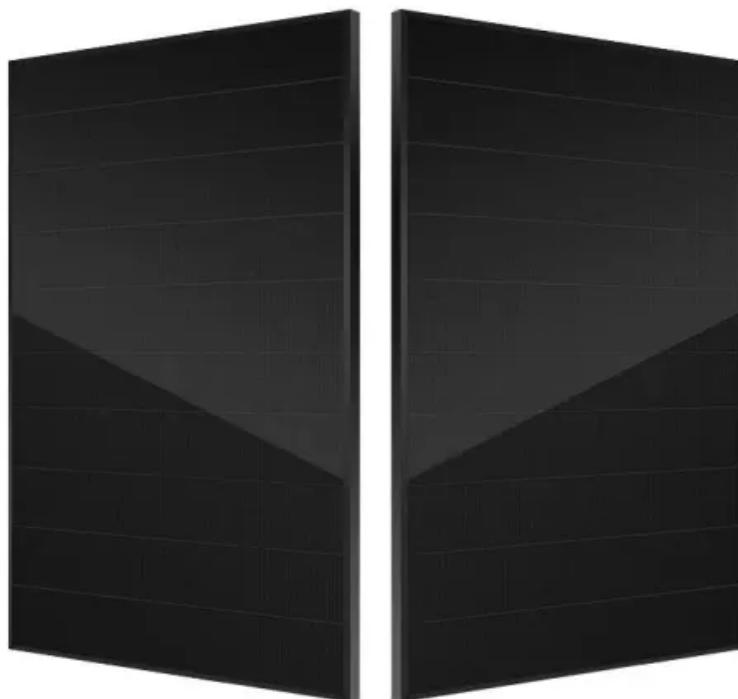




SolarTech Power Solutions

Denalon's impact on base station energy management systems



Overview

How does distributed execution affect base station control?

In the distributed execution phase, each actor network makes decisions independently based only on its own network and observations, and although each actor executes independently, the whole system is able to obtain a better base station control strategy because their strategies are based on the results of global optimization. Fig. 2.

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.

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) $R_{i,e} = E_{S,M=0} - E_{S,M=i} = E_{S,M=0} - E_{S,M=3}$.

Does a base station sleep affect quality of service (QoS)?

While base station sleeping and antenna switching techniques can be effective in saving energy, they can have an impact on the Quality of Service (QoS) of users. While the base station is sleeping, the User Equipment (UE) must wait

for the base station to recover or find another available base station.

How many base stations are in a heterogeneous network?

As an example, one can mention the transition from homogeneous networks (comprising 1 to 3 base stations (BSs) per km²) to heterogeneous networks (comprising 10 to 100 nodes per km²). Furthermore, the growing need for larger storage capacities adds to energy requirements.

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