



ICARO Project

CShark's challenge

Technical card

Entity providing the challenge: CShark

Contact point: EUROAVIA Forli-Bologna Local Board + Mattia Molinelli + Mattia Galperti

Title of the challenge: Build your Parachute!

Background

In this cutting-edge project, we aim to explore the possibilities offered by the use of stratospheric balloons as infrastructure for satellite launches. Stratospheric balloons represent a cost-effective and efficient solution to reach high altitudes, thus enabling access to near-Earth space for a wide range of applications, including scientific research, Earth observation, and telecommunications.

Our team has developed an innovative system that combines a picosatellite with a stratospheric balloon. The satellite is released from the balloon platform at high altitudes, where it can conduct its planned operations in near-Earth space. Subsequently, the satellite re-enters Earth's atmosphere and is recovered using a parachute.

Challenge description

In the context of our project, one of the main challenges is to ensure the safe return of the satellite to Earth after its operational period in space. This requires careful design and sizing of the recovery system, particularly the parachute used to slow down and control the satellite's descent.

The parachute must ensure that the satellite is brought back to Earth safely and controlled, minimizing the risk of damage to the payload and sensitive equipment. Each team's task will be to size the parachute and determine its shape based on considerations and studies conducted.

Below are the relevant data to complete the challenge:

- Satellite weight: 2.00 kg
- Satellite release altitude: 30.00 km

Each team is encouraged to tackle the challenge according to their own strategies, knowledge, and approximations. However, the ideal approach is to strive for the highest possible precision in managing the challenge while maintaining a level of flexibility to adapt to the various complexities of the project.

Objectives

Each team will need to complete the following tasks:

- Conduct a study following the requirements found in this document.
- Write a report detailing the study conducted, approximations made, and calculations performed.
- Include in the document a proposal reference of a parachute found on the internet that meets your requirements (optional).

Skills required to face the challenge

We are pleased to present this challenge open to all, without any specific skill requirements. We invite all students to participate and express their passions and knowledge. Our challenge offers a unique opportunity to explore and contribute to the field of aerospace engineering, regardless of experience level. Therefore, we hope to create a stimulating environment where enthusiasm for aerospace can flourish and thrive.

MAY THE LUCK BE WITH YOU!