

MODELING OF THE PROCESS OF DIAMOND BURNISHING IN THE TOOL-WORKING SYSTEM

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In recent years, manufacturing process that provides with low cost and high speed as well as accuracy and precision has been increasingly required. The processing techniques, which reduce the environmental load such as grinding sludge and lubricant are also desired in the industry. Today, surface burnishing by a diamond tool is the focus of attention from the industrial field. The burnishing process is one of micro plastic working methods, i.e. a special diamond point tool compresses the metal surface to obtain a mirror-like surface finish as well as to improve its surface hardness like shot-peening.

The burnishing process is one of micro plastic working methods. A special diamond point tool compresses the metal surface to obtain a mirror-like surface finish like. Advantage of Burnishing process can be summarized as follows:

- Quick change from a rough surface to a mirror-like surface of Rz 0.1-0.8 μm .
- Hardening effect and increase of wear resistance.
- Non-machining chip.
- No additional equipment is required except for a NC lathe.

However the adequate machining conditions to achieve proper surface finish have not been clarified. In order to evaluate the relationship between burnishing conditions and surface texture, practical burnishing tests were carried out under several machining conditions considering burnishing load and feed rate using an finite element method.

References:

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