

What is a solid-state high voltage high repetitive pulse generator?

Solid-state high voltage high repetitive pulse generators have a broad prospect in various applications. The high power and high-frequency operation of the pulse generator suffer from the massive heat dissipation problem, which limits the improvement of the output parameters and even affects the lifetime.

How does Ren's generator boost the output voltage?

Ren's generator effectively boosts the output voltage by using inductive energy storage as well as capacitive energy storage. However, it requires many inductors. Zhang et al. designed a high gain Marx generator in combination with a Cockcroft-Walton voltage multiplier.

How to supply high voltage from low voltage DC power supplies?

Among others, to supply high voltage from low voltage dc power supplies, many researchers have been working on the realization of solid-state Marx generators with high voltage gains. Wu et al. developed a bipolar Marx generator based on double transformers. By using positive and negative outputs, Wu's generator can realize high gain.

Can high voltage repetitive pulse generators generate pulsed discharge plasma?

Applying high voltage repetitive pulse generators (HVRPGs) to generate pulsed discharge plasma in various industrial applications is one of the most promising and active research fields.

How does a high voltage pulse generation circuit work?

High-voltage pulse generation circuit based on resonant circuit with saturable transformer. Supposing C₁ initially charged to U_{dc}, the energy in C₁ is resonantly transferred to C₂, by closing switch S at t = 0, through L₁ and the transformer ST, where diode D provides the charging loop of C₂, as seen in Fig. 14 (Choi 2010) (Li et al. 2005).

What is the power efficiency of a six times voltage gain circuit?

In the case of six times voltage gain, the component count of the proposed circuit is half that of the traditional Marx generator. Furthermore, in the experimental demonstration, the prototype of the proposed circuit achieves 81 % power efficiency with six times gain.

the secondary energy storage element to discharge pulses on the load through the cooperative action of the switch. The pulse amplitude obtained on the load will be higher than that on the ...

BESS battery energy storage system . DC direct current . DER distributed energy resource . DFIG doubly-fed induction generator . HVS high voltage side . Li-ion lithium-ion . LVS low voltage ...

A compact pulsed high-voltage generator has been developed for applications in pulsed gas discharges. Its

operation principle is based on inductive energy storage and it uses ...

The solution adopted is to place an energy storage system in parallel with the synchronous generator. The storage system consists of an inverter with a supercapacitor on the DC bus. A control law with a best ...

This book presents select proceedings of the conference on "High Voltage-Energy Storage Capacitors and Applications (HV-ESCA 2023)" that was jointly organized by Beam Technology ...

Voltage Regulation and Stability: Battery storage systems typically deliver stable voltage levels and can effectively regulate voltage fluctuations, ensuring high-quality power for sensitive equipment. Generators, ...

In this study, we introduce a variant circuit of the Marx generator based on hybrid energy storage (HES). This circuit topology, referred to as the LCL circuit in this article, ...

Hitachi Energy has successfully passed the world's first and highest voltage short circuit test on a 315 megavolt ampere (MVA), 765 kilovolts (kV) generator step-up transformer (GSU). The ...

So, it is built for high power energy storage applications [86]. This storage system has many merits like there is no self-discharge, high energy densities (150-300 Wh/L), high ...

The fabricated generator produced an output voltage, current, instantaneous power density, and high piezoelectric energy conversion efficiency of 18 V, 166 nA, 1.7 uW/cm ...

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