

# Solar Powered Airplane

Designed and built by Gary Stevens <http://garylstevens.com>

The solar plane is powered purely by the Sun. Sunlight striking the 32 solar cells is converted into electricity which powers the plane's electric motor and propeller. The solar array also powers the plane's radio control receiver and servos, plus an onboard instrumentation system that includes a GPS receiver, three electronic thermometers, a barometric altimeter, current and voltage sensors, a DVM, flash-memory data logger, and a 2.4GHz telemetry downlink transmitter.

This airplane can fly on a clear day as long as the sun is high in the sky, without burning a drop of fuel or relying on charged batteries.

This plane is my own design. It is not a kit, nor was it built to someone else's plans or design. It is the only one in the world just like it. The design and construction took over 2000 hours spread over 1-1/4 years.

## Specifications

Construction Materials	Balsa wood, light plywood and carbon fiber with a clear shrink-film covering
Control Channels	Rudder, elevator and throttle
Wingspan/Chord	120"/12.4"
Length	71"
Weight	8.95_lb (minimum weight configuration), 9.79_lb (w/ full telemetry system installed)
Lift/Drag (glideslope)	14.4
Solar Cells	32ea, SunPower C60 Maxeon, 5x5" 22% efficiency.
Solar Generation	8.0V @ 9.45A = 75.6W (for 20° zenith-Sun angle)
Cruise Power at 24.6MPH	54.7Watts into outrunner motor. Thrust horsepower = 0.0406HP
Motor & Propeller Efficiency	77% outrunner motor, 72% propeller
Onboard Telemetry System	GPS (Lat & Lon, speed over ground, altitude, heading), outside air temp & 2x solar cell temperatures, field elevation, barometric altitude, system voltage, solar current or motor current. Onboard (4-hour) data logging to flash memory plus 2.4GHz telemetry downlink transmitter to ground receiver with display for real-time data monitoring.
Maiden Flight	May 27, 2017

See video at: <https://www.youtube.com/watch?list=UUA6v6WuFSUpiVuS4ApfHKouA&v=8vb8rKSJwoo>

