

Brno University of Technology

Institute of Aerospace Engineering

Space Research Activities at the Institute of Aerospace Engineering



LETECKÝ ÚSTAV
Institute of Aerospace
Engineering



<http://lu.fme.vutbr.cz/>

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Space related capabilities and competences

Institute of Aerospace engineering has long tradition in the area of space and aerospace oriented research. Either based on international and national projects (FP, Horizon, TACR), ESA tenders (prime and subcontractor positions), contractual research. Main competences covers:

- Conceptual design of vehicles
- Structural design and testing – static, quasistatic, dynamic including vibrations
- Dynamic impact tests
- Manufacturing of airframe parts, complete integration of the vehicles
- Flight testing at earth conditions

Areas of interest:

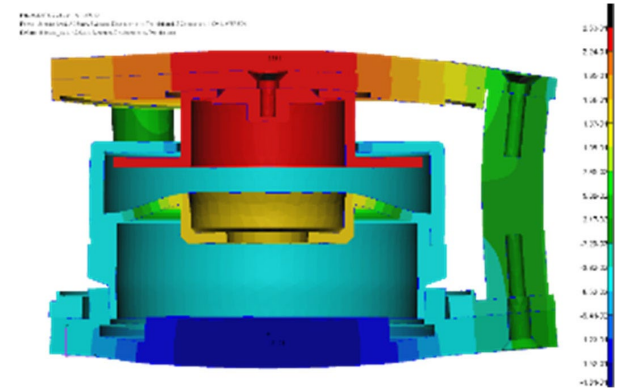
- Cube sats
- Drone technology
- Large structural systems



Miniaturized heat switch for probes and satellites

Active thermal management for space applications

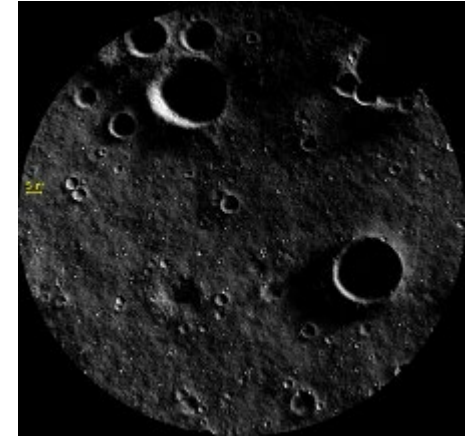
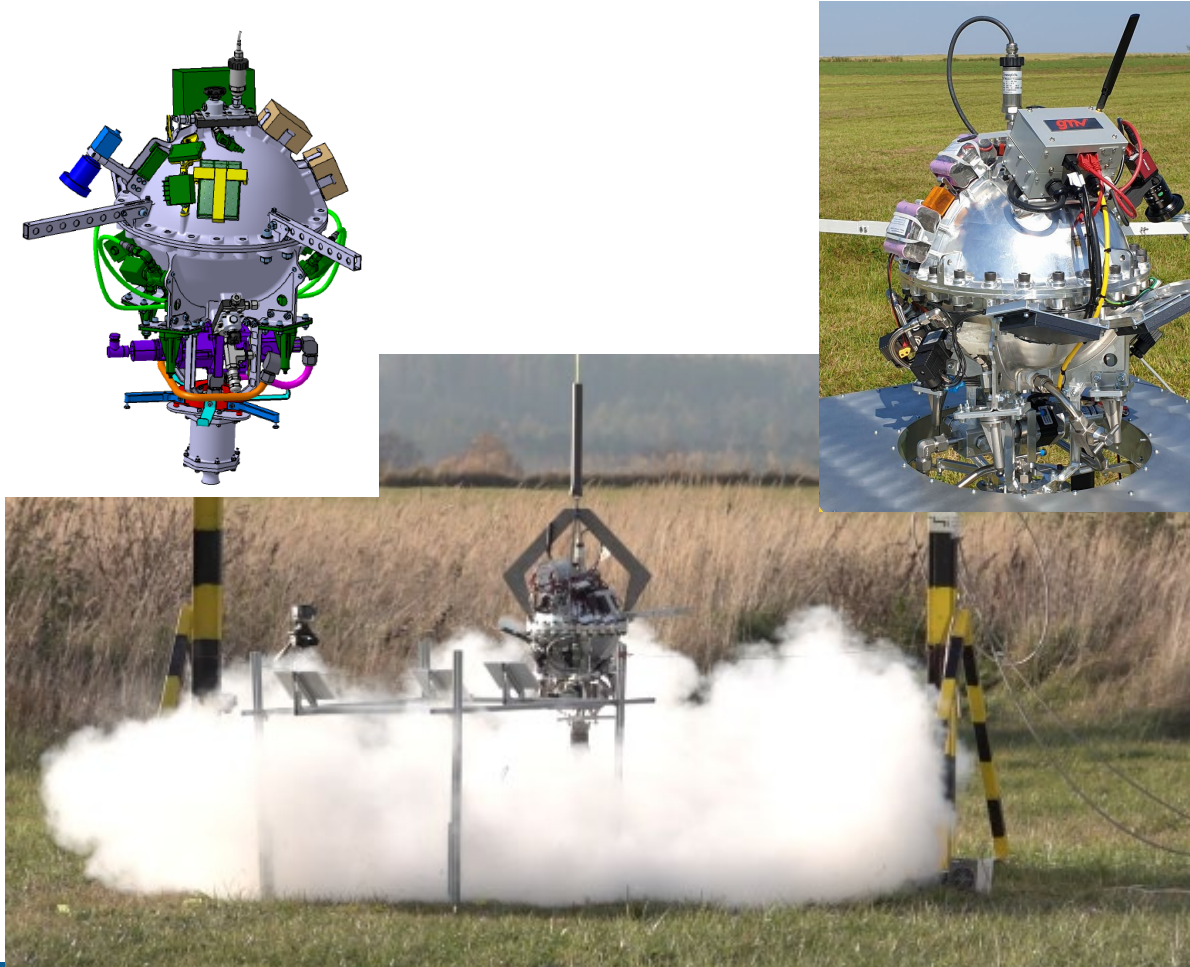
- Design and manufacturing MHS
- Testing at simulated Mars atmosphere and external space conditions
- Materials characterization, manufacturing and testing



