

## SolarTech Power Solutions

# High-efficiency high-frequency inverter



## Overview

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This paper reviews the high-frequency inverters for WPT systems, summarizes the derived topologies based on power amplifiers and H-bridge inverters, investigates the main factors restricting the development of high-frequency inverters, and analyzes the research directions for future development. What is a high frequency inverter?

In many applications, it is important for an inverter to be lightweight and of a relatively small size. This can be achieved by using a High-Frequency Inverter that involves an isolated DC-DC stage (Voltage Fed Push-Pull/Full Bridge) and the DC-AC section, which provides the AC output.

Which power supply topologies are suitable for a high frequency inverter?

The power supply topologies suitable for the High-Frequency Inverter includes push-pull, half-bridge and the full-bridge converter as the core operation occurs in both the quadrants, thereby, increasing the power handling capability to twice of that of the converters operating in single quadrant (forward and flyback converter).

What is MHz LLC converter based inverter?

is firstly derived to obtain an accurate switching frequency range. With the proposed hybrid modulation method and resonant tank optimization process, the MHz LLC converter based inverter is designed and tested.

What is a bridge type inverter?

The simplest form of an inverter is the bridge-type, where a power bridge is controlled according to the sinusoidal pulse-width modulation (SPWM) principle and the resulting SPWM wave is filtered to produce the alternating output voltage. In many applications, it is important for an inverter to be lightweight and of a relatively small size.

Can a microinverter convert low-voltage DC to high voltage AC?

**CONCLUSION** This paper introduces a microinverter for single-phase PV applications that is suitable for conversion from low-voltage (25-40 V) DC to high voltage AC (e.g. 240 Vrms AC). The topology is based on a full-bridge series resonant inverter, a high-frequency transformer, and a novel half-wave cyclo-converter.

What is the efficiency of a PFC rectifier & inverter converter?

When the converter is connected to single phase AC mains, the efficiency achieved is 98.95% in PFC rectifier mode and 98.95% in inverter mode. The efficiency results are obtained with the highest form factor/power density of 11.5kW/L.

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