# MANUFACTURING CNC PATTERNS IN WOOD FOR PLASTICS INDUSTRY

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#### Abstract

Patterns and molds for plastics industry requierse high standards of quality and accuracy. Their manufacture CNC provides these rules.

Key words: pattern in wood, CNC.

## INTRODUCTION

This paper presents programming and numerical control centers regulating the manufacture patterns for plastics industry, quality control issues occurred and resolving them.

## MATERIAL AND METHOD

Choice of machine tools for the realization of a piece is given by the ability to meet the requirements relating to:

- Power to operate the spindle motor and axis power feed system for moving the tool in relation to the workpiece;

- Providing tools and spindle speed;

- Type of the maximum stroke movements and advance system, made possible on each axle.

Preparation of any program design is influenced by a number of factors associated with the workpiece, including:

- Workpiece size;

- Workpiece material;

- The addition of processing;

- The rigidity of the piece;

- Arrangement devices for securing.

The experiment was performed using a numerical model processing center with multispindle ALBERTI (Figure 1).



Fig. 1. Overall CNC machine ALBERTI

Fixing parts are made by vacuum-type pneumatic devices.



Fig. 2. CNC Equipment



Fig. 3. Tool change 438



Fig. 4. The resulting piece of MDF wood type



Fig. 5. Calipers for measuring parameters foot cutter



Fig. 6. Drawing pattern

Figure 3 is exemplified how automatic tool changing feature a performance CNC Alberta.

By setting automatic pneumatic workpiece to be machined, MDF board is asigră Co and secure attachment of several pieces that will be processed in parallel (Figure 4).

A pneumatic clamping system failure or malfunction due to carelessness lead to rejection of the workpiece (Figure 7).



Fig. 7. Defect pattern through trapping faulty piece

Scheduling operations resulting in the following steps: drawing is loaded manually from the console CNC Alberta, existing interfaces are inserted either numeric data converted from a drawing produced by AutoCAD (Figure 6).

## MDF plate contouring program

Operation List POST: MONSANTO flappen

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OP 1 CONTOUR POCKET EFFECTIVE DIAMETH Feed Distance: 45369.3	F - FINISH ER 40, WID Time for C	TOOL 25 TH OF CU <sup>7</sup> OP 1: 7m 35	Т 25 D40 Г 20 s
Total Feed Distance	4536	9.3	
Tool Change Time	0m	15s	
Total Time	7m 50s		

Material: MDF Use Extraction \_\_\_\_\_ START '(DEGROSARE PLACA) %1 PDEGROSARE/S ()N10 G53 G90 N20 G59 X0 Y0 Z0 '(OP 1 CONTOUR POCKET - FINISH TOOL 25 T 25 D40) (EFFECTIVE DIAMETER 40, WIDTH OF CUT 20) N30 S15000 M3 M142 ..... 'CALL SUB 1 N120 G77 N101 N102 'BEGIN SUB 1 N101 (SUB 1) N180 G1 X360 Y360 Z-0.2 F16000 ..... N840 X590 Y140 N102 (END SUB 1) 'END SUB 1 N9999 %2 PDEGROSARE/P ()N1320 (THE MACHINE WILL TANDEM LOAD)

# **RESULTS AND DISCUSSION**

The product resulting from the processing accuracy and quality meet the requirements imposed by the manufacture of plastics.

The precision and dimensional stability, MDF wooden board meets the requirements of quality and affordable in terms of costs.

The work covers all the steps involved in drafting the instructions encoded necessary equipment CNC machining of a part.

The sequence of coded instructions needed for processing a program called reference piece. Each segment of the program is made up of a certain number of codes, also known as functions, the most important being the code sets G and M.

They are the ones that make up the base language used to describe the manner in which a piece to be machined: the movements must be performed, in what order, when to replace the tool etc.

### CONCLUSIONS

In view of the frequent replacement of the pattern, the material of which it is made, as well as lower costs of design and processing of the CNC manufacturing process is convenient one.

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