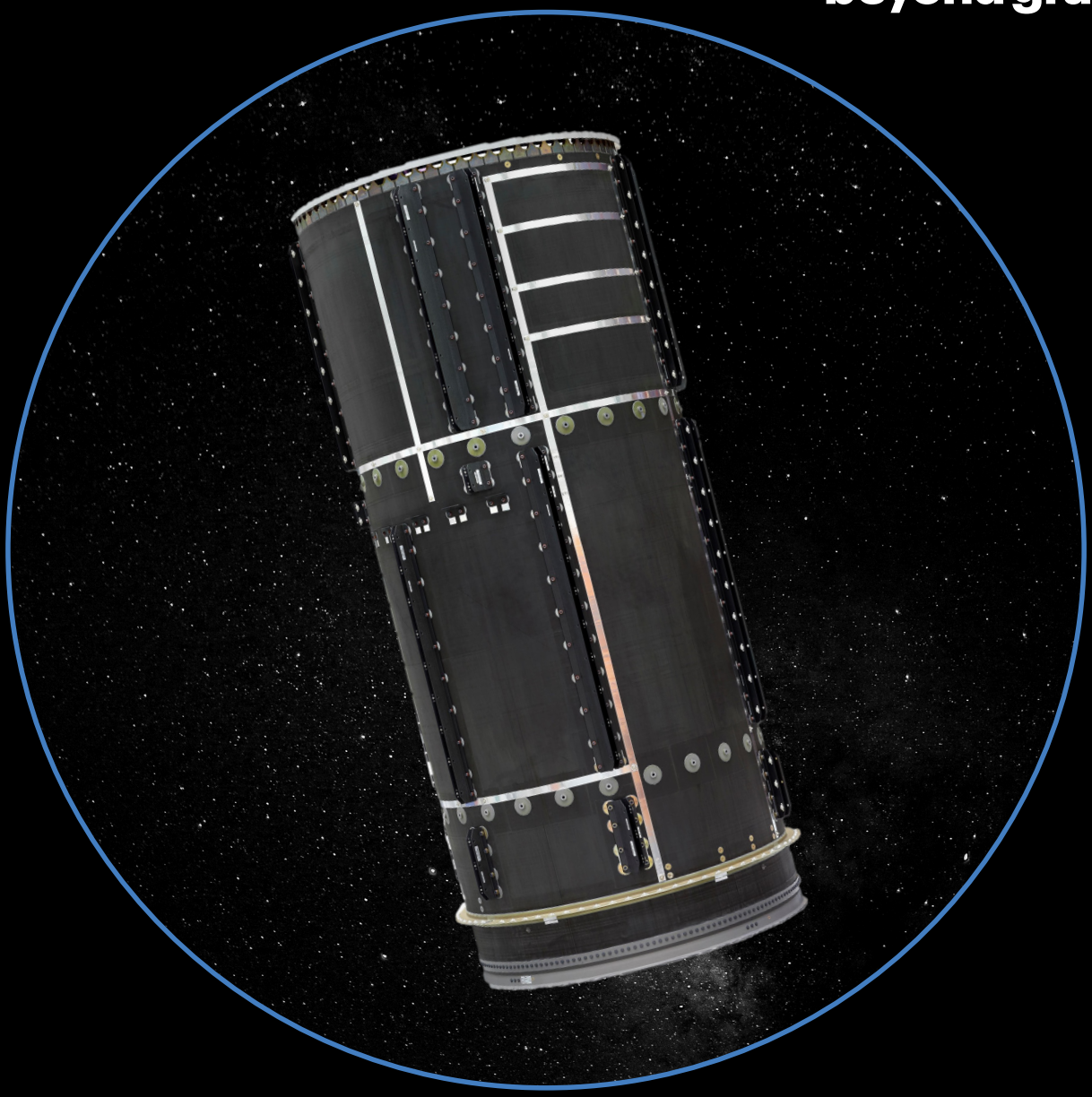
beyond gravity



Satellite Central Structures

Created with over 30 years of experience from Carbon fiber production, Beyond Gravity Central Cylinders continue to be used in a large number of satellites. With the optimized ultra-light Satellite Central Cylinder Structure from Beyond Gravity, a 90 kg Cylinder can carry satellite equipment with a mass up to 7 metric tons and still handle the accelerations and loads of a space launch.

