



DESIGN ISSUES OF AUTOMATION SYSTEMS AND THEIR FUNCTION

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Abstract: Modernization of existing enterprises of chemical, food and other branches of industry and creation of new ones envisages the implementation of large-scale works related to solving various issues of automation of production processes. Development of automation systems and implementation directly into production processes is a multi-stage process. It includes scientific research, design and assembly-adjustment works, as well as a set of activities that ensure reliable operation of automation systems during operation.

Key words: Automation, production, technological processes, Energy control and calculation automation systems, technological waste.

The issues to be solved in the automation of the production processes of modern production require experts to know the principles of the structure and operation of various automation devices, the methods of making different types and classes of automatic systems, as well as work in the field of automation of technological processes. also requires mastery of technical language. This means that a logically calculated and technically based system of automation of a technological process should be expressed in a language that is equally understandable for specialists who are engaged in the issues of installation, adjustment and use of automation systems. In this case, all specialists should have a unified understanding of the automation system being created with tools, implementation of given adjustment laws, methods of assembling tools and automation tools, transfer of impulse and command lines, and source lines. This is to understand in a word, for example, how installation workers can be achieved without the direct participation of installers in the process of developing or using the system. Such mutual understanding is provided by means of a specially developed technical document, which is called a technological process automation project.

Construction of new industrial facilities and reconstruction of existing enterprises is carried out on a project basis. The project consists of a complex of technical documentation, which includes notes that fundamentally justify the need for construction or reconstruction of the object, calculations and drawings necessary for the preparation of non-standard equipment, as well as for the implementation of



all types of construction, assembly and adjustment work. Depending on the complexity of the object under construction, the project will consist of certain parts. The project may have engineering - economic, technological, construction, plumbing, electrical, automatic parts. Controlling and automatic adjustment and management of technological processes, which is a part of the automation project, is carried out by the automation department (group) of the organization or technological design institute specialized in this field. This project includes control-measuring devices, adjusters, automation and signaling devices that ensure the rational operation of technological processes and safety in the operation of equipment, technical documents used in the object being designed. The basis for the implementation of the design is the order given by the organization that creates the technological part of the project and/or the customer. Sometimes the automation project organization is also involved in the creation of the task. Design tasks include:

a) the composition of the object being designed, a brief description of the technological process, the characteristics of devices and equipment;

b) the result of controlled and adjusted quantities, indicating the description of the environment;

c) errors allowed in control and correction and functional signs of devices (display, recording, integration, signaling, etc.). The design of control, automatic adjustment and control systems can be carried out according to special instructions. In the design of automation systems of technological processes using computers, as well as in the automation of objects that have not yet been mastered, or with very complex technological production, or in the automation of objects where new equipment is used, scientific-testing or experimental-design works are carried out before the above-mentioned design stages, and from their results It is used in creating a project. In the process of creating a technical project, it is necessary to justify the selection of the size of automation systems, the basis of their creation and the complex of technical tools that implement them, as well as to determine the estimated prices of automation systems. In addition, at the stages of the technical project, issues of conformity of technological processes and basic technological equipment to the conditions of automation are considered, and if necessary, measures are taken to modernize or reconstruct them in order to create conditions suitable for automation. When creating working drawings, the tasks of the technical project, which are sufficient for the preparation of the board and remote control, the selection of automation tools and devices, and the implementation of the order, as well as construction and assembly work, are determined and detailed. The size and



composition of the working drawings of automation systems should allow for the implementation of construction and assembly works in modern ways and include the use of blocks prepared outside the assembly area.

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