CNC LASER ENGRAVER

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Abstract

Now a day's technology is increased in rapid growth the usage and implementation of CNC system in industries and colleges but at greater cost. According to our idea on fabrication of compact and cheap cost CNC Engraver is introduced to reduce complexity, cost and man power. This project shows the design and implementation of two dimensional CNC machine which can engrave 2D & Gray scaled images or pictures with help of high watt burning laser module on surface which can be a paper, wood, leather, plastic, foam.

Problem Statement

Nowadays, the world is becoming highly advanced with a lot of things becoming smaller and compact. This project is about to implement the same idea to the engraving process of CNC machine. Even the usual CNC machine can machine the small work piece but it will increase the time and power consumption. This project will perform the same task with reduced time and power consumption with easier operation.

Literature Review

Improving the Dynamic Behavior and Working Accuracy of the CNC Laser Cutting Machines	Breaz Radu-Eugen, Târnovean Sorin, Biri Cristina, Bologa Octavian-Constantin
CNC Control of a Laser Cutting Machine	Lucian0 E. Chiang, Ph.D. Jorge Ramos G., Civil Engineer
Simulation Tools for Studying the Behavior of CNC Laser Cutting Machines	Sorin Târnovean, Radu E. Breaz, Cristina Biriş, Octavian C. Bologa
Robust Motion Control of XY Table for Laser Cutting Machine	Ale: Hace, Karel Jezernik, Boris Curk, Martin Terbuc

Block Diagram

•The CNC unit generates the reference inputs for the feed drives as a results of processing the NC code.

•Motion control cards are used for performing the tasks needed to keep each axis of the machine tool moving along the desired path.

•The servodrivers issue commands to the motors in order to drive the difference between position command and the actual position to zero.

•The motors are coupled to lead screws which are the mechanical actuation systems of the machine on which laser diode is connected.

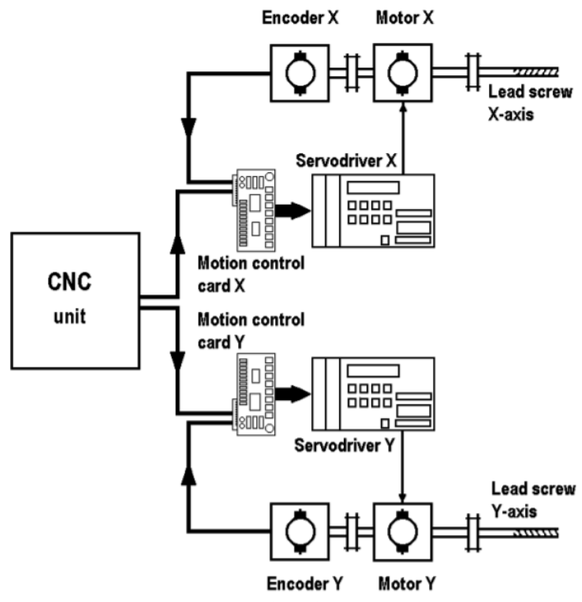

Fig. 1. The schematic diagram of the feed drives of a CNC laser cutting machine.

Application

- It can easily engrave 2D & Gray scaled images or pictures on work pieces.
- By using Arduino and G-code it is now possible to engrave any shape of any size on any metallic or non-metallic surface with LASER Diode.
- It can be used in the automotive industry for prototyping and production applications.

Future Scope

- The proposed system is very much effective than the existing system in many aspects. This system has an effective way of controlling the CNC engraver operation with better efficiency and accuracy.
- By using Arduino and G-code it is now possible to engrave any shape of any size on any metallic or non-metallic surface with LASER Diode.

References

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[2] Curtis S.Wilson, -Precision contouring error analysis [Online], cited 15.1.2018

[3] A. Petunin, "About strategies of tool path forming during development of NC programs for thermal cutting machines,"Ufa state University Journal of Control and Computer Science, vol.13