

Group M1.05 – Lighthouse Bend Ez Cap Punching Machine

Treyton Strong, Kareem Abuqasem, Joey Huttenhower
 West Texas Lighthouse for the Blind



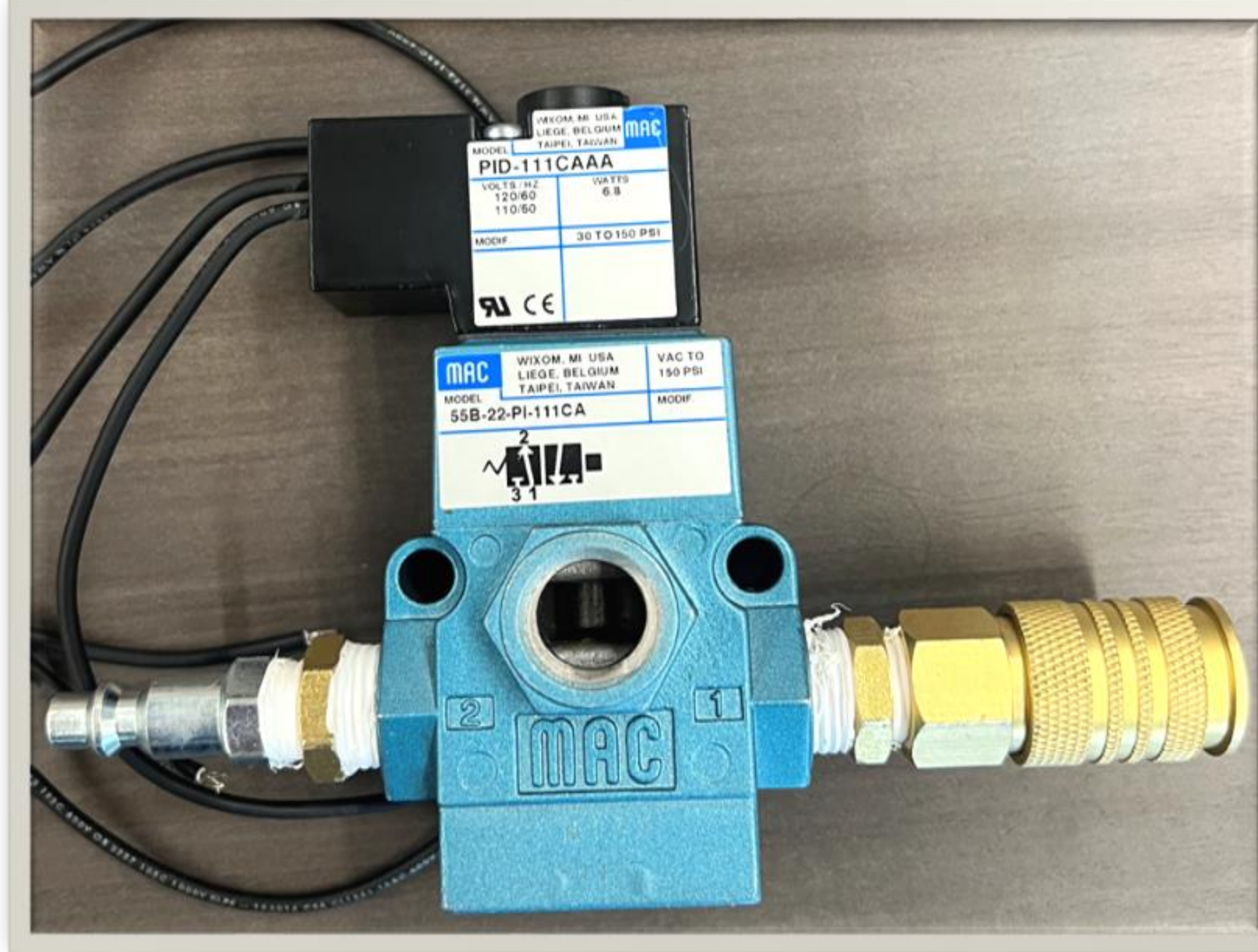
Product Description

The Lighthouse Bend EZ Cap Punching Machine Project aims to enhance the safety of the cap punching process by implementing a comprehensive safety system. This involves redesigning the system with a new controller, replacing buttons for easier operation, reducing the risk of fatigue and injuries. Additionally, the project includes revamping the workbench to streamline the process and create a cleaner work area.

Customer Needs

- Improve safety
- Sustain or enhance operational efficiency.
- Enhance the workbench for optimal functionality
- Contribute to the establishment of a standardized setup.

