CNC Plasma Machine

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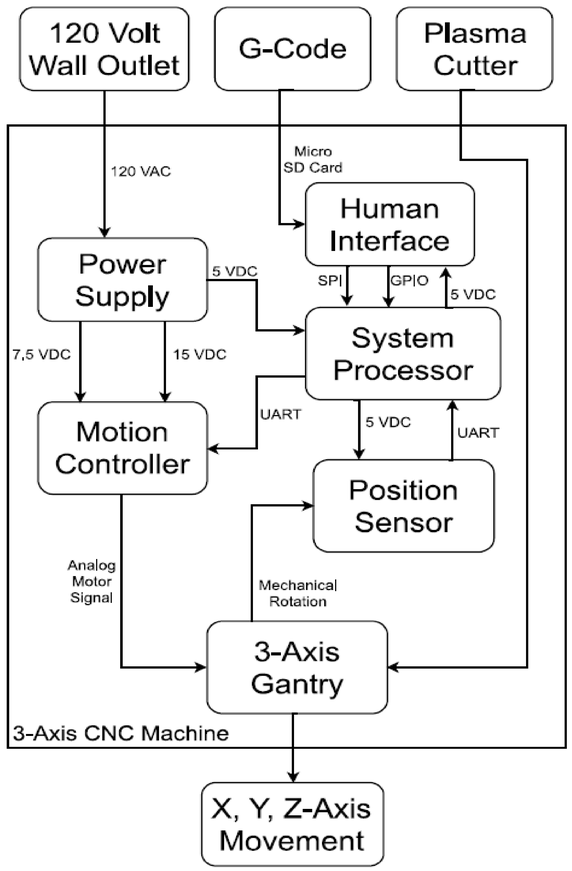
ABSTRACT

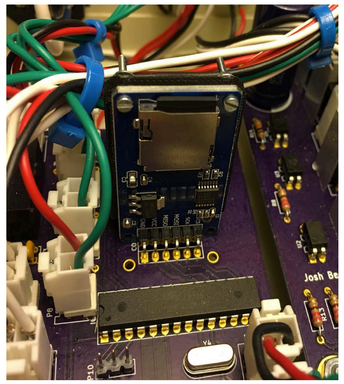
Our project is a 3-Axis CNC Plasma Cutter. This project provides a smaller more cost effective CNC Plasma Cutter machine for those with limited space and funds. Our project incorporates a hand-held plasma torch with a 3-axis CNC gantry to produce a precise and efficient method of cutting designs.

SYSTEM OVERVIEW

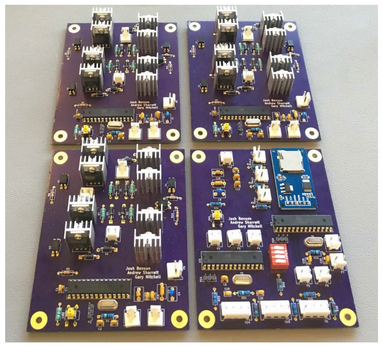


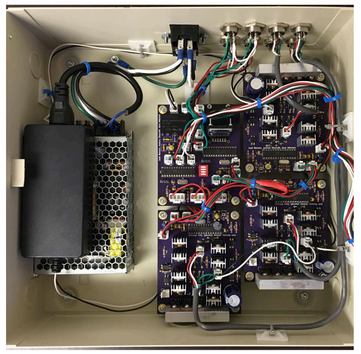
HUMAN INTERFACE

- Easy and simple to use
- Push button control and indicator lights
- Micro SD Card G-Code file input
- Main power switch



MOTION CONTROLLER AND PROCESSORS

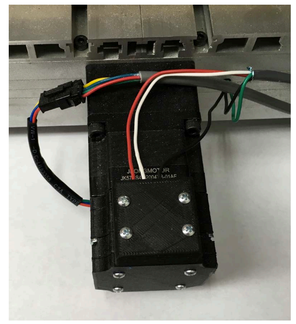




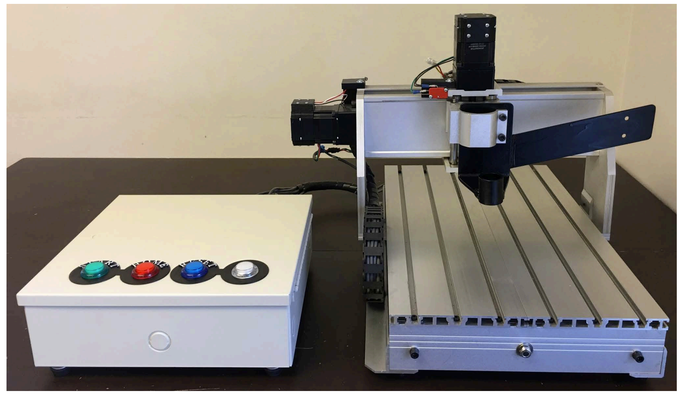
- Custom Designed motor controllers and processor
  - 6 H-bridge's used in design
  - Switching power supply to relay power to motors
  - Isolated power for digital control
- System Processor Convert G-Code into motor movements
  - SPI communication used between Micro SD card and main processor
- Axis control from individual processors
  - Gives smooth cuts and movement vs. using one processor to control everything
  - UART communication between axis control processors and main processor

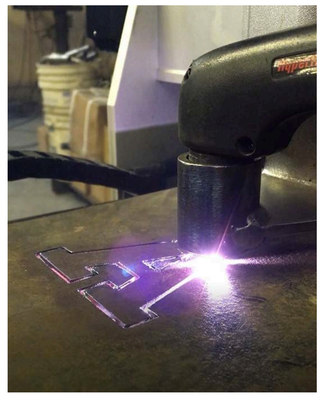
SENSORS

- Custom 3-D printed rotary encoders for system feedback
- Encoder wheel translates rotational motor movement into linear distance
- Used infrared LED and phototransistors



RESULTS





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