

RedBull Stratos Project : Some Details

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PAIRWORK TRANSLATION

With improvements like mobility and personalized adjustments, this full-pressure suit may serve as the prototype for the next generation of explorers.



A Suit Designed For Astronauts:

At altitude, without a pressure suit Felix Baumgartner's body fluids would begin to "boil" from lack of atmospheric pressure (a potentially fatal condition called ebullism). To reduce the likelihood of decompression sickness, his space suit is designed to provide pressure equivalent to the environment at 35,000 feet.

The exterior of the full-pressure suit is made of a material that is both fire retardant and an insulator against extreme cold (likely around -5 degrees Fahrenheit when Felix jumps and possibly as low as -70 degrees Fahrenheit during his descent). Inside, the suit's "bladder" is filled with gases to provide the pressurization. The uninflated suit, without the helmet and visor, weighs approximately 28 pounds.

The pressure suit helmet has features including a sunshade, a heated visor to prevent fogging, and a two-stage regulator that supplies 100% oxygen at all times. When Felix exhales, his breath is vented into the suit, designed to maintain its pressure of 3.5 psi (pounds per square inch) during the initial phase of the freefall. The helmet weighs about 8 pounds.

Pressure suit manufacturer David Clark Company has pioneered air and space crew protective equipment design, development and infrastructure since 1941, with products ranging from anti-G suits to space units.

The capsule houses all of the instrumentation, navigation and life-support equipment for the journey to 120,000 ft.

Engineered and developed specifically for this mission, the capsule is pressurized and thermally insulated for maximum protection from the outside elements.



The capsule is essential for Felix Baumgartner's safe delivery to the stratosphere, and it also serves as a back-up system in the unlikely event of pressure suit failure. Once at altitude, Felix verifies his pressure suit's integrity and depressurizes the capsule before opening the door to step off.

Technical Equipment: The capsule developed by Sage Cheshire Aerospace contains command and control systems as well as an emergency cutaway system. Also on board are oxygen and nitrogen tanks, radio communications and navigation equipment, transponders, and telemetry and control equipment. Cameras, recording devices and monitoring systems are mounted in the capsule (and on Felix) to track important data. These systems provide information about his condition and the environment inside and outside the capsule.

Shape: The shape of the capsule is reminiscent of space re-entry capsules. The circular door and windows allow maximum visibility for Felix and the capsule's interior cameras without compromising structural integrity; and further, the door's large, sloped, circular opening is designed to provide Felix with ample clearance for his pressure suit, helmet and parachute as he steps out onto the platform.

A 40 acre dry cleaner bag carries nearly 3,000 pounds. That's the Red Bull Stratos Balloon.

At launch the balloon and capsule together will stand taller than Seattle's Space Needle



The Red Bull Stratos balloon is filled with lighter-than-air helium, much like other high-altitude balloons. Helium is the ideal gas because it lifts, it's non-toxic, and it's non-flammable.

The balloon will be approximately 30 million cubic feet in capacity - more than 10 times larger than the balloon that Joe Kittinger used for his record-setting jump in 1960. At launch it will stand about 600 feet high, and from the top of the balloon to the bottom of the capsule the overall system will measure 764 feet. That's like launching a 75-story building.

The balloon's vast envelope is constructed of banana-peel-shaped strips, or "gores," of high-performance polyethylene (plastic) film that is only 0.0008 inches thick. These strips in total cover 40 acres. (You could wrap about 5,018,400 peanut butter sandwiches with that much plastic!)

And although it's actually thinner than sandwich wrap, the balloon material weighs more than 3,000 pounds, and when combined with the capsule parachute system and the rest of the flight train, the total weight of the ascending craft is expected to be around 7,000 pounds.

It's a one-of-a-kind technology hub no bigger than a lunch pail. Felix's chest pack houses monitoring, tracking, and communications systems.

A ring tone from the chest pack will tell Felix when he has broken the speed of sound.



This chest pack was designed with Felix's comfort and balance in mind. It's not too heavy or cumbersome to wear over his pressurized suit while still maintaining a streamlined shape. Think of it as a mail box in terms of size and purpose. All the data recorded inside the chest pack will report Felix's speed, position, and altitude back to Mission Control.

Here's the list of gadgets contained inside:

- The voice transmitter and receiver that connect to his helmet.
- GPS beacons to track his position.
- Telemetry equipment (which enables data capture and monitoring from long distances).
- An HD camera with a 120-degree view that encompasses Felix's faceplate as well as the ground below when Felix is in his streamlined, angled "delta" position.
- A package that will be used by the world governing body for air sports and aeronautical world records (the Fédération Aéronautique Internationale) to verify the records Felix hopes to establish.
- An inertia measurement unit (IMU) that will report altitude (pitch/angle) and spin.