



Mechanical & Thermal sub-team

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1. Goals of the Semester

2. Satellite integration

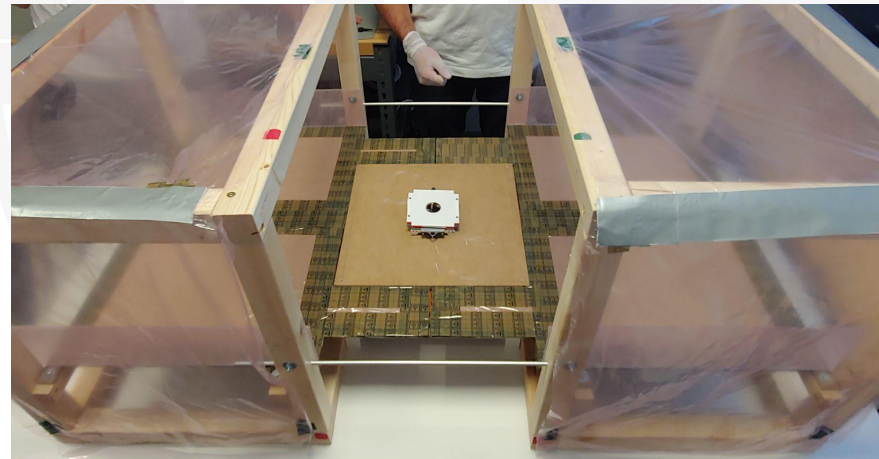
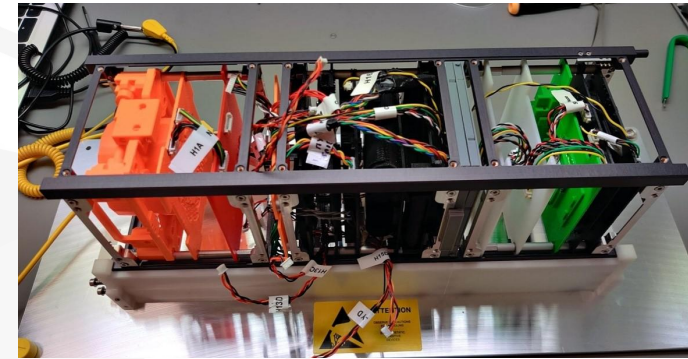
3. Leak test

4. Thermal testing

5. Other tests

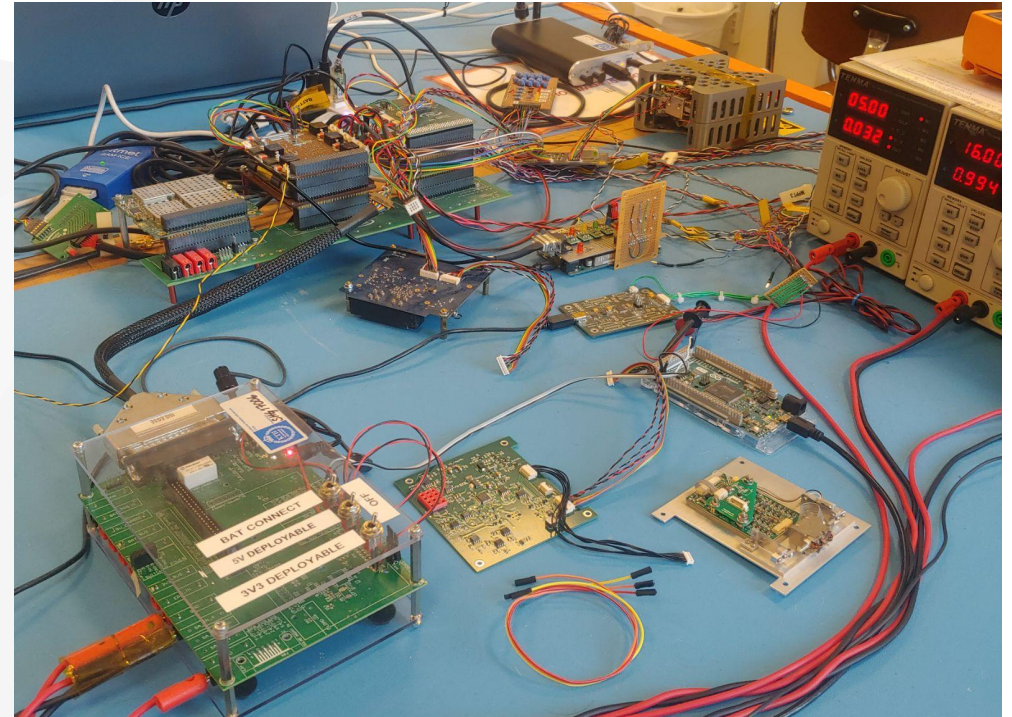


- Integrate the satellite
- Leak test of NanoProp
- Communication- and deployment test
- Thermal tests



