

PDEOZE PowerContainer

Calculate the power loss of a three-phase inverter



Overview

This example shows how to compute switching losses in a three-phase 3-level inverter, combining Specialized Power Systems and Simscape™ blocks.

How is a phase a inverter implemented?

The Phase-A leg is implemented using three Half-bridge IGBT with Loss Calculation blocks. Both switching and conduction losses are calculated and injected into a thermal network. The simulation illustrates the achievable output power versus switching frequency for the three-phase, 3-level inverter.

How does a 3 phase inverter work?

From a +/- 1800 volts DC source, a 400-kW, three-phase 3-level inverter delivers variable power to a distribution power system. The inverter output is connected to the 25-kV, 40 MVA, 50-Hz system through a 2200 V / 25 kV transformer. The inverter topology is based on the model described in .

Can a simulation tool accurately estimate the power losses of an inverter?

Therefore, several commercial simulation tools have been established to accurately estimate the power losses of an inverter and improve its performance. The goal of this project is to design an application capable of estimating the power losses of a three-phase, hard-switched inverter using various power semi-conductor devices.

How does switching affect the efficiency of the inverter structure?

The switching behavior of the power devices generates power losses switching frequencies will contribute to further increase the power losses . As a result, applications improve the efficiency of the inverter structure . Power losses are divided into two main categories: the conduction and switching losses.

What are the different types of power losses?

Power losses are divided into two main categories: the conduction and switching losses. The conduction losses occur when the power semiconductor is in turn-on and turn-off switching states. The described power losses can be

seen more analytically in the.

How to estimate power losses generated by power semiconductors?

There are many options to estimate power losses generated by power semiconductors, from which they can be chosen. The first direct calculation can be used, involving RMS and AV values of voltage and current. By this method, all types of power losses can be estimated .

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