

## METHODS AND PRINCIPLES OF OPTIMIZATION SPECIFIC TO THE DOMAIN OF EQUIPMENTS AND MANUFACTURING PROCESSES

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**Rezumat.** *Obiectivele fabricanților de produse industriale sunt orientate, în general, spre fabricarea produselor la nivele de calitate superioare, în timpi minimi și cu eficiență economică maximă. Îndeplinirea acestor obiective se poate realiza, în general, prin optimizarea parametrilor proceselor și echipamentelor tehnologice de fabricație. În scopul optimizării parametrilor proceselor și echipamentelor tehnologice de prelucrare este necesară aplicarea unei serii de metode și principii de optimizare care să permită identificarea și stabilirea dintr-o multitudine de alternative a celei mai bune soluții.*

**Abstract.** *The objectives of the industrial products manufacturers are generally oriented to manufacture high quality level products, in less time and with maximum economic efficiency. The achievement of these objectives can be realized, generally, by optimizing the processes and the technological manufacturing equipments parameters. In order to optimize these parameters it is necessary to apply series of optimization methods and principles that allow the identification and establishment of the best solution from a variety of alternatives.*

### 1. Introduction

Technological manufacturing processes within the framework of machine building are based on the interrelationship between the unfinished product and the tool, materialized, mainly, by the characteristic relative motion between the two components of the technological system, with an appropriate number and type of freedom degrees. These processes are mainly characterized by the following aspects: the dispersion of equipments and jobs in space, the discontinuity of the technological processes operations, the constructive and technological complexity of produced products, the production heterogeneity etc.

The presented aspects and features determine the following specific features of the technologic flux within the manufacturing processes of machine-building industry:

- a large amount of auxiliary operations (handlings, inter-operational transports, waiting's, storages, etc.) whose duration may overtake up to 70-80% from the manufacturing cycle length and their costs may amount up to 20-30% from the cost of production;