

Research Engineer, Power Electronics

Description:

VerdeGo is seeking a technical expert in electrical and electronic systems as applied to hybrid-electric power generation and related systems for aviation. The successful candidate will have a PhD in electrical engineering with a strong focus in Power Electronics. We seek at least 2 – 5 years of commercial (industry-based) project experience with operational hardware in power electronics.

Beyond the general area of power electronics, here are several areas where VerdeGo is working and where a successful candidate should have familiarity and possibly experience:

- High voltage DC components, circuits, and systems. VerdeGo systems operate up to 1000 VDC.
- Dynamics of HV DC systems, and hardware level best practices for product assembly, validation, operation, and maintenance.
- High-power (up to 100 - 300 kW, 300 – 500A) switched devices such as inverters and motor controllers. A key feature of every VerdeGo power generation system is a high-power inverter, therefore experience with different inverter architectures including SiC, issues relating to EMI and noise with high-frequency inverters, and other specifics related to hardware application would be highly valuable.

Job Responsibilities

- Engage with VerdeGo's technical team to help guide the electrical and electronic systems approach for developing the next generation of aerospace electric powerplants
- Support the design, development, testing, and validation of Electrical and Electronics systems including Power systems with a focus on optimizing for efficiency and weight
- Help to develop hardware and software to efficiently manage the engine, generator, inverter, and/or power distribution components for HV DC systems with significant transient loads
- Communications systems at VerdeGo Aero will include CANbus, RS-232, RS-422 and other protocols. Successful candidate may contribute to proper design and application of these protocols, including physical execution such as proper grounding and shielding, programming, and system troubleshooting
- Consider the end goals of fully functional systems including the development of customized components as well as the selection of off-the-shelf components
- Relative to our Li-Ion battery pack development projects, contribute to company work on layout, connection, and cooling. Familiarity with options for design and implementation of battery management systems is helpful.

Organizational Competencies

- Must be a team player with positive attitude. VerdeGo is a growing company, we routinely take on big challenges on a tight timeline, and we learn fast. Company culture is consistent focus on learning and moving forward as a team.
- Strong communication skills are important. The successful candidate will be expected to present work and key findings to internal stakeholders, investors, and customers.
- Patience and interest in mentoring will be important. VerdeGo has a strong team of young engineers and ideally, they will learn and grow. In addition to a strong science contribution, the best candidate will also be open to coaching, trusting, and pushing our growing electronics team.

During product development, VerdeGo maintains a keen eye on the make vs. buy question. We tend to focus manufacturing outside our facility to keep our physical footprint and overhead low, but we can and do execute some wiring and electronics development in-house. Going forward, there is an expectation for a blend of internal development vs. outside manufacture as it relates to LV wiring, HV wiring, controller development, and other activities.

Qualifications Required

An accredited Doctorate degree in Electrical Engineering or a closely related field.

2 – 5 years of experience with power electronics