

SYSTEM CONTROLLER DEVELOPMENT

## Commercial Aviation

Project  
Management



Systems  
Engineering



Electrical  
Engineering



# FPGA CODE DEVELOPMENT FOR AN AIRCRAFT ELECTRIC STARTER GENERATOR

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## APPROACH

- Assembled a dedicated team with aviation-focused engineering experience
- Setup a rigorous, multiphase project compliant with DO-254 DAL A certification
- Collaborated with the client on-site to determine the requirements flow down and to set up systems and engine tests
- Coordinated independent verification engineering

## RESULTS

- DO-254 planning documents for project completion (PHAC, HDVVP, HRVVS, HDS, HCMP, HPAP)
- More than 1,000 FPGA-validated requirements
- Field-oriented control (FOC) floating point algorithms to fixed-point field-programmable gate array (FPGA) code
- VHDL code for the controller that communicates with external systems
- FAA certification on the electric starter generator (ESG) communicates with a broad set of commercial and military aircraft

## KEY TOOLS & TECHNOLOGIES

- Very High-Speed Integrated Circuit Hardware Description Language (VHDL) code
- Hardware-in-the-loop (HIL) testing
- Systems testing on the dynamometer
- Aircraft Communication Protocols: ARINC 429 and MIL-STD 1553
- Simulink

**ALTEN TECHNOLOGY**