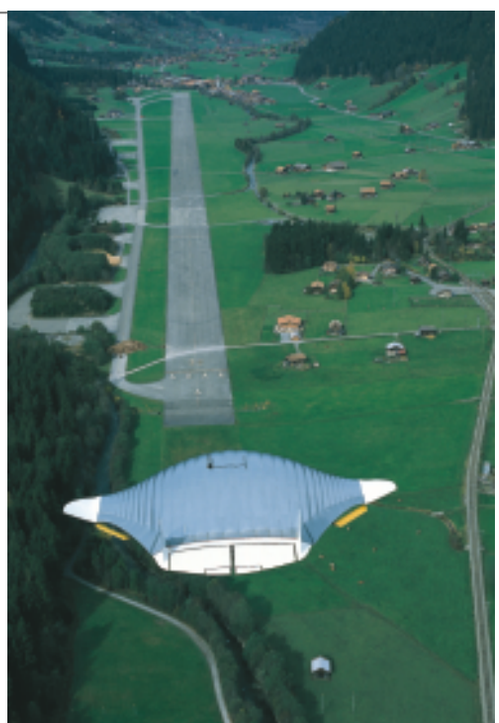
Flying Stingray

The technology platform STINGRAY marks the high end in terms of applications for pneumatic structures. It is at the same time a showcase and a pioneer of a construction principle, which combines high-strength fiber materials with compressed air, facilitating the creation of extremely light and robust yet flexible constructions.



From 1995 through 2000, the STINGRAY, packed with sensor electronics, has completed over 300 test flights in Hradcany, Czech Republic, and St. Stephan, Bernese alps. In addition to aspects regarding aerodynamics and flight mechanics, the main focus was on analyzing the reaction of the pneumatic textile structure method to different forces. The STINGRAY was navigated by former airforce pilot Gion Bezzola.

In the field of measurement instrumentation, new grounds were broken, too: due to a stereo photogrammetrical method, the aeroelastic deformation of the flying STINGRAY could be captured with an accuracy of a few millimeters from an escort helicopter. In order to capture the data, a system was developed, which is now about to be introduced to the market as MSR Modular Signal Recorder.

The new and improved version of the STINGRAY will feature a pneumatic control through dynamic areas, a cabin that will be fully integrated into the weight-bearing geometry, an electric drive with so called ducted fans, as well as a multifunctional landing gear.

Technical data

Wingspan	13 m
Length	9.4 m
Volume	68 m^3
Wing area	70 m^2
Power	64 PS each
Max. take off weight	840 kg
Differential pressure	20-50 mb
g-load	4.5 g
Take off speed	47 km/h
Cruising speed	130 km/h
Vertical speed	2.5 m/s