

A Pocket-sized Ecosystem

Voice-over 1:

To be self-sufficient on long space voyages, you have to recreate the mechanisms of our natural ecosystem, and researchers have been working on this ever since mankind first blasted into space.

Voice-over 2:

As soon as you put a human being into a closed environment, you have to give them oxygen, water and food. And these consumables, or metabolic consumables, weigh around five kilos per person per day.

Voice-over 1:

It sounds simple but it isn't. Space rockets aren't powerful enough or light enough to carry the hundreds of tonnes of provisions needed for medium- and long-distance space travel. At the University of Barcelona, scientists from ESA, the European Space Agency, are researching a support system for biological life. The project is called Melissa, which is short for Micro Ecological Life Support Alternative.

Voice-over 2:

The point of Melissa is to show that we can set up a system of continuous recycling on Earth, using waste to produce water, food and oxygen. The idea is to recreate in a small environment, using very little energy, very little space, with no risk to the crew, a mini-Earth which would allow astronauts to remain in space practically indefinitely.

Voice-over 1:

Melissa aims to produce one hundred per cent of the oxygen and twenty per cent of the food needed by a human being in space. To achieve these aims, Melissa is exploring production via recycling of organic waste, carbon dioxide and minerals, using the sun as an energy source.

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