

Optimization of multi-tool machining processes with simultaneous action

Abstract

The optimization of machining parameters for machine tools using the criterion of maximum productivity rate is complex and, in many cases, an unresolved issue. The intensification of machining processes leads to changes in the productivity rate. In the case of multi-tool machining processes, engaging cutters simultaneously to define optimal machining parameters for the maximum productivity rate is an important problem. Such multi-tool processes are conducted in multi-spindle and multi-station machine tools, turret-type lathes, automated lines, etc. This paper is intended to formulate a mathematical model for the optimization of multi-tool cutting processes on machine tools based on the criterion of maximum productivity rate. The mathematical model of the new productivity rate equation (for machine tools with changes in cutting for the optimal multi-tooling operation with simultaneous action) is confirmed by practical test.

Keywords; Multi-tooling machining; Optimization; Productivity