AUTOMATION OF TECHNOLOGICAL PROCESS DESIGN

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In modern mechanical engineering, automation of technological design is important. The introduction of design developments in the design of production, reducing the timing of its implementation and increasing efficiency. This process is subject to the requirements of modern machine-building production due to automated systems.

Today, the products produced are often changed, the design process has become more complicated and the requirements for reliability and resource have been strengthened. In order to improve the quality of supply equipment in the technological process, the terms of preparation and delivery are mutually agreed upon.

In the production process, computer technology is widely used in Computer-Aided Design Systems (CAD). In the development of CAD in industry, it is necessary to create designed products, increase the labor productivity of design and technologists, reduce the volume of project documentation. Process design automation allows you to make the work of developers more creative.

The advantage of automated systems in technological preparation of production is the execution and preparation of processes using electronic data processing tools. At the same time, due to the speed of electronic data processing tools, the possibility of using alternative solutions appears [1]. In the process of computer-aided design, there was a need to timely implement the implementation plan, as well as train qualified CAD development specialists and users.

By the time the first computers appeared, since 1960, a number of scientists G. K. Goransky, V. D. Tsvetkova, S. P. Mitrofanova, N. M. Kapustina made a huge contribution to the theory of automation of the design of various technological objects. Due to the limited number of primary computers, special attention was paid to computational methods in the process of technological design. Information processing system began to solve technological problems through software and technical means. CAD-CAM integrated design automation systems combine the design and technological stages of production. In the development of product manufacturing technology, it is necessary to prepare a design and technological element of production (DTP). At the design stage of the DTP, issues aimed at producing products of high quality and in the appropriate quantity are solved [2,3]. They consist of the following stages:

- processing of the design document;
- preparation of technological processes;
- design of technological equipment;
- temporary planning of the production process.

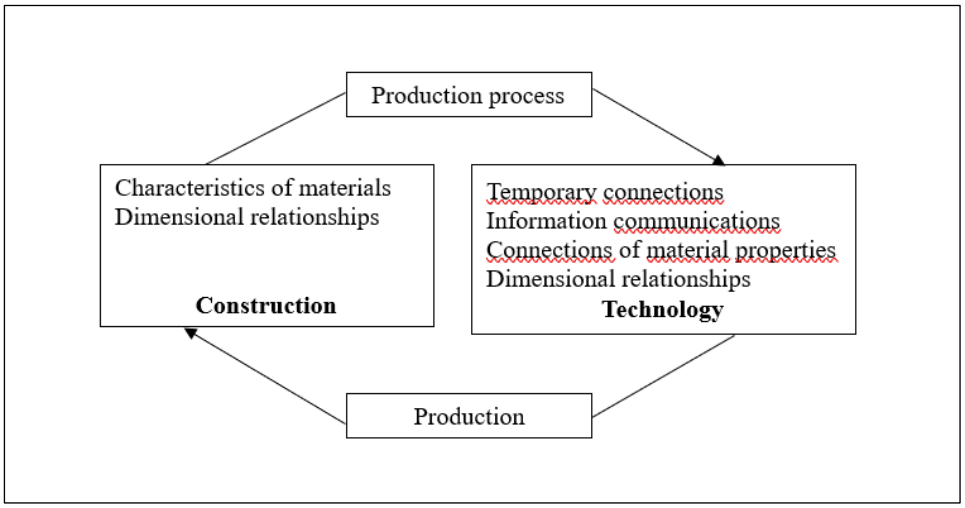


Figure 1. Contacts in the production process (I.M. Kolesov)

A significant amount of information is used to carry out design procedures. The process of creating a product is a monotonous process due to the fact that it takes a lot of time, in which a design engineer, a technological engineer are involved. In the design process, first of all, the terms of reference (TR) are fulfilled. The constructor processes the form based on the TT, performs the necessary geometric parameters for the product and many design calculations [4]. The technologist develops the technological process (TP) of manufacturing the product.

A number of features occurred in the production process. For example, nomenclature of components of products, a separate scheme for creating products, often changes in production conditions at workplaces. If minor changes occur in the configuration of the manufactured product, it is necessary to restore the TP parts. Preparation of work schedules in workshop centers takes a long time and has a significant impact on the cost of products produced at the enterprise.

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