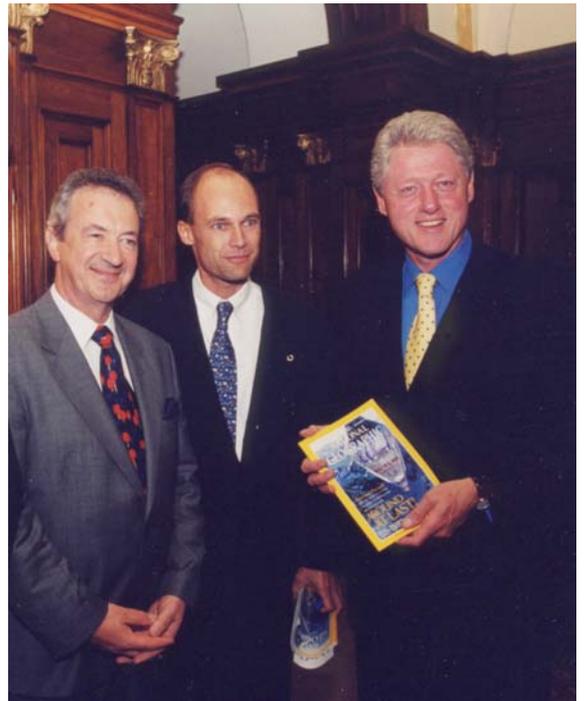


Solar Impulse™

In March 1999, Bertrand Piccard and Brian Jones, on board "Breitling Orbiter 3", accomplished what was considered to be the last great aviation adventure of the 20th century: the first ever non-stop round-the-world flight in a balloon. The aim was not to revolutionise air transport but to accomplish a great dream combining, in Jules Verne style, technology, human adventure and respect for the environment. The public understood this symbolism and, having followed their progress hour by hour, acclaimed the pilots as heroes. Entirely sponsored by the Swiss watchmaker Breitling, this expedition was considered by marketing experts as one of the greatest ever successes for private sponsorship. Several countries issued stamps to commemorate the event and the capsule was installed in the grand hall of the Smithsonian Air and Space Museum in Washington alongside the Apollo 11 capsule and the aeroplanes flown by the Wright Brothers, Charles Lindbergh and Chuck Yeager...





A NEW PROJECT

Today Bertrand Piccard is embarking on a new and even more ambitious project: **a round-the-world flight in a solar aircraft** . This time, the challenge is to influence the history of air transport by exploiting new technologies that satisfy the demands of our era for sustainable development: to **use only renewable forms of energy and remain airborne without generating any polluting emissions** .

This adventure aims, step by step, to re-enact the great 'firsts' and record-breaking flights that punctuated the history of 20 th Century aviation, but this time using only solar energy, with the final objective of a solar-powered round-the-world flight.

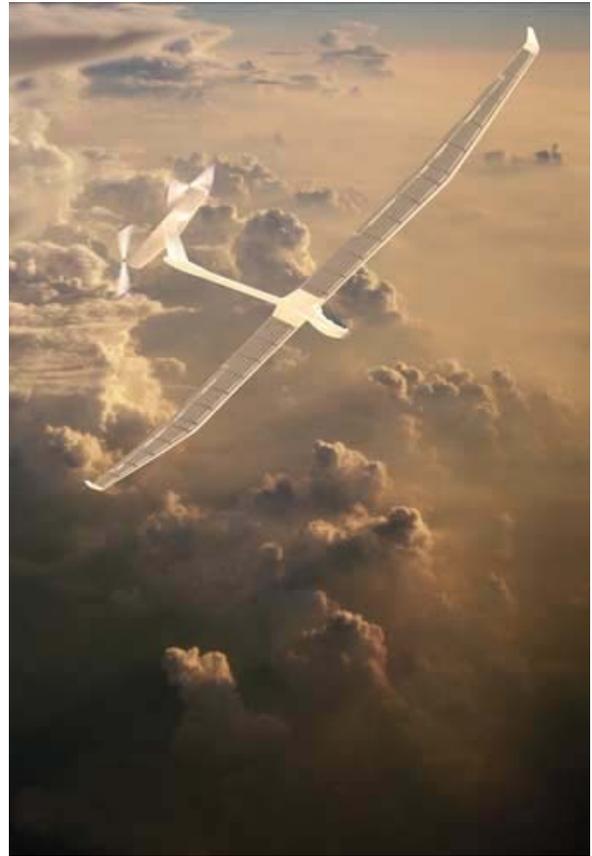
The key players in this exciting project with Bertrand Piccard are Brian Jones, co-pilot on the Breitling Orbiter 3, Andre Borschberg, an engineer and pilot appointed as project manager, and the Swiss Federal Institute for Technology (EPFL) who will act as scientific partner. At present little has been achieved by solar-powered aeroplanes, which have not yet succeeded in capturing or storing enough energy to remain airborne for more than a dozen hours. The challenge is to design a machine capable of sustaining long-term flight without using any kind of embarked fuel, whether it be hydrogen or a petroleum derivative.