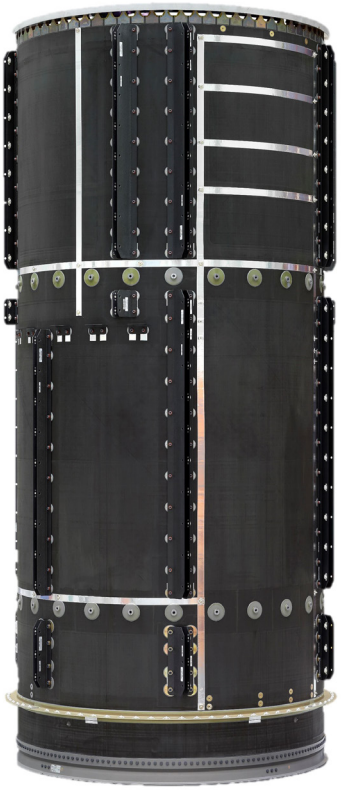
Central cylinder for satellites

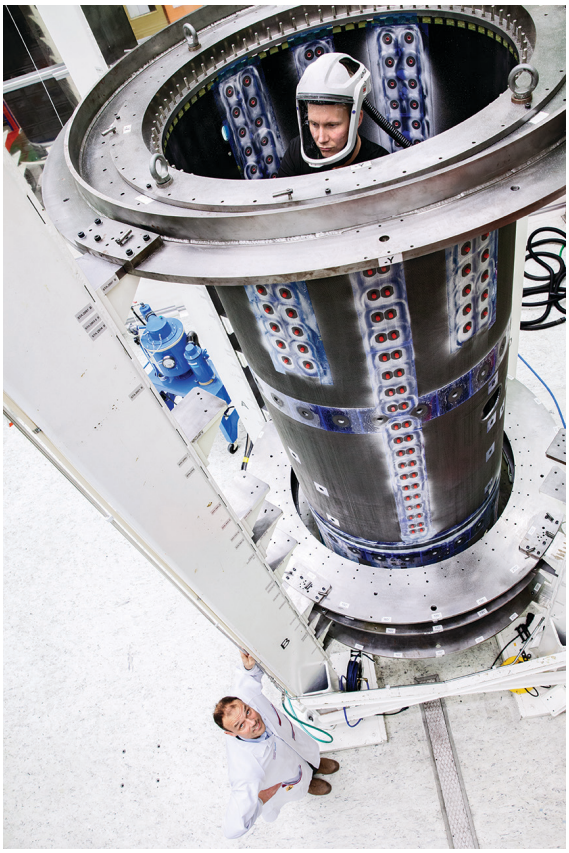
The central cylinder of a satellite could be compared to the spinal cord of a human being: It provides the mechanical support of all equipment, decks, panels, electronics, and propulsion tanks. Created with over 30 years of experience from Carbon fiber production, Beyond Gravity Central Cylinders continue to be used in a large number of satellites.

With the optimized ultra-light Beyond Gravity Satellite Central Cylinder Structure, a 90 kg Cylinder can carry satellite equipment with a mass up to 7 metric tons and still handle the accelerations and loads of a space launch.

The central cylinders can be made to accommodate the common space busses, up to 5m in height and with the standard 937 (37inch), 1194 (47 inch) or 1666 (66 inch) launcher interface.

The central cylinders can be made to accommodate the common space busses, commonly between 2.8-4 m in length and with the standard 1194 launcher interface.





Sandwich Design

The Beyond Gravity ultra-light Satellite structure is a sandwich composite structure with a mass and stiffness optimized design. It typically has a large number of different load zones with varying thickness and density all adapted to customer needs.

The Sandwich outer layers consist of CFRP (Carbon Fiber Reinforced Plastic) and aluminum honeycomb sheets make out the inner layer. For optimization purposes the carbon fiber skin thickness can vary between 0.3 and 10 mm.

The core of the sandwich is laid-up using a range of different density honeycomb sheets, all with the purpose to minimize mass.

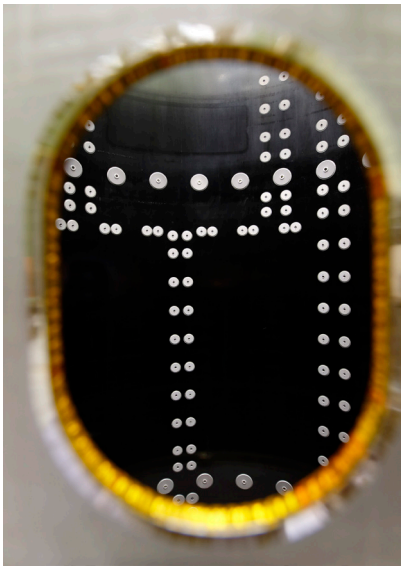
Reliability and Quality

For the initial launch and subsequent years in space the reliability and quality of the structure is crucial. The quality inspection is thorough and a vital part of the manufacturing process. Due to very thin skins in parts of the product, a special ultrasonic scanner is used to test the integrity of the structure before mounting inserts.

Precision

On a product with more than 600 inserts, to accommodate tanks, decks, corners and tubes, the accuracy of these holes is vital to meet the overall product quality requirements and schedule. Here is where you start to build your satellite and want reliability, quality and precision.

In order to achieve the needed accuracy, special tools are created to exactly match the chosen insert interfaces. These tools are then used in the manufacturing, resulting in a product that needs no further trimming once it leaves the assembly rig.



Main Characteristics of Beyond Gravity Central Cylinder

		Unit	Value[1)]
Dimensions	Height	m	up to 5m
Launcher Interface	Interface ring	mm	937 / 1194/ 1666
Weight	mass	kg	40-100
Material	Sandwich structure		Sandwich structure made of CFRP and Aluminium honeycomb
	Inserts		Titanium or aluminium
Satellite key data	Overall satellite mass	kg	2000-7000
Structural integrity test			Complete Ultrasonic scan and X-Ray

[1)] Mass of the standard system.

Beyond Gravity | Launchers
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