AUTOMATED PRODUCTIONPARENTAL SYSTEMS

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Annotation: The article presents the possibility of automation of production and technological processes considered both from the point of view of improving equipment, technological equipment and process quality, and from the point of view of ensuring technical and economic efficiency.

Keywords: equipment, group technology, mechanization, automation, metallurgical industry, modernization, high-tech industry.

For the purpose of sustainable, dynamic and balanced development of industry of the Republic of Uzbekistan, it is necessaryfurther modernization and diversification of industry by transferring it to a qualitatively new level, aimed at the rapid development of high-tech manufacturing industries, primarily for the production of finished products with high added value based on deep processing of local raw materials.

In order to increase the efficiency and competitiveness of industries, complexes and industrial enterprises based on their modernization, technical and technological renewal of production, the main tasks and priority directions for the development of industry of the Republic of Uzbekistan in 2017 - 2021 were identified (Strategy of action for five priority areas of development of the Republic of Uzbekistan in 2017 - 2021).

One of these areas is the implementation of large-scale modernization, technical and technological renewal of industrial production, equipping them with the most modern high-tech equipment, accelerated introduction of modern scientific achievements and progressive innovative technologies in industries, expanding the training of highly qualified personnel for industry.

Uzbekistan has a highly developed metallurgical industry, which is based on rich natural resources. Suffice it to say that Uzbekistan is in fourth place in the world in proven gold reserves and in seventh place in its production, in seventh place in uranium reserves and in eleventh – twelfth place in the world in copper reserves. The republic also has significant reserves of other metals, including precious and rare earth metals, such as silver, molybdenum, bismuth, tungsten, lithium and others.

The development of technology is characterized by an integrated approach - a detailed study of not only the main, but also auxiliary operations and transitions, including transportation of products, their control, warehousing, testing, and packaging.

Due to the necessity and possibility of quick changeover in serial and small-scale production, for each possible part (product) or standard size, a detailed manufacturing technology with possible deviations must be developed, special or universal devices, including satellite ones, must be developed. Conditions for transportation, control, testing, packaging must be appropriately defined and programmed. This is necessary to ensure a quick transition from one product to another literally within a day or shift.

To stabilize and increase the reliability of processing, two main methods of constructing a technological process are used:

1) the use of equipment that provides reliable processing with almost no operator intervention; 2) regulation of technological process parameters based on control of products during the process itself.

To increase flexibility and efficiency, it is preferable to use the principle of group technology, which allows processing a large group of different types of parts on the same equipment with minimal changeover costs.

These principles can be implemented when creating technology for processing basic standard parts: shafts, bushings, gears.

When developing technology, a number of proposals are taken into account: technological transitions for processing the elementary surface of a part are selected according to technological schemes–complexes of sequential technological transitions necessary to ensure the required processing quality; assign a sequence of transitions: turning external and internal surfaces; processing of auxiliary surfaces of grooves, contours, threads; ensure a

minimum number of tool changes and rotations of the table with the part, especially when machining precise holes with tight location tolerances. They strive for minimal changes in the relative position of the part and the tool; provide processing of base surfaces in one installation; the sequence of rough transitions is determined based on the condition of decreasing tvsp; sequence of semi-finishing and finishing transitions–based on reducing the number of changes in the position of the tool and the part in the plane perpendicular to the processing axis. The sequence of transitions for processing precision surfaces is established in order to reduce the total error.

Typical technological processes are usually built on the basis of concentrated operations performed on automated equipment. Group processes are largely differentiated by operations when combining transitions. This construction makes it possible to create productive automated operations for a large number of parts included in a group, even with a different sequence of operations for each of the parts or assemblies.

Concentration of processing, as a rule, requires significant costs for technological equipment and equipment, which is economically justified in large-scale and mass production, as well as in small-scale production based on the group principle.

In non-line production, the technological boundaries of the division of the process are: 1) obtaining a completed assembly element; 2) the possibility of using simple (universal) or reconfigurable technological equipment (equipment); 3) convenience of workplace planning and control; 4) ensuring the smallest possible share of auxiliary time in the operation; 5) standard and group operations established in this production, both in objects and in the content of the group process.

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