Status:

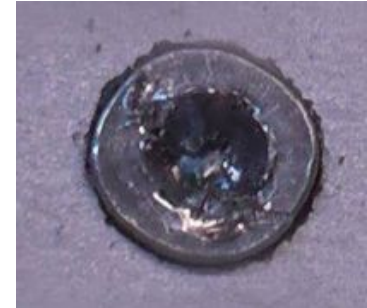
- Not integrated
 - Too many problems
 - Bugs in the OBCSW
 - (at least) two experiments are malfunctioning (LEGS, CUBES-1). NanoProp needs more testing.
 - SEUD not delivered yet



Accomplishments:



- All Gr 2 Ti screws have been replaced with Gr 5 Ti (100 screws)
 - 29 screws were found to be too short
 - Torx instead of Hex
 - Titanium screws < M3 prohibited by ECSS??
- Preparation for satellite integration document complete and reviewed
- Instructions for first assembly of the stacks complete



Miniature Student satellite

M651

PREPARATION FOR SATELLITE INTEGRATION

Document ID:
M651-001

Version:	Issue Date:	Document Type:	Valid from:
1	06 October 2023	Mechanical	Review



Miniature Student satellite

M650

ASSEMBLING OF THE STACKS

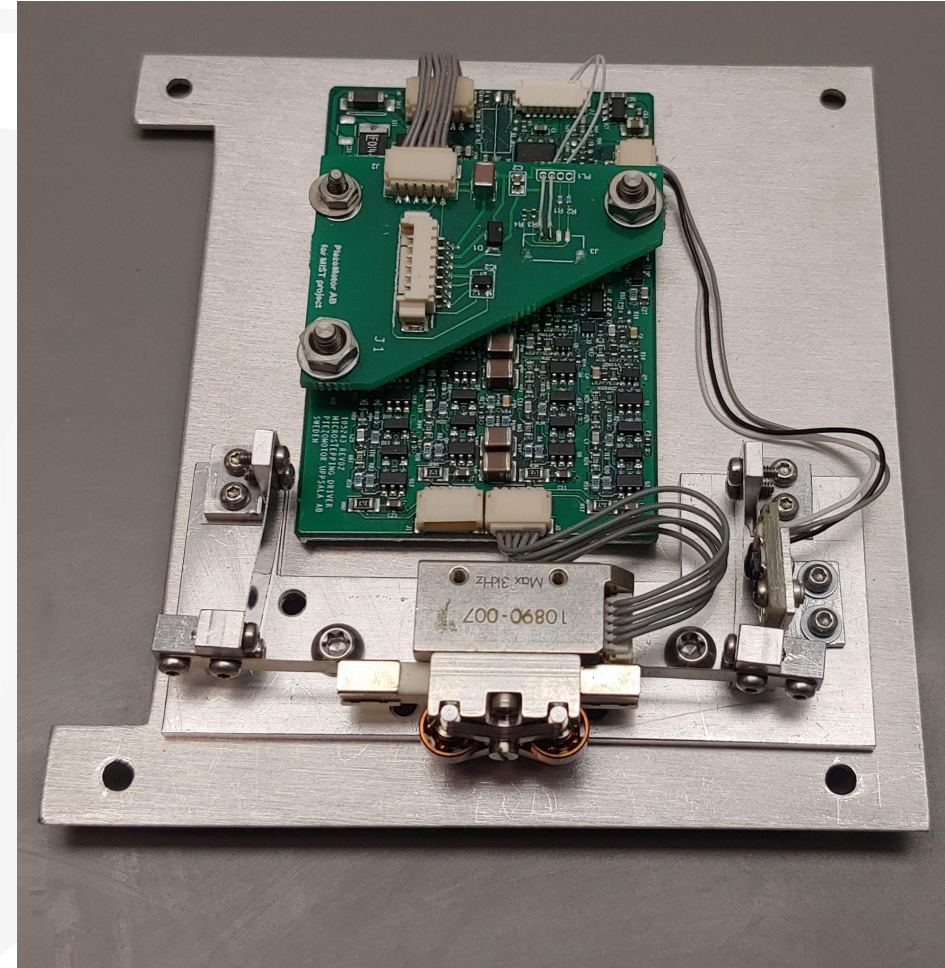
Document ID:
M650-002

PiezoLEGS:

