

Background

Computer Engineering Laboratory at Bina Nusantara University has a Computer Numerical Control (CNC) machine which has a head that can be customized either using a CO2 laser, engraver pen, and drill. But no mechanical desk designed for laser, therefore these machines requires software tools for the laser.

Research Questions

In the operation of a CNC machine with a laser head still has difficulty in terms of converting image files into G-code

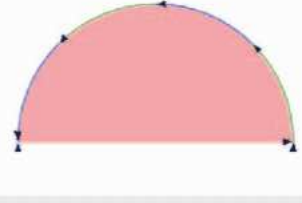
Research Purposes

Provide additional laser tools in the Inkscape software, particularly for run a CNC machine with a laser head belongs to the Department of Computer Engineering at Bina Nusantara University

CNC Machine From Computer Engineering LAB



Software Inkscape



name	laser cutter
id	laser cutter 0001
diameter	0.3
feed	60
penetration feed	100
gcode before path	M03 S1(turn on laser)
gcode after path	M05 (turn off laser)

(0,0; 0,0; 0,0)

(100,0; 0,0; -0,100000000149)

Flow Chart



GcodeTools.py

```

otif self.options.tools_library_type == "laser cutter":
    tool = {
        "name": "laser cutter",
        "id": "laser cutter 0001",
        "diameter":0.3,
        "penetration feed":100,
        "feed":60,
        "gcode before path": "M03 S1(turn on laser)\n",
        "gcode after path": "M05 (turn off laser)\n",
    }
    
```

AWK Programming

```

rahman@ubuntu:~$ awk '{S1~/G0/ && S4=""; S2~/Z0/ && NF=""; ; S2~/Z-0/ && NF=""; print}' input_file.ngc > output_file.ngc

G01 X37.694306 Y14.795417 F60.000000
G03 X37.707533 Y14.795413 I0.008819 J6.922530
G02 X37.720764 Y14.795417 I0.013230 J-20.776406
G03 X51.047714 Y20.315620 I-0.000000 J18.847153
G03 X56.567917 Y33.642570 I-13.326950 J13.326950
G03 X51.047714 Y46.969519 I-18.847153 J0.000000
G03 X37.720764 Y52.489723 I-13.326950 J-13.326950
G02 X37.707533 Y52.489727 I0.000034 J20.789640
G03 X37.694306 Y52.489723 I-0.004412 J-5.926943
    
```

Conclusion

In this research, will be produced a tool that is used in the Inkscape software to improve the performance of CNC machine using laser head belongs to Computer Engineering Laboratory at UBINUS. After evaluating the process in the cutting, it can be concluded that the system has less effective and efficient because there are many things that should be changed manually

Referensi

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Cutting Results

