

Pneumatic Comfort System

The Ultimate Laboratory – Lantal’s Contribution to Solar Impulse



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Lantal Textiles is the leading provider of textiles and services for the international community of aircraft, bus and railway operators. The Swiss company developed the revolutionary Pneumatic Comfort System (PCS) which uses firmness-adjustable air-filled cushions to assure the ultimate in comfortable seating and resting – now also for a very special cockpit. For Solar Impulse 2, Lantal Textiles is the "Official Supplier, Pilot Comfort Expert".

The goal: Attempt the first round-the-world solar flight

In the beginning, it was a vision: building a solar airplane capable of flying around the world. After 12 years of research and development, the vision is reality. The Solar Impulse 2 (Si2), with a wingspan of 72 meters and 17,000 solar cells, started its adventurous round-the-world tour. Given the ultimate goal of flying around the world in 12 legs of up to 5 days and nights (25 days altogether) over a period of three to four months, the weight of the plane, but also the comfort and ergonomics of the two pilots play a paramount role.

The contribution: Lantal as an official supplier for Solar Impulse

Solar Impulse 2, the solar airplane of Bertrand

Piccard and André Borschberg, is backed by Lantal as an official supplier. The product solutions for Solar Impulse 2 demand only the lightest, most reliable, and – for the cockpit – most comfortable components available today. Considering these superior requirements, Lantal implemented its revolutionary Pneumatic Comfort System and created specially designed and optimized seat cushions for the Si2. Lantal's PCS air-filled cushions, replacing the foam in regular aircraft seats, not only reduce the plane's weight, they also offer the pilots the greatest conceivable degree of comfort for the strenuous long-duration flight.

The promise: Offer the highest degree of pilot comfort

Thanks to the adaptable firmness of the cushions, Lantal's innovation assures total comfort in the sitting, relaxation, and resting positions, allowing the pilots to fully devote their attention to the realization of the ambitious flight. The individually adjustable firmness of the seat prevents the occurrence of painful pressure points and keeps the two pilots comfortably seated. The air-filled cushions retain their posture-supporting stability – no matter how long the flight might be.



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The acknowledgment: PCS demonstrates long-term comfort in 72-hour simulation flight

Prior to the first flight to Morocco in February 2012, a virtual 72-hour journey was conducted in a mockup of the Solar Impulse cockpit. In 72-hour simulation flights, the air-filled cushions demonstrated the PCS' superior comfort as both pilots noticed no pressure points after 3 consecutive days in the seat equipped with Lantal's PCS. During this 3-day adventure on the ground, the pilots expressed their enthusiasm for the firmness-adjustable air-filled cushions and the extremely comfortable body support they provide. Correspondingly André Borschberg stated: *"I like the adjustable firmness. No pressure points, extremely comfortable support."* Approving this statement, the second pilot, Bertrand Piccard, added: *"The cushions are very good, impressive, congratulations! Better than first class."*



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The implementation: Solar Impulse as an ultimate laboratory

For the same reasons, Lantal's PCS is increasingly becoming successful in civil aviation, where it helps enhance passenger comfort and reduce fuel costs. The PCS ingeniously conforms to the passenger's anatomy and features firmness-adjustable cushions

with an inbuilt massage function. Meanwhile, over 8000 seats have been equipped with the PCS. Swiss International Air Lines, Lufthansa as well as Air Canada, Etihad, Brussels Airlines, British Airways and Austrian Airlines are relying on the exceptionally dependable air-cushion system. They all want to offer their passengers the uniquely individual and comfortable seating experience. At the same time, airlines can reduce installed weight with the PCS, which saves fuel costs and hence CO₂ emissions.

For the special project with Solar Impulse 2, the Swiss company utilized the same components which are also implemented in every PCS. As there are no back-ups for non-vital systems in the Si2, the PCS system has to function without glitches during long flights at 8500 m in an unpressurized cockpit at subzero temperatures, during uninterrupted legs of up to 5-7 days. Here, the reliable and trustworthy character of the commercially applied product comes into effect. Taking every pilot feedback seriously, the Si2 is now the ultimate laboratory, giving Lantal the opportunity to test its innovative PCS under extreme conditions and hence improve its product for civil aviation.

The vision: Lantal's commitment for more sustainability

With the Pneumatic Comfort System for the cockpit and its ergonomics expertise, Lantal is contributing to the goal of Solar Impulse: to circle the earth powered only by solar energy, demonstrating the potential of new technologies to reduce our society's dependence on fossil fuels.

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