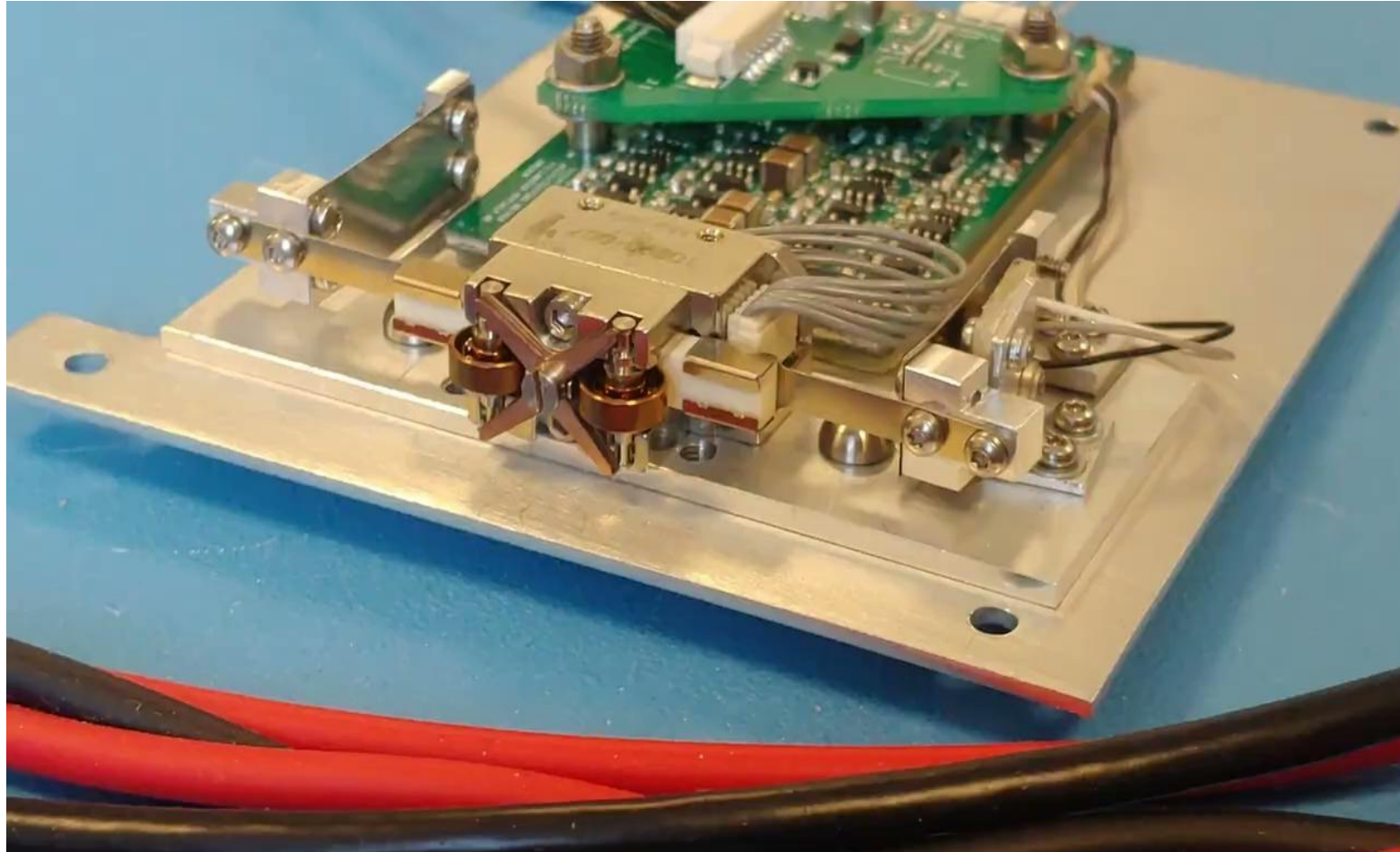
- 20+ hardware-related problems found
 - Too short screws
 - Too short threads
 - Missing Loctite
 - Loose screws

