

Economic Aspects of Rough Turning of Wide Grooves Based on Surface Roughness Measurement*

Marek KOŁODZIEJ

Wrocław University of Science and Technology, Faculty of Mechanical Engineering, ul. Łukasiewicza 5,
50-371 Wrocław, Poland

Correspondence should be addressed to: Marek KOŁODZIEJ, marek.kolodziej@pwr.edu.pl

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Abstract

The purpose of this article is to present the results of the analysis of the surface roughness parameters for different grooving strategies in S355J2 steel. The analysis was carried out based on basic and additional roughness parameter values, which allow for a more comprehensive assessment of the functional features of the measured surfaces. The results show that the surface structure of the machined surfaces is relatively homogeneous for the tested material. The negative skewness coefficient (S_{sk}) was obtained for the deep and dynamic methods, indicating significantly greater friction in relation to the trochoidal strategy. The smallest fractal dimension was obtained for the trochoidal strategy, which suggests the highest stability of the machining process. The tool utilization efficiency in the depth strategy was reduced by as much as 40%, and the tool cost per product series decreased from €2.75 per tool in depth machining to €1.65 in trochoidal machining.

Keywords: tool costs, turning, grooving, surface roughness

