Progress Report - Week 7 | Feb. 22 - Mar. 1, 2025

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Progress Discussion:

- The Cell Balancing Circuit is operational, currently facing actuating N-Channel Mosfet to activate with the Microcontroller's GPIO Pins.
- Transfer Switch in development; switching parameters are semi-operational. Currently on the 3rd iteration of Transfer Switch.
- Programming Notes:
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Discussion Notes:

- Need to get the transfer switch working. Prototype is at hand, but no components to test at the moment.
- The load switch will be controlled by the transfer switch.
- Have a capacitor that when power is unplugged, and cap reaches zero, load switch is kicked from external control to load.
- When external power is plugged in, voltages go to both the load AND the batteries

- Sensor Transition:
    - Moved from using the INA219 and ADS1115 to four INA260 sensors.
    - The ADS1115 was inaccurate and could not reliably measure the voltages seen in a 4S battery pack.
    - The INA260 provides all necessary measurements (voltage, current, and power) in a single package, simplifying the design.
- Microcontroller Update:
    - Switched from the RP2350 to an STM32.
    - Currently implementing UART communication between a controller and the STM32 for data transmission.
    - Load Switching: Implementing an ideal diode to efficiently manage switching the load on and off from the battery supply.
    - Power Management Discussion: Evaluating the use of a Charger IC to manage power when the system is plugged into an external source (e.g., wall outlet).

Tasks at hand:

- STM32 Peripheral mode prototyping
- Test and integrate transfer switch w/ balancing circuit.