Among Top 20 International Canned Satellite Teams

Polytechnic students from Aeronautics, Mechanical, and Telematics Engineering excelled with "Némesis I" in a competition held in Virginia, USA.

Enrique Soto

Representing Mexico and the Instituto Politécnico Nacional (IPN), the Cuauhtémoc team, composed of students from the Escuela Superior de Ingeniería Mecánica y Eléctrica (ESIME) Ticomán y Azcapotzalco units as well as from the Unidad Profesional Interdisciplinaria en Ingeniería y Tecnologías Avanzadas (UPIITA), participated in the 2024 International CanSat Competition. This event brought together the best teams from various universities worldwide to carry out missions involving the design, launch, and controlled descent of canned satellites, simulating the components of a real satellite.

The competition, organized by the National Aeronautics and Space Administration (NASA) and the American Astronautical Society, took place in Virginia, USA. The Mexican team, composed of 20 polytechnic students from Aeronautics, Mechanical, and Telematics Engineering, competed with the canned satellite "Némesis I," which was tested by being launched with a rocket to an altitude of between 670 and 725 meters.

This mission included the satellite’s operation in data transmission, measurement of environmental parameters (atmospheric pressure, wind speed, and temperature), and the maneuvering of a video camera that recorded a fixed point on the horizon to correct the satellite’s rotation. A significant aspect of the challenge was to transport organic matter (an egg) and ensure its integrity throughout all flight phases.

Cuauhtémoc Team’s Achievement

The competition was dominated by teams from Poland, the United States, Turkey, Argentina, Taiwan, Singapore, Bangladesh, Italy, and Korea. However, the Cuauhtémoc team managed to secure the 17th position among over 140 participating teams, 40 of which advanced to the final stage, consisting of the launch.
Among over 140 teams, the polytechnic students reached the final stage. Thus, the polytechnic students achieved the feat of being among the top 20 most outstanding teams in this type of competition.

Axel Emiliano Martínez Guardado, the captain of the Cuauhtémoc team, stated that this contest represented a lot of intense work, stress, and excitement. “It was astonishing to verify that our technology is among the best in the world. During the competition, we encountered some issues that we managed to solve as a team, and I am left with the satisfaction of being surrounded by people with a lot of spirit and willingness to work,” he emphasized.

Yael Castrejón Ocampo, the leader of the mechanical team, highlighted the teamwork capability of the IPN representative and expressed his joy over the achieved result. “We realized that the technology of other countries is on par with ours; by focusing differently, we can achieve better results to position ourselves among the top places.”

Josue Salvador Mendoza Estévez, responsible for the Ground-Satellite Station, mentioned that the team members were able to research and solve technical problems that arose during the competition. "Something I liked is that we were persistent and resilient. We saw how our work is on par with other schools. We proved that we have enough knowledge to reach the top places in future international competitions."

Joshua Hernández Ramírez, in charge of the flight computer, emphasized that the flight processor is a very complex part that involves numerous tests before the competition. “Many universities worldwide may have better resources, laboratories, and equipment, but IPN and Mexico are not far behind. From this experience, I take away what a judge said: When you launch something into space, you might never see it again, so the data is your life. You must find a way to protect your prototype’s integrity with just data.”