



Genergo: an Italian company builds the world's first known propellantless space-propulsion system, flight-tested and validated on orbit

Zero Propellant, Infinite Possibilities. A new Era of motion begins

Milan, November 11th 2025 - **Genergo**, an Italian deep-tech company based in Como, comes out of stealth and unveils an **innovative electromagnetic space-propulsion system that uses no propellant**, successfully flight-tested and validated across three space missions and protected by a portfolio of granted international patents.

Operational satellites equipped with propulsion carry propellant on board to perform orbital maneuvers, maintain position, and, in some cases, execute end-of-life atmospheric re-entry. Propellant takes up volume and adds mass - often further increased by the hardware required to manage it (pressurized tanks, control valves, feed lines) - introduces operational risks (leaks, explosions), and is, by definition, a finite resource. Once depleted, the spacecraft is no longer maneuverable and the mission ends.

Genergo's system generates thrust **without using any propellant and without expelling reaction mass**, by directly converting electrical energy into thrust through controlled electromagnetic impulses. To the company's knowledge, it is the first space-propulsion system worldwide capable of operating without propellant, flight-tested and validated on orbit, and it represents a clear discontinuity from current standards. By design, the technology is scalable and operates with a modest power requirement.

The system also exhibits a **highly sustainable profile**: it uses no hazardous or toxic materials, requires no pressurized components to be stored on board, and introduces no risk of contaminating the space environment—either during operations or upon atmospheric re-entry.

After passing, on the first attempt and within a few months, all mission launch-qualification tests to the industry's most stringent standards, the technology accumulated more than 700 hours of on-orbit operation across three missions launched between 2022 and 2023. The missions—still operational—were launched on SpaceX Falcon 9 as part of the Transporter rideshare campaigns (Transporter-5, -6 and -9) and hosted on D-Orbit's ION Satellite Carrier spacecraft (platforms designed by the Italian company based in Fino Mornasco, Como, also used to carry and qualify emerging technologies in space). Over the past two years, multiple on-orbit activation cycles have continued alongside data analysis and characterization activities; additional tests are planned to further characterize the technology.

The campaigns confirmed system functionality in **real space conditions**, bringing the technology to a maturity level equivalent to TRL 7–8 (Technology Readiness Level). As additional confirmation of the results, several long-duration tests were conducted in which it was observed, **objectively and repeatedly**, that motor activation produced a measurable acceleration or deceleration of the host spacecraft.

The performance achieved to date by the flight-tested prototypes is already aligned with market requirements for specific mission profiles.

Several Italian organizations contributed to the project, including:

- The **Department of Electronics, Information and Bioengineering (DEIB)** at Politecnico di Milano, for laboratory bench measurements;



- The **Department of Aerospace Science and Technology (DAER)** at Politecnico di Milano, which developed the spacecraft dynamics model for the on-orbit analysis of the first mission and produced the motor electromagnetic-emissions report required during preliminary qualification for on-orbit acceptance;
- An **independent company** specializing in high-technology solutions, which validated the in-orbit results using a broad set of methodological approaches, ensuring the robustness and repeatability of the observed performance.

Genergo's technology opens new perspectives for space missions.

In addition to further on-orbit campaigns planned for continued development, the first commercial application will be controlled deorbit—namely, lowering a satellite's orbit to guide atmospheric re-entry and ensure burn-up at the end of the mission.

Genergo will exhibit at Space Tech Expo Europe, Bremen, 18–20 November 2025 (Hall 7 – Startup Pavilion – Stand ZZZ11).

For further information: www.genergo.space

About Genergo

Genergo is an Italian deep-tech company based in Como developing space-propulsion systems that convert electrical energy directly into thrust, without propellant and without expelling reaction mass. The company's proprietary system has surpassed 700 hours of on-orbit operation across three missions and has reached a maturity level equivalent to TRL 7/8, supported by independent analyses conducted on data acquired under real operating conditions. Genergo's vision is to make mobility in space safer, more sustainable, and reusable.

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