AUTOMATIC CONTROL SYSTEMS

Tashkoziyeva Zulfiya Eraliyevna
Fergana Polytechnic Institute, Fergana, Uzbekistan

ABSTRACT

Introducing students to the types of automatic control systems. A set of measures that implements the process in a certain sequence and without human intervention includes the automatic control of the technological process and the control of the zagotovka processing on metal cutting machines, the frequency of rotation of the spindle, the speed of the pivoting and daily movements of the support or table, or the position of the revolver head. These controlled quantities are represented by the control parameters of the process.

Keywords: Discrete, object, mixed system, model, command, perfolenta.

Automatic control systems are operated according to:
- according to the degree of centralization of management;
- depending on the type of influence on the object of management;
- according to the presence of reverse aloua;
- depending on the type of programmer.

According to the degree of centralization of management, they are divided into centralized, decentralized and mixed types. In a centralized system, a machine or an automatic line (object) is controlled from a command point. An example of this can be an automatic machine controlled by a camshaft or a control unit. In a decentralized system, the management of the facility does not have a central control. The working bodies of the machine (object) are controlled with the help of yul sensors. Connection or disconnection of the sensors is carried out by means of supports installed in the working bodies. An example of this is the control bodies of automatic machines.

A mixed system is a system made up of a combination of centralized and decentralized systems. According to the method of influencing the controlled object, control systems are divided into continuous and discrete-continuous types. An example of a continuous control system is a system controlled by connecting a camshaft. In this case, the balls on the distribution shaft continuously transmit the power to the support, which is the working body of the machine, with the help of lever mechanisms. In the discrete-continuous control system, the working body of the machine tool is controlled using pulse signals. An example of this system is control systems with a numerical program. They are divided into open and closed control systems according to the

presence of a reverse relationship between the object and the control body. In open control systems, the control system does not receive information about the parameters of the process (object) and does not affect its change. In the closed control system, the process (object) and the control body are connected with each other by inverse alloua, and the change of the control parameter in the given time is ensured. Such a system is also called an inverse aloua system.

Depending on the type of software, control systems are classified as follows:

a) controlled by the distribution shaft;

b) guided by supports;

c) guided by a template (copier);

g) numerically controlled (SDB).

Camshaft-driven systems are available with ball-and-socket transmission mechanism and commando device types. In the control system with the help of supports, the supports perform the function of a programmer and are installed on the working body. They affect the sensors of the automatic system. These systems are part of the open management system.

The standard (copier) control system is included in the tracking system. A template (copier) is considered a program carrier. In this case, the power of the working body of the machine tool is provided in accordance with the dimensions of the template profile.

Mechanical, hydraulic, electro-hydraulic, pneumo-hydraulic types of monitoring (copy-valve) system are widely used.

In the control system with a numerical program, the program is given in a numerical code. In this case, the magnitude of each force of the executive body of the machine (object) is given using numbers. Information is provided in programs (perforated tape, magnetic tape, compact (compact) cassettes). Discrete (continuous) movement of the executive body of a certain magnitude corresponds to the impulse of each unit of information. This control system is included in the discrete-continuous system.

Automated system complex. CAD system

We will have to carefully study the tasks and problems to be solved, various operations in the creation and production processes of new products. All these tasks taken together are called the product life cycle. Let's take a look at the life cycle of a partially improved product by Zeid as an example.

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