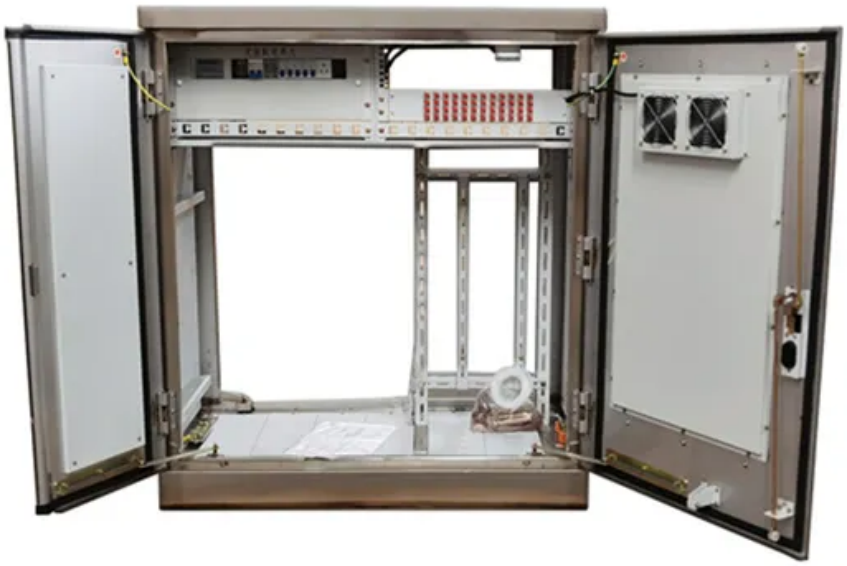
ContainerPower Energy Solutions

How much is the boost loss of outdoor power supply



Overview

While boost converters only account for a fraction of power converters in a building, this work presents a modeling method that can be extended to compare other types of converters, ultimately allowing a full-building loss analysis.

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To establish a fair efficiency comparison, this work derives a formulaic loss model of a DC/DC and an AC/DC PFC boost converter. These converters are modeled with identical components and an equivalent input and output voltage. Simulated designs with real components show AC/DC boost converters.

How much current is drawn from a boost converter?

If the boost converter has an efficiency of 95%, and my device pulls 300mA does the boost converter pull more than 300mA from the power supply to compensate for the 5% energy loss or does it just pull 300mA?

It will draw much more than 300mA even of.

What is the average energy loss if a booster connected to power source but without a load?

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How much loss does a DC/DC boost converter have?

The loss model and experiment were compared for a DC/DC boost converter and found to match within 3.4%. A parametric loss analysis of modeled

converters in the range of 200 to 400 V and 50 to 500 W shows AC/DC PFC boost converters to have up to 2.5.

The problem may lie in the “invisible power consumption” of the inverter - power loss. The inverter is like a “power mover”, converting direct current (DC) from batteries or solar panels into alternating current (AC) for home appliances, but this process is not a “lossless conversion”. Read about.

Abstract—Studies have shown the efficiency benefits of DC dis-tribution systems are largely due to the superior performance of DC/DC converters. Nonetheless, these studies are often based on product data that differs widely in manufacturer and operating voltage. This work develops a rigorous loss.

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