CONTRIBUTIONS REGARDING THE PROCESSING OF A CRAFT OBJECT WITH THE CNC STEPCRAFT – 2D.840

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Abstract

This paper presents the processing of an craft object with the CNC STEPCRAFT-2 / D.840 where the ASPIRE program was used to design the object. The ease with which it can be processed, the fine details that can be carved in wood of different types and the beauty that this raw material has, has helped people to perfect their processing techniques.

Key words: ASPIRE, CNC STEPCRAFT-2/D.840

INTRODUCTION

Wooden handicraft products are sought for their uniqueness. Wood was one of the main raw materials that the people tried to model with increasing skill.

Due to human evolution, the objects that his hand created were perfected with the progress made in the electronic industry. This is possible with the help of computers and high-performance machines where special craft objects can be processed. In order to deserve the sacrifice of wood cutting, people process wood to perfection by creating real objects of art.

MATERIAL AND METHODS

The craft object was processed on the CNC STEPCRAFT-2 / D 840 which is a machine for processing wood, plastic or non-ferrous metals.

The machine has three axes which are offset by 90°. Each axis is equipped with a stepper motor and a reference switch.

The STEPCRAFT milling motor is a quiet technical product of high stability and precision. It is a cylindrical motor with direct transmission system in a compact housing. It ensures high concentricity at the tip and a long life of the cutting tool. The engine used for processing the handmade object is brushless and starts directly from the program. It stops automatically at the end of the program and goes up to 20000 speeds.

Fig. 1. CNC STEPCRAFT-2/D (https://www.stepcraft.ro/stepcraft-2-d-840-ready-to-run-system.aspx)

The Aspire software was used to achieve the handicraft object processed with the CNC STEPCRAFT-2 / D. Aspire has been developed to allow the production of decorative and artistic dimensional carved parts. As well as drawing and modeling tools, it includes both 2D and 3D machining, along with 3D V-Carving / 3D Engraving to allow a huge variety of jobs to be produced as quickly and easily as possible.

Aspire includes drawing and editing tools that allow designs to be created and modified. Once the 2D design is ready, 3D components can be created from 2D drawings.

Aspire's interface makes the drawing and modeling tools easily accessible.

Aspire provides simple interface buttons to toggle screen layout to assist the shift in focus from design to toolpathing. (https://l.facebook.com/l.php?u=https%3A%2F%2Fwww.google.com%2Fsearch%3Fq%3Daspire%2520tutorials%2520pdf)

RESULTS AND DISCUSSION

In order to achieve the handicraft object, the Aspire program was opened in which, as shown in figure 2, the working field is created and the material thickness is selected. Then select point 0 to highlight the start of the program and the "ok" button to work in the field created.

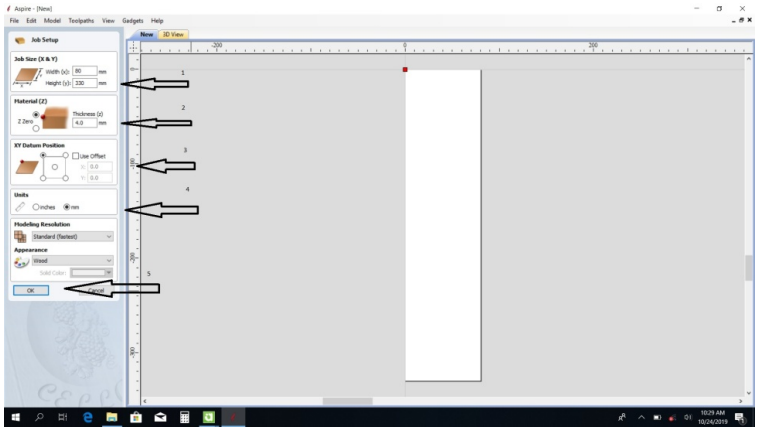

Fig. 2. Creating the work field

Figure 3 shows the model of the craft object. It will have to take into account the operations that are inside and those will be cut first. The thickness of the physical piece must be 8 mm.

