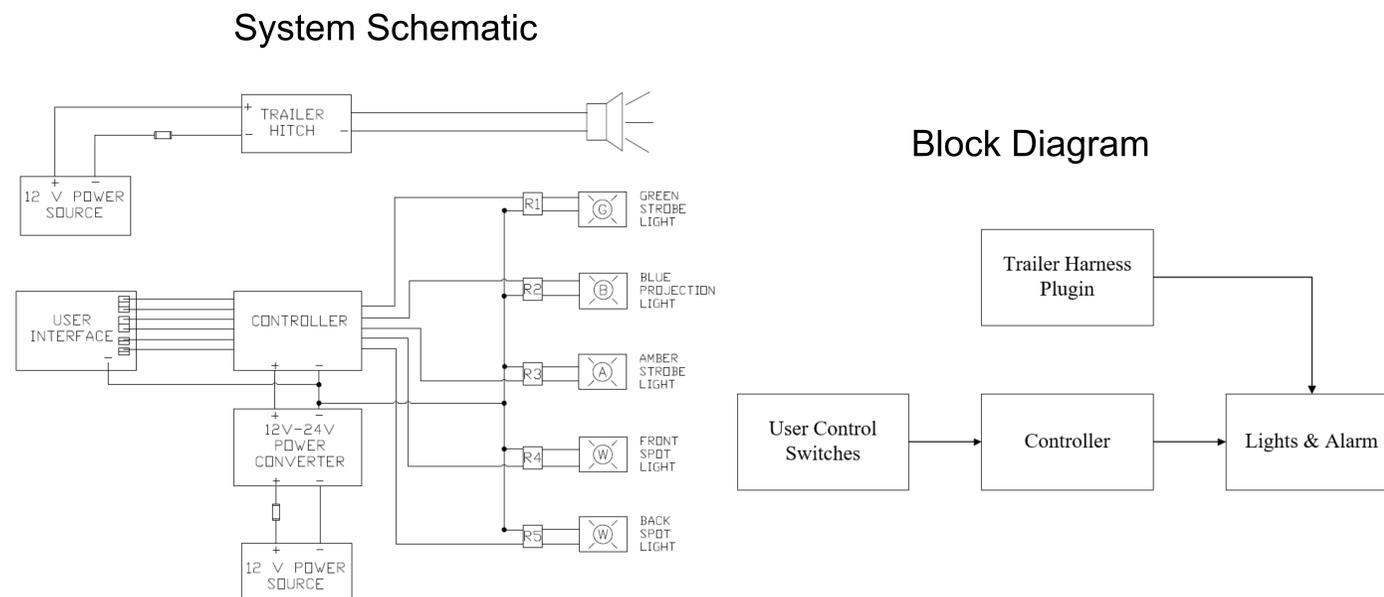


Mine Safety Light

Project

- Vehicles operated in the mining industry are installed with strobe lights and alarms to make them safer to operate on the job site.
- Underground mining companies use as many as six different peripheral devices per vehicle for various contexts on site.
- The Mine Safety Light aims to reduce time and labor costs to install these devices by combining them into one easy-to-install system.
- The system uses a controller to select which lights and alarms to activate based on the needs of a driver.
- This project aims to investigate power flow techniques and control to improve the reliability of systems like this one for the safety of miners in the industry.

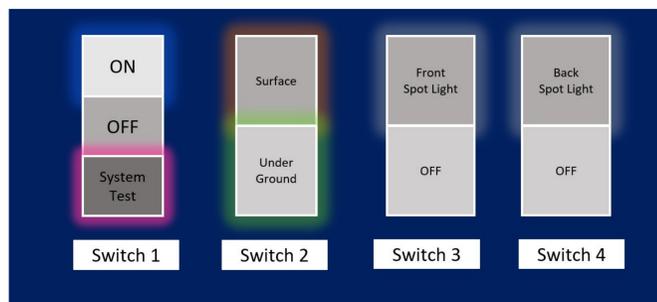
System



Methods

- Uses a programmable logic controller programmed using ladder logic.
- Lights actuated using relays to guarantee reliable circuit control.
- Strobing effect produced using NE555 timer circuit.
- Controller states changed by driver using switch module installed in a vehicle's cab.

User Interface



Conclusion

The Mine Safety Light demonstrates that cost-effective methods for improving safety in industry can still be innovated and improved upon.

What Was Learned?

- Ladder logic
- Integrated control of power systems
- Circuit protection techniques
- Product development considerations

What's next?

- Add more features like a whip light
- Design and print PCBs to further increase system reliability
- Streamline the manufacturing process of the system
- Increase the customizability to be able to serve more companies