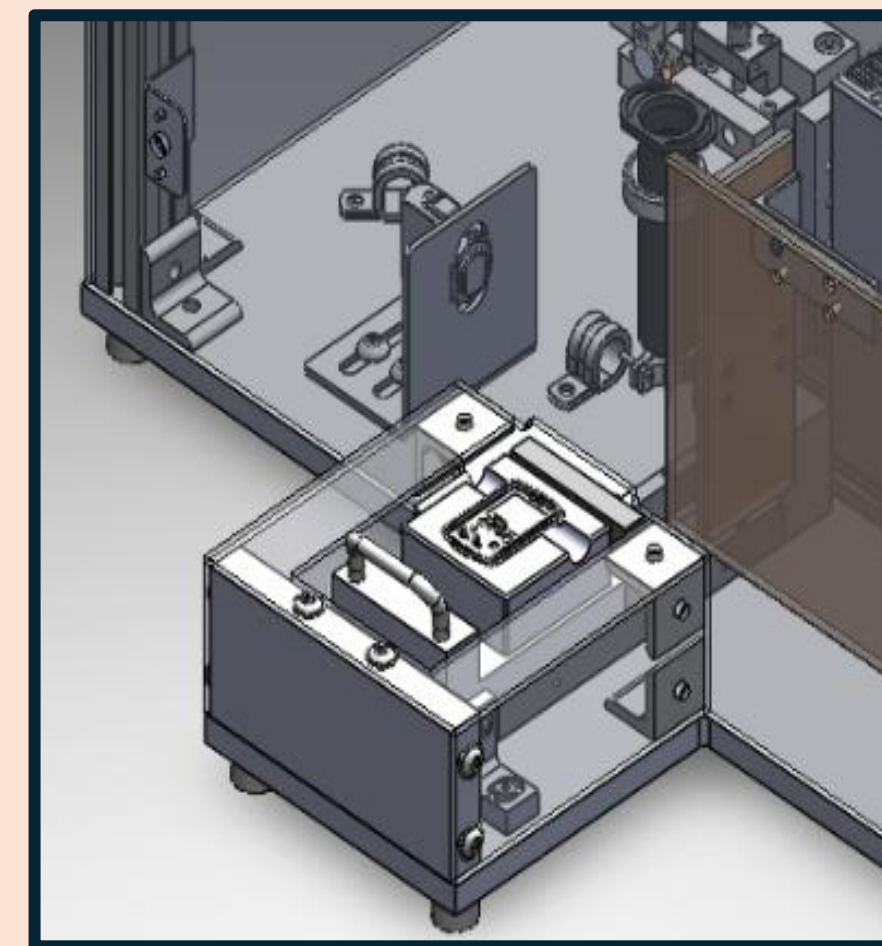


Project Description

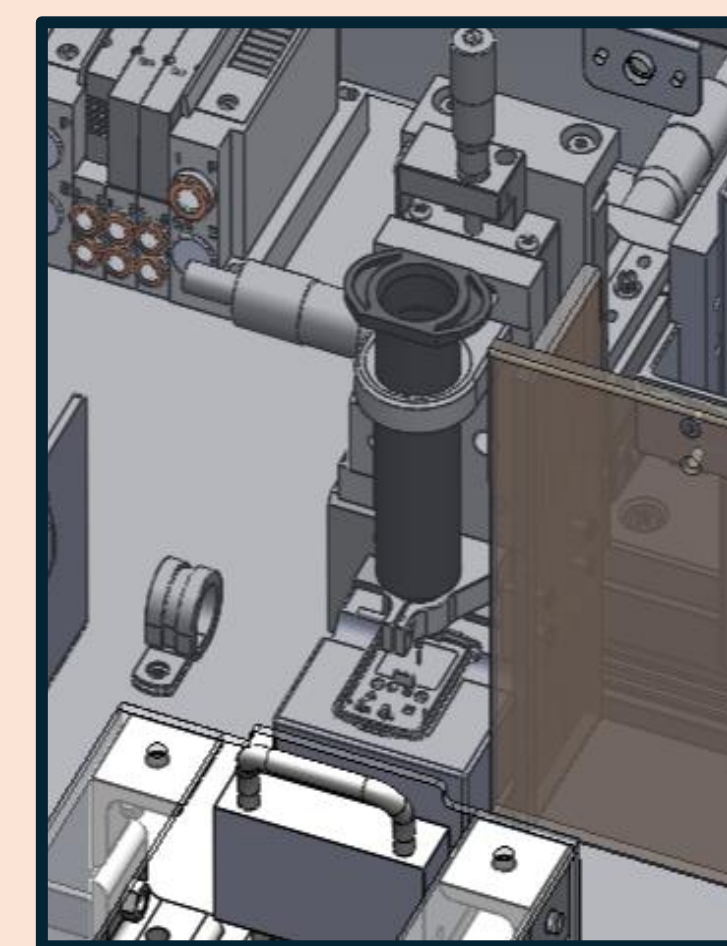
Problem: Masimo's health-care products require light pipes to provide a path for light to travel from the inside to the outside of the device. Current assembly of these light pipes require expensive production-grade manufacturing equipment for large scale operations.

Need: Design a cheaper, benchtop level version of the Automated UV Dispense & Cure Station that can accommodate a wide variety of Masimo's devices, and to be targeted for small scale operations, such as batch or pilot runs. This system needs to allow the operator to load, dispense, cure, unload the working parts in a safe and streamlined operation while ensuring dispense & cure parameters are consistent.

