The Spherical Fuel Tank of the 909 Bergspyder

25/08/2026 In 1968, Porsche entered its lightest ever racing car, the 909 Bergspyder, into competition. One of the secrets behind its light weight was the titanium spherical fuel tank.

It was the penultimate round of the European Hill Climb Championship on Salzburg's Gaisberg mountain on September 8, 1968. After five wins in five races in the 910/8 Bergspyder, Porsche had all but secured the title. But that didn't stop the racing department from continuing to develop at breakneck speed and bringing the brand-new 909 Bergspyder to the Gaisberg. The lightest Porsche of all time weighed in at just 400 kilograms and measured 3.48 meters in length, nearly 1.80 meters in width, and 75 centimeters in height.

Porsche viewed the uphill sprints as an opportunity to experiment with reducing weight and improving performance for longer distances. And that's precisely why the 909 was developed. Some of the features of its predecessor, the 910/8, were retained, including the wheel hubs, the titanium chassis springs and brake calipers, an aluminum space frame, the titanium and magnesium engine components, the ultralightweight beryllium brake discs, and the GFRP body, weighing just 10 kilograms, with

aluminum frame and titanium coil springs.

But what was new was the unusual component next to the engine, which was roughly twice the size of a soccer ball and secured in place by three straps. As the ultimate symbol of weight reduction, the spherical tank housed a pressure vessel made from 0.8-millimeter-thick titanium and, inside of that, a rubber bladder. Before the race, the bladder would be filled with gasoline, and nitrogen pumped into the space between the titanium and rubber at a pressure of approximately 15 bar. A hose connected the tank with the mechanical fuel injection pump. As a result of this experiment, the 909 could operate without a fuel lift pump, resulting in a reduction in weight of up to seven kilograms – a significant figure for a racing department fighting for every last gram.

The second innovation was the improved weight balance between the front and rear axles. While the differential with the limited slip differential was installed all the way at the back, the seat shell, engine, and five-speed transmission were all located far up front, leaving the driver's feet positioned ahead of the front axle, surrounded only by the filigree aluminum tubing of the space frame and the plastic body. That required confidence, considering the 275 PS of the two-liter flat-eight engine accelerated the 909 from 0 to 100 km/h in just 2.5 seconds. At a sensational 1.4 kg/PS, the power-to-weight ratio nearly rivaled that of Formula 1 at that time. Depending on the gear ratio, top speeds of up to 250 km/h could be achieved.

The 909's time came to an end after its second run in the final on Mount Ventoux in France. Porsche withdrew from the European Hill Climb Championship to focus all its resources on the World Sportscar Championship and Le Mans. In the 1970 World Sportscar Championship, the 908/3 competed at Nürburgring and the Targa Florio – and thanks in part to the weight distribution introduced in the 909, was an almost unbeatable cornering artist.

The spherical tank experiment, on the other hand, ended with the brief career of the 909, of which only two were ever built. On Gaisberg mountain, the engine choked on an overly rich mixture and was plagued by misfires, which translated to third place for Rolf Stommelen. The team combined the sphere with a petrol pump on Mount Ventoux, enabling Stommelen to secure second place. What remains in the racing department after nine titles in 11 European Hill Climb Championships is a mindset that's always searching for creative innovations – and a titanium sphere that symbolizes the unwavering drive to push the limits of what's possible.

Info

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Subline: Gerhard Mitter in a Porsche 909 Bergspyder at the 1968 Gaisberg hill climb

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Title: Porsche 909 Bergspyder, Rudi Lins, 2019, Porsche AG
Subline: Rudi Lins in front of the 275 PS engine of the Porsche 909 Bergspyder

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