

Identification of Drilling of Biocompatible Materials Based on Titanium

Dana Stancekova¹, Jan Semcer¹, Anna Rudawska², Robert Cep³

¹University of Zilina, Faculty of Mechanical Engineering, Univerzitna 1, 010 26, Zilina, Slovak Republic
dana.stancekova@fstroj.uniza.sk, jan.semcer@fstroj.uniza.sk,

²Lublin University of Technology, Faculty of Mechanical Engineering, ul. Nadbystrzycka 36, 20-618 Lublin, Poland
a.rudawska@pollub.pl

³VSB -TU Ostrava, Faculty of Mechanical Engineering, 17. listopadu 15/2172, 708 33 Ostrava, Czech Republic
robert.cep@vsb.cz

At present commonly used conventional materials are substituted by materials of better mechanical qualities. For example highly alloyed steels with chromium, cobalt and nickel alloys, titanium and titanium alloys belong to this group. Titanium and its alloys also belong to the group of hardly machinable materials thanks to its good chemical and physical properties, such as high strength, high corrosion resistance, low density, deformation resistance at high temperature and at the same time low thermal conductivity that unfavourably affects the process of machining. Despite its more complicated machining, titanium together with its alloys are widely used in the aerospace, aviation and automotive industries and, last but not least, in biomedicine. Biologically compatible materials are used for production of implants in medicine from commercially pure titanium TiGr2, TiGr5, nanostructured commercially pure titanium nTi and titanium alloys TiNbTa. As there is a need to produce still smaller and more complex implant with extraordinary accuracies, there arises a strong necessity to understand the process of their machining. We have already published experimentally gained knowledge on turning and milling of stated materials. In this paper we aim to inform about machinability of these materials in drilling.

Keywords: titanium, a biocompatible material, drilling, torque

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