



Partner Projects

Parker Solar Probe a Hot Topic

Customer

As part of NASA's Living With a Star program, Johns Hopkins University Applied Physics Laboratory (APL) designed, built and manages the operation of NASA's Parker Solar Probe, whose mission is to conduct a detailed study of our Sun by flying 24 progressively closer passes (closer than any previous spacecraft) through the Sun's atmosphere over the course of seven years.

Application

Solar panels provide power for the spacecraft during its mission. The panels must be stowed very compactly for launch, then deployed using electric motors once the spacecraft reaches a safe orbit.

In addition, maintaining optimal communication signal integrity between the command center on Earth and the probe as it travels throughout the solar system requires electric motors to constantly reposition the probe's radio antenna.

Challenge

Size, weight and reliability are all critical factors in spacecraft design. Powerful yet compact electric motors that could survive the harsh conditions of space travel and work flawlessly throughout a seven-year mission were required.

Solution

Windings worked closely with our contract partner to develop electric motor stator components that could be tightly integrated into the Parker Solar Probe's antenna deployment and radio antenna positioning mechanisms and operate reliably throughout the entire planned mission.

Results

The Parker Solar Probe launched successfully on August 12, 2018. Upon reaching a safe orbit the solar panels deployed as planned. On January 29, 2020, 1-1/2 years after launch, the probe completed its fourth pass through the Sun's atmosphere. With the radio antenna positioning properly, no communications anomalies have occurred.

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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