

Press Release 13/08

MEASURING CRANKSHAFT CUTTERS: AS FAST AS NEVER BEFORE

Get the cutting-edge technology of presetting!

At first sight or for a novice, crankshaft cutters (fig.1) are nothing but big-heavy disk milling cutters with many inserts. Experts know that crankshaft cutters must fulfil extraordinary demands concerning radial and axial run-out.

With costs easily amounting to tens of thousands of euros, crankshaft cutters must compensate their investment by delivering the correct results and most of all achieve the expected tool life. This can only be done if crankshaft cutters are used on a machine in a 100-percent shape: preset and measured.

But how much time can you spend on presetting tools? The easiest, but most risky way to do this is to blindly trust the promises of your tool supplier, the quality of the indexable inserts or the operator. You know that this will not work and moreover, can you actually run such a high risk? The simplest way of inspecting and measuring crankshaft cutters is using a granite plate and dial gauge. This antediluvian procedure is cheap but will not at all correspond to today's demands of sophisticated crankshaft cutters ending up being the most expensive solution. The "measuring" procedure is a time-consuming and in no way documentable estimate, depending on the experience of the operator.

Presetting and measuring tools with modern image processing technology sometimes measure crankshaft cutters automatically and operator-independent. But even among these systems there is a wide variety of technologies. Run-of-the-mill machines show huge problems with visualizing the cutting edge of multi-insert tools which come with a low pitch. The result is un-focussed imaging of the precedent and the following edge, overlapping the cutting edge of the insert just being measured. Another issue is that aligning and focussing these heavy multi-insert tools is a complex task most measuring systems cannot come to terms with. So what is the answer to this one? No measuring? No way!

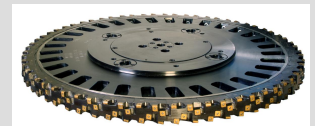


Figure 1

ZOLLER, the world's leading producer of presetting and measuring tools for high-precision tools has been offering »gemini« (fig. 2) or »venturion 800« (fig. 3) as a solution for crankshaft cutters or turning/turn broaching tools for more than ten years. Positioning, focussing and measuring crankshaft cutters always has been done automatically with ZOLLER machines. When developing the new control electronics and software »pilot 3.0« (fig. 4), which is already available on the market ZOLLER, had exactly these applications in mind and now offers special procedures for focussing and measuring multi-insert tools, in particular crankshaft cutters. With a ZOLLER machine, your crankshaft cutter is clamped in the measuring machine, the data file for the current tool is loaded and measuring starts.

The results will strike you as unbelievable:

Example: 120 cutting edges (single row of edges) measured in 70 seconds in micrometer-precision

Measuring parameters:

- Longitudinal value of each edge
- Transversal value of each edge
- Cutting radius of each edge
- Cutting radius of each edge
- Radial run-out
- Axial run-out

The measuring results are graphically visualized on screen and in the software »pilot 3.0« as listings or diagrams (fig. 5). After this automatic measuring procedure the operator can choose any edge out of tolerance to be preset. When selecting a particular edge, this is automatically positioned into the camera's field of vision, allowing the indexable insert to be cleaned, changed, rotated or preset again.

This procedure as used with ZOLLER machines to preset and measure crankshaft cutters also applies for all the various types of precision tools. With its newly developed control system and electronics »pilot 3.0«, the measuring specialist from Germany offers a huge range of innovations, providing the operator with unique, sophisticated, and extremely efficient solutions!

Christian Pfau
Head of Sales with E. Zoller GmbH & Co. KG



Figure 2



Figure 3



Figure 4

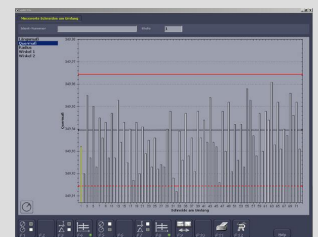


Figure 5