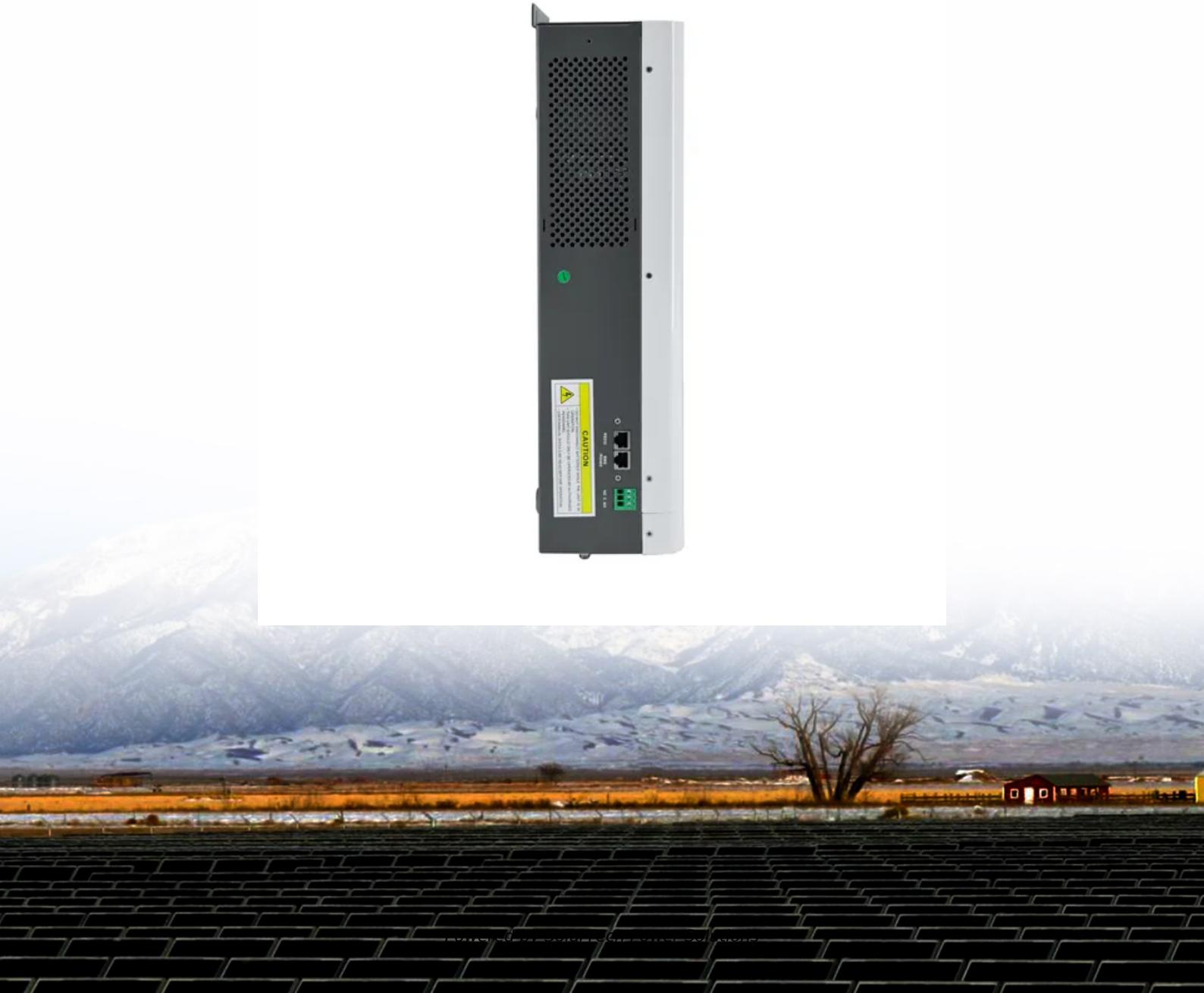




**SolarTech Power Solutions**

**Is the source of light for  
communication base stations  
the same as electricity**



## Overview

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Solar panels convert sunlight into electricity, 2. The generated electricity powers the base station, 3. Signals are transmitted using radio waves, 4. Energy storage systems ensure continuous operation. How much energy does a communication base station use a day?

A small-scale communication base station communication antenna with an average power of 2 kW can consume up to 48 kWh per day. 4,5,6 Therefore, the low-carbon upgrade of communication base stations and systems is at the core of the telecommunications industry's energy use issues.

How does a base station work?

In this scheme, the base station is powered by solar panels, the electrical grid, and energy storage units to ensure the stability of energy supply. When there is a surplus of energy supply, the excess electricity generated by the solar panels is stored in the energy storage units.

Can low-carbon communication base stations improve local energy use?

Therefore, low-carbon upgrades to communication base stations can effectively improve the economics of local energy use while reducing local environmental pollution and gaining public health benefits. For this research, we recommend further in-depth exploration in three areas for the future.

Will communication base stations reduce electricity consumption?

Our findings revealed that the nationwide electricity consumption would reduce to 54,101.60 GWh due to the operation of communication base stations (95% CI: 53,492.10–54,725.35 GWh) (Figure 2 C), marking a reduction of 35.23% compared with the original consumption. We also predicted the reduction of pollutant emissions after the upgrade.

How does a solar base station work?

The main technological approach includes the integrated installation of solar

panels, energy storage units, and controllers, with the specific transformation plan displayed in Figure 6. In this scheme, the base station is powered by solar panels, the electrical grid, and energy storage units to ensure the stability of energy supply.

What are the components of a base station?

**Power Supply:** The power source provides the electrical energy to base station elements. It often features auxiliary power supply mechanisms that guarantee operation in case of lost or interrupted electricity, during blackouts.

**Baseband Processor:** The baseband processor is responsible for the processing of the digital signals.

## Is the source of light for communication base stations the same as...

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