
An Estonian Startup to Start Producing Oxygen on Mars

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An Estonian technology startup, called UP Catalyst, has received €50,000 of seed money from the European Space Agency's Business Incubation Centre to boost its oxygen production on Mars.

The startup, founded in 2019, will use the seed money for business and product development to boost its “novel way of oxygen production on Mars”, the company said in a statement. “In addition to the funding, [UP Catalyst](#) receives technical support from the European Space Agency and hands-on mentoring from the field specific experts,” it added.

According to the company, the US National Aeronautics and Space Administration – known as NASA – has been preparing for human exploration of Mars for decades and the Mars Oxygen In-Situ Resource Utilization Experiment – better known as MOXIE – has already shown some promising attempts to produce oxygen from the Martian atmosphere for propellant and for breathing.

Reprocessing CO into carbon nanomaterials

“MOXIE works by separating oxygen atoms from carbon dioxide molecules, which are made up of one carbon atom and two oxygen atoms. A waste product, carbon monoxide, is emitted into the Martian atmosphere,” the Estonian startup said.



Carbon nanomaterials. Photo by UP Catalyst.

“UP Catalyst’s innovative carbon capture method works in the same way and even at the same temperature. The difference is, however, that UP Catalyst is reprocessing the carbon monoxide into valuable carbon nanomaterials. The produced nanomaterials could be used in

various fields of space industry, eg in battery and ultracapacitor technologies, conductive and strengthening coatings, polymer formulations, water filters etc.”

“Mars has a thin atmosphere with a surface pressure less than a hundredth of the Earth’s. Furthermore, it is 96% carbon dioxide with only about 0.1% oxygen. For comparison, Earth’s atmosphere is 21% oxygen. UP Catalyst has developed a novel method to use both byproducts in a sustainable way,” the company claims.

A producer of sustainable carbon nanomaterials

The Estonian startup says NASA wants to land astronauts on Mars in the 2030s. “However, it has some competition in the race to get there. Both Boeing and SpaceX hope to get to the Red Planet first, with SpaceX setting the lofty goal of arriving in 2026.”

UP Catalyst is a producer of “sustainable carbon nanomaterials and catalysts in novel methods”, the company says in its description. “Currently, carbon materials are expensive and have a major negative impact on the environment, they are either mined from fossil resources or synthesized in toxic processes from raw oil.”

The company says its production processes are based on CO₂ electrolysis and biomass pyrolysis. “It recycles waste materials such as wood chips, black liquor, sludge and CO₂. UP Catalyst’s products are superior to any other carbon nanomaterials in quality, product properties and highly competitive pricing. These materials are used in a wide range of industries such as, but not limited to batteries, fuel cells, water filters and many others.”

Read the [original article](#) on Estonian World.