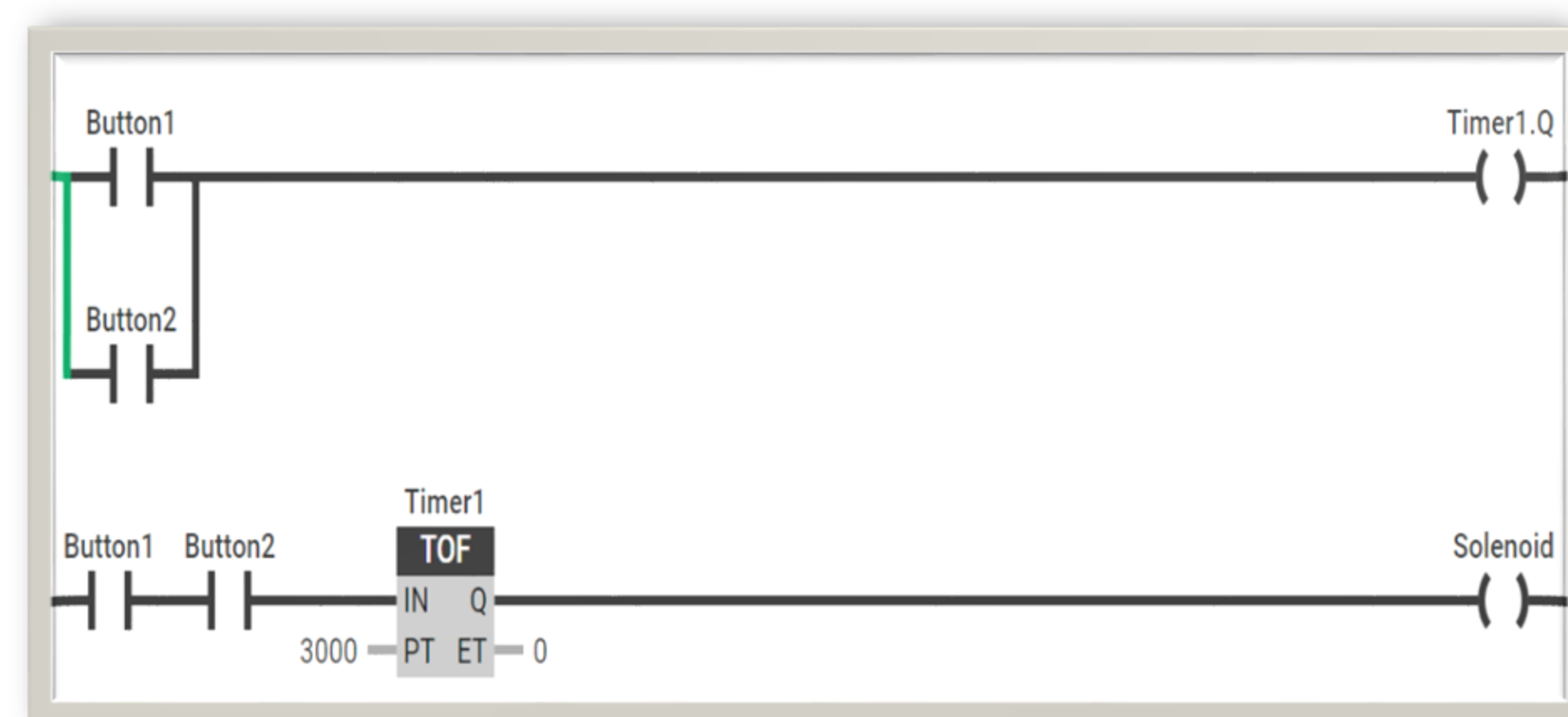
Process and Design



- Solenoid Valve**
- Connects to pneumatic press
 - Regulates air pressure



- NVIDIA Jetson Nano**
- Creates and applies ladder logic for button safety
 - Future use with AI programs.



Pneumatic Press and Prototype Table Setup

- Press used to puncture pen caps
- Closer workspace to minimize wasted area
- Buttons will be almost flush to table for minimized obstructions

OpenPLC Ladder Logic

- When button 1 or button 2 is pressed our timer will start to count down from 3 seconds
- When both buttons are pressed and the timer is still on the solenoid will activate
- Once the timer ends buttons must be released to restart the timer



Future Goals

- Maximize workbench efficiency by eliminating any unnecessary or wasted space.
- Design workbench for effortless and efficient cleanup
- Develop a feeding system to easily grab caps in correct orientation
- Incorporate an advanced AI program to detect operator hands, enhancing safety measures and further preventing operator injuries.

Acknowledgements

West Texas Lighthouse for the Blind
 Abhimanyu Sharotry
 Dr. Davidson
 Joshua Glaze

Meet the Team!

