BUHLE POWER

Inverter high frequency vibration

Overview

What causes high-frequency vibration near the side-band frequencies?

Special attention is given to the high-frequency vibration near the side-band frequencies caused by the switching noise of the inverter. The finite element (FE) method has been used for both electromagnetic and structural dynamics analyses. This paper is organized as follows.

Do inverters and pulse width modulation cause resonance in permanent magnet synchronous motors?

Abstract: The utilization of inverters and pulse width modulation (PWM) technology in driving permanent magnet synchronous motors (PMSMs) introduces high-frequency sideband electromagnetic force. Consequently, the risk of PMSMs resonance inevitably increases, leading to disruptions in the operating state and increased noise radiation.

Does sideband harmonic current cause electromagnetic vibration?

Two-dimensional (2-D) sideband electromagnetic force, torque ripple, and electromagnetic vibration of PMSMs with integral-slot and fractional-slot winding arrangements are studied in this article. The torque ripple caused by sideband harmonic currents is derived. Rules to reduce electromagnetic vibration are proposed.

Do sideband harmonic currents cause torque ripple?

The torque ripple caused by sideband harmonic currents is derived. Rules to reduce electromagnetic vibration are proposed. The results indicate that the sideband electromagnetic forces have both low- and high-frequency characteristics. Torque ripple shows a new high-frequency characteristic.

Inverter high frequency vibration

[High frequency vibration of inverter-fed PMSM and its ...]

The high-frequency vibration experiments are conducted on a surface mounted 8-pole and 12-slot PMSM. The high-frequency vibrations near switch frequency and its multiples are main ...

[Analysis of high-frequency oscillation mechanism of inverter ...]

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[VFD Machinery Vibration Fatigue Life and Multilevel ...]

Aug 2, 2023 · Xu Han and Alan B. Palazzolo Abstract--This paper documents fatigue-related mechanical failures in variable-frequency drive (VFD) motor machinery due to mechanical ...

[High-Frequency Electromagnetic Vibration Analysis and ...]

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[Forced response vibration analysis of induction motor ...]

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[Vibration and noise characteristics of an inverter for]

From this study, observations from NVH tests on an EV inverter is highlighted in frequency range where relatively high vibration and noise levels were present. Keywords: switching frequency, ...

[A Technique for Suppressing High-Frequency Vibrations in a ...]

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[Vibration and Noise Optimization of Variable-Frequency ...]

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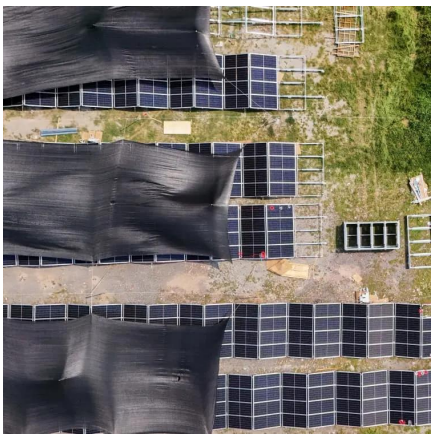

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[High-frequency vibration suppression and current balance]

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