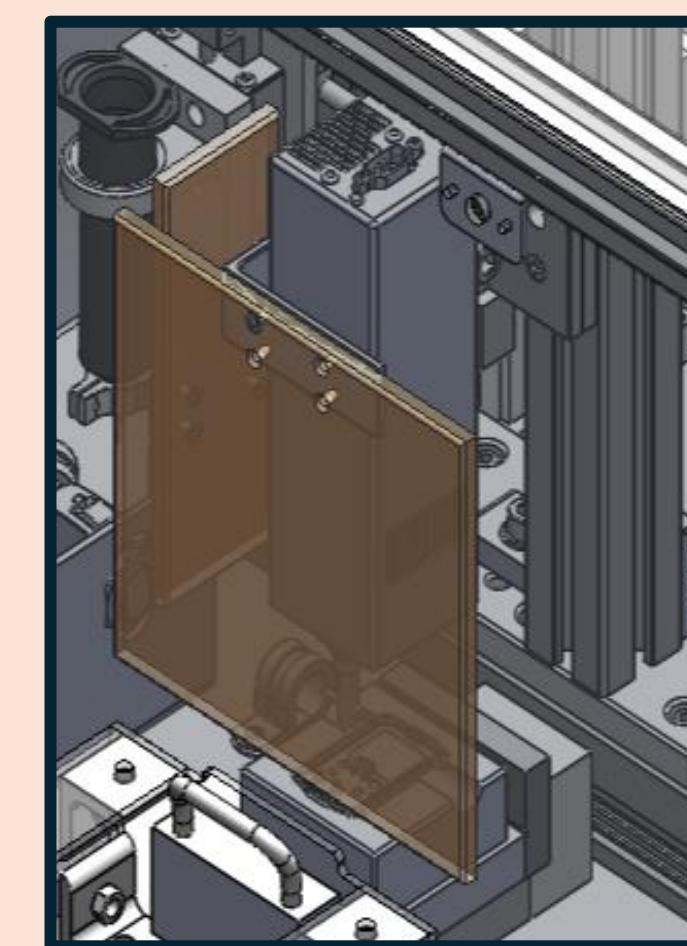
Stages of Operation



1. Part is placed into the nest and moved away from the operator



2. Resin is dispensed from the EFD into the part



3. Resin is cured with UV light from the MX-150

Major Components

Electronic Casing

- PLC
- HMI
- UL Disconnect Switch
- 24V Power Supply
- Terminal Block
- 1 Amp Circuit Breaker
- Emergency Stop Button

