



## Company Overview

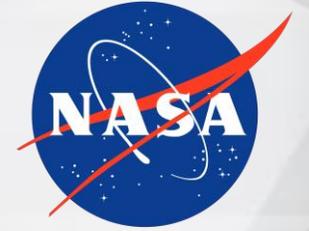
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Powering Transportation's  
Electric Renaissance

# Company Overview

- **Description:** Leading provider of high-voltage, high power, and certifiable electric power systems (primarily energy storage and distribution) for highly reliable applications
- **Key Markets:** Aerospace & Defense, Automotive, Marine, and Industrial Traction
- **History:** Founded in February 2016. Foundational / core IP and technology dates to as early as late 90s under Infineon / Phillips Aerospace
- **Locations:** Logan, UT (HQ) & Los Angeles, CA (Innovation site)
- **Employees:** 95+ (prior experience at Boeing, Collins, Honeywell, Rolls Royce, Safran, Cummins, ATK, Ford, General Atomics, L3, Northrup Grumman, Sig Sauer, General Dynamics, Infineon, Merrill Lynch, etc.)
- **Primary Shareholders:** Founders, Boeing & Safran
- **Other:** AS9100, ISO9001 Certified



# Footprint & Capabilities

## ○ North Logan Headquarters

- 16k sq. ft (8k manufacturing; additional 60k sq. ft of manufacturing will come online in mid- 2021)
- Can run loads up to 4MW; Engineering lab for battery life cycle cell characterization and module cycling
- Includes thermal chamber and thermal management system controls / emulation
- Environmental testing capabilities including shock and vibration as well as altitude; Facility has thermal vacuum

## ○ Battery Limit and Stress Testing (BLAST) Lab

- Destructive testing for DO311A
- Hybrid-propulsion integration lab (up to 7k lbs. thrust)

## ○ EPS Development and Test Lab (USU Innovation Campus)

- Advanced technology research (including active BMS research)
- Wireless charging assets and microgrid testing
- Rapid prototype capability (3D printers and 5 access CNC machine)
- Battery emulators (420kw of power)

## ○ Pilot Line

- Manufacturing for 4k sq. ft and R&D Facility



# Heritage in Electric Aviation

- Since 2016, the company has won over 30 programs, with over 20 programs in hybrid-electric and all-electric aircraft, specifically
- Current manned and unmanned aircraft customers include Boeing, Bell Helicopter, Embraer, Safran, United Technologies and Bye Aerospace
  - Electric Power Systems also has many private development programs with high-profile customers



# Heritage in Electric Aviation



- Electric Power Systems currently has battery systems flying in six hybrid-electric and all-electric aircraft
  - The next closest competitor has only been awarded one bid for aircraft battery systems
- Electric Power Systems has also developed numerous battery systems for military hybrid armored vehicles, electric marine vehicles, and commercial vehicles
- Additionally, due to Electric Power Systems' stringent safety procedures and processes, its battery systems have never experienced field failures, unlike other industry players' battery systems

# Solutions

- Certifiable path to DO-311A, DO-160, DO-178, and DO-254
- Modular and scalable design – can be mounted in any orientation depending on vehicle architecture
- DC Fast Charge capable for quick aircraft turnaround supported paced operations
- Containment preventing module-to-module propagation during thermal runaway
- Leading energy density, weight, and cycle life performance characteristics
- Wireless power and communication cables between modules
- Integrated liquid cooling



**Custom  
Integrated  
Assemblies**



Battery  
Management  
Systems



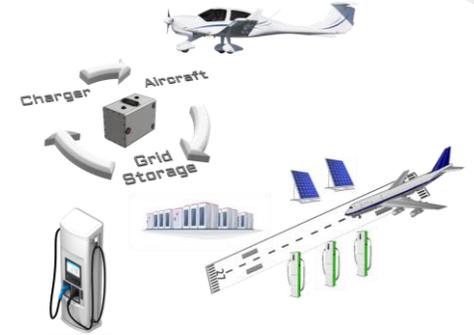
Software &  
Control  
Algorithms



Leading 3rd  
Party Cell  
Technology



Packaging &  
Thermal  
Management



## Safety

- Containment System must show ability to prevent propagation
- Battery Management System must prevent abuse

## Energy & Power Density

- $> 180\text{Wh/kg}$  needed at System level to be used in propulsion
- Airborne Applications require high discharge rates ( $> 3c$ )
- High power accompanied with environmental conditions invokes need for onboard thermal management

## Operating Cost

- Must compete with traditional transportation systems
- Decrease the time it takes to deliver goods
- Improve reliability of propulsion systems
- Drive commonality across platforms
  - Economies of scale

## Infrastructure

- Ability to rapidly turn around an asset
  - Reduce the cost of DC fast charging
- Provide secondary markets for onboard assets
  - BMS that handles Module mismatches
  - Drive commonality from airborne to ground applications

An aerial night view of a city with lights and a glowing yellow arrow graphic pointing right.

# Powering Transportation's Electric Renaissance