

D-Orbit Company Profile

D-Orbit is a first-mover in the market of decommissioning devices and a disruptor in next-generation commissioning solutions. We are leading the future in satellite fleet management by developing state-of-the-art technology to be integrated on satellites and launcher stages to streamline the initial and the final phase of the mission, reducing system complexity and cost of operation, and increasing lifetime, reliability, and revenues.

The Challenge

D-Orbit aims at disrupting the space industry by redefining how commissioning and decommissioning, the initial and final phase of a space mission, are performed, addressing current shortcomings and creating value in the process.

Commissioning is a critical phase for the new generation geostationary satellites, equipped with electric propulsion only. While electric propulsion is very effective for attitude control maneuver, its low thrust causes a slow transfer – up to six months – from parking orbit to operational orbit, delaying the start of operations and therefore postponing the revenue-generating phase. During the transfer, the satellite is exposed for a long time to radiations from the Van Allen belt, with consequences on the solar arrays and other electronic components.

End-of-life decommissioning, as mandated by increasingly stringent international regulations, is quickly becoming a concern for satellite operators, especially in view of next-generation mega-constellations. Besides the legal requirement, removing satellites at the end of life is becoming necessary to reduce the risk of collision with defunct spacecraft. Yet, satellite's onboard propulsive systems are not optimized for end-of-life maneuvers, leading to end-of-life operations that are long, complex, expensive, that cut the lifetime of a satellite, and that cannot be performed at all in case of satellite failure.

D-Orbit's Solutions

D-Orbit has a patented product line of smart, modular systems, based on solid rocket motor systems, proprietary core technologies to protect and maximize satellite value in an increasingly hazardous space environment.

- D-Raise is a compact, independent, solid propulsion system specialized in commissioning maneuvers for full-electric satellite platform. Thanks to its compact, high thrust motor, D-Raise speeds up the transfer maneuver from parking orbit to operational orbit by boosting the perigee up to an altitude of 10,000km, well above the Van Allen radiation belts. This maneuver enables satellite operators to perform orbit circularization maneuvers much quicker, anticipating the revenue-generation phase, while preventing unnecessary deterioration of solar arrays and other electronic components.
- D3 is an independent, smart motor specialized in decommissioning maneuvers. Installed on satellites before launch, D3 removes them from operational orbit at the end-of-life or in case of major failure in a quick, safe and controlled manner. D3 is fully compliant with international space debris regulations, helping operators of constellations to cleanly remove satellites at the end of life, maintaining their orbits clean from uncontrolled satellites and reducing collision risk.
- D-Launcher system is a specialized version of D3 designed to eliminate upper stages by executing a precise deorbit maneuver into a safe re-entry zone, enabling an optimal use of onboard fuel for the launch itself. D-Launcher ensures launch operators to meet restrictions prohibiting use of launchers beyond certain altitudes unless deorbit is guaranteed, minimizing debris build up and risk collision.

The Future

D-Orbit is currently working at D-Sat, a D3-powered satellite that will demonstrate self-decommissioning technology in space by the end of 2016.

After that, the sky is the limit. D-Orbit is working on life extension solution for on-orbit GEO satellites, and active debris removal. Providing on-orbit services is D-Orbit's strategic business objective. Industry partnering discussions are underway.