STATISTICAL THEORY OF MANAGEMENT MANUFACTURING PROCESS

Pignasty O.M.
National Technical University "KPI"
Kharkov

The report formulated the theoretical basis for building a statistical model of process control [1]. According to the concept of statistical modeling of the macro parameters of the process is determined by the state of the objects of labor. Objects of labor are distributed along the production route. It is demonstrated that a sufficiently large number of items of work appear Speciality patterns characterize the state macro parameters of the process. The nature of these laws do not depend on the behavior microparameters of individual item of work..

To describe the behavior of the subject of work entered the phase space. Point in phase space determines the state of the subject of work at a given time. The processing of the transition from one process step to another property, characterizing the state of the object of labor, change continuously. In this case, the subject of work during the production cycle describes the trajectory in phase space, which is a set of points that define the state of the subject of work at a time. Using the technological model of the interaction of objects of labor with equipment recorded the kinetic equation for the items of work. The movement of each item of work in the phase space is described by the same dynamical equations (corresponding to the same technology), with different initial conditions. The distribution function of the states of the objects of labor is defined in such a way that its product with the volume element of the phase space gives the number of items of work in this volume element. We believe that the volume element has a finite size, large enough to contain the required for the statistical average over the specified element of the number of items of work, and at the same time quite small compared to the macroscopic dimensions of the phase space containing the phase trajectories of objects of labor. Macroscopic characteristics of the process are the moments of the distribution function of the objects of labor over the states. Conditions are obtained to ensure the asymptotic stability of the dynamic behavior of macro parameters of the process. Identified sufficient conditions for the solvability of operational control macroparameters process. Establish the conditions under which the problem of optimal control of a macro argument has a unique solution.

Literature:

1.Пигнастый О.М. Статистическая теория производственных систем. – Х.: Изд. ХНУ им.Каразина, 2007. – 388 с.