

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

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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 mission developed in Europe. Kayser-Threde's main activity, under ESA / TAS-Italy 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 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, some scientific instruments, or part of them, are presently being studied and breadboarded by Kayser-Threde, such as

- A Raman Instrument (Spanish lead) 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 spores.
- A high resolution camera (HRC) mounted on the rover mast and developed jointly with the DLR planetary research institute in Berlin (DLR-PF).

The paper will focus on current SPDS breadboards. The complete SPDS subsystem now has been breadboarded and assembled, and first full functional test results will be presented.