Mathematical models for productivity and availability of automated lines

Abstract

The basic attributes of any industrial machine are productivity rate, quality of products, as well as the cost and flexibility of manufacturing systems. Attributes of productivity are related to the theory of reliability, let alone the theory of efficiency of machines. The main attribute of reliability with any industrial machine is availability, which is the integrated index of the machine's reliability. The availability of industrial machines with complex designs should be a constituent of equations on productivity rate. This paper develops analytical equations of productivity rate with the availability of automated lines as a function of structural, technical and technological parameters of industrial machines. The equations allow for the output of automated lines to be modelled and their structures to be defined according to the level of productivity and availability.

Keywords