

MODEL OF GENERALIZED MACHINE-TOOL

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Rezumat. *Lucrarea de față prezintă un concept revoluționar și modern în care calculatorul poate modela o mașină-unealtă, determinând forma suprafețelor pieselor prelucrate pe aceasta cu o precizie mai mică de $0.01\mu\text{m}$. Acest concept a fost verificat în numeroase cazuri: prelucrarea roților dințate cilindrice cu freză melc, prelucrarea roților melcate cu determinarea liniilor de contact dintre melc și roata melcată, prelucrarea melcilor de la pompa de noroi; mașina de rectificat fără centre, unele aspecte ale prelucrării de finisare a roților dințate cilindrice prin șeveruire etc. Totodată, cu ajutorul lui se poate determina un model de prelucrare a pieselor în condiții de imprecizii reale ale mașinii și/sau de vibrații.*

Abstract. *This paper presents a revolutionary and modern concept according to whom the computer can mold and shape a machine tool, generating surfaces of the machined parts with an accuracy of less than $0.01\mu\text{m}$. This concept has been verified in many cases as: machining of cylindrical spur gears; machined worm wheel; parallel type worm manufacturing of solids handling pump; centerless grinding machine, some aspects of finishing cylindrical gears by shaving cutter, and so on. Also with the help of this concept can be determined the machining of the parts in conditions of real inaccuracy of the machine and / or vibration.*

Keywords: machine tool, surfaces, machining, model

1. Introduction

Surface treatment of the complex parts such as gears flanks led to the concept of generalized machine-tool. Machining with the gear hob is considered as among the most productive and economical methods [1, 2, 3]. Although technological process that is extended in production has still many aspects that can be improved to ensure increased gear performance in terms of accuracy and behavior in operation. In practice, calculation methods and adjustment of process parameters of technological system have limitations, especially in determining the size of processing errors and their classification in step precision prescribed.

This article presents theoretical aspects of generalized machine-tool [1, 4, 5]. According to the concept, it have been defined: the shape and position of the cutting edges and the cutting edges of the tool, the movements of the machine elements and assemblies, the timing of the movements, the part of the topographic surface and generating conditions.

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