

SPACE EXPLORATION SYMPOSIUM (A3)
Mars Exploration – Science, Instruments and Technologies (3B)

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EXOMARS: SAMPLE PREPERATION AND DISTRIBUTION SYSTEM AND INSTRUMENTS
UNDER DEVELOPMENT

Abstract

This paper provides a progress report on the on-going development of the Sample Processing and Distribution Subsystem (SPDS) for the 2018 ExoMars rover mission.

The SPDS is being developed by OHb under direct subcontract to TAS-I to supply the scientific instruments of the ExoMars rover with granular Mars rock and soil samples of a specific particle size distribution. This is achieved through a set of mechanisms making up the SPDS which receive the samples from the rover drill, crush, meter ('dose') and distribute them.

Since mid 2013, OHb Munich have also been developing the structure of the ExoMars rover analytical laboratory (ALD) (a task delegated to OHb by TAS-I) including the ALD pressurized Ultra Clean Zone (UCZ) surrounding the sample path, on which this paper also provides an update on, including the attendant development of the UCZ pressure relief valve and of the ALD optical windows that likewise are under responsibility of OHb.

Currently, the SPDS as well as the ALD structure are completing their qualification programme, and flight H/W production has started.

Moreover, some scientific instruments, or part of them, are presently being studied and breadboarded by OHb System AG, 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).