

TECHNOLOGICAL PROGRAMMING OF THE CIRCULAR KNITTING MACHINES THE ME CAD PROGRAM

**Florica PLOP
"TRANSILVANIA" TECHNICAL COLLEGE, ORADEA**

Introduction

The CAD-type installations manufactured by the circular knitting machines manufacturers are used for preparing the programs and for the "on-line" driving of the machines from the productive departments. A programming station is composed of: a computer and a 32 bite processor, a 300 MB hard disk and a minimum of 33 MHz frequency, a high resolution color monitor, keyboard and mouse.

Optionally, a variable number of peripherals can be added: graphic tablet, plotter, scanner, video camera, white and black or color laser or ink jet printer

1. The MeCad Program

The technological programming of a knitting machine supposes the knowledge of the technical characteristics of the machine, of the mechanism of eye forming, of the drawing mechanism, the calculation of the dimensions of the bearing and the knowledge of the technological possibilities of the machine. The MeCad program is conceived for the circular knitting machine Variatex T.E.J. 2500, of the MEC MOR company. This machine manufactures knit fabrics in chain panels for outdoor wear, of wool and wool-like threads, of different gauge, according to the gauge of the knitting machine.

This program is convertible, thus the drawings can be made on other knitting machines of the STOLL, JUMBERCA, SHIMA companies and vice-versa.

2. The setting of the machine

The setting of the machine supposes:

- 1) Define the configuration of the machine
- 2) Choose the gauge of the machine
- 3) Establish the positioning of the padlocks
- 4) Establish the thread conductors

1) Configuration of the machine

When selecting "Symbols" from the Main Menu, the window from figure 1. appears; if we type "Machine Threading" we can choose the configuration of the working systems. The machine has 18 systems and the operator can opt for one of the 8 standard configurations: 10L, 1L+1T, 2L+1T, 3L+1T, 5L+1T, etc.

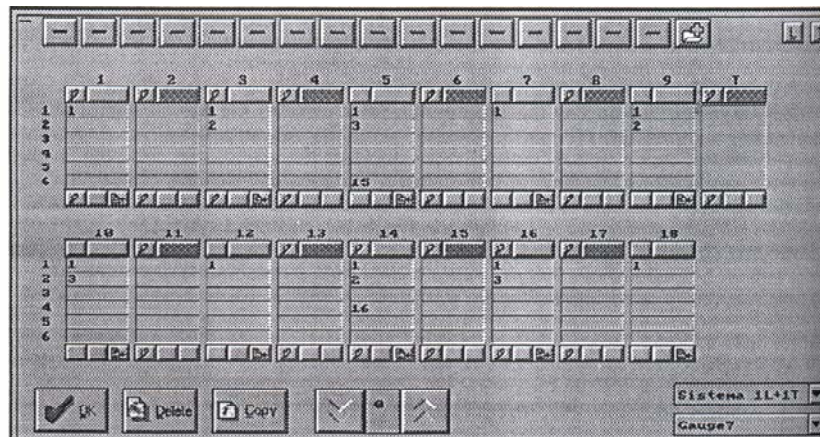


Fig.1. Configuration of the machine 1L+ 1 T [3]

2) Gauge of the machine

The gauge of the machine represents the number of the needles on a certain portion of the fonture. We select "Gauge" and we choose the gauge between 5 and 14 needles on an English inch.

3) Position of the padlocks

The positions of the needles are chosen by typing key 2, from figure 2 to activate the padlocks from the cylinder or the disc; they can be selected in the normal position (in work) and in the transfer position.

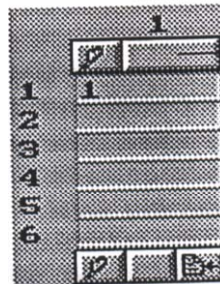


Fig.2. System Activation [3]

4) Thread conductor

For each system in work we establish a thread conductor, with a chosen color, correspondent to the drawing. At system 5 (in work) we position the conductor of the thread 6 with color 15 for the elastic thread, which will work or not, as the case is (according to the margin structure and the characteristics of the thread that is being processed). At system 14 conductor 4 will deposit the dividing thread necessary to divide the panels, with color 16. We establish as well the thread conductor and the systems that will knit the additional rows.

If it is possible we prefigure a system and with a click on "Copy" the data are positioned automatically at all the other systems.

3. Sample Preparation

Sample preparation covers the following steps:

1. Fixation of the machine commands
2. Sample processing

3. Display of the test drawing
4. Writing on the machine floppy
5. Sample save

1. Fixation of the machine commands on each cycle

We select "Process" from the Main Menu, we type "Machine Commands" and with the open window from figure 3, we can start the encoding.

