

Inductive energy storage experiment

The experiment utilizes computercontrolled inductive storage circuit to ignite the thruster [12]. A high-voltage carbon rod (DP6700A, CYBERTEK, China) is connected in parallel to measure the...

In this paper, the superposition experiment of 10-stage inductive energy storage modules was carried out. The experimental results show that the time-delay isolation method of ...

An inductive energy storage switch system for the destruction of solid materials is reported. This is based on creating a pulsed electric breakdown in the solid dielectric, which then propagates in the specimen. This scheme provides a higher destruction effectiveness compared to a capacitive energy storage system. The higher energy efficiency is attributed to ...

For electroporation experiments it is essential to generate, in a controlled way, repetitive high-voltage pulses, with precise voltage amplitude and pulse widths, in order to deliver well-defined energy packages to biologic loads. ... where it is seen that, usually, the energy density of inductive storage systems is, in average, two orders of ...

cathode arc thruster (VAT) was used in this study. An inductive energy storage device [6] in combination with trigger-less ignition methods [7] was implemented. This configuration ...

EXPERIMENT 5 Circuits Containing Inductance 5.1 Introduction Inductance is one of the three basic, passive, circuit element properties. It is inherent in all electrical circuits. As a single, lumped element, inductors find many uses. These include as buffers on large transmission lines to reduce energy surges, on a smaller scale

In this article, we propose a solid-state Marx circuit using inductive energy storage, where inductors play the role of principal energy storage element. When combined with an opening ...

In this paper, the principle of inductive energy storage(IES) is applied to twisted pair wire(TPW), served as energy storage unit for generating nanosecond pulse. As a kind of transmission line, the electromagnetic field constraint of TPW is realized by twisting, so it has greater bent flexibility than coaxial transmission line, which makes it ...

In the experiments, striplines have been used for inductive energy storage, and SiC power devices have been used as the opening switches. The experimental results have proved both the circuit ...

A vacuum arc thruster is a type of micro-thruster based on pulsed ablative vacuum arc discharge. A simple inductive energy storage circuit in a vacuum arc thruster is ...

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The purpose of an opening switch is simply to stop the flow of current in the circuit branch containing the switch and to accomplish current interruption, the opening switch must force the current to transfer from the switch to a parallel circuit branch and then withstand the voltage generated by the current flowing through the load. The purpose of an opening switch is simply ...

In the experiments, strip-lines have been used for inductive energy storage and SiC power devices have been used as the opening switches. The experimental results have proved both the circuit ...

Finally, the inductor storage circuit suitable for this experiment was designed and displayed in Fig. 7. Download: [Download high-res image \(155KB\)](#) Download: [Download full-size image](#); Fig. 7. The final design of the inductive energy storage circuit.

In ref., a solid-state Marx circuit using inductive energy storage is proposed. Inductance is added to each stage of Marx as the energy storage element and charged by the primary energy storage element capacitor. ... In the experiment, the signal generator trigger pulse width is set to 2 ms. This means that the charge time of the energy ...

Utilization of inductive storage in production of intense charged particle beams, laser beams, and hot dense plasmas of interest in thermonuclear fusion studies and in other research areas is very attractive because of its inherent compactness associated with energy storage in the form of magnetic fields. A major problem in utilizing inductive energy sources ...

experiments, the test on a four-stage inductive Marx circuit has ... (CES) and inductive energy storage (IES) [9], [12], [13]. By utilizing these energy storage methods, a variety of circuit topologies can be constructed g. 1 show three circuit Manuscript received February 14, 2021; revised April 3, 2021; accepted

PROOF OF PRINCIPLE EXPERIMENT OF THE MEATGRINDER: AN INDUCTIVE ENERGY STORAGE AND TRANSFER CIRCUIT D. Giorgi~ K. Lindner, J. Long, T. Navapanich, O. Zucker Energy Compression Research Corp. ...

TRIDENT - A MEGAVOLT PULSE GENERATOR USING INDUCTIVE ENERGY STORAGE D. Conte, R. D. Ford, W. H. Lupton, I. M. Vitkovitsky Naval Research Laboratory Washington, D.C. 20375 Abstract A megavolt level pulse generator, TRIDENT, has been ... at powers of 1011 W. Future experiments include is the opening switch. Our approach to this problem

Inductive energy storage devices, also known as pulse forming networks (PFN), are vital in the field of high-power pulsed technology. They store energy in a magnetic field created by electric current flowing through an inductor, or coil. Upon discharge, the stored energy is released in a quick pulse, hence their prominence in pulsed power ...

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An inductive energy storage pulse power system is being developed in BARC, India. Simple, compact, and robust opening switches, capable of generating hundreds of kV, are key elements in the ...

The Meatgrinder, a novel inductive energy storage and transfer circuit, has been shown to approach 100% energy transfer efficiency. A low-current-level experiment has been performed which has ...

In the experiments, strip-lines have been used for inductive energy storage and SiC power devices have been used as the opening switches. The experimental results have ...

The experiments show that the RCPG can be adjusted by adjusting the inductor parameters to meet different load requirements, such as biomedical, and the number of modules can be increased to achieve higher current output. ... Inductive energy storage for pulsed power supplies is considered to have great potential because its energy density is 1 ...

@article{osti_5273936, title = {Closing/opening switch for inductive energy storage applications}, author = {Dougal, R A and Morris, G Jr}, abstractNote = {This paper reports on a magnetically delayed vacuum switch operating sequentially in a closing mode and then in an opening mode which enables the design of a compact electron-beam generator based on an ...

Pulsed power has been generated by using either capacitive energy storage (CES) or inductive energy storage (IES). In this article, the combination of CES and IES, which is called hybrid energy ...

DOI: 10.1109/TDEI.2017.006421 2212 L. Yu et al.: Voltage Adding of Pulse Forming Lines Using Inductive Energy Storage 2 PULSE FORMING LINE USING INDUCTIVE ENERGY STORAGE In contrast to CES where the energy is stored by applying a voltage between two conductors, IES is carried out by driving a current through them.

Solid-state Marx generator circuits have been widely studied in recent years. Most of them are based on capacitive energy storage (CES), with the basic principle of charging in parallel and discharging in series. In this article, we propose a solid-state Marx circuit using inductive energy storage, where inductors play the role of principal energy storage element. ...

Lasing and discharge characteristics of a nitrogen laser pumped by a transverse discharge from a generator with an inductive energy storage and a semiconductor current interrupter are investigated ...

An inductive energy storage pulsed power generator with SOS (semiconductor opening switch) has a possibility of realizing the compact and lightweight pulsed power generator. ... and the present ...

By adopting a simple inductive energy storage (IES) circuit [7] and the "triggerless" ignition method [8], the mass of the propulsion system can be decreased to less than 200 g, with a specific impulse of >1000 s and a power level ...

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"Performance model of vacuum arc thruster with inductive energy storage circuit" ?? Thruster Engineering 100%. Energy Storage ... Discharge experiments were conducted to validate the proposed circuit model. The current-time curve and discharge energy were calculated and had ...

Wire-array z-pinch experiment was carried out on ASO-X generator. ASO-X is a 3-stage inductive voltage adder, and works as the inductive energy storage system with the ...

Wire-array z-pinch experiment was carried out on ASO-X generator. ASO-X is a 3-stage inductive voltage adder, and works as the inductive energy storage system with the plasma opening switch.

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