Accomplishments:

- 5 screws replaced
- Applied Loctite and tightened 28/30 screws
- Testing

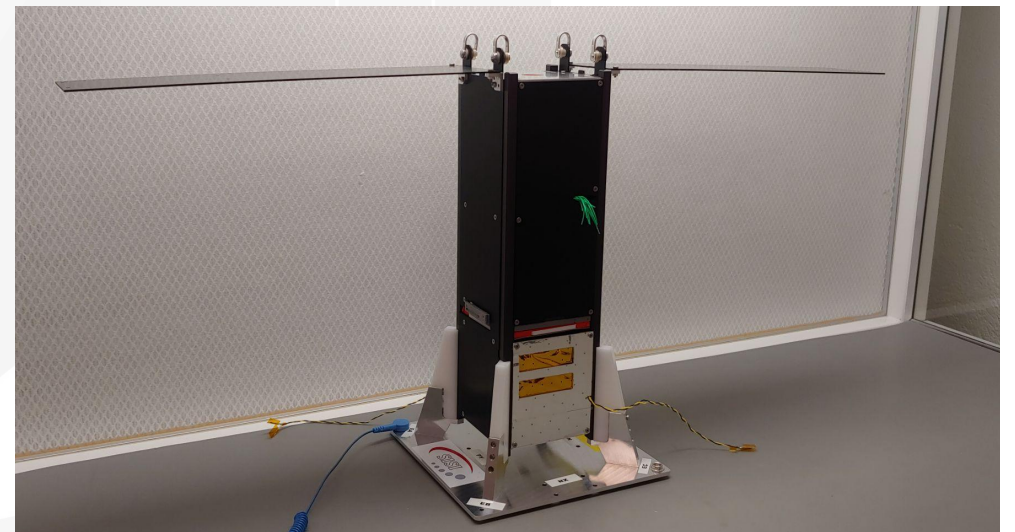
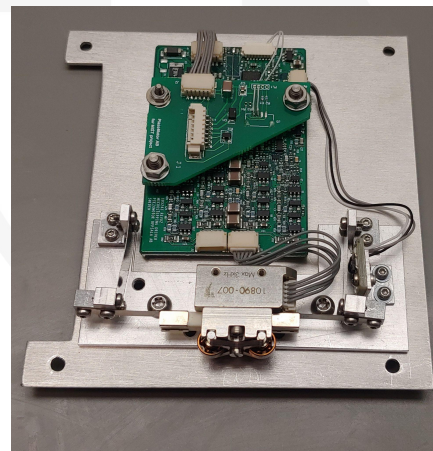
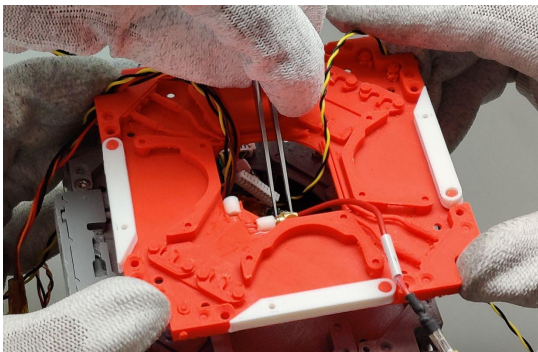
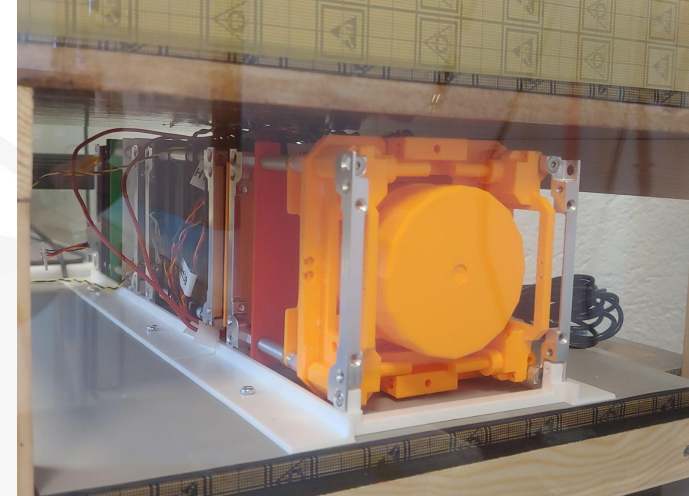


- Motor still working, but sensor needs re-calibration



Plan:

- Finish the LEGS experiment
- AntS + HDRM refurbishment instructions
- Practice assembly instructions with mock-up:
 - Mounting/combining the stacks
 - Mounting AntS+HDRM on the middle stack
 - Cable routing
- Integrate all stacks (!)





