Inductive Energy Storage Power Supply

Higher energy density makes inductive energy storage more promising than capacitive storage for pulsed power supplies in industrial and military fields. To realize high amplitude of pulsed current and relieve stress of opening switch, this paper proposes a novel inductive pulsed power supply consisting of high-temperature superconducting pulse power ...

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 ...

Superconducting pulsed-power supply (SPPS) provides an efficient method for both high-density inductive energy storage and high current pulse generation. An SPPS consisting of eight high-temperature superconducting pulsed-power transformer (HTSPPT) modules with XRAM methodology was designed and simulated in preliminary studies. It recycled the ...

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 supply [9], but the energy density of the whole system is still inadequate. As superconducting ...

The energy storage inductor is the core component of the inductive energy storage type pulse power supply, and the structure design of the energy storage inductor directly determines the energy storage density that the power module can achieve. Genetic algorithm is...

By adopting a simple inductive energy storage (IES) circuit [7] ... (DC) power supply could provide a voltage of up to 30 V and a current of up to 60 A, with a voltage accuracy of 0.01 V. The signal source was a microcontroller. The computer controlled the signal source and oscilloscope to automate the experiments.

With the rapid development of electromagnetic materials, the development of inductive energy storage is rapid. Compared with capacitive energy storage, inductive energy storage has the advantages of high energy density ratio, small volume, light weight, easiness in miniaturization, higher energy utilization rate and pulse power, and can be widely applied to the fields of ...

The pulsed power supply (PPS) is one important component in the electromagnetic launch system. The inductive PPSs have attracted researchers" attentions with the major advantages of high energy ...

A power supply based on inductive rather than capacitive energy storage and incorporating a hysteretic, current-mode, buck regulator can address these concerns at a competitive cost. ... we developed a driver using

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Inductive energy storage for pulsed power supplies is considered to have great potential because its energy density is 1 order of magnitude higher than that of capacitive one. Associating with the superconducting technology and the STRETCH meat grinder circuit, which proposed by the Institute of Advanced Technology, a superconducting inductive pulsed power supply (SPPS) ...

A battery was used instead of a power supply system to reduce the energy consumption of the entire VAT processing unit. The energy required for a single pulse was estimated to be 0.266 J, by measuring the change between the discharge current and the voltage. ... (VAT) was used in this study. An inductive energy storage device [6] in combination ...

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