

Mars Exploration (5)

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EXOMARS 2020 MISSION: PROGRESS REPORT ON SAMPLE PREPARATION AND DISTRIBUTION SYSTEM (SPDS) 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 of the European Space Agency (ESA).

The SPDS is being developed by OHB under direct subcontract to TAS-I to supply the scientific instruments of the 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, then subsequently crush, meter ('dose'), and distribute them to the science payloads.

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 is completing its qualification programme, and – in parallel – flight H/W production is well under way. The ALD structure qualification has already been closed a year ago, and the flight model structure is in fabrication.