

Exploration of Mars (08)  
Robotic Mars Exploration (1)

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EXOMARS: SAMPLE PREPARATION AND DISTRIBUTION SYSTEM AND INSTRUMENTS  
UNDER DEVELOPMENT**Abstract**

Kayser-Threde is significantly involved in payload support systems developments for the ExoMars 2018 Rover mission as developed in Europe. Kayser-Threde's main activity, under ESA contract, is to design and breadboard the ExoMars Sample Preparation and Distribution System (SPDS) for ExoMars, consisting of a crushing/milling station and various sample distribution mechanisms accommodated in the Rover. The SPDS is a highly sophisticated system which prepares and distributes samples collected from a subsurface by means of a drill to a suite of experiments. Kayser-Threde supports also the ExoMars industrial prime TAS-Italy with payload analytical integration (and infrastructure) for the instruments embedded in the so-called Analytical Laboratory Drawer (ALD) for the SPDS elements. Moreover, the following scientific instruments, or part of them, are presently being studied and breadboarded by Kayser-Threde:

A Raman-LIBS Instrument allowing identification of mineralogy and - even more important for the ExoMars Mission - of biogenic signatures for particles down to single bio-organisms like bacteria or spore. It is regarded as a key instrument for the astrobiology focus of the mission. Within this pan-European Instrument activity (Spanish lead) 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, will highlight achievements and challenges and summarize the status of the sub-elements at the time of the conference.