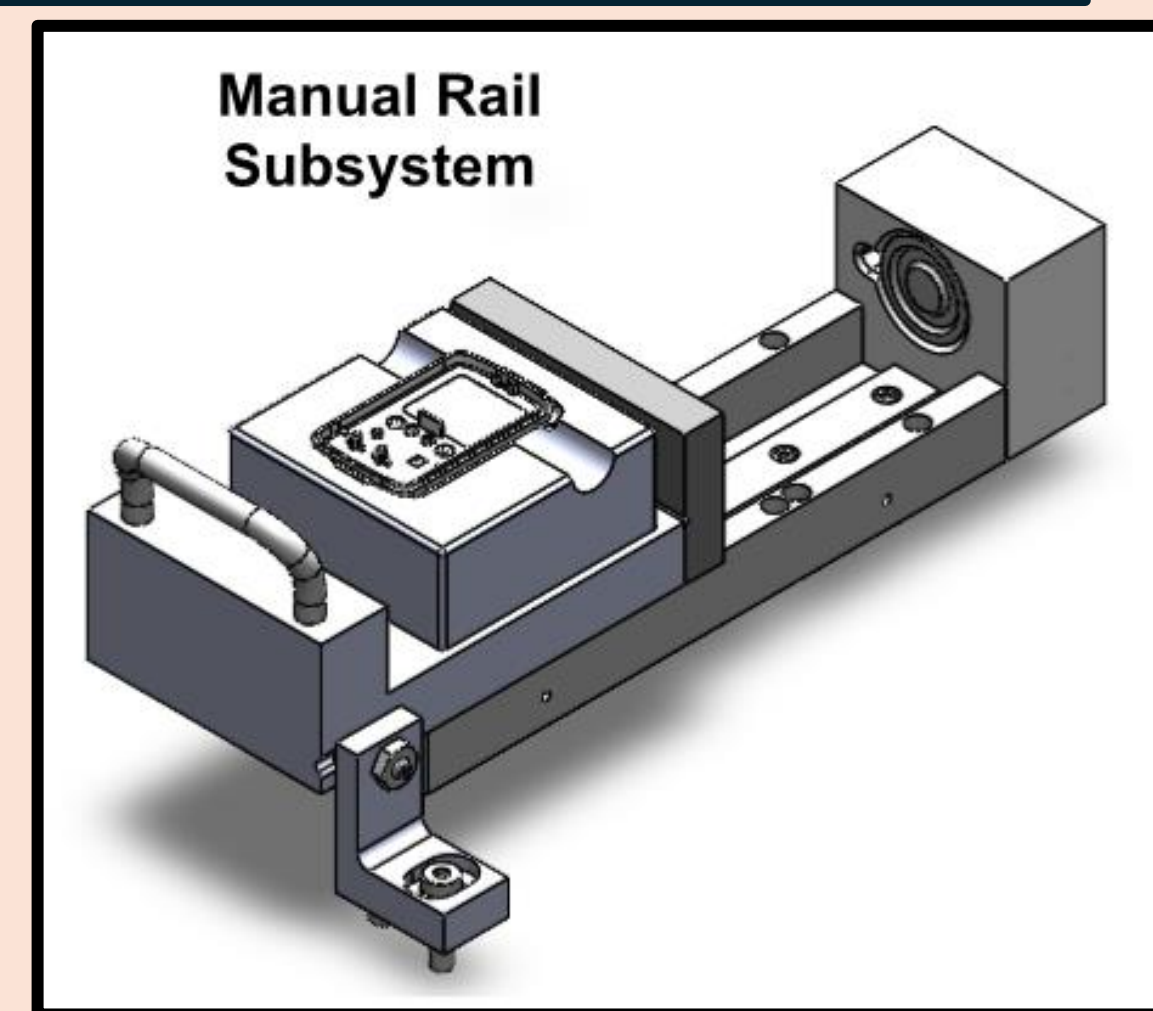
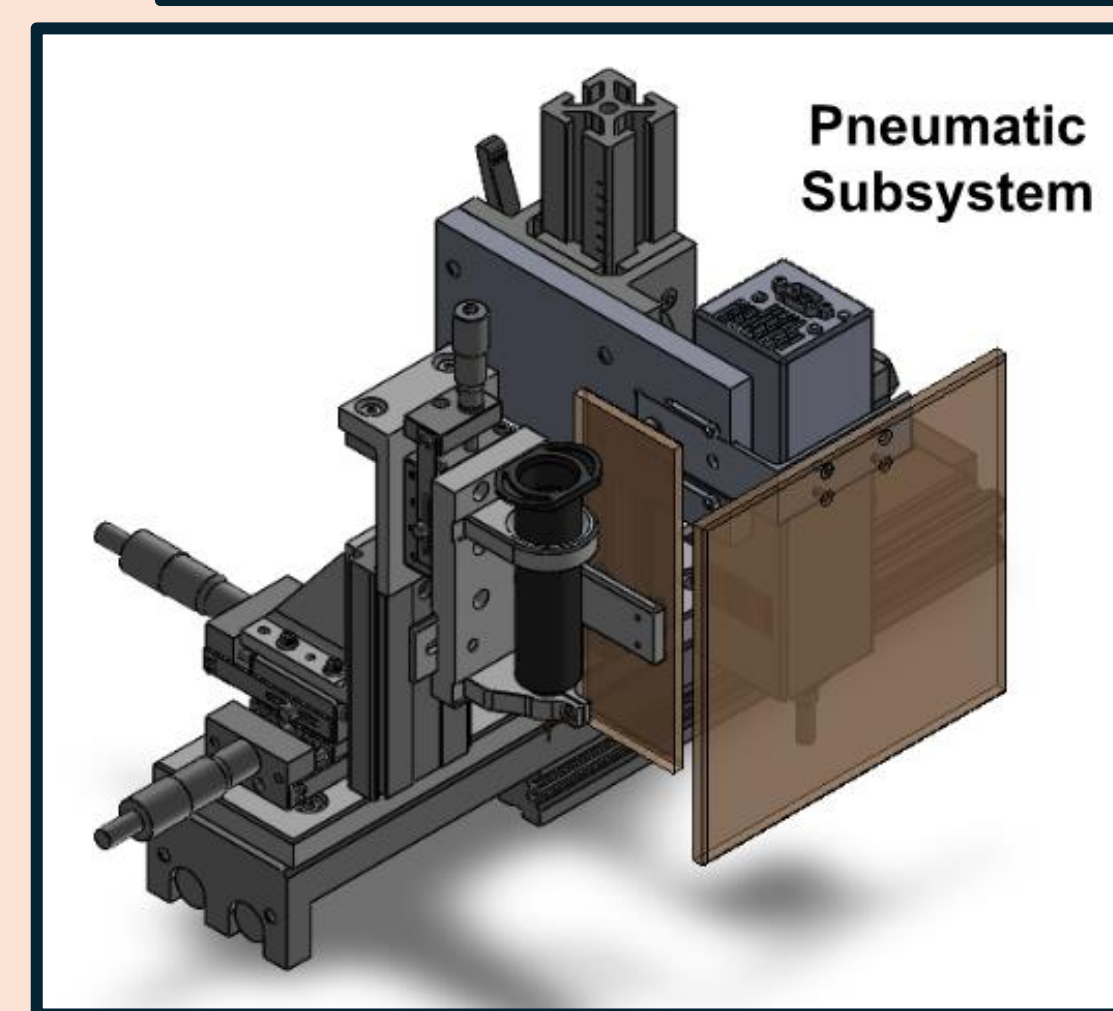
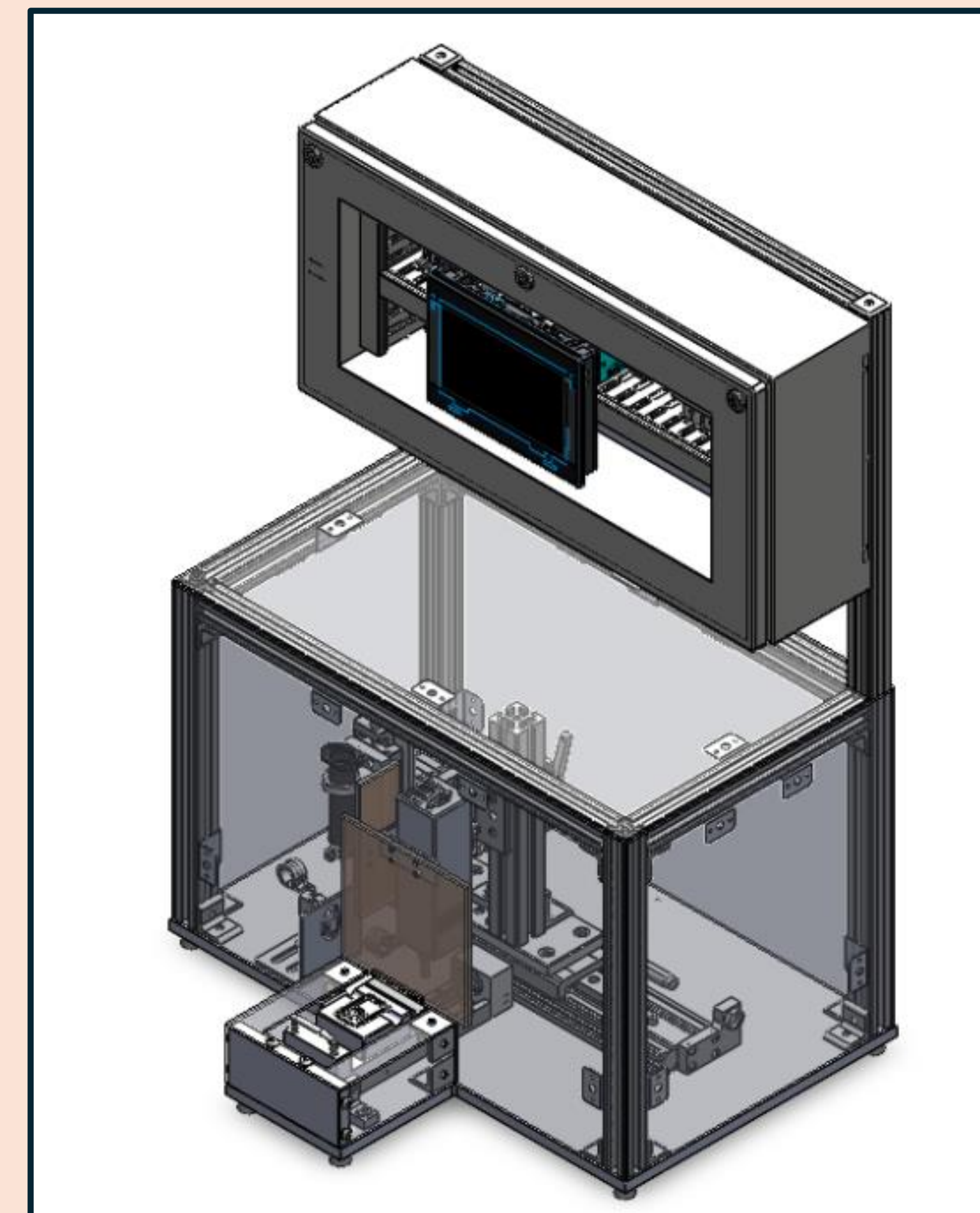
