

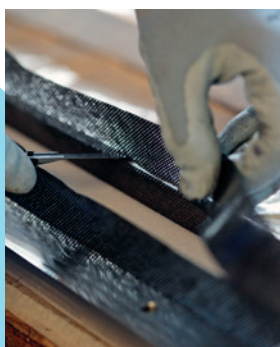
THE FLYING LABORATORY

What major civil and military aircraft makers thought impossible has been achieved by the ingenuity of the Solar Impulse team.



4 brushless, sensorless motors with exceptional energy efficiency each generating 13.5kw (17.4 hp), fitted with a reduction gear, limiting the rotation speed of a 4m diameter (13ft), two-bladed propeller to 525 rev/min. The entire system is 94% efficient, a record rate, yielding a 6% energy loss versus 70% in normal thermal motors!

Airframe made of composite materials (carbon-fiber and honeycomb sandwich).



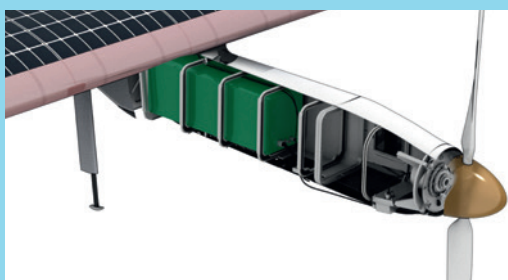
An ultra-lightweight and incredibly strong structure, thanks to a revolutionary carbon-fiber manufacturing process in which only the areas subject to high loads are reinforced. This innovation has reduced the weight of some carbon material layers by 75%, yielding a significant reduction in the weight of each component.



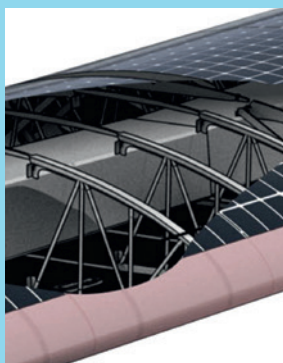
Energy stored in lithium polymer batteries, whose energy density is optimized to 260 wh/kg. Batteries insulated by high-density foam and mounted in the four engine nacelles, with a system to control charging thresholds and temperature. Their total mass amounts to 633 kg (1,395 lbs.), or just over a quarter of the aircraft's weight.



17,248 monocrystalline silicon cells each 135 microns thick like a human hair, providing the best compromise between lightness, flexibility and efficiency (23%).



Upper wing surface covered by a skin consisting of encapsulated solar cells and the lower wing surface by a strong, flexible skin.



140 carbon-fiber ribs spaced at 50 cm (20 in.) intervals give the wing its aerodynamic cross-section, and also maintain its rigidity.

Isolation foam with very thin pores inside the cockpit to insulate from extreme temperatures during flight.