Questions?



Purpose:

- To ensure no leakage in propulsion system under vacuum environment

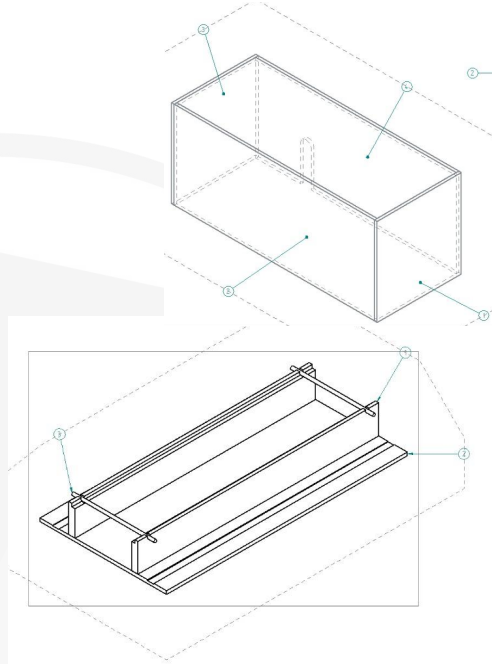
Accomplishments:



- Designed leak test equipment 3D models, 2D drawings and part lists

Planned work:

- Procurement and manufacture leak test equipment (satellite holder and cover)
- Create handling instruction for installing and removing satellite from vacuum tank
- Check leak test equipment feasibility



Item Number	Title	Material	Quantity
1	Side plate	Aluminium	2
2	Base plate	Aluminium	2



Questions?



TBT: Thermal Balance Test

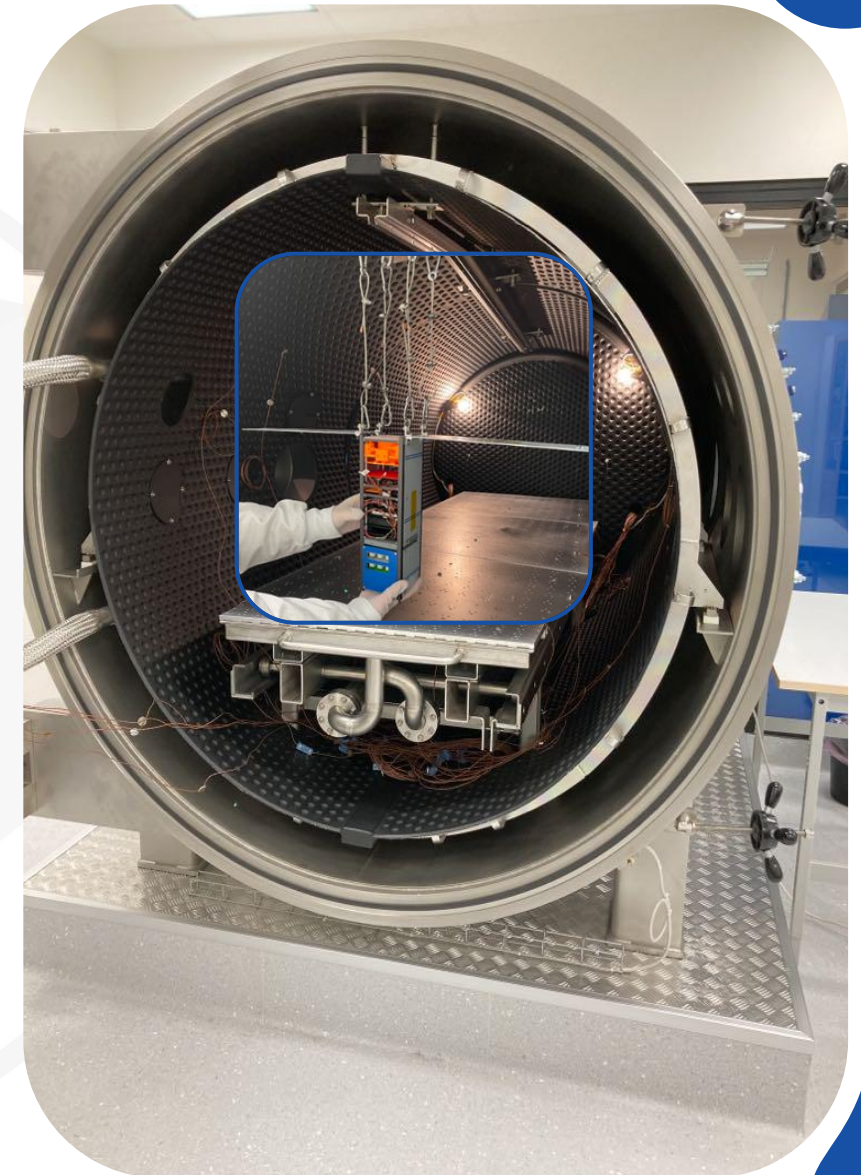
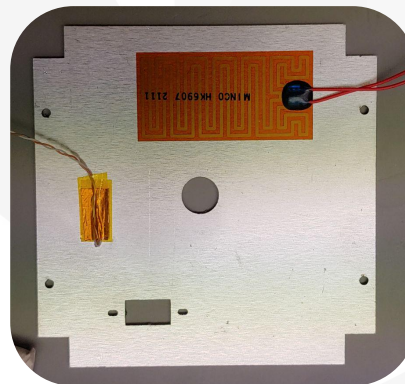
- Apply thermal gradients
- Measure temperature difference over interfaces

