Results of Group Discussion

Requirements for Attitude Determination and Control System of university satellites

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Will be discussed

- Sensors for attitude determination
- Active/passive attitude control
- Configuration of ADCS and its accuracy for different mission types
- Flexibility of ADCS for onboard reprograming and sensors calibration
- The place for self-developed ADCS for such kind of projects
- The possible role of UNISEC and its network for increasing efficiency of university satellite design
Defining configurations of ADCS for different types of missions

Ways of decreasing satellites failure rates for future satellites which are either going to be built by new teams or teams with limited experience (using ADCS example)
Overview of 2 Satellite ADCS

BeeagleSat

Sensors:
- Magnetometer
- 6 Sun sensors (coarse)
- 1 Sun sensor (precise)
- 1 Horizon sensor
- 1 Gyro

Active Control:
- 3 Magnetorquers
- 1 Reaction Wheel

Horyu IV

Sensors:
- 6 Sun sensors (precise)
- 5 Solar panels
- 2 Gyros
- GPS

Passive Control:
- 1 Permanent magnet
- 1 Hysteresis Damper
## Minimum Required ADCS Components

<table>
<thead>
<tr>
<th></th>
<th>Remote Sensing 1 ±1 deg</th>
<th>Scientific Mission ±10 deg</th>
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<tbody>
<tr>
<td><strong>Sensors:</strong></td>
<td></td>
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<tr>
<td>1 Gyro 3-axis</td>
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<td>6 Sun sensors (coarse)</td>
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<tr>
<td>1 Sun sensor (precise) FOV</td>
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<td>1 Magnetometer</td>
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<tr>
<td>180 deg</td>
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<td>Passive Control:</td>
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<tr>
<td>1 Magnetometer 3-axis</td>
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<td>1 Permanent magnet</td>
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<tr>
<td>Horizon sensor</td>
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<td>1 Hysteresis Damper</td>
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<tr>
<td><strong>Active Control:</strong></td>
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<td>3 Magnetorquers</td>
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<td>3 Reaction Wheel</td>
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Group Recommendation

ONLINE PLATFORM

• Basic info for each Spacecraft Subsystem
• History Log of executed missions
• FORUM / FAQ
• Analysis data and Conclusions
• Online Library
• Lessons
Building the Platform

• UNISEC members can contribute

• Motivation for volunteers
  – Recognition by UNISEC Community
  – Networking
  – Other benefits