

THE NEXT GENERATION OF ELECTRIC AVIATION

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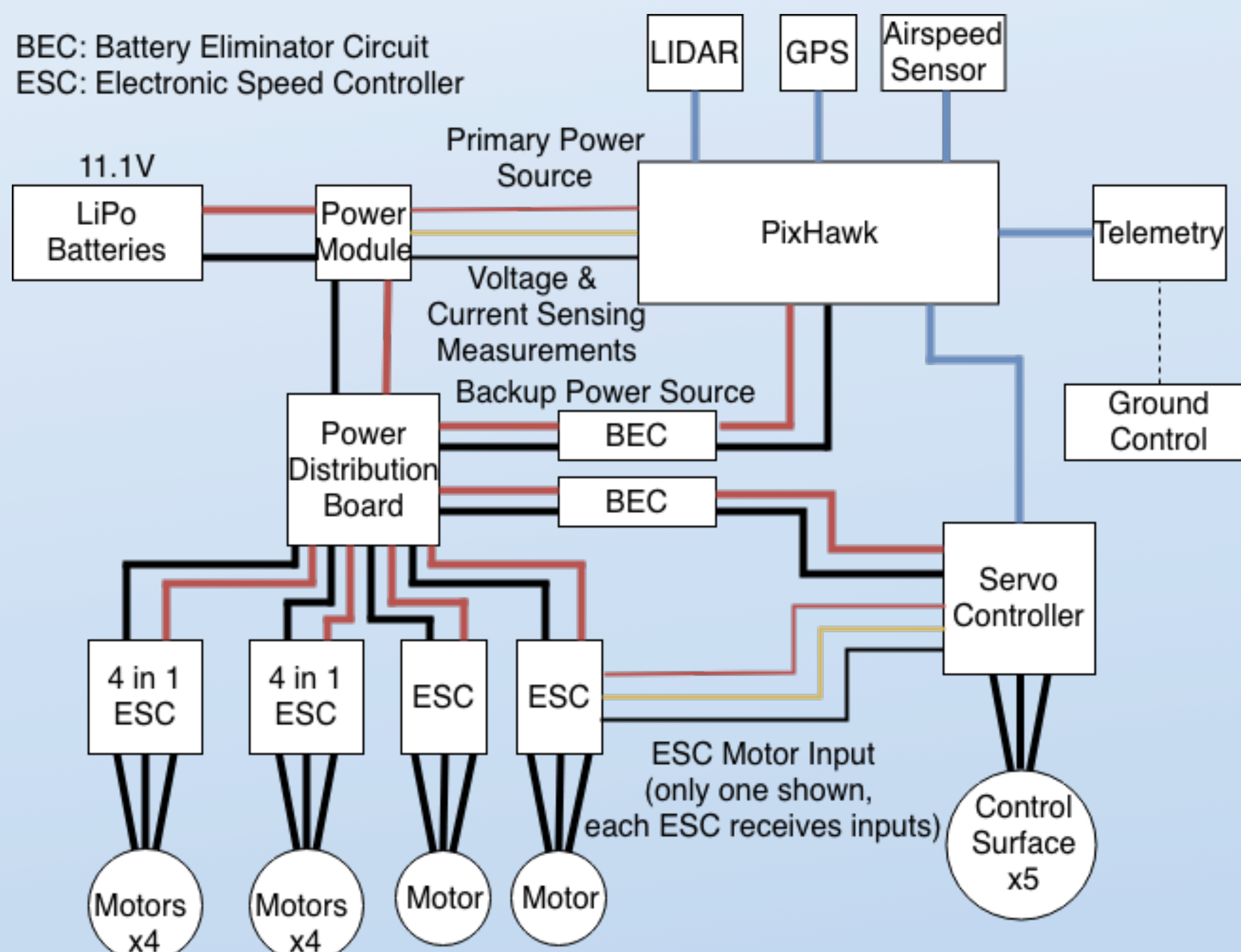
Background

Electric passenger flight is one of the most exciting, disruptive, new technologies on the verge of coming to market. There is a potential to reduce emissions and increase comfort to hundreds of millions of airline passengers across the world, not the mention, substantial growth in profitability and efficiency to the world's largest airline companies. Wright Electric, an electric aircraft startup based in Los Angeles, has the goal to have every short distance flight be zero-emissions in the next twenty years by developing an electric-powered, commercial airplane using electric propulsion and swappable battery packs.

Overview

In support of this goal, our team is focusing on two distinct project prototypes: autonomous takeoff, flight, and landing of an RC plane and a ground based distributed electric propulsion system.

