Pulse finishing – high-speed finishing of sensitive and complex workpieces

As one of the leading and technologically most creative suppliers of surface finishing systems on the European market, OTEC Präzisionsfinish GmbH, has developed a further component for its proven stream finishing system which owes is success to the excellent results obtained. This new component does full justice to the most demanding requirements in matters of deburring. "Pulse finishing" is the name that has been given to this latest technical achievement which enables parts for extremely sensitive applications such as hydraulics and complex tools like thread cutting taps as well as fuel injection systems to be finished with absolute precision.

The principle behind this new concept, which enables up to five workpieces to receive a perfect surface finish at the same time in less than a minute, harnesses the power of finely tuned relative movement between abrasive media and workpiece. The workpiece is taken up, for example by a gripper, and immersed in a media stream (see Fig. 1), where it is accelerated to a speed of up to 2,000 rpm in the shortest possible time, then immediately decelerated before a further phase of acceleration commences (hence the name 'pulse finishing').

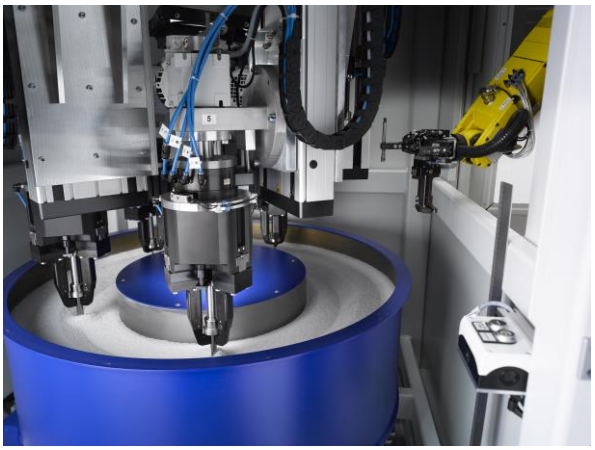

Fig. 1

Fig. 2

Assisted by the inertia of the media – i.e. as a result of the differing speeds of the two elements – the desired grinding effect gives high-precision deburring even in places previously inaccessible to mass finishing processes, such as the transverse bore holes of hydraulic components:

Fig. 3: Workpiece

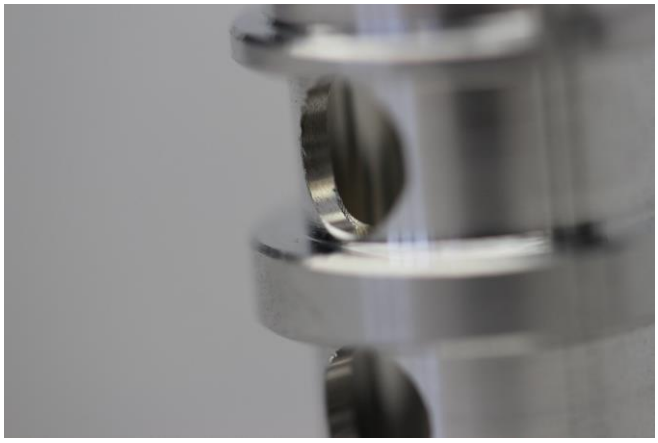

Fig. 4: Initial burring in transverse bore hole

Fig. 5: After one minute without pulsation

Fig. 6: After one minute with pulsation

With the new pulse finishing system, OTEC has once again demonstrated its innovative strength and technical creativity by not merely responding quickly to market demands but by anticipating them and acting ahead of time.

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The company:

OTEC is a medium-sized manufacturer of drag finishing, disc finishing and stream finishing machines. Founded by Helmut Gegenheimer in 1996, the company has steadily established itself on the market by developing innovative new machine concepts and numerous patented processes. Initially this was in the jewellery industry, then increasingly in the tool making, pharmaceutical and automobile industries as well as in the area of medical devices and CNC machining. The key to success has always been the development of new, better solutions which have proven to be superior to previous surface finishing processes. Today, OTEC is the technological leader in many markets and maintains a network of branches worldwide.

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