

Grinding of Titanium Alloy Ti6Al4V with Silicon Carbide Grinding Wheel

Radek Lattner¹, František Holešovský¹, Martin Novák¹, Marek Vrabel²

¹Department of Technologies and Material Engineering, Faculty of Production Technologies and Management, J. E. Purkyně University in Ústí nad Labem, Pasteurova 3334/7, 400 96 Ústí nad Labem. E-mail: lattnerr@fvtm.ujep.cz, holesovsky@fvtm.ujep.cz, novak@fvtm.ujep.cz.

²Faculty of Mechanical Engineering, Technical University of Košice, Letná 9, 042 00 Košice. E-mail: marek.vrabel@tuke.sk

Grinding is one of the technologies for surface finishing of large scale of material. This paper deals with grinding of titanium alloy Ti6Al4V with silicon carbide grinding wheel. Ti6Al4V is the most widely used titanium alloy. Its utilization can be found in medical, aerospace, chemical and other industries. This experiment deals with evaluating of surface roughness after grinding. The roughness parameters (Ra, Rz) were measured on each specimen ten times. Also cutting forces were measured while grinding each specimen. All these measured values were evaluated and presented in graphs.

Keywords: grinding, surface integrity, titanium alloy, silicon carbide

References

- [1] GALANIS, N.I., MARKOPOULOS, A.P., GIANNAKOPOULOS, I.D., MANOLAKOS, D.E. (2013). Manufacturing of Femoral Heads from Ti-6Al-4V Alloy with High Speed Machining: 3D Finite Element Modelling Experimental Validation. In: *Manufacturing technology*. Vol. 13, No. 4, p. 437-444, ISSN: 1213-2489
- [2] MACEK, K. (1991). *Kovové materiály*. Praha, ČVUT, 157 s.
- [3] MASLOV, J. N. (1979). *Teorie broušení kovů*. Praha. SNTL. 248 s.
- [4] MACEK, K. et al. (2002). *Nauka o materiálu*. Praha, ČVUT, 209 s.
- [5] JANOVEC, J., CEJP, J., STEIDL, J. (2001). *Prespektivní materiály*. Praha, ČVUT, 135 s.
- [6] VASILKO, K. (2015). Metal of the Future – Titanium and the problems of its Manufacturing. In: *Journal of Production Engineering*, Vol. 18, Nr. 1, ISSN 1821-4932.
- [7] LATTNER, R., HOLEŠOVSKÝ, F., KAREL, T., LATTNER, M. (2015). Abrasive Machining of Ti6Al4V Alloy, In: *Manufacturing technology*, Vol. 15, September, No. 4, ISSN 1213-2489.
- [8] NOVAK, M., KASUGA, H., OHMORI, H. (2013). Differences at the Surface Roughness by the ELID and Grinding Technology, In: *Manufacturing Technology*, Vol. 13, No. 2, ISSN 1213-2489.
- [9] KUNDRAK, J., FEDOROVICH, V., MARKOPOULOS, A. P., PYZHOV, I., KRYUKOVA, N. (2014). Improvements of the Dressing Process of Super Abrasive Diamond Grinding Wheels, In: *Manufacturing Technology*, Vol. 14, December, No. 4, ISSN 1213-2489.

Paper number: M201633

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