Influence of Cutting Tool Overhangs at Machining of Hardened Steels

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This article builds on existing results of testing hardened steel bearing ring machining. Grinding technology is preferably used for this area as a standard. Turning with cubic boron nitride has been used as an alternative machining technology. Results indicate that in mass production the values accuracy of degree IT 4 can be achieved. Arithmetic mean deviation of the profile is then in the range of Ra = 0.2 - 0.4 µm. During testing several kinds of cubic boron nitride material were used. The material that showed best results was chosen for further experiments. Subsequently it was tested under different cutting conditions on two types of machine tools. It was tested cutting in smaller range of depth of cut and wider feed values. The resultig feedrate and cutting depth which correspond to best result of arithmetic mean deviation of the profile Ra were selected from those tests. Subsequently, the testing was carried out at various cutting speeds and particularly at two different sizes of tool overhangs.

Keywords: hardened steel, CBN, cutting inserts, cutting speed

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