

# DESIGN OF A NEW MULTI-VARIANT SOLAR PANEL DEPLOYMENT SYSTEM (MVSPDS)

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## Abstract

Multi-Variant Solar Panel Deployment System (MVSPDS) is defined as the satellite deployment System which can change its orientation according to the power supply required for the satellite or power supply source available to the satellite. To deploy the solar panels completely, it is necessary to design the deployment mechanism which has high precision and reliability. So, this method of deployment will not only provide the said benefit but also it will allow a wide range of application. Consequently, the analysis on the dynamic characteristic of the deployment mechanism must be done at an initial design stage. The design effectiveness and structural safety of the proposed solar panel module were validated by launch vibration and in-orbit environment tests at the qualification level. In this paper, the complete design of a new Multi-Variant Solar Panel Deployment System in a Satellite is proposed completely by me, where the author have inculcated various deployment methods and proposed a new method of satellite deployment. The complete design is done in the Autodesk 360 software (Educational license) where the design and animation method are extensively used to make this possible. It will be clearly depicted from the design that the structure is very compact during the process of orbit insertion. Yet when it come into working it definitely works according to the power need of the satellite. For an example when the satellite needs less amount of power it will transform itself in such a way that the amount of power generation will be less on the other hand when the satellite needs more power than the Solar Panel will change itself in such a way that it will have the maximum surface area as a result of which the power generation will be maximum. Moreover, the variety which provides is really unique as it also has the power to change its solar panel into different structure for an example it can change itself into a circle like structure it can change itself in the canister to form another structure and moreover it will work completely according to the need if programmed properly for space flight mission. And hence can give rise to a wide variety of different deployment methods.

**Keywords:** Satellite, Solar Panel Orientation, Solar Panel Deployment, Multi-Variant Solar Panel