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

Author: Mr. Ahmed Farid
Telespazio VEGA Deutschland GmbH, Germany

Mr. Peter Atef Ghaly
October University for Modern Sciences and Arts (MSA University), *(country is not specified)*

GENERATING CO2 AND H2O ON MARS FOR IMPLANTATIONS AND SURVIVING

Abstract

The fantasy of the Mars invasion is becoming reality. Counting all of the solid missions that are already discovering and learning Mars. We remain to design a dense cabin contains green plants for the sake of human being surviving on Mars. This will lead us to purpose in this paper a system capable of generating oxygen O2 as well as water H2O to ensure the sustainability on the indoor life on the planet. The intend of this paper is to explain the systematic optimisation of generating O2 and H2O on Mars.

The most abundant gas on Mars is Carbon dioxide. It forms about 95

Due to low temperature and thin atmosphere during Southern hemisphere's summer much of the ice cap sublimates, a process in which the ice turns straight back into gas, leaving behind what is known as the residual polar cap. We can deice the water ice beneath this layer in the summertime, as most of the carbon dioxide ice cap will be evaporated. We can extract the iced water by rovers then deice them from the heat generated from solar panels.

Using isolated tubes with the suitable heat and pressure mandatory for transferring water to the designed cabins, the tubes should maintain a temperature between 180 K and at least up to 298 K. In addition, using filters and heaters to ensure that it doesn't contain a high level of salts. Our designed cabin should have a stable pressure and temperature to ensure water doesn't freeze or evaporate. Moreover, we can accomplish STP by applying the same scientific concept used on the international space station through using the Active Thermal Control System (ATCS) and an internal cabin pressurisation system. consequently a balanced Pressure and temperature can be achieved.