



Partner Projects

High Speed Magnet Retention Solution Enables Quick Recovery

Customer

A domestic technology developer and solution supplier to the US Department of Defense (DoD).

Application

Classified.

Challenge

With permanent magnet DC motors, high-speed rotation at high temperature can cause surface mounted magnets to shift, reducing critical air gap clearance between the rotor and the stator. The initial magnet retention technology purchased by the customer failed during initial testing, putting the critical project's development schedule at risk resulting in increased scrutiny from concerned government representatives. Producing an acceptable technical solution within a very condensed timeline became a critical success factor. As an additional challenge, all engineering, planning and communication needed to be done remotely due to the global pandemic occurring at the time.

Solution

Restraining the permanent magnet mass at very high rotational speed under all operating conditions required detailed analysis and deep engineering expertise to properly evaluate. Windings' Engineering

Services team was engaged on an immediate and expedited basis to work closely with the client's project engineers to develop a retention solution. To conserve time, project representatives from both companies met on a daily and sometimes even hourly basis to coordinate the development of a high-tech carbon fiber sleeve. In parallel with the technical development activity, Windings' rapid prototyping team salvaged components from failed customer test units to build new prototypes more quickly.

Results

Windings successfully delivered an innovative technical solution that met or exceeded all operating requirements for the application. The time from initial Windings' engagement to delivery of working prototypes was less than 2 weeks, minimizing project schedule delay for the customer.

Windings

For more than 50 years, Windings has provided engineered electromagnetic solutions for critical applications in the Aerospace, Space and Defense industries. As a full-service provider, Windings is a leader in the engineering, optimization and manufacturing of custom electric motors, generators and related components including rotors, stators, lamination stacks and insulation systems.

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