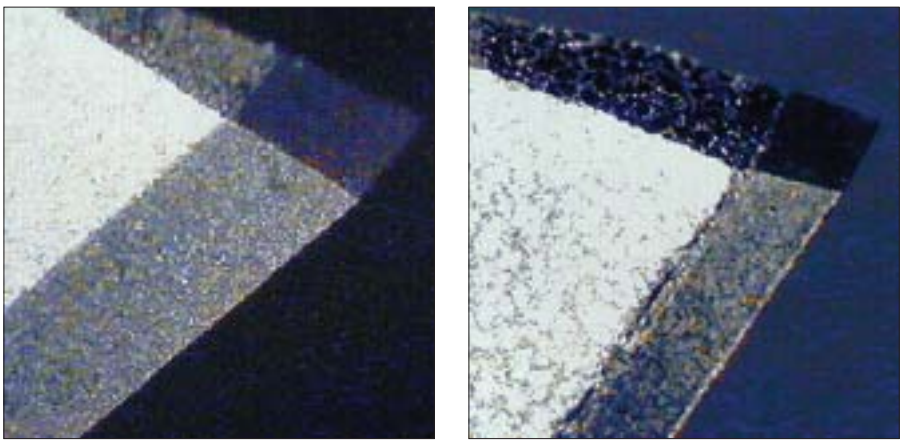

Fig 2 Magnified image of Vectaspark cutting edge finish (left) compared to that obtained by an alternative machine

Engis (UK) Ltd,
9 Centenary Business Park, Station Road,
Henley-on-Thames, Oxon, RG9 1DS, UK.
Tel: +44 1491.411117
email: sales@engis.uk.com www.engis.com