Impossible, some might say? That's what many thought about the round-the-world balloon flight...before it became reality.

OBJECTIVE

Records will be broken and historic firsts achieved, but these will represent only the spectacular aspect of an adventure that above all is designed to draw the attention of the public to the essential changes that are necessary to ensure future energy resources and the ecological balance of our planet. The aim will be to deliberately use the project as a **communication platform** for the concept of renewable energy, and so generate public enthusiasm in favour of **sustainable development**.

All too often, any mention of ecology provokes a lukewarm reaction in a public afraid that its comfortable existence is under threat. It is clear that environmental and energy problems cannot be resolved by reversing the achieved material comforts, but rather by changing attitudes and bringing about major technical innovations. The current state of knowledge shows that it is possible to combine quality of life with development and environmental protection. The solution to the ecological problems we face therefore lies in **scientific research, information and dialogue**.



PROJECT PHILOSOPHY

The development of solar flight will:

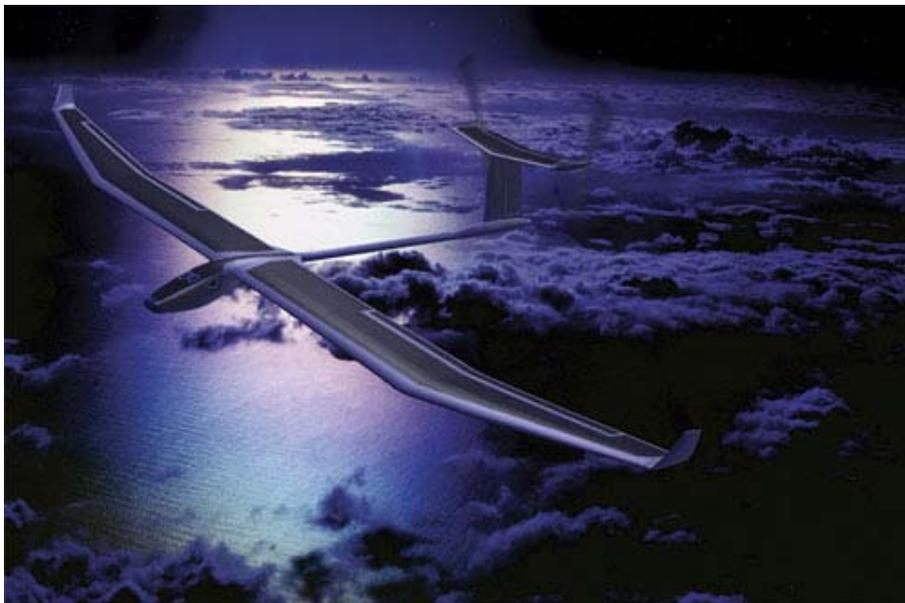
- Open up new scientific, ecological, humanistic and economic horizons;
- Stimulate scientific research in entirely new areas of composite materials science and methods of producing and storing energy;
- Attract sources of private-sector funding for scientific research;
- Mobilise public support for a meaningful and inspiring endeavour;
- Actively promote renewable forms of energy;
- Participate in the creation of popular interest in the very idea of sustainable development, a concept that is often misunderstood.

