

2 Studien/Diplomarbeiten for the ESA project

Lunar Dust, Plasma, Waves and Fields Package for Lunar Exploration

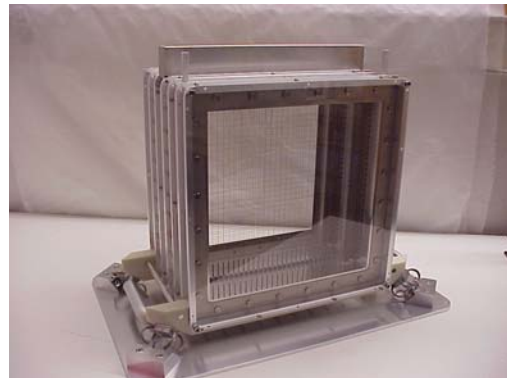


The development of a European lunar cargo and logistics capability requires a stepped approach to allow the development and demonstration of key technologies. An important element in this process has been identified as a precursor **Lunar Lander mission** by 2018. The primary objective of this mission is to demonstrate soft precision landing technology with hazard avoidance. The mission can then deploy and operate a payload on the surface of the Moon, which can address key objectives associated with the human exploration and prepare for future human activities.

The primary goal for **ESA's First Lunar Lander** is to demonstrate and mature the key technologies for a future lunar cargo landing capability; soft precision landing with hazard avoidance. In addition, a lunar lander in the 2018 time frame provides an opportunity to perform investigations on the Moon that are essential to the success and sustainability of lunar exploration and that must be carried out in advance of an extended human presence. Such investigations will address the health of humans in the lunar environment and ensure the sustainability of lunar exploration.

Lunar dust originates from the lunar regolith, a layer of rocks and fine grained particles at the lunar surface, whose thickness can vary between approximately 3 m and 20 m. The particles that make up the regolith have been generated by billions of years of meteoroid impacts. A **dust sensor** developed by IRS/Univ. Stuttgart is supposed to characterise the micron-sized particles by charge induction. The instrument is developed and has to fit within an integrated payload measuring dust, plasma and radio signals.

This project is a joint effort of the company Kayser-Threde and von Hoerner & Sulger, the University Nijmegen and the University of Upsala under the guidance of the European Space Agency (ESA).



Schwerpunkt Mechanical Design

Aufgaben: Mechanical design of the dust sensor and production of a preliminary interface document

Schwerpunkt Thermal Design

Aufgaben: Thermal design calculations of the dust sensor exposed to the moon surface

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