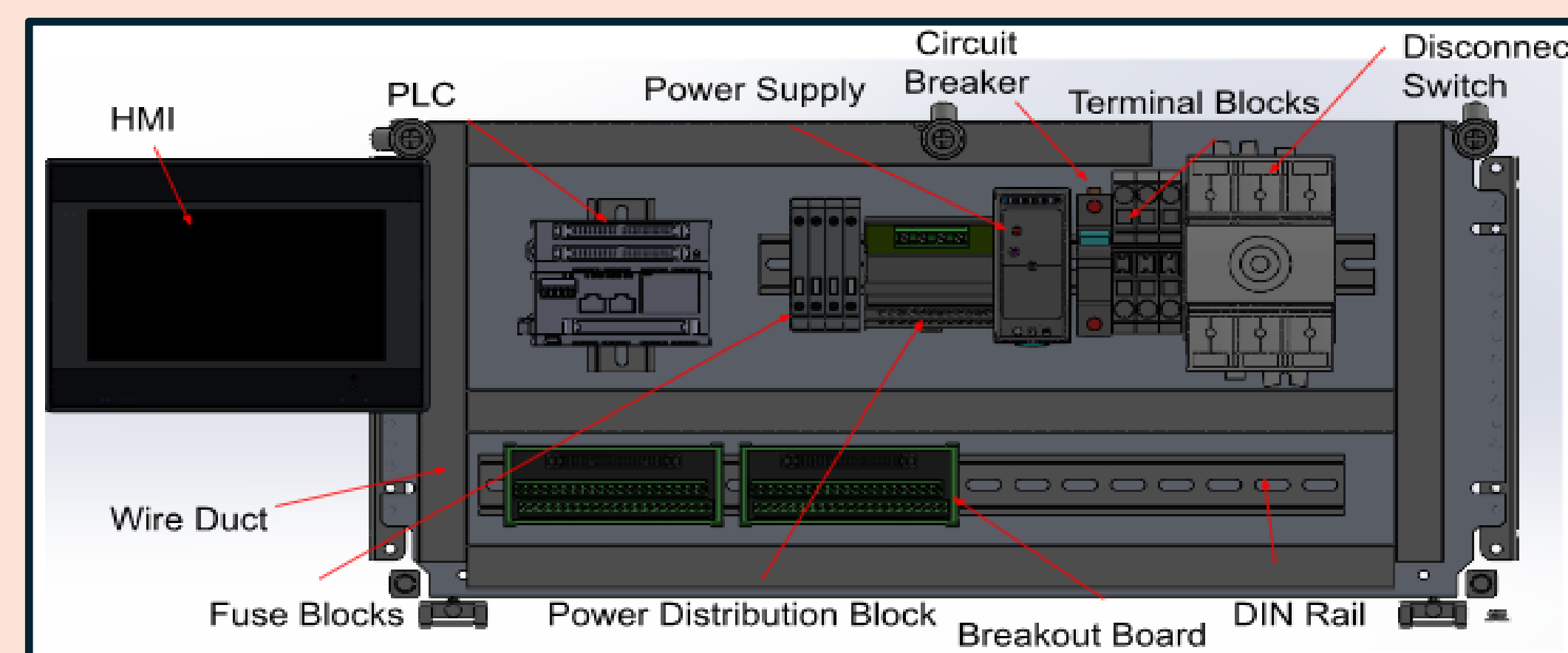
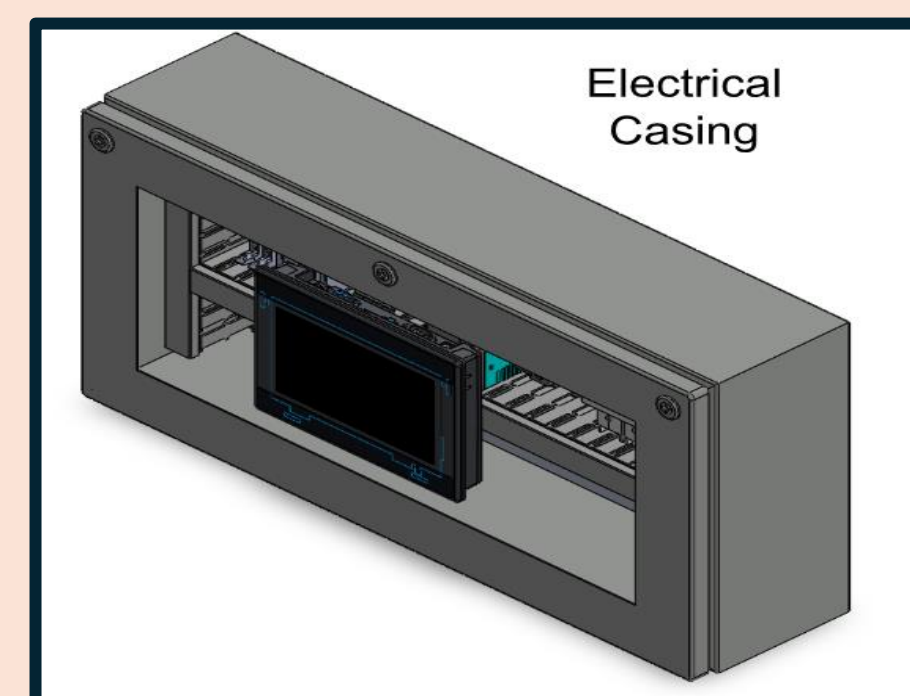
Pneumatic Subsystem

