

SPACE EXPLORATION SYMPOSIUM (A3)
Mars Exploration - Part 2 (3B)

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OVERVIEW OF KAYSER-THREDE'S PRESENT INVOLVEMENT IN THE AREA OF SUPPORT
SYSTEMS AND SCIENTIFIC INSTRUMENTS FOR EXOMARS

Abstract

The European flagship mission ExoMars is devoted to searching for traces of past and present life. A further scientific objective is to investigate the Mars environment and geophysical properties. Due to insufficient funding in Europe, the ExoMars funding agency ESA has decided to streamline the mission and look for international partners. At the time of writing this abstract the ExoMars mission is therefore in a re-definition stage prior to starting Phase C/D.

The paper will describe Kayser-Threde's activities in the field of payload support systems which are presently:

- Design and breadboarding of the Sample Preparation and Distribution System (SPDS) for ExoMars consisting of a crushing/milling station and various sample distribution mechanisms, accommodated on the Rover. The SPDS is a highly sophisticated system which prepares and distributes samples collected from a subsurface by means of drill to a suite of experiment.

- A geophysics and environmental package to be accommodated on the stationary lander which is under review due to the descoping of the mission.

Furthermore, the following scientific instruments, or part of them, are presently studied and breadboarded by Kayser-Threde:

- A RamanLIBS Instrument allows to identify mineralogy and - even more important for the ExoMars Mission - can identify biogenic signatures for particles down to a single bioorganisms like a bacteria or spore. It is regarded a key instrument for the Astrobiology focus of the mission. Within this pan-European Instrument activity (Spanish lead with Spanish, Dutch, British and German hardware contributions) Kayser-Threde is responsible for the extremely lightweight front optics of this instrument,

- A high resolution camera HRC mounted on the rover mast and developed jointly with the DLR research institute in Berlin, DLR-PF.

The paper will focus on current breadboards which have already been tested, highlight achievements and challenges and summarize the status of the subelements at the time of the conference.