Georgia Tech School of Electrical and Computer Engineering
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HyTech Racing

Battery Management System

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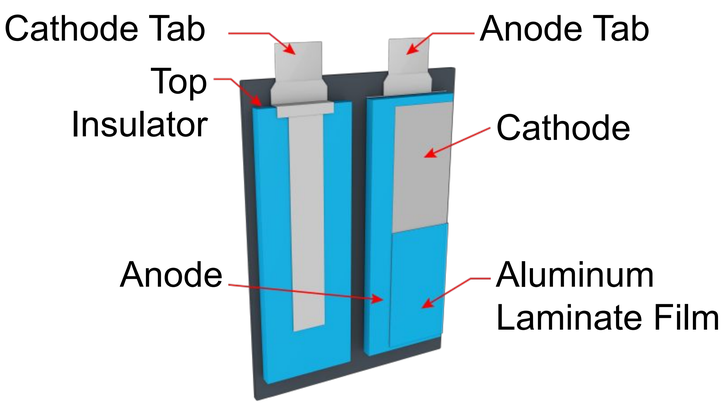
Introduction

- HyTech Racing is in need of an all-in-one battery charger
- **Problem:** HyTech's current system was lacking in ease-of-use and consistency
- **Our Solution:** Design and build an all-in-one unit to charge, track, and balance battery cells
  - **Hardware:** Cell dimension variance
  - **Software:** State of health data analysis and friendly user interface

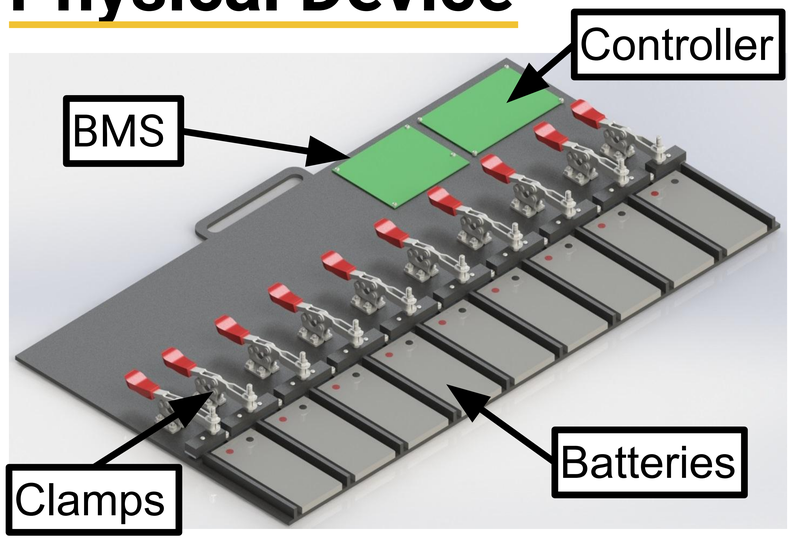
Lithium Cobalt Oxide Pouch Cell



Features

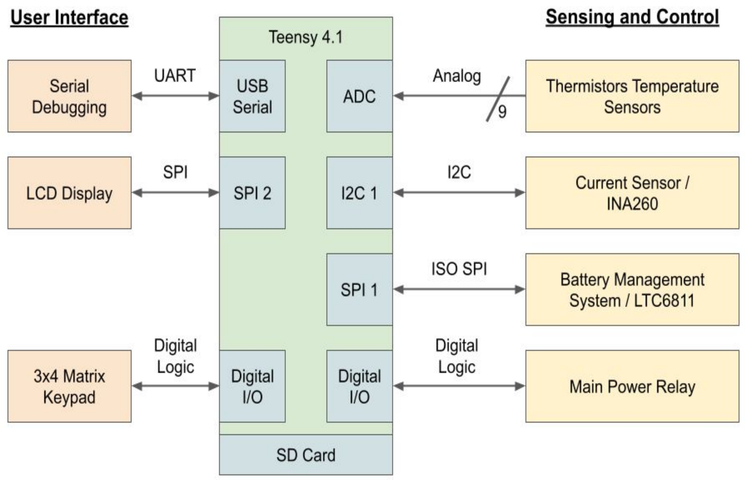
- Charge 9 LCO battery cells
- Balance the cells while charging
- Estimate battery state of health with data logging

Physical Device



Functionality

Controller Board Block Diagram:



Performance

- **Charging**
  - Charging 9 cells at ~38V and 10A
  - We can expand to 12 cells if needed
  - Voltage can be measured in less than a millisecond while charging

Future Steps

- **Custom programmed power supply**
  - Adjustable voltage and current based on number of cells charging
- **Physical device upgrades**
  - Add protective box around BMS and controller
  - Reinforce body to prevent flexing
- **Development of software features**
  - We were only able to get cell charging working in software
  - HyTech can pick up on the work since the hardware is complete