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SOFTWARE FOR PRINTING CREATED CUTTING SCHEMES

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In fulfilling the objectives set for the light industry—such as increasing production, expanding product range, and improving the quality of consumer goods—the development and implementation of modern research methods and quality control tools play a significant role.

The implemented system for graphical visualization of cutting layouts addresses the issue of material savings, which is extremely important for enterprises. This software product significantly improves the work of process engineers and enhances the quality of completed tasks.

Problem Statement. Let there be a given area Ω a set of parts {Si} that need to be placed within the area Ω.

In problem formulation, several types of defined areas are distinguished:

a) Unbounded area: an area that cannot be enclosed within a circle of finite radius.

b) Area bounded by fixed boundaries: an area with a shape and size defined by specific boundary lines.

c) Area bounded by movable boundaries: an area where the dimensions are determined as a result of solving the problem.

d) Area bounded by mixed (movable and fixed) boundaries: an area where certain segments of the boundary are predefined and fixed, while the parameters of the movable boundary lines are determined as a result of solving the problem. A semi-infinite strip is an example of this type of area.

Let's associate the coordinate system X'1Y' with part S1 (see Fig. 1). The origin of the coordinates (point O1) is referred to as the pole of the part. The placement parameters of part S1 will be the coordinates x1, y1 of the pole and the angle θ of rotation of the movable coordinate system X'01Y' relative to the fixed system XOY (see Fig. 1).

Often, a cutting layout is created for a single part but in different sizes. When printing the layout on a non-color printer or plotter, it becomes difficult to distinguish between adjacent parts of different sizes. To address this, it is suggested to mark parts of the same size with a unique label, represented by one of several combinations of one to four dots.

The same method used to display graphics in a window or on another device is applied when printing the designed cutting layouts. In other words, the process of outputting to print involves six steps.

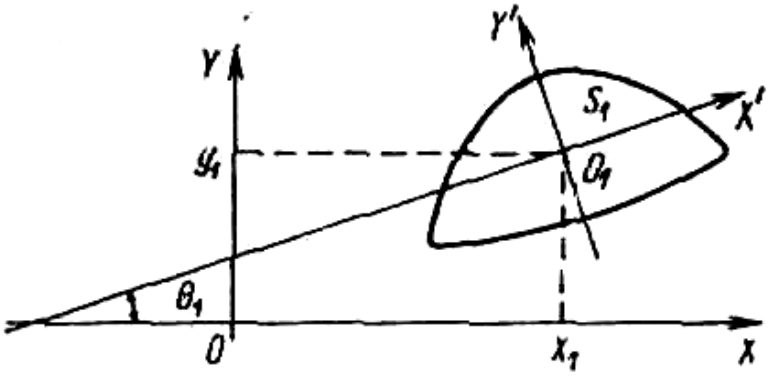

Figure 1 – Parameters of the detail placement

1. Obtain the device context
2. Set the attributes of the drawing
3. Create and select graphic objects
4. Call drawing functions
5. Release and destroy graphic objects
6. Release the device context

The developed software product for printing created cutting schemes has a user-friendly interface and does not require specialized knowledge in computer science to operate. An example of a printed projected cutting scheme using the developed software product is shown in Fig. 2.

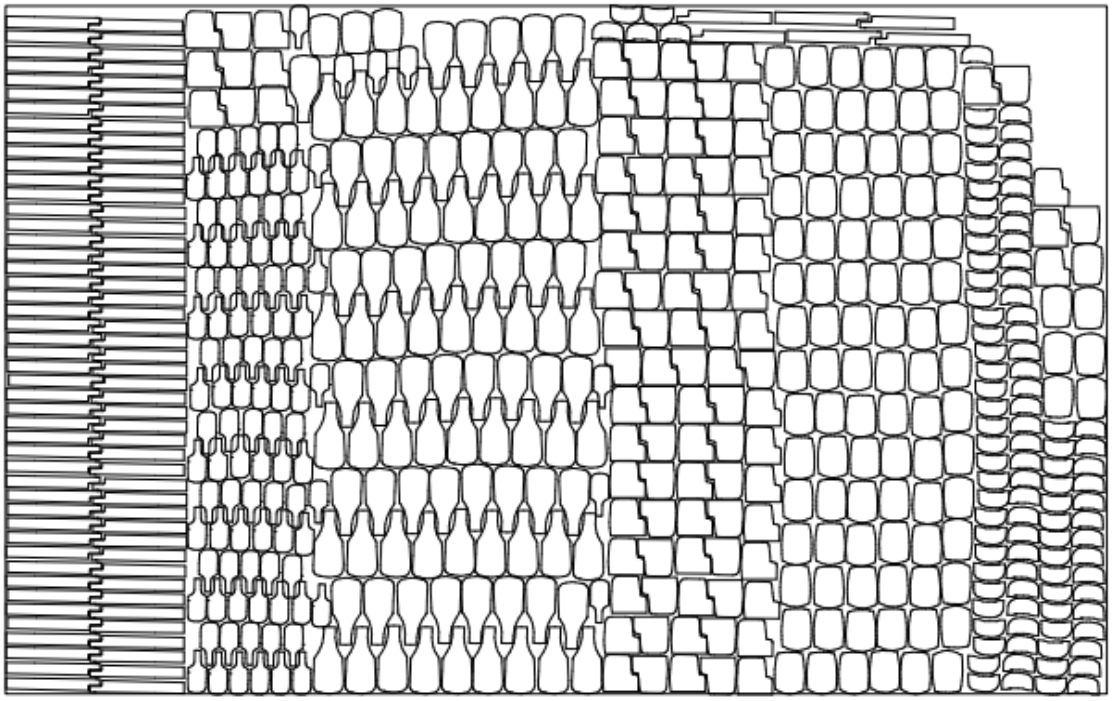

Figure 2 – Example of a printed cutting scheme using the developed software product