

## Influences of Holders Speed on the Cutting Edge during Drag Finishing

Ondřej Hronek, Miroslav Zetek, Tomáš Bakša, Pavel Adámek

Laboratory of Experimental Machining, Regional Technological Institute, Univerzitní 8, 306 14 Pilsen, Czech Republic,

E-mail: hroneko@rti.zcu.cz, mzetek@rti.zcu.cz, baksa@rti.zcu.cz, adamek@rti.zcu.cz

The article deals with the influence of the holders speed on the final radius size of the cutting edge. The reason why is investigated radius of cutting edge is that its size affects important parameters in machining process. For example, these parameters are geometrical accuracy of machined components, cutting tool life and stability of machining. Furthermore, it is forces on the cutting edge and thermal influence on the tool. In the experiment five variants are used, prepared by drag finishing. The main variable parameter is holder speed. The aim is to confirm or refute the input idea. This idea is based on the theory, that the higher holders speed will increase the intensity of drag finishing process. The results are measured and analysed on microscope IFM G4.

**Keywords:** Microgeometry of the cutting edge, Drag finishing, K factor, Surface quality

### Acknowledgement

*The present contribution has been prepared under project LO1502 'Development of the Regional Technological Institute' under the auspices of the National Sustainability Programme I of the Ministry of Education of the Czech Republic aimed at supporting research, experimental development and innovation.*

### References

- [1] ČESÁKOVÁ, I., ZETEK, M. DIAGNOSTIKA STAVU ŘEZNÉHO BŘITU PO MIKROÚPRAVÁCH. In Transfer inovací. Košice: Technická univerzita v Košiciach, 2011. s. 74-78., ISSN: 1337-7094
- [2] ČILLIKOVÁ, M., MIČÚCH, M., NESLUŠAN, M., MIČIETOVÁ, A. (2013). Non-destructive micromagnetic evaluation of surface damage after grinding. In: *Manufacturing Technology*, Vol. 13, No. 2, ISSN 1213 – 2489
- [3] KŘÍŽ, A., KOLAŘÍK, K., JANOUŠEK, A., PALÁN, J. (2015). Integrita povrchu ostří nástroje ze slinutého karbidu. *Strojírenská technologie – Plzeň 2015 Sborník příspěvků*. s.107-113. ISBN 978-80-261-0304-2
- [4] MADL, J., RAZEK, V., KOUTNY, V., KAFKA, J. (2013). Surface Integrity in Notches Machining. In: *Manufacturing Technology*, Vol. 13, No. 2, ISSN 1213 – 2489
- [5] CSELLE, T., CODDET, O., GALAMAND, C., HOLUBAR, P., JÍLEK, M., JÍLEK, J., LUEMKEMANN, A., MORSTEIN, M. TripleCoatings® - A New Generation of PVD-Coatings for Cutting Tools, In *Vrstvy a povlaky 2008*. Trenčín: Digital Graphic, 2008. S. 9-14. ISBN 978-80-969310- 7-1.
- [6] BIERMANN D, BASCHIN A. Influence of cutting edge geometry and cutting edge radius on the stability of micromilling processes. In: *Production Engineering*, 3, Springer Verlag; 2009, p. 375-380
- [7] DENKENA B., LUCAS A., BASSETT, E. Effects of the cutting edge microgeometry on tool wear and its thermomechanical load. In: *CIRP Annals – Manufacturing Technology*, 60(1); 2011, p. 73-76
- [8] KUNDRAK, J., FELHO, C. (2016). 3D Roughness Parameters of Surfaces Face Milled by Special Tools. In: *Manufacturing Technology*, Vol. 16, No. 3, ISSN 1213 – 2489
- [9] BOUZAKIS, K.-D., et al. Effect of dry micro-blasting on PVD-film properties, cutting edge geometry and tool life in milling. *Surface & Coatings Technology*. 2009, 204, 6-7, s. 1081-1086
- [10] DENKENA, B., BIERMANN, D. Cutting edge geometries. *CIRP Annals – Manufacturing Technology*, 2014; 63:631-653.
- [11] DENKENA, B., SPENGLER, C. Influence of Different Grinding Processes on Surface and Subsurface Characteristics of Carbide Tools. *Key Engineering Materials*, 2004; 257–258:195–200

**Paper number:** M2016172

Copyright © 2016. Published by Manufacturing Technology. All rights reserved.