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## Energy Control of Pulsed Power using Embedded System and Magnetic Pulsed Compression Circuits

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Pulsed power has long been used in many applications such as ozonizers, sterilization, and bioelectrics; the use of embedded systems for pulse power has been researched. However, certain factors such as the embedded system design make development difficult and complicate system use. Additionally, many fields require certain functions, safety that has noise protection and ease of operations.

The present work aims to develop an energy control of pulsed power using a field programmable gate array (FPGA) and magnetic pulsed compression circuits. The design specifications are as follows: voltage rise time of less than 50 ns; charging energy to 1.0 J/pulse; a peak output voltage of 35 kV; a repetition rate to 500 pps (pulses per second); and flexible control of pulse interval, pulse shot number, pulse repetition and output energy. This pulsed power generator is composed of a controller using an FPGA, a charger and a pulsed power unit with magnetic pulsed compression circuits. Flexible control of pulse interval, pulse shot number and pulse repetition are made from a control of trigger timings in the pulsed power unit, and energy control is from charging timings to a primary capacitor for pulsed power. These improvements by energy control and others are very important for some applications of pulsed power.

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