SMALL SATELLITE MISSIONS SYMPOSIUM (B4)
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DEVELOPMENT AND OPERATION OF MICRO-SATELLITE "SOHLA-1 (MAIDO-1)"

Abstract

A 50 kg class micro-satellite "SOHLA-1" was launched, together with other six piggy-back subsatellites, by a Japanese H-2A rocket on January 23, 2009. The "SOHLA-1" was developed by Space Oriented Higashiosaka Leading Association (SOHLA), a corporation of small and medium-size enterprises in Higashi-Osaka and Kansai district. The fundamental design and detailed designs of the bus-systems has been carried out by the students of Osaka Prefecture University under the technical support of Japan Aerospace Exploration Agency (JAXA). [1]

The main objectives of the "SOHLA-1" program is to realize the low-cost and short term development of a micro-satellite on the basis of a technology transfer of "MicroLabSat" and the micro-satellite design technique of JAXA with the cooperation of the enterprise group in Higashi-Osaka and Osaka Prefecture University. Another objective is to provide training to engineers in the Kansai district for developing the micro-satellite system technology for more advanced missions.

The design and development of the SOHLA-1 bus system were carried out by graduate and undergraduate students of Osaka Prefecture University and Ryukoku University. They undertook the development of a subsystem in which each special research field was intensive. A working group for the design reviews was conducted by Osaka Prefecture University, JAXA, and SOHLA in order to study the design problems of SOHLA-1. The design meetings were held more than 35 times during FY 2004–2005. The vibration test, thermal balance test, etc., were carried out at Tsukuba Space Center and Creation Core Higashi-Osaka, where the students participated in the planning, execution, and post-analysis of the tests and obtained valuable experience.

This paper reports the development of the subsystems, the electrical power system, structural system, thermal control system, and attitude control system, which Osaka Prefecture University was mainly involved with. This paper also reports the status of the operation and the results of the undergoing on-orbit experiments.

Reference

[1] H. Okubo and H. Azuma, "Activities of Small Spacecraft Systems Research Center and On-Going Projects," Proceedings of the 25th International Symposium on Space Technology and Science (Selected Papers), 2006, pp. 1624-1627.