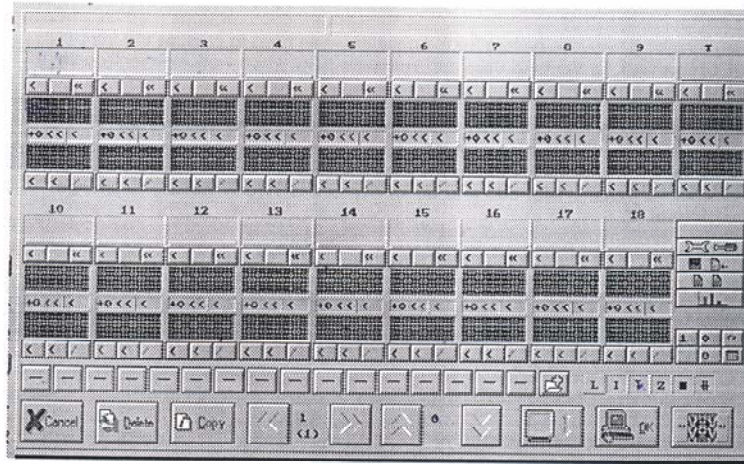


Fig.3. Preparation for the encoding [3]

The operator must fix all the necessary information for encoding the sample:

- choice of the color for each cycle;
- positioning on the main cycle and increase or decrease of the cycles (if the case is);
- adding the thread conductor for each work system;
- introduction of the needles in work, by selecting the needles and by choosing the structures (fig. 4.);

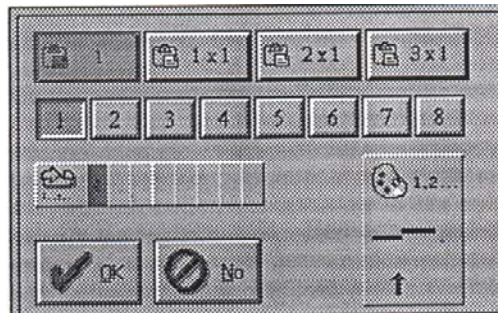


Fig.4. Selection of the needles [3]

-adding the machine parameters: density of the fabric in the cylinder and disc (with values from 1 to 99 according to the fabric structure), drawing the fabric (for needles in work with values of -5...+5, for needles in transfer position or correction of the values, if the case is), knitting speed with values between 4 and 16 m/s;

- transforming a working system in a transfer system;
- increase of the lines for drawing encoding;
- command of the working or transfer system;

-choice of the cymosa from the pre-defined structure table; cymosa number 1 has the code 246 and is made with colors 161 and 162.

2. Sample processing

We start the encoding; we read the drawing, the error list (fig.5.), by selecting "Information", "Program test pattern error list".

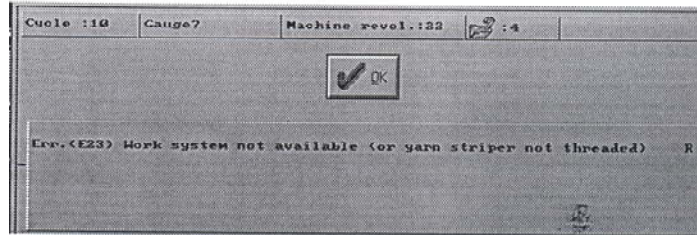


Fig.5. Error list [3]

3. Display of the test pattern and of the possible changes

Click "Test pattern", the window from fig.6. appears with the fixation of the symbols for compilation.

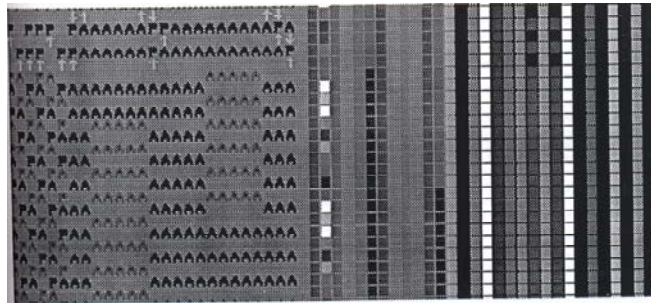


Fig.6. Test sample [3]

4. Floppy writing

In the Main Menu we type "Process" and "Write on machine disk" and the window from fig.4.31 appears. We click "Develop", we verify the machine gauge, the total number of needles, the number of needles in work, we specify the number of copies, we correct the errors (if the case is), we return to fig.7, we name the sample and we click OK.

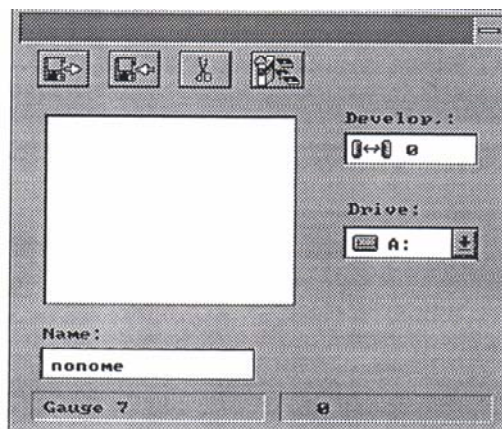


Fig.7. Sample copy [3]

5. Sample save

In the Main Menu we select "File" and then "Save graphics" for a temporary save. By clicking "File managing" we save the drawing on different supports: HD; floppy A, B.

From the Main Menu we select exit from the program, we click "Exit" and then OK.

The floppy with the pattern is introduced in the knitting machine; the operator starts the machine and executes the procedure and the necessary modifications for obtaining a quality sample that corresponds the production cycle. In this stage, after verifying the sample, we can modify it, correct it or improve it, by reentering the program.

Conclusions

The production cost reduction determined the development of the circular knitting machines with big diameter, high working speeds and special facilities. The use of the MeCad Program for projecting the fabrics on the Variatex knitting machines has as a purpose the improvement of the product quality, the increase of the working productivity and the shortening of the manufacturing cycle.

Bibliography:

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[4.] ***Variatex T.E.J. 2500-Prospectul mașinii-Firma Mec-Mor