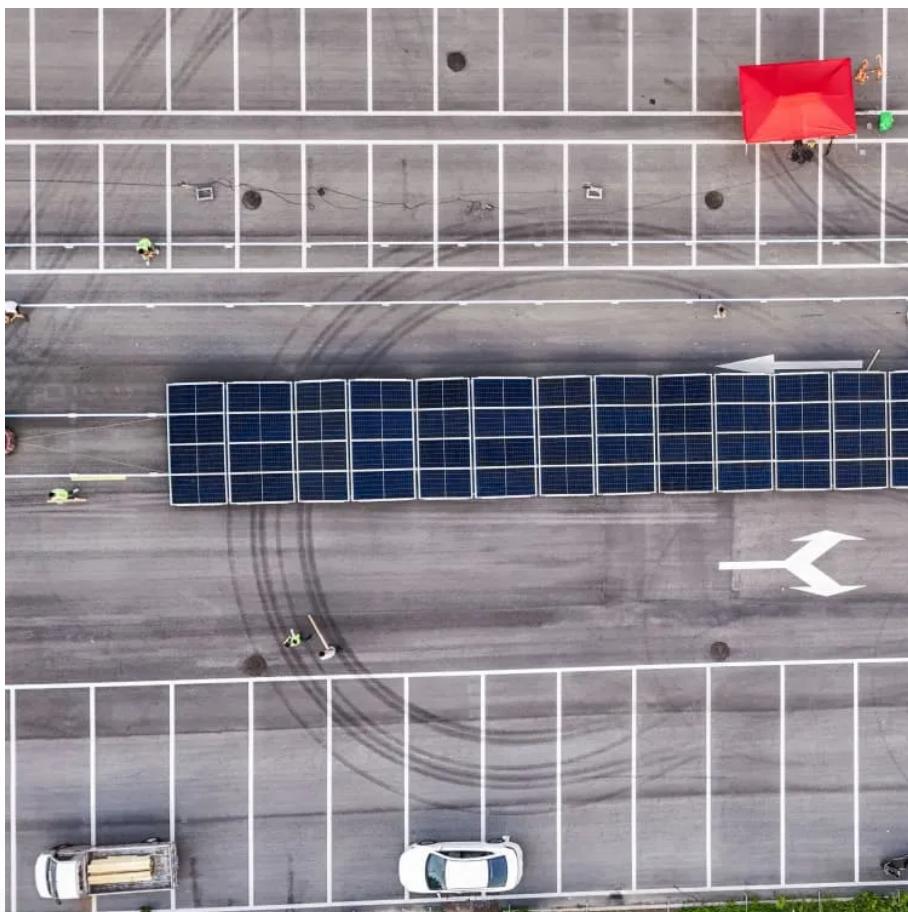




FTMRS SOLAR

# Battery and inverter performance introduction





## Overview

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Does a multilevel inverter drivetrain improve battery efficiency?

Based on the loss models, the inverter and battery efficiency during different driving cycles are assessed. In comparison to the two-level inverter system, the multilevel inverter drivetrains show an increased drivetrain efficiency, despite increased battery losses. The MMSP topology showed the best result.

How are inverter losses modeled?

The inverter losses are modeled using the semiconductors' datasheets. Based on the loss models, the inverter and battery efficiency during different driving cycles are assessed. In comparison to the two-level inverter system, the multilevel inverter drivetrains show an increased drivetrain efficiency, despite increased battery losses.

How does a PV inverter work?

The inverter's control scheme is designed to address irradiation fluctuations and both balanced and unbalanced load conditions. The PV system consists of PV modules, an MPPT to stabilize PV voltage and current, followed by a three-phase inverter, a harmonic filter, and a connection to the Point of Common Coupling (PCC). Fig. 3.

Which inverter has the best drive cycle efficiency?

Within this investigation, the CHB inverter shows the best drive cycle efficiency, but the battery losses are neglected. A similar drive cycle comparison can be found in , where a battery and inverter loss comparison of a CHB and modular multilevel series parallel (MMSP) converter is carried out.



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