

Experimental Verification of the Relation between the Surface Roughness and the Type of Used Tool Coating

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This contribution deals with the need of continual experimental study of the phenomenon that relates to the increasing demands to the quality of engineering production and also to the productivity and economy of the production. Experimental part is focused to the influence of the tool coatings, which significantly affect the roughness of the material machined with the use of the cutting plates made of high-speed cutting steel. The plates were used in the series of the experiments, what allows us to create the models of real situations in the area of concrete manufacturing technology and subsequently to analyze them. To the measured and evaluated parameters belonged: the roughness of the machined material after the use of coated and uncoated tools. Planing technology is realized until there are major visible changes in cross roughness of the machined material, what means the increasing of Rz values. This is caused by the fact, that the coating was removed from the cutting edge, what is considered as the blunting of the tool. Measured values are statistically expressed in the form of the graphs.

Keywords: planing, tool coating, roughness, cutting tool, high-speed steel

References

- [1] BOBROV, V., F., et all. (1967). *Razvitije nauki o rezanii metallov*. Moskva: Mašinstrojenije, 1967, 414 s.
- [2] DOSTÁL, F. (1967). *Drsnost obrobených ploch*. Praha : SNTL, 1962. 118 s. Knižnice strojírenské výroby, sv. 70. ISBN -
- [3] GAZDA, J. (2004). *Teorie obrábění. Průvodce tvorbou třísky*. Liberec: TU, 2004, 112 s., ISBN 80-7083-789-6
- [4] HUMÁR, A.: *Materiály pro řezné nástroje*. Praha 2008. ISBN 978-80-254-2250-2
- [5] CHEN, T. , GUO, X. , YANG, H.: *Research on the surface roughness predictive model of austempered ductile iron based on genetic algorithm*. Advanced Materials Research, ISSN: 10226680 ISBN: 978-303785396-2
- [6] MÁDL, J., KVASNIČKA, J. (1998). *Optimalizace obráběcího procesu*. Praha: Vydavatelství ČVUT, 1998, 168 s.
- [7] HATALA, M., DUPLÁK, J., ORLOVSKÝ, I. (2011). *Comprehensive identification of cutting ceramic durability in machining process of C60 / - 2011. - 1 elektronický optický disk (CD-ROM)*. In: Progresivní metody ve výrobních technologiích : sborník anotací příspěvků sympozia : mezinárodní vědecké sympozium : Perná, 3.11.-5.11.2011. - Ostrava : VŠB-TU, 2011 P. 1-5. - ISBN 978-80-248-2502-1
- [8] MONKOVA, K., MONKA, P., VEGNEROVA, P., et all., (2011). *Factor analysis of the abrasive waterjet factors affecting the surface roughness of titanium*. TEHNICKI VJESNIK-TECHNICAL GAZETTE, ISSN 1330-3651, Volume: 18, Issue: 1 Pages: 73-77 Published: MAR 2011
- [9] TECHNICKÁ REDAKCE SANDVIK COROMANT. *Průručka obrábění*. Překlad M. Kudela. 1. vyd. Sandvik CZ., 1997. ISBN 91-972299-4-6.
- [10] WRIGHT, P, K. (1977). *Applications of the Experimental Methods Used to Determine Temperature Gradients*. In: Cutting Tools. Austrial Conference Manufacturing Engineering. Adelaide, 1977, Barton, 1977, pp. 145-149.

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