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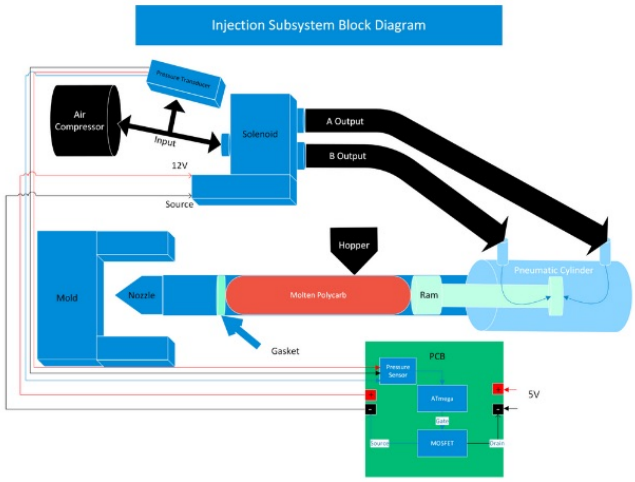
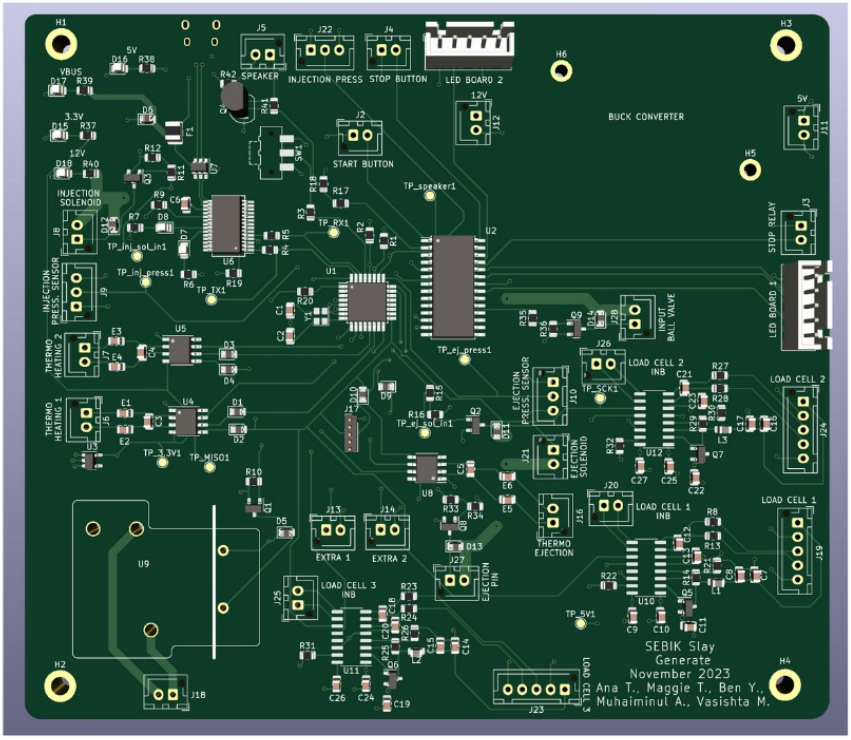
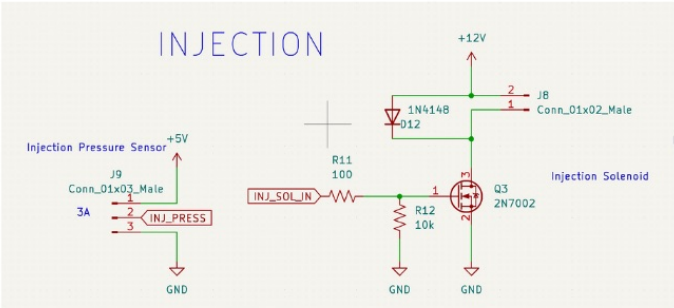
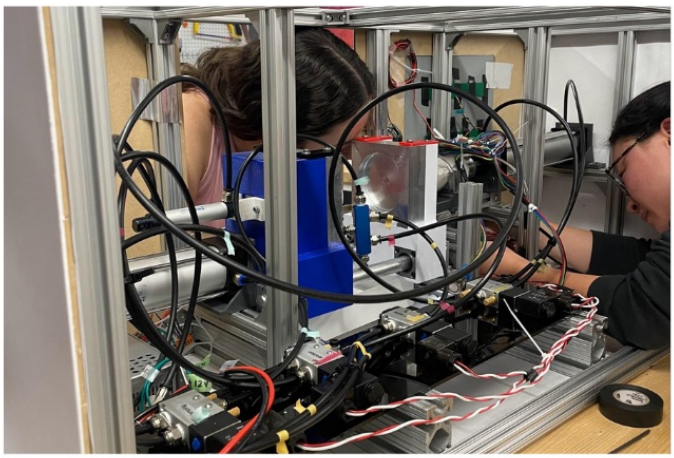
AUTOMATED TABLE TOP INJECTION MOLDER (SEBIK)









What?

- Collaborated with a team of 12 engineers in developing an automated tabletop injection molder to produce one common medical product every four minutes to address medical supply shortages in rural hospitals nationwide

How?

- Designing a **custom PCB** with **N-channel MOSFETs** to control pneumatic pistons and an **ATmega328PB microcontroller** to regulate airflow
- Developed exception handling mechanisms using **C++**, ensuring user safety throughout the injection process
- Analyzed potential failure modes within the injection ram subsystem using a **DFMEA**
- Verified the functionality of the PCB by performing continuity testing using a **multimeter**

Results

- The design fulfilled its intended functionality by allowing 10.45 grams of molten polypropylene to be injected every 4 minutes via pneumatic pistons