



Three cell flying capacitor inverter for dielectric barrier discharge plasma applications

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It is reported the design, construction and initial tests of a three cell flying capacitor inverter (TCFCI) in a half-bridge configuration. The device operates at a 200 kHz frequency which leads to a voltage output at 12.5 kHz presenting an acceptable response in an open-loop configuration. These features outdo those reported in the current multilevel converter literature. The TCFCI is driven by pulse width modulation, following a phase

shift (PS-PWM) control strategy, in order to generate a steady AC voltage signal. This inverter is used to excite a dielectric barrier discharge cell (DBDC) intended for cold plasma generation at room pressure. Some results obtained for two different kinds of atmosphere, helium and argon, are presented. All the system having been

tested, early recorded voltage and current waveforms, are included. Finally, three methods for calculating the related electric efficiency of the discharge cell are discussed.

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