INFLUENCE OF CUTTING PARAMETERS ON THE ROUGHNESS OF MACHINED SURFACES

Virgil Gabriel TEODOR [1], Răzvan Sebastian CRĂCIUN [1],
Aura Cătălina COTÎRLEAŢĂ [1]

[1] „Dunărea de Jos" University of Galaţi, Faculty of Engineering,
Department of Manufacturing Engineering
email: razvan.craciun@ugal.ro

ABSTRACT

Aluminum-based alloys are increasingly used in the aeronautical, automotive, defense, etc. industries. This has led to the development of research on the machinability of these types of materials. Although aluminum is not considered to be a material characterized by good machinability, there are among its alloys some that stand out for this quality. This is the case of duralumin 2024 T351, which is an alloy characterized by good mechanical strength, relatively high hardness and corrosion resistance. These characteristics, combined with a low density of the alloy, cause the material to be widely used in the aeronautical, automotive and defense industries. Among the methods of processing parts made from 2024 T351, machining is also used. One of the indicators of the quality of this type of processing is the roughness of the chipped surface. In this paper we aim to identify which of the parameters of the machining process has a more important influence on the roughness obtained.

KEYWORDS: cutting, surface roughness, ANOVA

REFERENCES

[1] Crăciun, R.S., Teodor, V.G., Baroiu, N., Păunoiu, V., Moroşanu, G.A., *Study of Cutting Forces in Drilling of Aluminium Alloy 2024-T351*, Machines 2024, 12, https://doi.org/10.3390/machines12120937;

[2] Susac, F., Frumuşanu, G.R., *Preliminary Investigation on the Effect of Cutting Parameters on Surface Roughness and Flatness in Dry Milling of PMMA*, International Journal of Modern Manufacturing Technologies, vol. XIV, No. 2, 2022, https://doi.org/10.54684/ijmmt.2022.14.2.251;

[3] ****, *Quick guide to surface roughness measurement: Reference guide for laboratory and workshop*, Mitutoyo Am. Corp. 1 (2010) 1-8, http://www.mitutoyo.com/wp;

[4] Teodor, V.G., *Tehnologia fabricării produselor (Technology of product manufacturing)*, Galaţi University Press, 2003, ISBN 978-606-696-277-3;

[5] Baroiu, N., Costin, A.G., Teodor, V.G., Nedelcu, D., Tabacaru, V., *Prediction of Surface Roughness in Drilling of Polymers Using a Geometrical Model and Artificial Neural Networks*, Mater. Plast., 57 (3), 2020, 160-173, https://doi.org/10.37358/MP.20.3.5390

[6] Susac, F., Tăbăcaru, V., Teodor, V.G., Baroiu, N., *Effect of Cutting Parameters on the Hole Quality in Dry Drilling of Some Thermoplastic Polymers*, Mater. Plast., 56, 1, 2019, 245-251;

[7] ****, https://www.theworldmaterial.com/2024-aluminum-alloy/;

[8] Fisher, R.A., *Statistical Methods for Research Workers*, Oliver & Boyd (Edinburgh), 1925;

[9] ****, Matlab. Available online: https://www.mathworks.com/products/matlab.html.