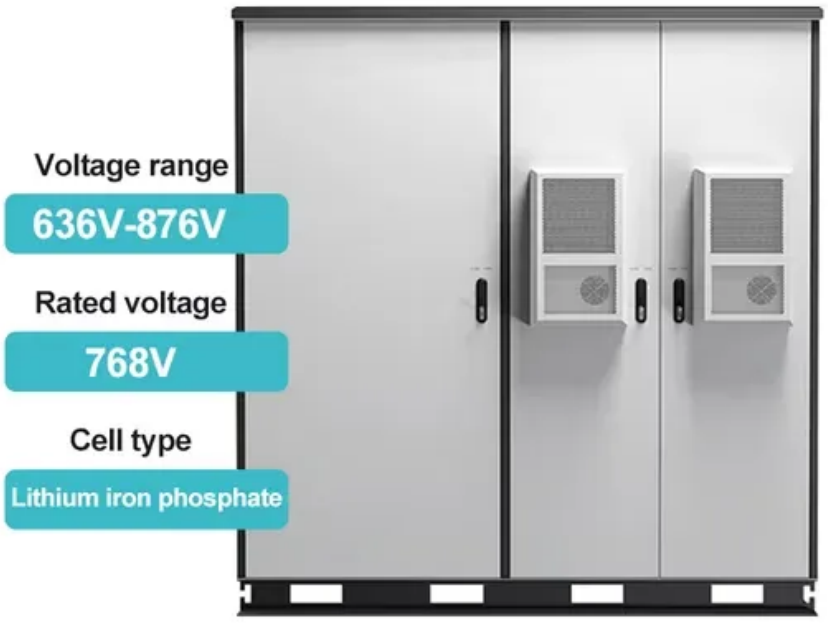
ContainerPower Energy Solutions

General wind power energy consumption of communication base stations



Overview

What percentage of the energy consumption comes from ran (radio access network)?

Figure 1.1(c) then shows that of the energy consumption of the network, 70%-90% comes from the RAN (Radio Access Network) of which 70% of the energy consumption comes from the Radio Base Stations, see Figure 1.1(d).

How much energy does a radio network use?

Importantly, more than 70% of this energy has been estimated to be consumed by the radio access network (RAN), and in more details, by the base stations (BSs) .

What is a base station power consumption model?

In recent years, many models for base station power con-sumption have been proposed in the literature. The work in proposed a widely used power consumption model, which explicitly shows the linear relationship between the power transmitted by the BS and its consumed power.

How does the energy consumption of radio base stations affect OPEX?

As the set of configurations gets larger the combi-nations of configurations on a hardware-software product, e.g., a 5G radio base station, increases quickly. As a consequence tractability decreases and optimization becomes harder. Figure 1.1: The effect of the energy consumption of radio base stations on the operator OPEX .

Can a neural network predict energy consumption from field data?

Mathematical optimization of energy consumption requires a model of the prob-lem at hand. In this thesis linear regression is compared with the gradient boosted trees method and a neural network to see how well they are able to predict energy consumption from field data of 5G radio base stations.

Can communication and power coordination planning improve communication quality of service?

Our study introduces a communications and power coordination planning (CPCP) model that encompasses both distributed energy resources and base stations to improve communication quality of service.

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