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**ABSTRACT**

There is provided a high frequency AC inverter comprising a DC-DC circuit having a variable output, an output power circuit and a load circuit and a controller, the load circuit comprising a load circuit detector configured to detect the electrical parameters of the load circuit. The output power circuit comprises a DC to AC driver having a variable frequency output, a HFAC driver circuit comprising a resonant network and a transformer coupled to the HFAC driver circuit and the load circuit. The controller is configured to control the output of the DC to DC circuit to control the current on the load circuit to maintain it within a predetermined range.