Note: Sustainable development is the ability of present generations to provide for their own needs without jeopardising the ability of future generations to provide for theirs.

STRATEGY

The aim is to assemble the best brains available to develop the necessary technologies to design and build an aircraft capable of staying airborne without any external help, save from the sun. Several specialists of international ,renown have already agreed to participate in this adventure.

When Bertrand Piccard first presented the idea to Professor Stefan Catsicas, Vice President for Research at the **Swiss Federal Institute for Technology (EPFL)** in Lausanne , the latter immediately spotted an opportunity to develop a genuine flying energy laboratory. A group of experts was established and tasked with conducting a **feasibility study** . Several laboratories, bringing together specialists in mechanics, thermodynamics, aerodynamics, electrical systems, composite materials, photovoltaic systems, energy transfer and storage and computer modelling, worked together between March and October 2003 to define the main thrust of the work. Inspired by the revolutionary and challenging high-technology aspects of this undertaking, Stefan Catsicas proposed that the EPFL should become the **scientific partner** of the project and had very little problem convincing Professor Patrick Aebischer and the other members of the Board of the EPFL. This represents a logical follow-on for the EPFL, which participated in the success of the Breitling Orbiter 3, for which it carried out thermodynamic research, and of the racing yacht Alinghi, winner of the America 's Cup



PROJECT LENGTH

This is a long-term project, and each stage will provide breakthroughs in technology, a succession of outstanding aviation firsts and extraordinary communication opportunities for sustainable development:

- Announcement of the project on 28 th November 2003 ;
- Design and construction of the first prototype in 2004-2005;
- Flight tests of the first prototype early in 2006;
- A complete night in the air during the first 36 hour solar flight during 2007;
- Flight tests of the second prototype from end 2007;
- Ultra long distance and duration flights from start of 2009

FAMILY TRADITION

Never before has a single family left a greater mark on the world of exploration than Auguste, Jacques and Bertrand Piccard. In this family, invention and exploration have been the norm for three generations: the pressurised capsule with the first stratospheric flight, the Bathyscaphe with the absolute diving record and the first round-the-world flight in a balloon... The new project is wholly in keeping with this tradition of exploration, adventure and scientific development.





Explorers of new territories in the world of knowledge:

"Explorers of new territories in the world of knowledge": a phrase that succinctly describes the EPFL. The EPFL has already contributed to the success of the first round-the-world balloon flight by Bertrand Piccard in 1999, and to the victory of "Alinghi" in the last America 's Cup; and it counts amongst its faculty members Claude Nicollier, NASA's first European astronaut.

This spirit of exploration is reflected in the spectacular growth of the institution: the EPFL plays a major role in the emergence of new areas of scientific research, undertakes many research projects that cross the boundaries of the classical disciplines, and brings together theoretical research, experimentation and technology transfer in an original manner.

As official scientific advisor, the EPFL will bring all its academic expertise to the Solar Impulse project. Its contribution will not only find solutions to the complex technological challenges presented by this new adventure, but will also contribute to the advance of science in numerous key areas such as ultra-light materials, flexible solar cells, energy-saving in highly complex systems , and next-generation human/machine interfaces capable of self-adjusting to each user.

In order to carry out these projects, the EPFL has developed a strategy that aims not only at making major scientific breakthroughs, but also at achieving a substantial amount of technological spin-off that is beneficial to society and promotes sustainable development and better quality of life.

Today, the campus is growing rapidly and brings together almost 10 000 people on the banks of Lake Geneva overlooking the Alps . An inspiring place, which stimulates the urge to create, to explore and to innovate for the future of the human race and of the environment.





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