PARAMETER CHANGES WHICH CHARACTERIZE THE WEAR OF THE CUTTING TOOL IN THE MILLING PROCESS OF ASPEN WOOD

Andis ĀBELE∗
Mg.sc.eng. – Latvia University of Agriculture, Department of Wood Processing
Adresa/Address: Dobeles street 41, Jelgava, Latvia, LV – 3001
Tel.: +371 26266825; Fax: +371 63010609
E-mail: andis.abele@llu.lv

Ulvis MIONČINSKIS
Mg.sc.eng. – Latvia University of Agriculture, Department of Wood Processing
Adresa/Address: Dobeles street 41, Jelgava, Latvia, LV – 3001
Tel.: +371 26266825; Fax: +371 63010609
E-mail: mioncinski@inbox.lv

Abstract:
The aim of the paper is to determine changes of parameters (cutting power, roughness of wooden surface and rounding of cutting edge) which characterize the wear of the cutting tool in the milling process of aspen wood (Populus tremula), depending on the rake angle of the cutting tool.

The milling process was performed by means of a computer numerical control milling machine and two cutterheads with a rake angle of the fixed cutter knife adjusted at 10°, 15°, 20° and 30°. The cutters made of high speed steel and highly alloyed tool steel. After reaching the definite length of the cutting trajectory, the cutting power and the roughness of the processed wood surface were measured, as well as replicates of the cutting edge, by pressing it in lead sheet.

By milling aspen wood with highly alloyed tool steel cutter knives at rake angle of cutter 10°, the roughness of the processed wooden surface began increasing after 44 000m length of cutting trajectory, which corresponds to a cutting time of 15 hours.

Key words: wear of cutter; surface roughness; cutting power; milling; aspen wood; high speed steel; alloyed tool steel.

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∗ Autor corespondent / Author to whom all correspondence should be addressed