
Are base stations a threat to the safe operation of electric network?

Abstract: The ultra-dense deployment of base stations (BSs) results in significant energy costs, while the increasing use of fluctuating renewable energy sources (RESs) threatens the safe operation of electric network (EN). These issues can be addressed by coordinating BSs' active/sleep states with RES generation.

What causes a communication base station to fail?

Power interruption is a significant contributor to communication base station functional failure. Communication systems closely rely on power systems, and power outages can result in widespread station interruptions. In the case of the earthquake in Changning County, 90% of disrupted base stations experienced power interruptions as the cause.

What causes base station functional failure?

In Fig. 6, the causes of base station functional failure (T) are identified: power interruption (I 1), damage to communication room (I 2) (equipment included), and damage to communication towers (I 3).

Are ACDB and CBS a risk factor for base station functional failure?

The failure probabilities of the AC distribution box (ACDB) and communication building structure (CBS) nodes are relatively high, indicating that they have significant impacts on base station functional failure. Therefore, it is recommended to prioritize seismic mitigation measures for the ACDB and CBS.

What is an indoor base station?

An indoor base station comprises a communication room accommodating various communication equipment and a communication tower responsible for transmitting and receiving information. The communication room is equipped with wireless communication devices, transmission equipment, power supply equipment, air conditioning, and cable routing racks.

How does a communication tower damage a base station?

The communication tower and its antenna equipment are responsible for signal transmission and reception, and their damage directly affects the normal operation of the base station. This study mainly considers tower body damage (X 11) and antenna damage (X 12).



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