TVCT: Thermal Vacuum Cycling Test

- Equipment verification at thermal extremes

Ongoing work:

- Test procedure document
- Test systems correct functionality definition
 - Temperature readout
 - Power state
- Thermal simulation corrections
 - Heater placements
 - Power dissipation
- Heater loosening safety precaution





Questions?





Communication and Deployment test

Accomplishments:

- Successful rehearsal during the summer
- Some minor problems, most have been remedied

Remaining (mechanical) work (~30h):

- Reviewing and revising instructions for the test
- Buy cameras
- Some remaining work on the transportation box

Vibration test

Accomplishments:

- New adapter manufactured during the summer
- New screws for adapter and pod

Remaining work (~120h):

- Insert helicoils into vibration adapter
- Write new instructions for the vibration test
- Perform a new rehearsal

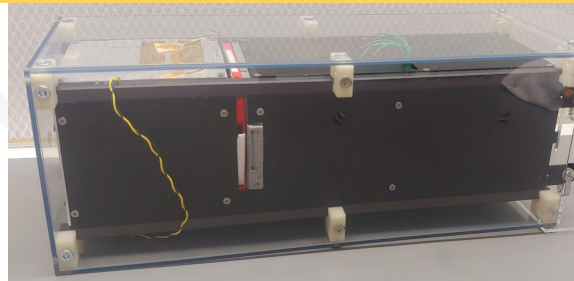
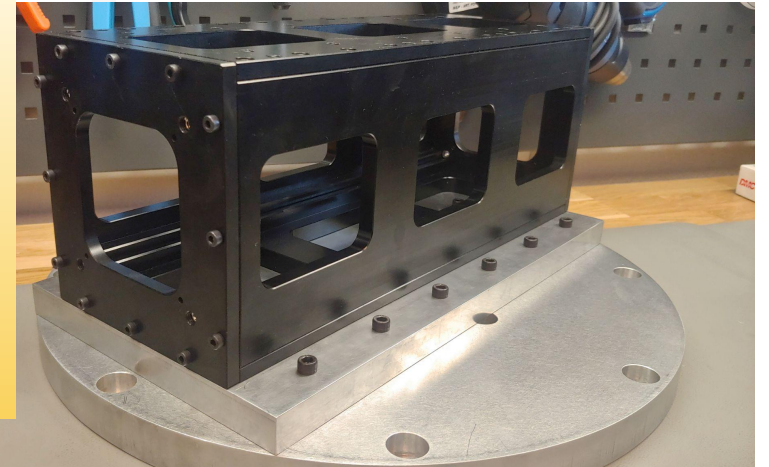
Magnetic calibration

Accomplishments:

- We have a plan!

Remaining work (~20h):

- Minor modifications of transportation box
- Visit test facility and write down step-by-step instructions





The End!



Questions?