



**SolarTech Power Solutions**

# **Outdoor base station energy-saving solution design**



## Overview

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What is the energy-saving technology of base stations?

This technical report focuses on energy-saving technology of base stations. Some energy saving technologies since 4G era will be explained in details, while artificial intelligence and big data technology will be introduced in response to the requirement of an intelligent and self-adaptive energy saving solution.

How can a base station save energy?

There are two main methods of base station energy saving, including hardware and software.

What are the standardized energy-saving metrics for a base station?

(1) Energy-saving reward: after choosing a shallower sleep strategy for a base station, the system may save more energy if a deeper sleep mode can be chosen, and in this paper, the standardized energy-saving metrics are defined as (18)  $R_{i,e} = E_{S,M=0} - E_{S,M=i}$   $= 3$ .

Why do base stations waste so much energy?

When there is little or no communication activity, base stations typically consume more than 80% of their peak power consumption, leading to significant energy waste. This energy waste not only increases operational costs, but also burdens the environment, which is contrary to global sustainability goals.

Can a base station sleep strategy reduce energy consumption in UDN systems?

The goal of this paper is to find a base station sleep strategy in UDN systems that reduces the total system energy consumption while being able to guarantee QoS.

## How AI based energy saving can help BS Energy Saving?

In response to the requirement of an intelligent and self-adaptive energy saving solution, AI and big data technology are also introduced to BS energy saving for improving the efficiency and reducing the manpower required. 7.2. AI based energy saving for 5G base stations Nowadays the 5G network deployment is on the fast track around the world.

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