

## **DIVERSIFICATION IN THE FOOTWEAR PRODUCTION COMPANY USING CAD / CAM SYSTEMS**

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**Abstract:** *The most important tasks of the footwear companies are to meet the needs of people with quality footwear and items of interest to all ages. Being the first to bring a new style shelves is often the difference between success and failure in business. The paper analyzes the program CES 2000, which expands the possibilities automatic sewing machine CEM 350. With the help of automatic sewing machine CEM 350 was made 10 models of footwear. The case study was conducted within the enterprise shoe „Cristina Mold-Rom Simpex” SA in Chisinau. Conclusions drawn from the survey are: analyzed program does not require sophisticated computers and great effort from the user to himself mode; the implementation of automatic sewing machine in the production process to a considerable increase of labor productivity; sales; new patterns were obtained with a different appearance, improved the appearance of the products and high quality.*

**Key words:** *Footwear technology, shoes, diversification, CAD/CAM systems.*

### **INTRODUCTION**

The main task is to ensure public light industry with quality manufacturing, production would increase the material and cultural level of people's lives. Relations between domestic operators, depending on their interests, competition is an economic system in which everyone has the freedom to produce and sell what suits the conditions it deems most favorable [5]. Therefore, the company intends to develop is very important to research the characteristics of potential consumers preferred product. Currently, the client is not forced to buy the first product that meets his needs, but can choose between pricing models and brands [3].

### **1. DIVERSIFICATION IN THE COMPANY OF FOOTWEAR PRODUCTION USING SYSTEMS CAD / CAM**

Diversification of production in an enterprise is the result of concentrates several factors [1, 2, 4]: the diversification of raw and auxiliary materials, their production technologies, and technologies for manufacturing of products; existence of competitors; manifestation of the natural desire of every individual to distinguish themselves from others to put their personality through the style.

Diversification techniques involved in producing a number of models in the same families, models which are then subjected to an analysis aimed at defining the best solutions for both the consumer and the manufacturer. Product development through diversification idea starts from the premise that at the design stage of the basic model have been taken into account and respected general criteria: functional, aesthetic, socio-economic and technological.

Diversification can be applied to the entire assembly of the shoe, or only to certain parts of the shoe, resulting in products with a different appearance. In making the shoe upper assembly can adopt models that faces footwear consist of one part or several parts. Detailing faces is considering several objectives, namely:

- the use of natural leather under their physico-mechanical characteristics and demands faced landmarks both in the manufacturing process and in the conduct;
- economic use of natural leather surfaces;
- facilitating the process of forming the space, according to requirements of the technological process;
- creation of possibilities of combining different kinds of materials.

This diversity technique allows to obtain a very large number of types of shoe models costs are kept low due to the fact that the same design. The most common method of diversification is still changing in line and form. In a first phase, form parts is designed in a simple way, to highlight the figure last, so that, in the next

phase, the upper assembly to undergo a series of changes by detailing what more pronounced. The process of diversification through restructuring the line parts used in its aspects: right, broken, curved, thin-thick, continuous, interrupted, etc. The models obtained can be classified in the same family, provided that they meet certain conditions:

- use a common structure for the upper assembly materials;
- keeping unchanged the composition and shape of the lower assembly;
- keeping embodiment upper assembly type.

The need for rapid introduction of high quality designs constantly pressuring all companies producing shoes. Be the first to bring a new style shelves is often the difference between success and failure in business. Therefore, the management company ICS "Cristina Mold-Rom Simpex" LLC purchased CES\_2000 program and automatic sewing machine CEM 350.

CES\_2000 program benefits are [6]:

- the possibility of writing the desired design level step stitch;
- compatible with any version of Windows;
- minimum power consumption;
- comprises a database stitch types, designs, markings.

Automatic sewing machine CEM 350 has an area of 500 x 250 mm. Using the machine does not require special training and allows a single operator to 2-3 machines. Sewing operations on this machine consists of phases whose content is determined by the number and order of the calculation technology.

Workflow in the automatic machine CEM 350:

**STEP 1** - sticking tape on the bottom of the tablet:



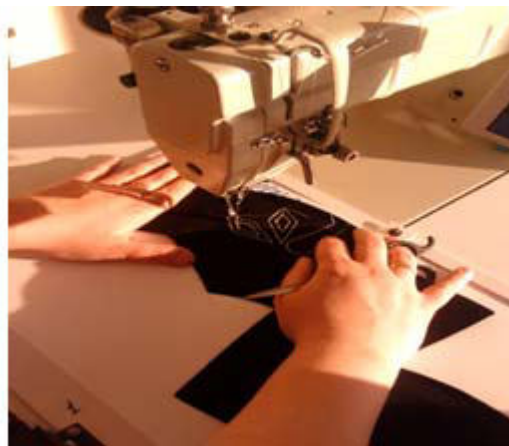
**STEP 2** - arrangement of parts as contour cut board:



**STEP 3** - preparation of blank sewing:



**STEP 4** - sewing blank:



**Step 5** - remove the blank from the board, cutting splint and cleaning adhesive.

With automatic machine CEM 350 was made 10 models of shoes (figure 1).



**Figure 1.** Footwear made by automatic machine CEM 350



Figure 1. Footwear made by automatic machine CEM 350 (Continuation).

## 2. CONCLUSIONS

Analyzing the possibilities offered by the CES\_2000 work, we find that it is a system that does not require sophisticated computers and great effort from the user to work very way.

When implementing automatic sewing machine CEM 350 in production was noticed a considerable increase in labor productivity and sales analyzed enterprise; new patterns were obtained with a different appearance, has improved external appearance and high quality of these products.

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