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SPACE EXPLORATION SYMPOSIUM (A3)
Interactive Presentations (IP)

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OXYGEN PRODUCTION FOR LIFE SUPPORT SYSTEM OF LUNAR BASE

Abstract

One of the most perspective and priority direction of space exploration consists in lunar base creation, for its implementation, significant and inalienable part is permanent and reliable oxygen production system. Oxygen delivery from the Earth is prohibitive expensive (above $80 000 per kilogram), therefore this problem shall be solved at the base location.

Known methods of oxygen production are shown, determined their advantages and disadvantages.

The scope of this work is oxygen production optimal method development and machine creation for method implementation.

Investigation tasks:

- lunar regolith chemical composition exploration;
- known methods review of oxygen production;
- optimal method choosing and argumentation;
- detrition of the necessary solar power system;
- structure presentation of the machine.

Novelty of these materials consists in unique method based on metals production from oxides with hydrogen using. Efficiency, simplicity and relatively low cost are grounded; oxygen production process scheme is given.

Proposed method advantages are:

- minimal temperature of reaction;
- hydrogen cycle using (without resupply);
- minimal electricity consumption;
- low cost of project implementation.