

## THD (Temperature Humidity Devices)

### Objectives

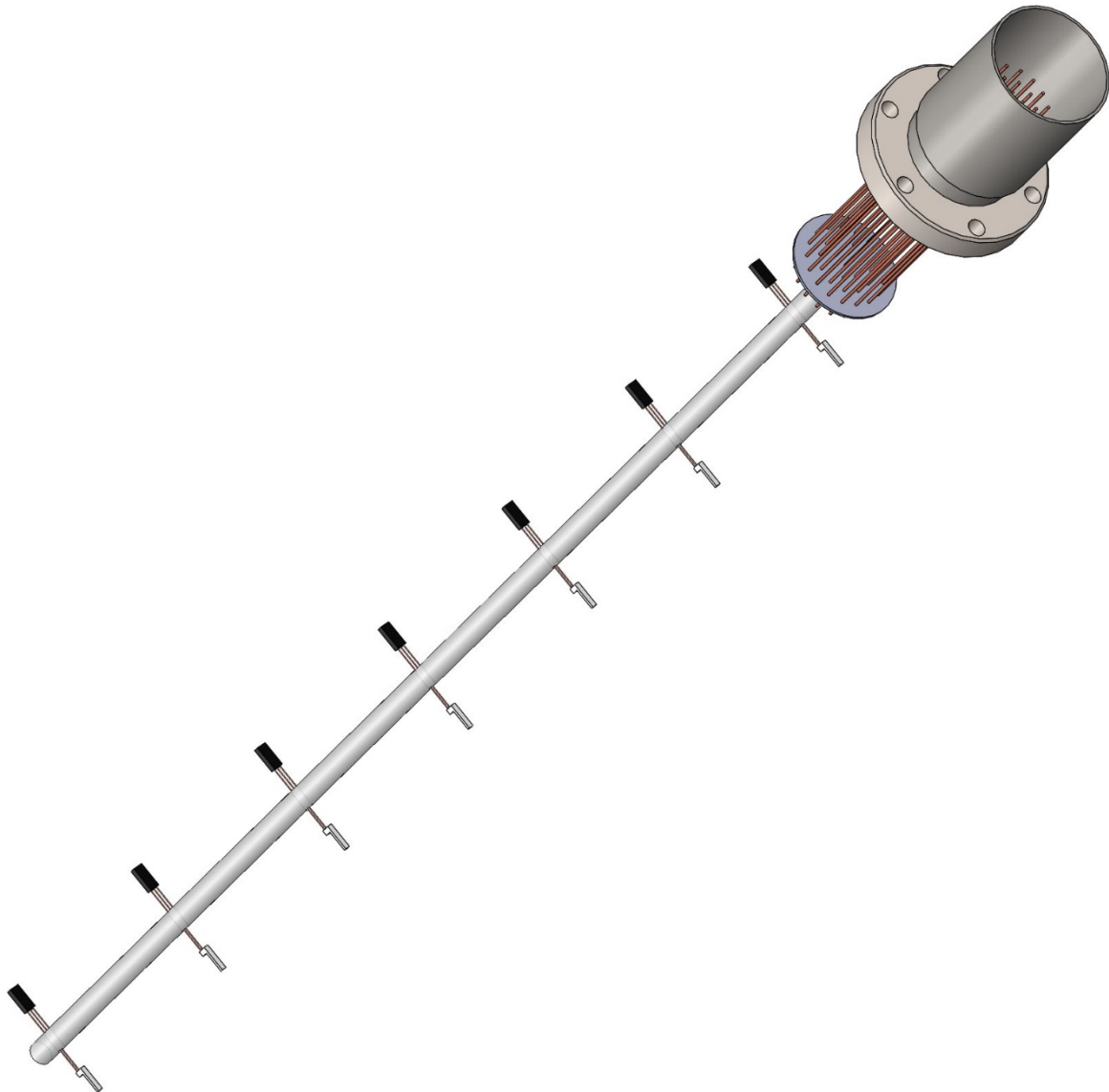
Measure the relative humidity and the temperature inside a vacuum chamber at different heights. The total height and the number of sensors is variable. In MARTE vacuum chamber in normal configuration are 7 sensor in a binomial.

### Environmental conditions

- Sample temperature range: from 50K to 450K in the environment.
- Relative humidity range: from 0% to 100%.
- Pressure range: from  $10^{-3}$ mbar to 1000mbar.

### Technical parameters

- Temperature sensor: Pt1000 class A.
- Humidity sensor: Type condenser with temperature correction.
- Mounted on a DN40CF flange.
- Equidistance separation between them
- Nylon rod for minimum heat conduction
- Gripping threads to homogenize the resistance of all sensors



## MARS DUMMY (Environmental testing of Mars vacuum chamber)

### Objectives

Testing the Mars environment in different environmental conditions. In MARTE vacuum chamber it is possible to recreate different Mars regions as Polar Regions. In this sense it is possible to recreate the coexistence between water liquid and water solid (ice) and vapor, at similar to the red planet.

### Environmental conditions

- Mars gas composition. 95% carbon dioxide.
- Temperature on surface with refrigerated glycol closed circuit.
- Solar irradiation with different sources. Deuterium source, Xenon source, Halogen and Led lamps.
- Recreate the condensation in Mars Polar Regions with water injections by ALI.
- Measurement of the gas composition measured directly through a tube to the RGA system at low pressure.

### Technical parameters

- Photodiodes: UV-A, UV-B, UV-C, VIS-UV.
- Humidity sensor with temperature sensor.
- Rain Sensor. Hydration sensor.