- Dymax MX-150 UV Light Emitter
- Nordson Electronic Dispensing Unit (EFD)
- Syringe Pneumatic Actuator
- Horizontal Pneumatic Actuator
- Air Preparation Unit
- Valve Manifold

Manual Rail Subsystem

- Linear Rail
- Carrier 1
- Nest
- Electromagnet
- Detent Fixture
- Beam Break Sensors

Assembly



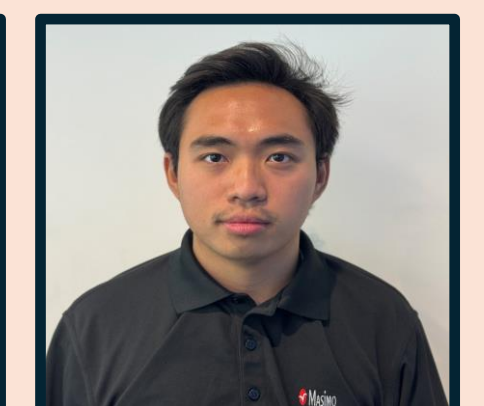
Meet the Sponsor

Founded by SDSU alumni, Joe Kiani, Masimo is a global medical technology company that develops and produces a wide array of industry leading monitoring technologies, including innovative measurements, sensors, and patient monitors.

