

# 2kw high frequency inverter design





## Overview

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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.

What is a high frequency variable load inverter architecture?

This thesis presents a high frequency variable load inverter architecture along with a physical prototype and efficiency optimizing controller. The inverter architecture consists of two constituent inverters, one connected directly through the load and the other connected through an immittance converter, which acts as a lossless power combiner.

What is a 30 MHz 2 inverter?

of a 30 MHz  $\Phi 2$  inverter designed to deliver up to 520 W to a  $33.3\Omega$  resistive load and over an input voltage range between 160 V to 200 V. The semiconductor switch selected for this design is a 500 V vertical MOSFET (ARF521) which has an  $R_{ds,ON} = 1\Omega$  and an  $C_{OSS} = 55.42$  pF at  $V_{ds} = 160$  V. Details on the modelling of the semiconductor.

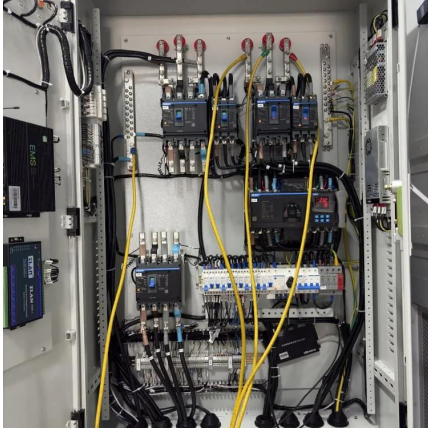
Can a high-frequency variable load inverter directly drive widely variable loads?

Typically a tunable matching network is used to transform the varying load into a constant and impairing transient response. This thesis presents the design, physical prototype, controller, and experimental results of a high-frequency variable load inverter architecture (referred to as HFVLI) that can directly drive widely variable loads.



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