MODEL OF GENERALIZED MACHINE TOOL

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Rezumat. *Lucrarea de faţă prezintă un concept revoluţionar şi modern în care calculatorul poate modela o maşină-unealtă determinând şi forma suprafeţelor pieselor prelucrate pe aceasta cu o precizie mai mică de 0.01µm. Acest concept a fost verificat în numeroase cazuri: prelucrarea roţilor dinţate cilindrice cu freză melc, prelucrarea roţilor melcate cu determinarea liniilor de contact dintre melc şi roata melcată, prelucrarea melcilor de la pompa de noroi; maşina de rectificat fără centre, unele aspecte ale prelucrării de finisare a roţilor dinţate cilindrice prin şeveruire etc.. Totodată, cu ajutorul lui se poate determina un model de prelucrare a pieselor în condiţii de imprecizie reale ale maşinii şi/sau de vibraţii.*

Abstract. *This paper presents a revolutionary and modern concept according to which the computer can mould and shape a machine tool, generating surfaces of the machined parts with an accuracy of less than 0.01µm. This concept has been verified in many cases such as: machining of cylindrical spur gears; machined worm wheel; parallel type worm manufacturing of solids handling pump; centreless 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

The surface treatment of the complex parts such as gears flanks led to the concept of generalized machine tool. Machining with the gear hob is regarded as among the most productive and economical methods [1,2,3]. Yet the 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 behaviour in operation. In practice, calculation methods and adjustment of process parameters of the technological system have limitations, especially in determining the size of processing errors and their classification in the step precision prescribed.

This article presents theoretical aspects of generalized machine tools [1,4,5]. According to the concept, they have been defined: the shape and position of the cutting edges and the cutting edges of the tool, the movements of the machine

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