Team Photron



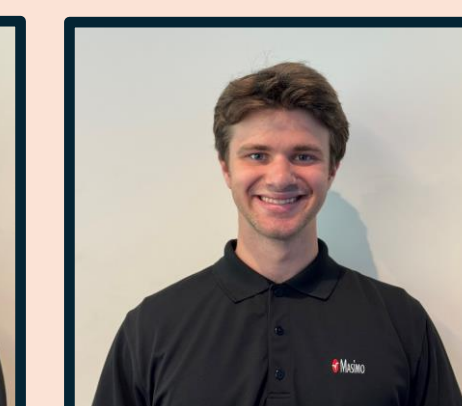
ME Lead: Mason Cayaban



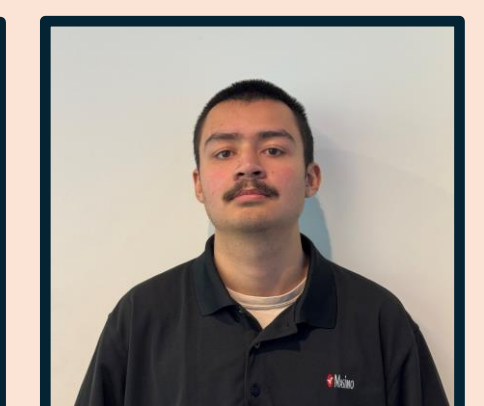
ECE Lead: Trent Nguyen



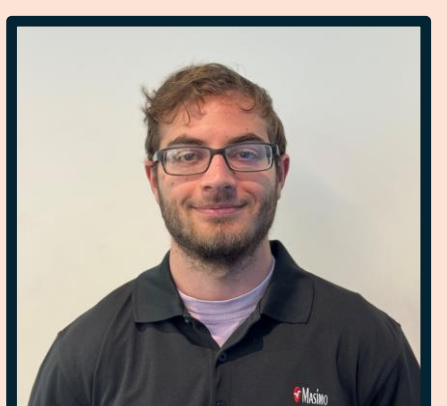
ME: Wade Anderson



ME: Ethan Anderson



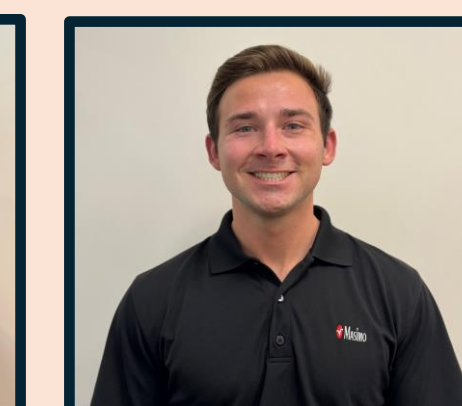
