

## **PDEOZE PowerContainer**

# **Power generation costs for the Vaduz communication base station**



## Overview

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Can a base station power system model be improved?

An improved base station power system model is proposed in this paper, which takes into consideration the behavior of converters. And through this, a multi-faceted assessment criterion that considers both economic and ecological factors is established.

Can a base station power system be optimized according to local conditions?

The optimization of PV and ESS setup according to local conditions has a direct impact on the economic and ecological benefits of the base station power system. An improved base station power system model is proposed in this paper, which takes into consideration the behavior of converters.

Does converter behavior affect base station power supply systems?

The influence of converter behavior in base station power supply systems is considered from economic and ecological perspectives in this paper, and an optimal capacity planning of PV and ESS is established. Comparative analyses were conducted for three different PV access schemes and two different climate conditions.

What happens if PV capacity is less than base station load?

When the installed PV capacity is less than the base station's daily load, the return on investment of PVs remains relatively stable, but it gradually decreases as the installed PV capacity increases. The return on investment of adding ESS is consistently lower than that of PVs, but its trend is different.

Does loss of power converters affect the optimization of base station PV and ESS?

The main conclusions are as follows: The loss of power converters significantly affects the optimization of base station PV and ESS. Calculating with a fixed efficiency cannot accurately reflect the actual situation. The proposed

evaluation method achieves a balance in LCC, initial investment, return on investment, and carbon emissions.

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The wind-solar-diesel hybrid power supply system of the communication base station is composed of a wind turbine, a solar cell module, an integrated controller for hybrid energy

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