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SUSTAINABLE DESIGN OF LOW-COST MODULAR TEST PLATFORMS AS AN ENTREPRENEURSHIP FOR SPACE DEVELOPMENT IN COLOMBIA

Abstract

the research is based on the problem of access to ground testing systems of aerospace technologies, where colombia as an emerging country sees the possibility of entering the use and exploitation of its outer space, through the possibility of working with small-scale satellites, which demand its understanding and study in different scenarios such as, test systems and scale models that simulate the operation of this satellites in orbit.

faced with this, the methodology of sustainable product design and manufacturing is presented, as an entrepreneurship alternative for the realization of satellite structures of small scale and low cost. with the purpose of carrying out in a practical and integrated way different types of tests in the laboratory with equipment of the subsystems on board the platform.

this is intended to contribute to the development of proprietary technologies, evaluation and selection of integrated technologies, in the study of the aerospace concept necessary for the processes of technological appropriation facing a developing country. the above taking into account the need to link both public and private companies in the application and use of these technologies.

in this sense, the use of sustainable design methodology is proposed as a tool to determine the engineering specifications and the generation of conceptual design proposals for nanosatellite structures. likewise, it seeks to present the application of design techniques such as the quality deployment function, the inventive problem solving technique, the manufacturability-oriented design, the assemblability, the environmental impact, the reliability and the evaluation of safety, as relevant means for compliance with the operating standards of cubesat type models.

finally, several constructive modes of the low cost test platforms are proposed with different techniques and materials. these designs result in the materialization to test on-board systems in laboratories as vibration test-bench showed, to create a star-up and promote groups or companies research interested in developing space industry and technologies in colombia.