ECE: Brandon Cabatu



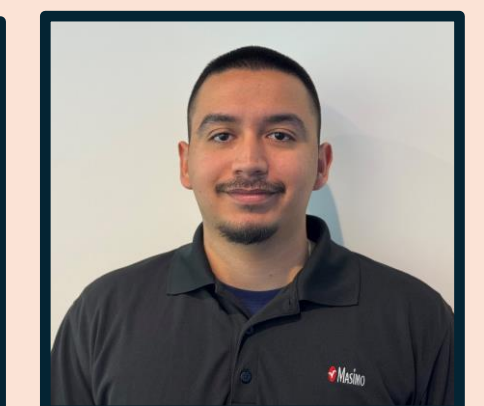
ECE: Steven Awakem



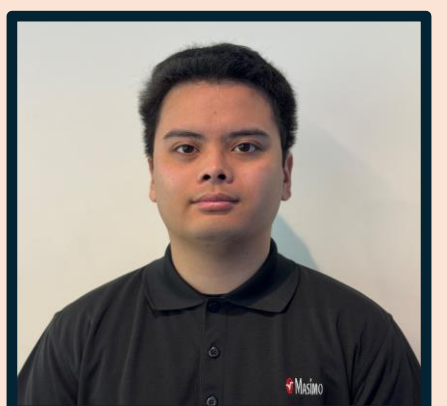
ME: Kyle Desamito



ME: Zachary Payne



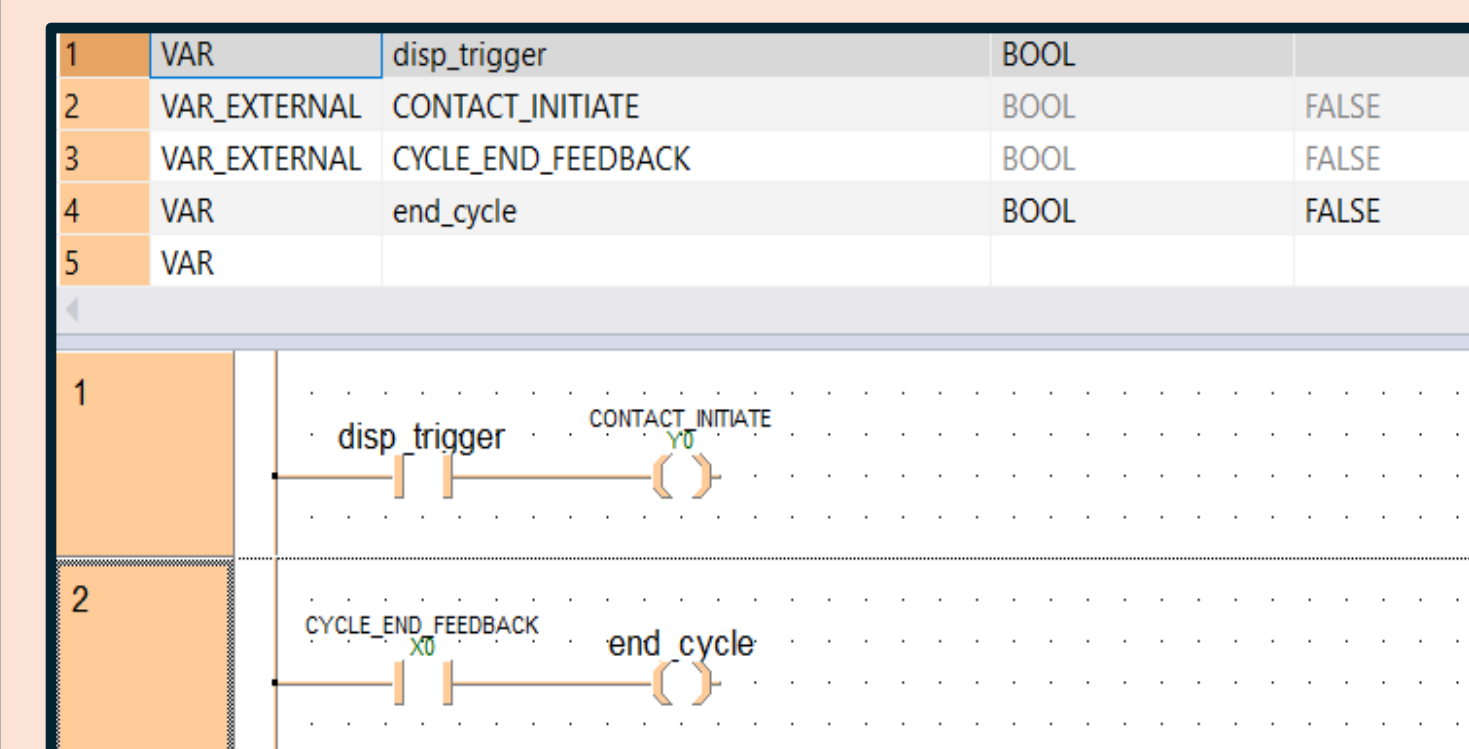
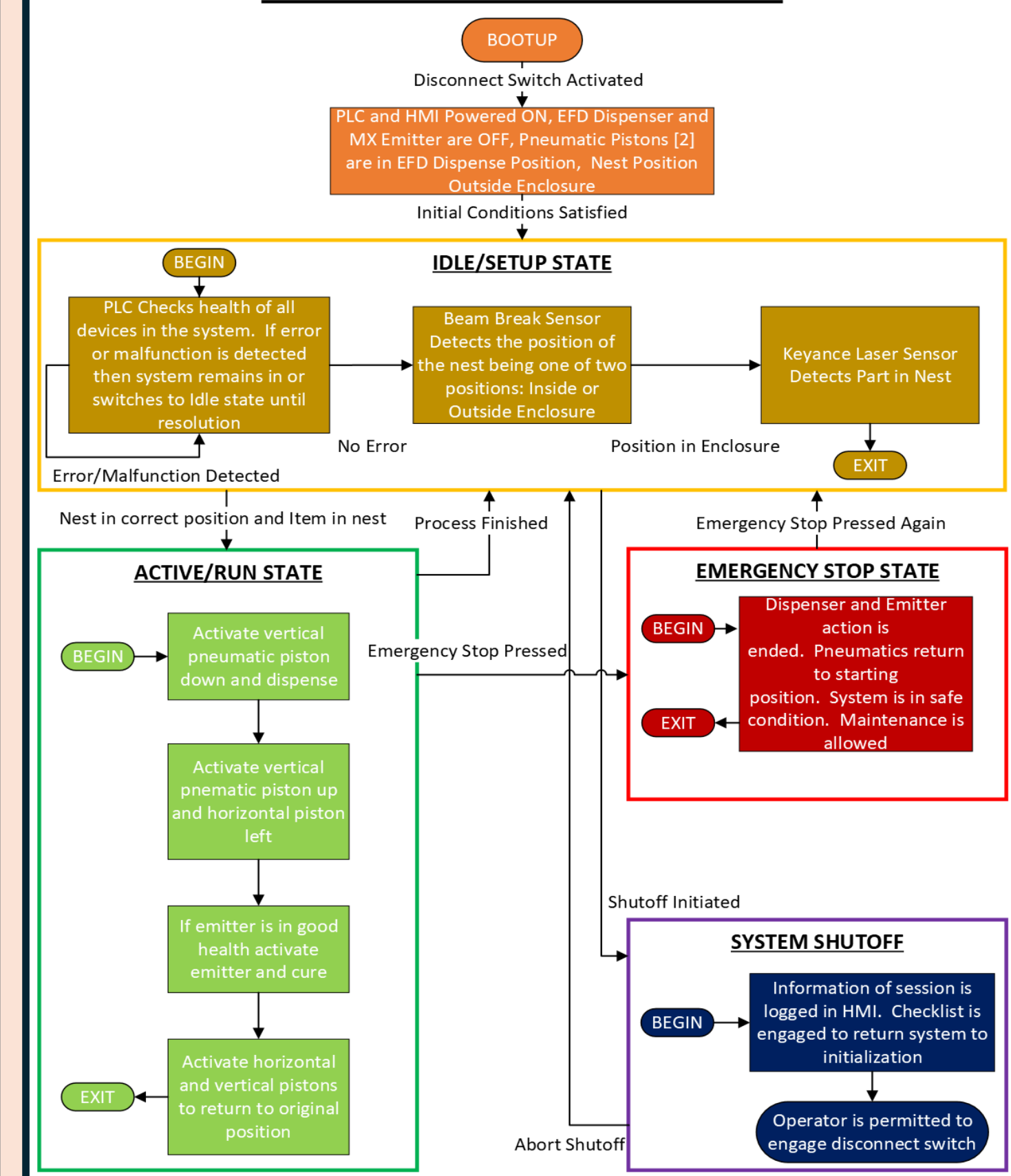
ECE: Vidal Marquez