Moon drone

FEASIBILITY AND PRELIMINARY DESIGN OF A MOON DRONE VEHICLE

- IAE VUT responsible for conceptual design, integration and testing



THALES

gmv
INNOVATING SOLUTIONS

T4i TECHNOLOGY
FOR PROPULSION
AND INNOVATION

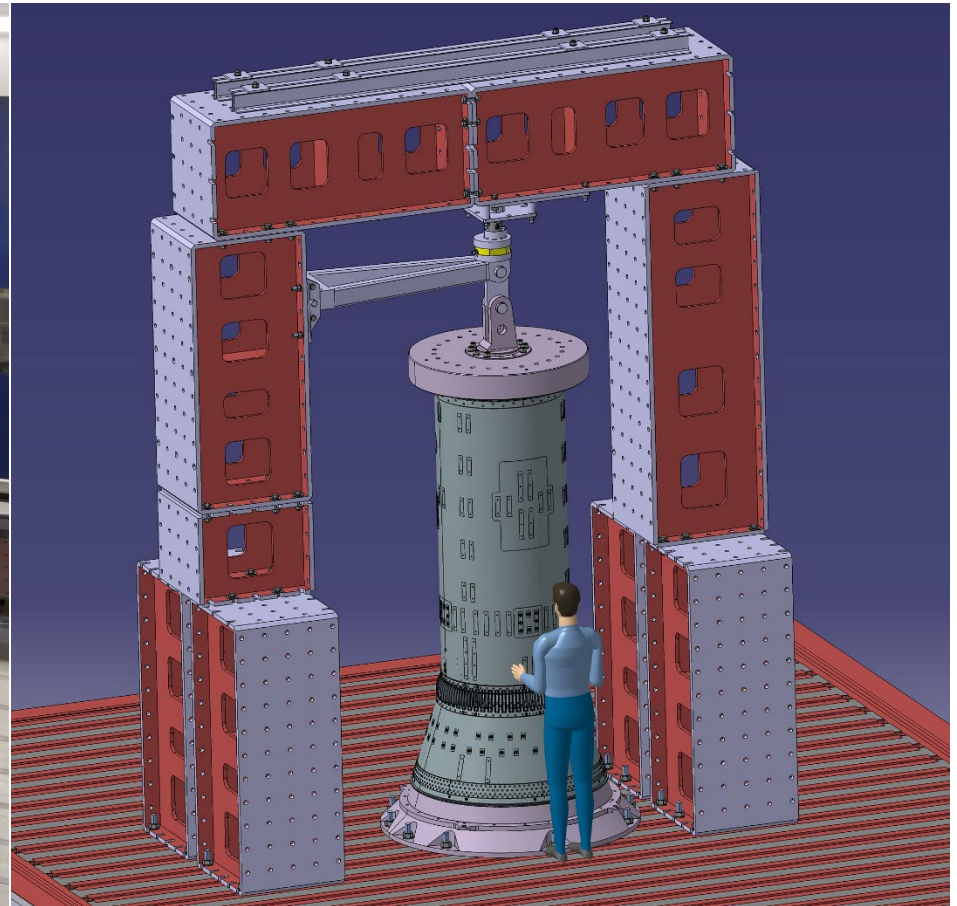
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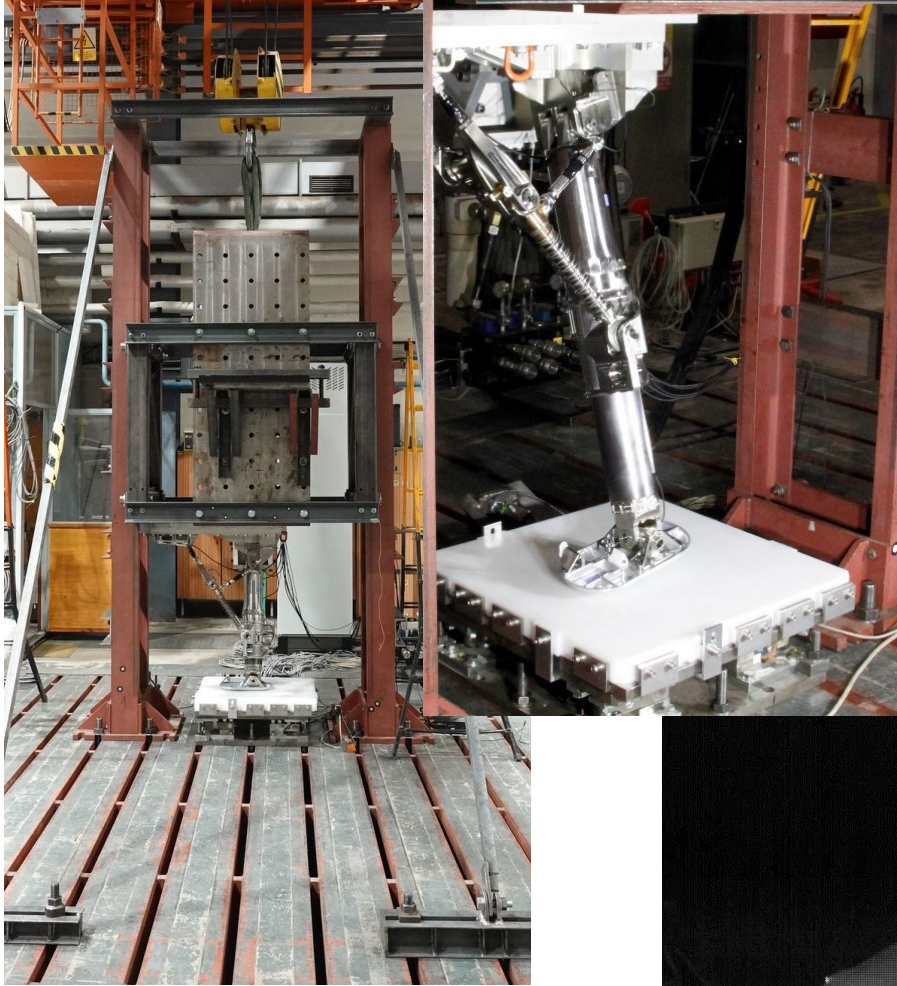
esa



ROSE-L Lower Cylinder Qualification Test



Space Rider Landing Gear Drop Tests



Ongoing space related projects at IAE BUT

DISTANT

- Distal Steering and Traction Actuation for Noxious Temperatures
- Design, manufacturing and testing of subscale model of novel lunar rover axle
- ESA project - GMV prime, BUT subco
- ***BUT participating on design, responsible for materials selection, manufacturing and integration***

FIRST!

- HYDROGEN PEROXIDE PROPULSION AND NEW LIQUID PROPELLANTS FOR LAUNCHER AND IN-SPACE TRANSPORTATION
- ESA project - T4i Italy prime, BUT subcontractor
- ***BUT responsible for CFD LES simulations of novel dual vortex rocket booster.*** T4i – design, manufacturing and testing

BRNOsat

- CZ project lead by Hvězdárna a planetárium Brno, participants are Spacemanic, MUNI, BUT
- ***Cubesat for scientific mission, launch scheduled 2027***
- BUT is delivering scientific qualified payload for mission - ***flight prototype of MHS***

SATén

- National Centre for Aeronautics and Space (NACCAS) project funded by TAČR.
- ***Lead and coordinated by BUT***, members of consortium are VZLÚ, Spacemanic, Hilase, Heyrovský institute of Academy of Science, ESC Aerospace
- ***Design, manufacturing and full qualification of 8U cubesat for scientific mission***
- Two payloads – RON = orbit lab for Neutron stars signal research for industrial application (BUT), DOME = hyperspectral camera for space plasma events characterization (Heyrovský institute Academy of science).





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Vysoké učení technické v Brně

Fakulta strojního inženýrství

Letecký ústav

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