

## **PROBLEMS OF AUTOMATION OF TECHNOLOGICAL PROCESSES OF SEWING MANUFACTURING**

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### **ANNOTATION**

This article provides information on modern automated systems used in the sewing industry and the principle of their operation, types of engineering programs and their application.

**Keywords:** design, automation, ALT subject, function, Dyurkopp, Pfoff (Germany) firms.

### **INTRODUCTION**

Today, the efficiency of the garment industry depends largely on the availability of high-quality hardware and software. This is determined by the flexibility of technological processes and the automation of production units, as well as their ability to work together.

In the process of designing and sewing clothes, the stage of preparation of design and technological documentation is the initial stage of the garment industry, in which the design solutions of new models of clothes are formed. Modern automated design systems include subsystems such as "Constructor", "Designer", and "Technologist", which allow for the automated introduction of new clothing models. The use of these subsystems reduces time and labor costs and improves project quality at the design and technological stages.[1,2]



**1-photo. Placement of mechanics in sewing industries**

The subject of information technology or ALT in professional activities is important in enhancing the professional competence of a specialist in the garment industry. In order for a garment industry specialist to meet the needs of the labor market, he or she must have the theoretical knowledge and practical skills to use information technology in the light industry and be able to apply them in practice.

Automation of technological processes in sewing on machines and devices under human control.

The most difficult process in the automation of technological processes is the mechanization of the transfer of sewn parts to the place of threading. The main reason for this is that the fabrics bend and hang due to the loss of the base. This mechanization of work requires the spatial movement of additional mechanisms in the work area, as well as increasing the number of links.



2-photo. Working in sewing enterprises

The automation process requires the combination of 2-3 parts and the assembly of several of them in a series, as well as additional separate processing. For example, some operations are performed and then next operation is performed (intermediate ironing operations during sewing).

Extensive work is being done to automate indivisible operations in the production of products, is being created automated lines.

An example of this is the ALT system of technological process design. The functions of this system are these follows:

Development of a manual of technological operations for the manufacture of garments:

- Automatic calculation of time consumption and equipment consumption using electronic standards reference:

- automatic execution of the organizational-technological scheme of the garment production process:

- Development of a single approach to the use of reference and design information for the design of the garment and the flow throughout the cycle:

Automatic generation of output documents

New modern technologies are able to automate and expand the operations performed. As a result, efficiency is increased, high assembly accuracy is ensured and operator fatigue is reduced. All this leads to an improvement in product quality.

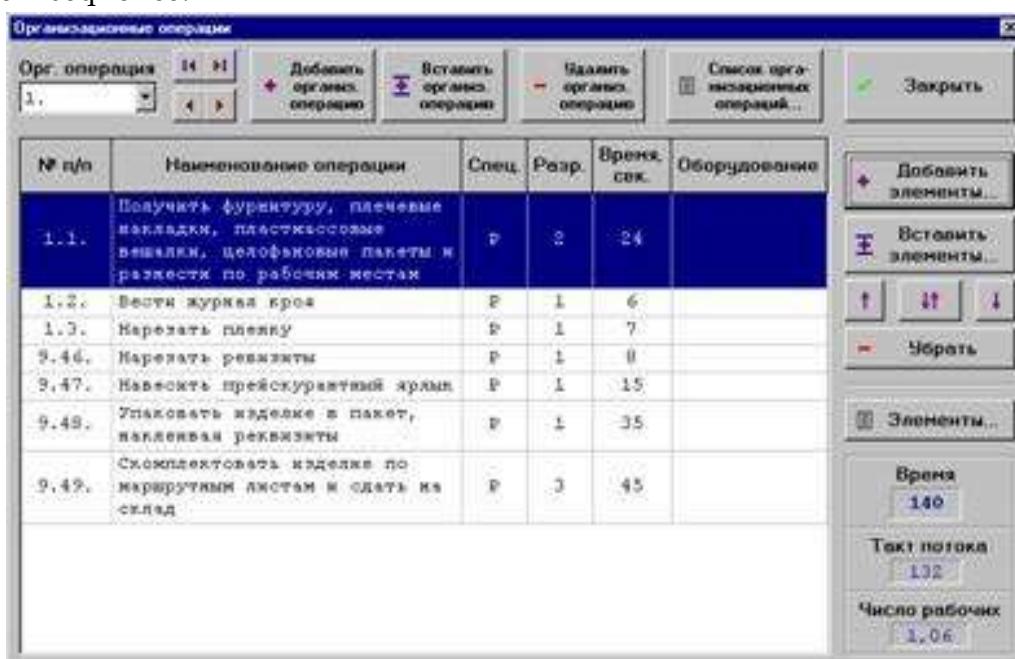
It is important to reduce labor-intensive work due to automation, and from a technical point of view, for example, the stability of the seam formation, reducing the loss of needle thread strength. This allows you to increase the speed of the sewing machine without losing quality. One of the new developments in the field of sewing machine automation is that the microprocessor system of the sewing machine has all the functions to adjust the thread according to the set of features, adjustable pressure of the presser foot, adjust the piercing forces of various needles. Dyurkopp and Pfoff (Germany) are producing the latest needle designs for automation systems.

Microprocessor control is performed according to the program of operation on a two-needle sewing machine, which is loaded into the memory of the machine. The program controls the closing of the needles, the number of stitches before and after the turn, works with two needles at once.

Thanks to the use of programmable automation in computer memory, a laser cutting machine can cut any model from the database in a matter of minutes. Automated placement programs calculate efficiency. This alone saves 3-8 percent of the material. Defects in the material are detected using optical sensors. [1,3]

In the future, the garment industry is expected to introduce automated systems that cover the entire production cycle, from design to warehousing.

The solution of the problem of automated design of the technological process is based on the catalog of non-technological operations, the catalog of the parameters of the equipment available at the sewing plant and a number of regulatory documents. With ALT, this problem is solved in two different modes: dialog and automatic. In the dialog mode, the specialist selects the desired indivisible operations from the catalog according to the sewing scheme and composes their sequence.



3- photo.Creating a scheme of division of labor

In automatic mode, model information is entered into the computer using a special code. A special optimization program is launched, which creates a sequence of indivisible operations for the projected model, based on the parameters of which is automatically formed technological process.

Most of the existing automated systems for the technological manufacture of garments are associated with design software modules. Technological training software modules have been developed in Russia's Gracia, Relict, Eleandr, Assol, and Ukraine's Julivi systems. [4]

Existing automated systems for technological training act as information retrieval systems designed to create a sequence of technological operations and a scheme of division of labor.

Modern technological training systems are part of the automated management system of the enterprise, which performs the functions of forming technological documents on the design of the product, their transfer to another workplace and printing. [5]

The experience of industry professionals in the implementation of this type of software in the enterprise, the error-free, regular operation of the program and its effectiveness is very important.

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