Deorbit Device Competition

During the 4th UNISEC-Global Meeting

October 21, 2016 at Istanbul Technical University, Istanbul Turkey

Call for Papers

We are pleased to announce that the Deorbit Device Competition (DDC) will be held in the Fourth UNISEC-Global Meeting (http://www.unisec-global.org/).

UNISEC-Global is a consortium of local chapters (UNISEC-xx) that aim at facilitating university students' practical space projects such as building and launching satellites and rockets. As a part of space community and as an educational entity, we are responsible for improving awareness of long term sustainability of space activities. For several years, space-faring communities have recognized the mounting risk posed by orbital debris and possible approaches to mitigate the contribution by pico/nano/micro-satellites should be considered, such as devices for expedited or controlled re-entry at the end of satellite's mission life.

The DDC is organized to identify possible technical approaches for cost effective and innovative system concepts for the deorbit device. Space engineers, researchers, students and all interested in contributing to the harmonious space development will be welcome to join and share the ideas and plans.

Important date

- November 1, 2015 : Call for papers
- May 31, 2016 : Abstracts submission due (postponed from April 30)
- June 30, 2016 : Notification for acceptance
- September 1, 2016 : Full Papers submission due
- October 21, 2016: Final presentation

Objectives

To facilitate the sharing of innovative solutions for debris mitigation and developing effective deorbit devices that can be demonstrated and validated with CubeSats.

Abstract template

Please download the abstract template at:
<http://www.unisec-global.org/meeting4_cfp.html>

Awards

- 1st place and 2nd place

Requirements for Deorbit Device

The author will propose the deorbit device that satisfies the following requirements:

1. The device is mounted on a **CubeSat (1U, 2U or 3U)** that complies with CubeSat Design Specification given by California Polytechnic State University (http://www.cubesat.org/index.php/documents/developers)

2. The device will be activated at 21:00:00 UTC, October 21, 2018 with the following orbit element:
   - semi-major axis : 6930 km

- orbital inclination : 97.6 degree
- eccentricity : 0.002
- R.A.A.N. : 30 degree
- Argument of Perigee : 210 degree
- Mean Anomaly : 190 degree

Evaluation Criteria

The proposed deorbit device is evaluated according to the following criteria:

1) Effectiveness
(How effectively and how fast can the device make the satellite de-orbit?)
2) Mass and envelope at launch
(Does the device easily fit into a CubeSat(1U-3U)and can it be scaled to a larger satellite?)
3) Cost
(Is it affordable for university satellites?)
4) Technical feasibility - Mechanical and electrical design
(Is the device designed to function properly?)
5) Impact on the satellite
(Is the device (power, mass, weight, etc.) suitable for CubeSat?)
6) Reliability
(Is the device designed to fail with a low probability?)
7) Safety
(Does the device influence other satellites when it is launched?)
8) Maintenance and testability
(Is it easy to maintain and test on the ground?)
9) User friendliness
(Is the device easy to interface to the satellite?)
10) Debris risk
(Does the device generate risks in producing additional debris? Will it function even if satellite has problem in functioning?)

Contact

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