ECE: Marco Montano

PLC Ladder Logic

PLC SYSTEM PROCESS DIAGRAM



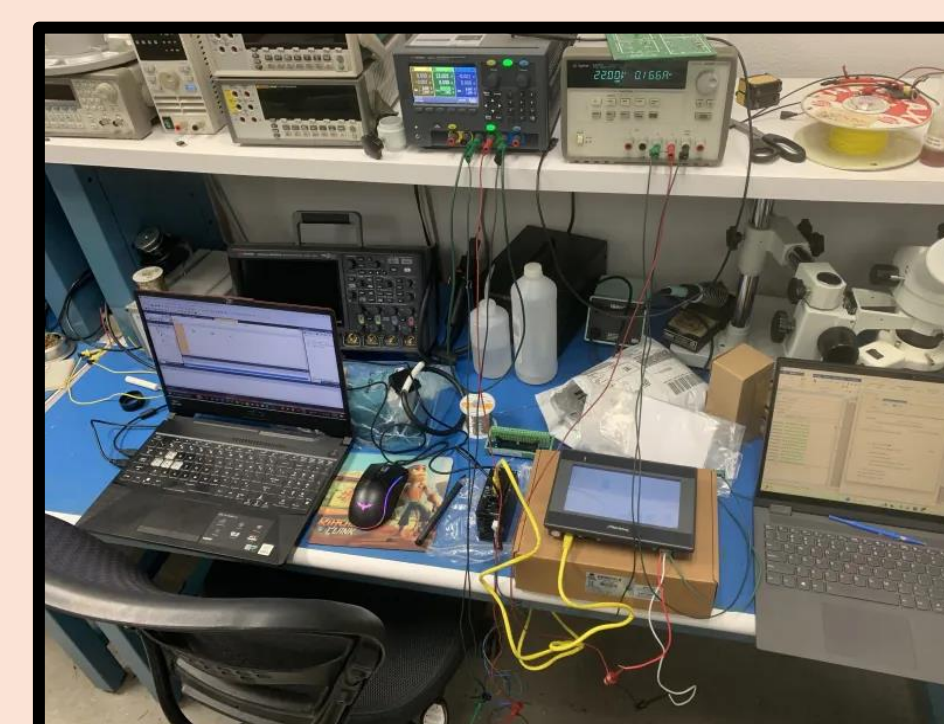
Manufacturing and Testing



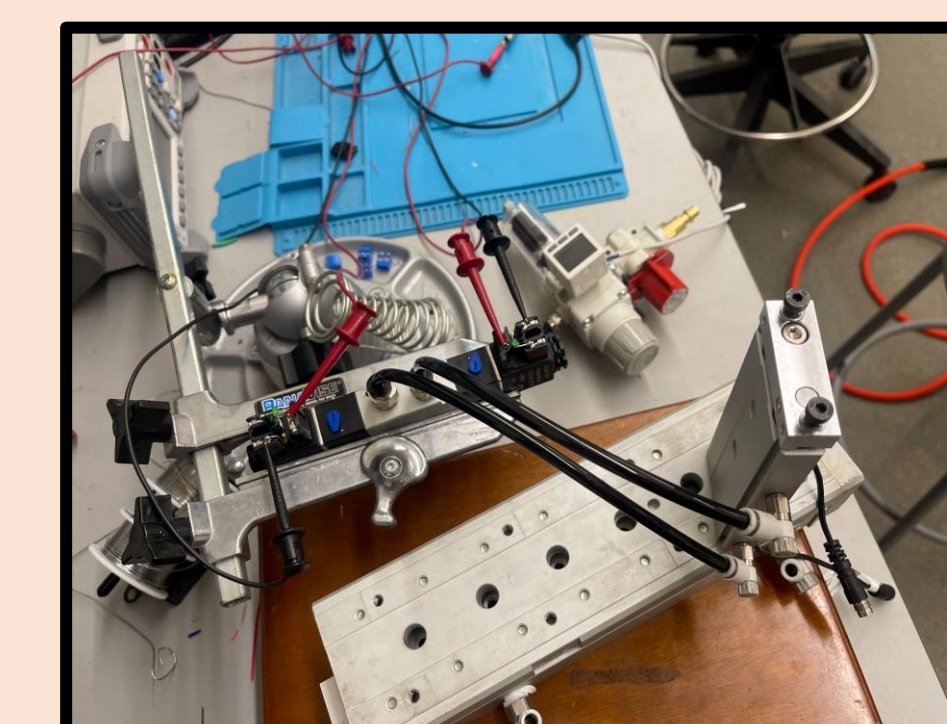
CNC Machining



Water Jetting



HMI Testing



Pneumatic Testing

Acknowledgments

Team Photron would like to thank Dr. Scott Shaffar and Professor Barry Dorr for arranging and advising the project. The team would also like to thank everyone at Masimo, specifically Glenn Pohly, Brendan Green, and Marc Laidet for their support and contributions towards the project.