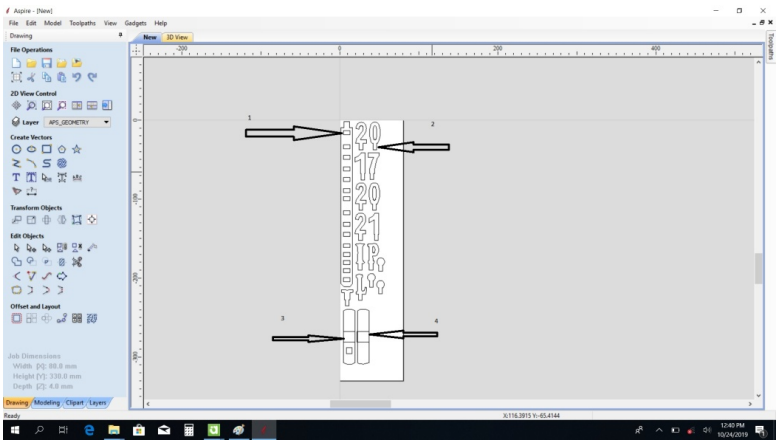

Fig. 3. Model of the craft object

In figure 4 shows the saving of both profiles in a single program. Here, too, we can observe the post selection of the processor that recognizes the CNC machine, namely STEPCRAFT 840.

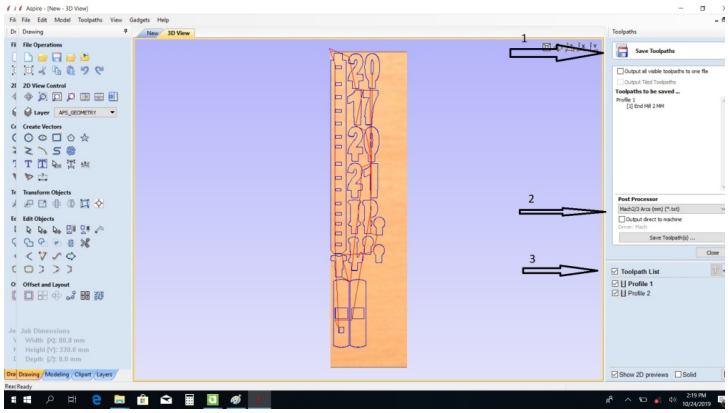

Fig. 4. Saving profiles

In the CNC machine directly loading the nc code of the profiles where the material and the milling used are highlighted.

(Profile 1)
(File created: Thursday October 24 2019 - 02:20 PM)
(for Mach2/3 from Vectric)
(Material Size)
(X= 80.000, Y= 330.000, Z= 8.000)
()
(Toolpaths used in this file:)
(Profile 1)
(Tools used in this file:)
(1 = End Mill 2 MM)
N100G00G21G17G90G40G49G80
N110G71G91.1
N120T1M06
N130 (End Mill 2 MM)
N140G00G43Z20.000H1
N150S19600M03
N160(Toolpath:- Profile 1)
N170()
N180G94
N190X0.000Y0.000F1000.0
N200G00X5.399Y-14.325Z10.000
N210G00Z2.000
N220G1Z-0.125F1000.0
N230G1X11.799Y-14.325
……

……
……
N15660G1X44.607Y-23.183
N15670G1X44.437Y-23.444
N15680G1X44.232Y-23.590
N15690G1X44.092Y-23.621
N15700G00Z10.000
N15710G00Z20.000
N15720G00X0.000Y0.000
N15730M09
N15740M30
%

Figure 5 shows the profiles made at CNC - STEPCRAFT 840.

Fig. 5. Profiles made at CNC

In continuation for making the craft object the characters are mounted in outside the glass.

Fig. 6. Mounting the craft object

For the object to be inserted into the glass, a spring clip is used, a bent and sharp electrode and a thin piece of wood to fit into the mouth of the glass. This must be long enough that the characters can be pressed.

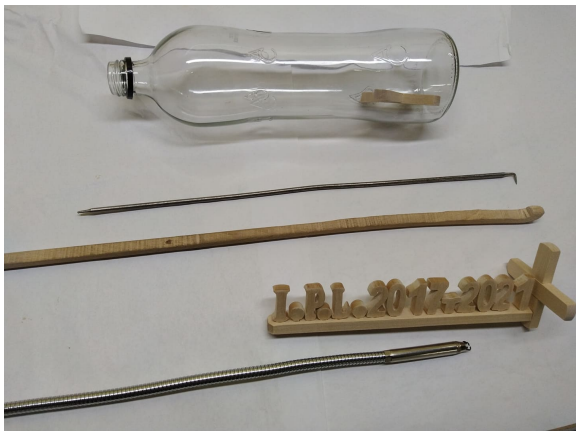
Fig. 7. Tools

The last operation is to place the characters that are put in the glass from its bottom to the lied archeving the final craft object.

Fig. 8. The final craft object

CONCLUSIONS

By using the current programs used in high performance CNC, you can make special craft objects, true works of art.

With the help of the Aspire software used to make this craft object, the design time was considerably reduced.

At the same time, a craft object was made with high accuracy and a flawless finishing surface.

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