

Beyond Gravity: Innovating Space Launches with Reusable Payload Fairing Concept

Beyond Gravity, a leading international space supplier, is at the forefront of innovation and tackles the challenges of high costs with a focus on reusability. An innovative payload fairing (PLF) concept promises to disrupt space launches by allowing the payload fairing to close again – after the payload and the second stage are released – and return to Earth together with the first stage of the launcher. The company's commitment to innovation in the space industry has played an important role in advancing the technology and design of today's payload fairings.

Pushing the boundaries of what is technically feasible through innovation is one of the core promises of Beyond Gravity. In a world where space exploration continues to inspire and amaze with its boundless possibilities and breathtaking discoveries, the industry also faces major challenges, including affordability and contribution towards a greener future. The company is now taking a step toward addressing these challenges by launching a major research and innovation project. The Launcher Innovation Team at Beyond Gravity is working on a disruptive Payload Fairing (PLF) concept for reusable launchers. Instead of the half-shells being completely separated from the second stage, as is the case today, the two half-shells will open, release the payload, and then close again while remaining attached to the first stage of the launcher. Unlike traditional fairings, the PLF remains attached to the first stage throughout the entire flight and re-enters the atmosphere with the first stage for a soft landing. This novel approach would represent a major step forward in the reusability, schedule flexibility and cost reduction of launch systems and payload fairings.

Paul Horstink, Executive VP at Beyond Gravity's Launcher Division explains: "This new approach is set to address the evolving market's needs while staying true to Beyond Gravity's commitment to sustainability, innovation, and dedication to a 100% mission success. In addition, the cost savings associated with reusable rockets could make the launch systems more accessible to a wider range of companies and organizations, supporting more frequent launches." The concept is initially being developed with medium launch vehicles in mind, which can be with ongoing research scaled up to large vehicles, refining the system architecture and

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subsystems. Paul Horstink sees great entrepreneurial opportunity for this novel approach: “We envision future collaborations with launcher primes to develop reusable launchers and the potential to introduce novel subsystem solutions beneficial for a range of products. We are working closely together with our current customer base as well as new players in the commercial space market to develop this concept further.”



The second stage being released, before first stage closes again and returns to Earth.

Extensive Experience in Building Worldclass Payload Fairings

Beyond Gravity has four decades of experience in the production of payload fairings and has been a key contributor to the evolution of ArianeGroup's and ULA's launch vehicles, particularly in the development of advanced lightweight structures. From the launch of the first Ariane rocket in 1979, the company's involvement in the aerospace industry has played a pivotal role in advancing the technology and design of payload fairings. Paul Horstink: “Beyond Gravity's innovations have been crucial in the continued evolution of payload fairings. Our semi-automated industrial processes without the use of an autoclave helped reduce launch costs, improve launch schedule flexibility, and enhance the overall performance of launch vehicles.”

Realizing what's next.

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Collaborations with Innovative Startups in Space Industry

Next to reusable payload fairings, Beyond Gravity is fostering partnerships in innovation and research by cooperating with innovative startups and upcoming players in the international space ecosystem. The company's own startup program, "Launchpad", has successfully established collaborations with several startups. For instance, Beyond Gravity is working with RevoAI on an ESA project to assess the use of artificial intelligence in the development of future structures. Another startup, Gate Space, is developing a sustainable solution for satellite propulsion with refueling capability. Beyond Gravity is in ongoing exchange with them, and they recently got accepted into the prestigious Techstars Space Accelerator program in the US. Ethereum X, another startup in Beyond Gravity's startup ecosystem, is working on a 100% reusable rocket, to name just a few examples.

Beyond Gravity recognized within the Swiss Innovation Award

Reflecting Beyond Gravity's deep-rooted dedication to innovation, the company has recently been recognized as one of the top 150 most innovative companies in Switzerland in the "Top Innovative Companies 2024" ranking. This prestigious list, compiled by Swiss Business Magazines Bilanz and PME in collaboration with the research firm Statista, involved a comprehensive evaluation of thousands of Swiss companies. The assessment focused on various aspects of innovation, including the overall innovativeness, product breakthroughs, and the culture of innovation within each company.

More from our Launchers Division:

<https://www.beyondgravity.com/en/launchers/launcher-structures>

More on our Incubator Program:

<https://www.beyondgravity.com/en/incubator>

Pictures and further news:

<https://www.beyondgravity.com/news>

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Beyond Gravity, headquartered in Zurich, Switzerland, is the first startup to combine agility, speed, and innovation with decades of experience and proven quality. Approximately 1'600 employees at 14 locations in seven countries (Switzerland, Sweden, Austria, Germany, USA, Finland, and Portugal) develop and manufacture products for satellites, launch vehicles and the semiconductor industry with the goal of advancing humanity and enabling

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*exploration of the world and beyond. In 2022, the company generated revenues of approximately CHF 356 million.
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