

A,1244,2004 321 NO_x Treatment Using Inductive-Energy-Storage Pulsed Power Generator Fumito Endo* Non-member Weihua Jiang* Member Kiyoshi Yatsui * Member Naohiro Shimizu** Member Nitrogen oxide (NO_x) removal is being studied for exhaust-gas treatment by pulsed discharge. A recently developed pulsed-power source using ...

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 [6]. By connecting two power converters in series, Zhang's generator ...

The cooling cost of high temperature superconductors is much lower than that of low temperature superconductors. By now, a few HTSPPTs have already been tested based on inductive energy storage system [6], [7], [8] and capacitive energy storage system [9]. High energy transfer efficiency can be obtained by using a HTSPPT in a capacitor-based pulsed power ...

The pulse amplitude obtained on the load will be higher than that on the primary energy storage unit so as to get a higher voltage gain. 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 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 ...

Inductive energy storage refers to the method of storing energy in a magnetic field generated by an electric current flowing through a coil of wire. This process is fundamental to devices like superconducting magnetic energy storage systems, where energy can be stored and retrieved efficiently, providing rapid power delivery when needed. The efficiency and effectiveness of ...

In order to guarantee a quick development of the EVs market, broad infrastructure is required to comfortably recharge their energy storage systems as fast as possible. Inductive power transfer (IPT) is an innovative approach for EV battery charging owing to the possibility of wireless supply, which prevents the use of electric cables to start ...

Meanwhile, the inductive and capacitive hybrid energy storage is applied in this pulsed power supply.

Therefore, the closing time of the switch in secondary side becomes a controllable factor which can be delayed and executed later. At the same time, a time difference between primary and secondary side can be achieved by the delay-closing.

A pulse source with inductive energy storage was used to trigger the silicon carbide Diode Avalanche Shaper (DAS). By importing the pulse signal from the experiment into the sentaurus, and at the same time imitating the pulse source output with a current source, the degree of agreement between simulation and experiment is greatly improved. The triggering process of ...

Experiments have been performed wherein the "plasma focus" has been used as both a current interrupter and an inductive energy storage method (due to the jump of resistance in the pinch discharge) [16]. This technique seemed promising for the authors to create a capillary-discharge X-ray laser.

The equalization topologies based on inductive energy storage have high equalization accuracy and perfect functionality, but often have more complex structure and control method. ... To verify the effectiveness of the proposed equalization method, equalization experiments are designed for the battery pack under charging and discharging states.

As shown in Fig. 1, SFCLs are used in a typical hybrid wind energy conversion system (WECS) with the P2G technology, which uses the doubly fed induction generators (DFIGs) and permanent magnet synchronous generators (PMSGs). There are 4 main SFCL applications in this system: i) Installation on the rotor side of a DFIG; ii) Installation on the ...

As a result, when all capacitors and inductors are connected in series, the voltage generated on the load is from both capacitive energy storage and inductive energy storage. In the demonstration experiment, we have used a 4-stage Marx circuit to generate an output voltage with a peak value of ~9 kV on a 400- Ω load, with a charging voltage of ...

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 ...

Although the capacitive energy storage (CES) has been the dominating method so far, it has been long since people realized that inductive energy storage (IES) could be more efficient and compact [4]. The obstacle that has hampered IES has been the lack of suitable opening switches, because high-voltage, high-speed, and high-efficiency opening ...

1.4.2 Inductive Energy Storage Pulsed Power Supply. Inductive energy storage pulsed power supply is essentially a magnetic-field energy storage pulsed power supply, in which energy is stored in the magnetic

field of the coil. It is released to the load during discharging for a strong pulsed current.

Considering the above requirements, there are several basic concepts that can be used for high-voltage pulse generation. The key idea is that energy is collected from some primary energy source of low voltage, stored temporarily in a relatively long time and then rapidly released from storage and converted in high-voltage pulses of the desirable pulsed power, as ...

Inductive energy storage refers to the capability of storing energy in an inductive component such as a coil or inductor. The fundamental principles governing this phenomenon rely on electromagnetic fields created when electrical current flows through these components. ... The primary advantage of this method is its ability to release energy ...

circuit methods of pulsed power generation. Pulsed power generation starts from energy storage. Although the capacitive energy storage (CES) has been the dominating method so far, it has been long since people realized that inductive energy storage (IES) could be

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 a ...

Inductive storage pulse-train generator. Abstract: 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 ...

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