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Simulation and modeling of high voltage DC to AC PWM inverter for electrostatic generator (Conference Paper)

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Abstract

This paper proposes a single-phase DC to AC inverter for ESG (electrostatic generators) that may be used in the household's application. The electrostatic generators were developed a while ago and remained abandoned for a long time. Now, as the modern technology advanced, it's time to utilize the ESG to power generation. A pulse width modulation (PWM) based high voltage DC to AC inverter is a suitable system for converting the EGS high electrostatic DC voltage into standard 50Hz, 220V(rms) AC. The PWM technique is used to control the inverter switches to create a pulse width modulated bi-phase square wave signal. A lowpass LC filter has been utilized to remove the higher harmonic frequencies and which is capable to reduce the total harmonic distortion (THD) around 3.5%. The proposed model showed the overall system performance in terms of efficiency is 95%. To use ESG, this inverter is an easy and cost-effective electrical device. From the result, it is observed that the output voltage of the proposed inverter is greatly improved compared to the other inverter circuits. © 2018 The Authors, published by EDP Sciences.

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Indexed keywords

Engineering controlled terms:

[AC generators](#) [Cost effectiveness](#) [Electric inverters](#) [Electric machine theory](#) [Electrostatic generators](#) [Electrostatics](#) [Manufacture](#) [Pulse-width modulation](#) [Voltage control](#)

Engineering uncontrolled terms:

[Electrical device](#) [Higher harmonic](#) [Inverter circuit](#) [Modern technology](#) [Pulse-width-modulated](#) [Simulation and modeling](#) [Square wave signal](#) [Total Harmonic Distortion \(THD\)](#)

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