

Inverter DC side parallel capacitor





Overview

Can parallel inverter systems reduce DC link capacitor size?

Parallel inverter systems find applications in multiple fields. The interleaved superposition of the DC link currents in these systems can potentially be adjusted to mitigate the overall harmonics consequently reducing the DC link capacitor size.

Why do inverters need a large DC-link capacitor?

A major challenge in enhancing the performance of inverters is the ripple content in the DC-link current. These ripples are produced by the chopping effect of inverter switches, causing the DC-link current to fluctuate around the required average current, consequently requiring a large DC-link capacitor .

What is a DC-link capacitor in a traction inverter?

Figure 1. Simplified Block Diagram of a Traction Inverter The DC-Link capacitor is a part of every traction inverter and is positioned in parallel with the high-voltage battery and the power stage (see Figure 1). The DC-Link capacitor has several functions, such as to help smooth voltage ripples, filtering unwanted harmonics and reducing noise.

What is the role of a DC link capacitor in inverter systems?

Before diving into the calculations, it is important to understand the role of a DC link capacitor in inverter systems. The primary function of a DC link capacitor is to smooth out the DC bus voltage between the rectifier and inverter stages, which helps in reducing voltage ripple and preventing voltage spikes.



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