Hardware Block Diagram



Target Features

- Autonomous flight time of 4 minutes
- 10 Motor distributed propulsion rover
- Full autonomous flights performing lift off, cruise, and landing

Hardware Components



Pixhawk 2

- 168MHz Cortex M4
- Fully Compatible with PX4
- Triple redundant IMU sensors



Scorpion Motor

- 1900 RPM/Volt
- 130 W Maximum Continuous Power

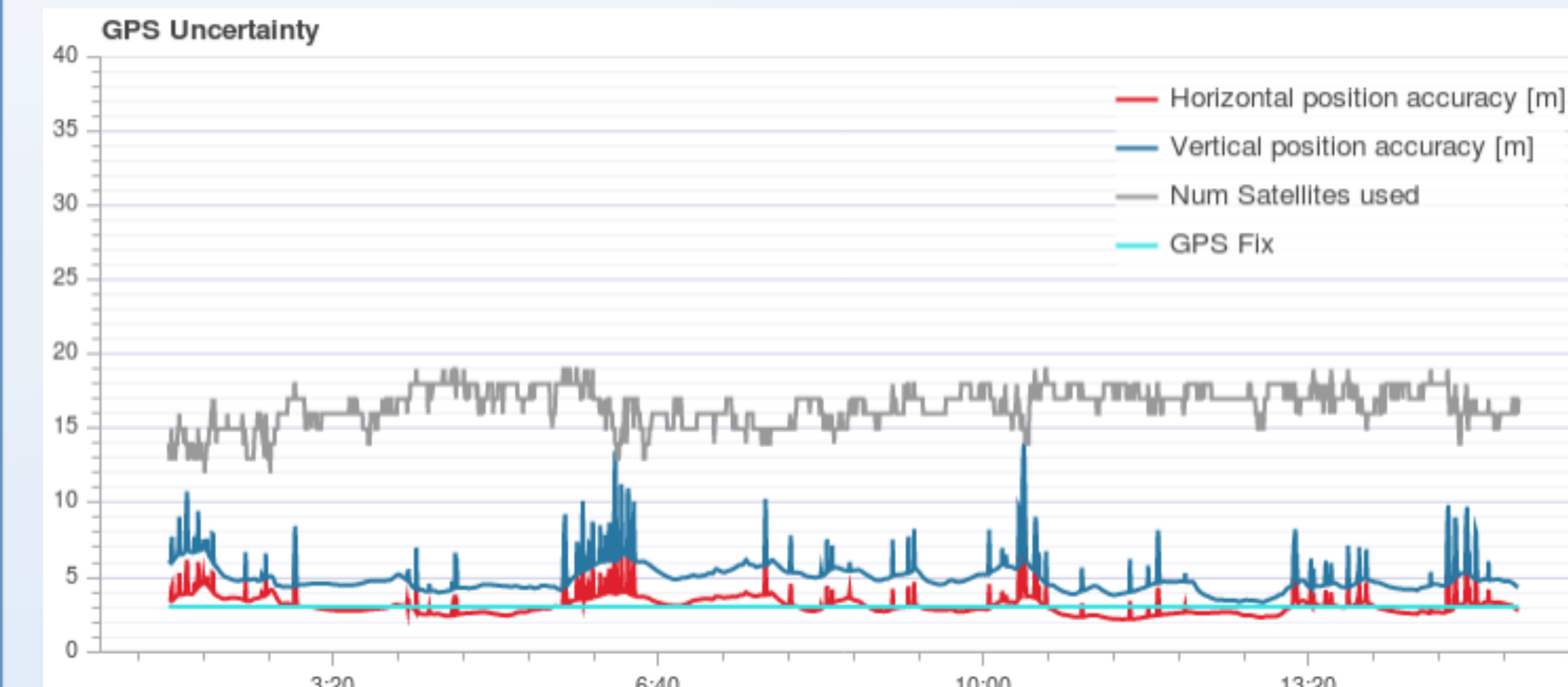


Here GNSS GPS

- -167 dBm navigation sensitivity
- Supports all satellite augmentation systems

Results

The data below displays the GPS uncertainty during a manual test flight, in order to qualify the accuracy of the sensor package.



The figure below shows the actual route followed by Wilbur as it autonomously executed a pre-programmed flight path.



Goleta Monarch Butterfly Grove

Future Improvements

- Incorporate distributed electric propulsion system into autonomous aircraft
- Design Power Management PCB to simplify wire management and lessen weight
- Thermal simulations and management