

# **Bidirectional grid-connected inverter**





## Overview

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Can a bidirectional DC-AC converter be used in a power grid?

A comprehensive experimental process was adopted to validate the two modes of operation of the bidirectional DC-AC converter proposed here when connected to the AC grid and in a power range up to 1.5 kW.

How does a bidirectional converter work?

Therefore, the bidirectional converter could operate in inverter or PFC rectifier mode, depending on the state of the AC grid. Thus, the HEMS provided a corresponding signal that forced the bidirectional converter to inject electricity into the grid (inverter mode) or to charge the batteries (PFC rectifier mode).

What is a grid-connected microgrid & a photovoltaic inverter?

Grid-connected microgrids, wind energy systems, and photovoltaic (PV) inverters employ various feedback, feedforward, and hybrid control techniques to optimize performance under fluctuating grid conditions.

Why are grid-connected inverters important?

This dependency leads to fluctuations in power output and potential grid instability. Grid-connected inverters (GCIs) have emerged as a critical technology addressing these challenges. GCIs convert variable direct current (DC) power from renewable sources into alternating current (AC) power suitable for grid consumption .



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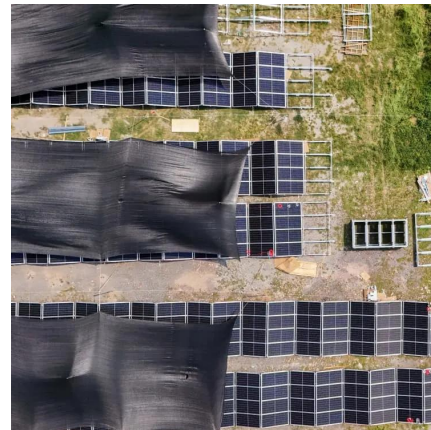


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