

ENERGY SOLAR

Near Space Aircraft Energy System - Solar Array & Energy Management

Explore the Near Space Aircraft Energy System designed for altitudes of 20 km to 100 km. Featuring a modular solar array, energy storage, and energy management, this system offers long endurance, low cost, and reliable energy solutions for unmanned airships and aircraft.

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Product Features

Near space refers to airspace at an altitude of **20 km to 100 km**. Aircraft operating in this airspace are called near space aircraft, which mainly include stratospheric airships, floating balloons, and high-altitude, long-endurance airplanes.

Compared to traditional aircraft and satellites, near space aircraft have advantages such as **long endurance**, **low cost**, **all-weather capabilities**, and **repeatable takeoff and landing**. Additionally, they cannot be easily detected or attacked. These aircraft are widely used in fields like early warning detection, communication broadcasting, and electronic countermeasures.

The company has constructed an energy system architecture comprising **solar array**, **energy storage**, and **energy management**. It adopts a distributed modular design, achieving a closed-loop system of "energy generation - energy storage - energy supply" for different aircraft.

Applications

- The products can be applied in high-resolution platforms for observing the Earth, **5G base stations** for emergencies, and high-altitude communication relay platforms.
- A dedicated solution provider and manufacturer for near space aircraft energy systems.

Basic Architecture of a Near Space Aircraft

- **Solar Array**
- **Power Controller**
- **Power Busbar**
- **Energy Storage Battery**

Parameters

Configuration	Solar Powered Unmanned Aircraft Energy System	Solar Powered Unmanned Airship Energy System
Key Performance Parameters		
Service Life	Calendar life ≥ 3 years	Calendar life ≥ 3 years
Flight Duration	≥ 24h - 30 days	≥ 24h - 90 days
Conversion Efficiency of Silicon Solar Array	22.5%	22.5%
Conversion Efficiency of High-Efficiency Solar Array	≥ 30%	≥ 30%
Maximum Discharge Rate of Energy Storage Battery	1C	3C
Energy Storage Battery System	High energy battery	High energy battery
Energy Density	450 - 500 Wh/kg	300 - 350 Wh/kg

Configuration	Solar Powered Unmanned Aircraft Energy System	Solar Powered Unmanned Airship Energy System
Controller Operating Efficiency	90% - 97%	90% - 97%
Controller Weight to Power Ratio	1.5 kW/kg - 2.5 kW/kg	1.5 kW/kg - 2.5 kW/kg
Service Environment		
Service Altitude	0 - 30 km	0 - 25 km
Service Temperature	-90°C to +70°C	-90°C to +70°C