Repeatedly Resonating Ignition Circuit for HID Lamp

Electronic Ballasts

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Abstract: An ignition circuit is proposed for the electronic ballast of high-intensity discharge (HID) lamps. The igniter can be integrated into the bridge inverter by commonly using the power switches of the inverter and the reactive components of the output filter. The reactive components act like an energy tank that can resonate repeatedly by turning the two power switches of the inverter on and off alternately. As a result, a high voltage can be accumulated on the capacitor to ignite the HID lamp. Once the lamp has been ignited successfully, the energy tank stops resonating but performs as the output filter of the inverter. A laboratory circuit of the igniter is built and implemented on an electronic ballast, with the full-bridge inverter designed for 150-W metal halide lamps. Experimental results demonstrate that the proposed circuit accomplishes the expected functions of ignition and filtering.

Author Keywords: Electronic ballast; high-intensity discharge (HID) lamp; igniter; resonant energy tank

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