

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Interactive Presentations - IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS
SYMPOSIUM (IPB)

Author: Prof. Fernando José Zorto Aguilera
National Autonomous University of Honduras (UNAH), Honduras, fernando.zorto@unah.edu.hn

Prof. Fabricio Ortíz
National Autonomous University of Honduras, Honduras, fabricio.ortiz@unah.edu.hn
Ms. Gabriela Nicolle Muñoz Enamorado
National Autonomous University of Honduras (UNAH), Honduras, gmunoz@unah.hn
Ms. Maria Jose Anderson
National Autonomous University of Honduras (UNAH), Honduras, maria.anderson@unah.hn
Mr. José Wuilmer Garcia Ortiz
National Autonomous University of Honduras (UNAH), Honduras, ortizwuilmer@unah.hn
Mr. Willians Steven Fernandez Zuniga
National Autonomous University of Honduras (UNAH), Honduras, willians.fernandez@unah.hn
Mr. Ivan Castro
National Autonomous University of Honduras (UNAH), Honduras, ivan.castro@unah.edu.hn
Mr. René Flores Pon
National Autonomous University of Honduras (UNAH), Honduras, rene.flores@unah.edu.hn
Mr. José Gabriel Zorto Aguilera
National Autonomous University of Honduras (UNAH), Honduras, gabrielzorto@unah.edu.hn
Mr. Julio César Salgado Lagos
National Autonomous University of Honduras (UNAH), Honduras, julio.salgado@unah.edu.hn
Mr. Emmanuel Roberto Rosales Cerna
National Autonomous University of Honduras (UNAH), Honduras, enmanuel.rosales@unah.edu.hn

MORAZÁN PROJECTS (MRZ-SAT): ACADEMIC FACILITIES OF THE GROUND SEGMENT OF
SPACE MISSION.

Abstract

The Morazán Project (MRZ-Sat) is the first Honduran satellite built in collaboration with professionals and institutions from Guatemala and Costa Rica, whose mission is to act as an early warning system against floods in Central America. The project has three components: space, ground, and user segment, with several requirements defined by JAXA.

The National Autonomous University of Honduras (UNAH) is the lead institution for designing, constructing, and operating a 1U CubeSat. However, since its first satellite project, it does not have the necessary facilities to build and operate the satellite. For that reason, the university has needed to build the first academic cleanroom (CR) in Central America and the first academic Ground Station (GS) in Honduras. The GS facility is in the School of Space Sciences at UNAH's main campus, and its physical spaces were designed after defining the architecture's communication link of the ground station with the satellite. The GS building is 29.74 m² of cargetecture structure, a low-cost but fully functional facility made of used shipping containers as a base plan but with all the plumbing, electrical, communications, and HVAC amenities needed for the satellite's operation.

The CR is in the School of Engineering at UNAH's main campus. It has an area of 49.29m² of ISO 7 space where the CubeSat will be assembled. Also, the CR was designed for its further use to develop future space missions and perform laboratory tests and projects from other departments like electrical, chemical, mechanical, and biomedical engineering and the UNAH's chemistry department.

The design of booth spaces was based on the needs for the space mission and the university's needs for new educational spaces. Another crucial factor to mind was the costs of both spaces (CR and GS) because the civil, mechanical, and electrical design underwent many redesign cycles to be within the budget boundaries, obtaining a final cost of USD 190,000 for CR and USD 100,000 for GS.