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THE DEVELOPMENT AND DESIGN OF A SOLAR TRACKER SYSTEM IMPLEMENTED IN SPACE EXPLORATION VEHICLES

Abstract

The sun is one of the most important energy sources in space missions. The power sources depend on the mission requirements, such as where is it traveling to? and for how long will it be functioning? The objective of this paper is the development of a solar tracking system for supply energy to a geosynchronous satellite in earth orbit or also for planetary surface exploration devices. Presenting information about the design of the mechanical system, instrumentation and device control system.

The main idea for a solar tracking system is to propose an alternative way of constantly supplying power to space exploration devices, without the need to implement different and more complex power supplies, reducing the mission payload and, of course, reducing operating costs. The system will be controlled by a PID (Proportional-Integral-Derivative Control) integrated into a microcontroller, supported by photoresistors that will be in charge of the feedback of the Proportional-Integral-Derivative control, transmitting signals to the microcontroller, positioning the solar panels on the point where the reception of solar energy is stronger. The implementation of a system that can be recharged autonomously means an advance in the useful life of space vehicles, allowing more profitable missions with a greater impact and cost benefit for the aerospace industries.