

Energy storage capacitor group of electromagnetic gun

Can pulsed power supply based on capacitor be used in Em railgun?

Abstract: Although the pulsed power supply (PPS) based on capacitor has been successfully applied to engineering prototype of electromagnetic (EM) railgun, its large volume makes it poor adaptability and flexibility due to relatively low energy storage density.

Can a power supply meet the requirements of a half electron gun?

The test results show that the power supply not only can meet the requirements of HALF for its electron gun but also have good waveform repeatability and amplitude stability.

How thermionic cathode grid-controlled Electron Gun Works?

To make the injector more stable, reliable, and longer life, we choose the thermionic cathode grid-controlled electron gun (EG) scheme. As we all know, applying pulsed high voltage to the grid of the EG can control the strength of the electron beam output and its pulse width.

Are magnetic guns a practical device?

Magnetic guns and launchers have received periodic attention for many years, and several large systems have actually been built. The fact that none of these evolved into a practical device reflects largely the immaturity of required support technology and lack of coordinated follow-up programs.

Why are railgun fields higher than superconductors?

It should be noted that railgun fields are much higher than the critical fields of superconductors. Augmentation has the obvious effect of reducing the amount of current flowing through the brushes and the projectile, and thereby the necessary conductor mass which must be accelerated.

Proposed ship-based long-range electromagnetic guns require input energies greater than 100 MJ, at peak powers in excess of 50 GW, and at average power in the tens of megawatts. ...

ELECTROMAGNETIC RAILGUN: FROM FICTION TO REALITY Wg Cdr PA Patil Research Fellow, CAPS The Electromagnetic (EM) Railgun, developed by the United States ...

Capacitors are the most widely used energy storage devices and have an important position in pulsed power systems. Till now, the development of capacitors has been greatly ...

The electromagnetic FEA model of the capacitor-driven inductance coil gun was constructed to be able to optimize the coil's dimensions. The driving circuit was implemented as a dynamic model for ...

This paper introduces the simulation electromagnetic gun device based on STM32, which mainly uses openmv and laser ranging module as recognition sensor.

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[Show full abstract] obtains the target and controls the energy storage capacitor voltage of the electromagnetic gun, increases the voltage through the DC power supply, ...

Inductive energy storage will produce spikes at the moment of circuit breaking, so superconducting technology should be used . Flywheel energy storage cannot achieve high ...

Knowledge of the local electromagnetic energy storage and power dissipation is very important to the understanding of light-matter interactions and hence may facilitate ...

The electromagnetic gun does not bring out flames or smoke or shock waves when it is launched, so it is relatively concealed and difficult to find. 4. Adjustable projectile emission ...

The capacitor bank is composed of n numbers of capacitor energy storage modules. One or more capacitor banks are connected to the confluence plate at the tail of the electromagnetic launcher. ... The inductance and ...

This post was last edited by qwqwqw2088 on 2021-8-10 17:22Introduction: This system uses STM32F103 as the main control module and an external touch screen to

Future Weapons Systems Technology Project. The EM-15 coil gun is a handheld, battery powered (12 VDC) rifle that is capable of launching a .30 caliber metallic projectile at adjustable velocities.The electronic circuit consists ...

An electronic switch made from a high-power silicon controlled rectifier is subjected to instantaneous discharge. An electromagnetic gun coil is connected between the electronic ...

The energy storage capacitor can instantly discharge to replace the high-power pulse power supply in the electromagnetic gun launching system. The efficiency of the general ...

To this end, the National Natural Science Foundation of China's major project "Scientific Basis of Electromagnetic Energy Equipment for Extreme Conditions" led by the Naval University of Engineering has specifically set up ...

Energy Storage: When Mr. Parler from Cornell-Dubilier provided me with 40 capacitors for my Rail Gun research I kept the 3 leftovers as possible replacements in case some of the capacitors from the bank were destroyed ...

Electromagnetic railgun have high initial velocity, long range and other advantages. Improving the launch efficiency is one of the most important needs for the application of electromagnetic rail ...

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The research results show that the proposed system can be used as the driving power of EM railgun with 40 MJ muzzle kinetic energy, and the effective energy storage density (energy ...

Improving the launch efficiency is one of the most important needs for the application of electromagnetic rail launch technology. Based on the subsystem models of pulse power ...

significance to study the influence of parameters such as coil inductance, energy storage capacitance, discharge voltage and the relative position of the projectile in the coil on ...

The chapter describes the electrical and mechanical design aspects of a conventional EM Railgun driven by different types of capacitive energy storage sources. ...

The book includes papers on topics, such as energy storage technologies (capacitor & battery), HV insulation & dielectric material, electromagnetic accelerators (rail and coil gun),...

Energy can be reversibly stored in materials within electric fields and in the vicinity of interfaces in devices called capacitors. There are two general types of such devices, and ...

Power systems in mobile EML applications require high energy density capacitors as power conversion, energy storage, and power compression devices. Applications.

Illustration of the electric and magnetic energy storage. V_o is the charging voltage, R_o is the charger output resistance, C is the capacitor, V_p is voltage across the capacitor, S_c is the closing ...

The concept of electromagnetic guns has actually been around for a while. The June 1932 Modern Mechanics magazine cover story featured an electric cannon built by an English designer named Dr. Kapitza. ... a Cockcroft ...

Electromagnetic (EM) railgun is a device designed to launch a projectile with hypervelocity. Railgun is powered by some electrical energy source e.g. a capacitor bank. ...

The operating principle of electromagnetic rail gun by store capacitor was analyzed. A simulation model about the bullet velocity in the electromagnetic rail gun was built.

As the energy storage element of the whole electromagnetic launcher, the capacitor must provide sufficient charge for the launcher at the moment of launch to generate a large transient ...

A power management circuit has been designed to store the produced energy from the TENG into a capacitor, resulting in the enhanced energy-storage efficiency of up to 112% as compared ...

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Abstract. Superconductors can be used to build energy storage systems called Superconducting Magnetic Energy Storage (SMES), which are promising as inductive pulse power source and ...

[Show full abstract] resistance, the inductance of the excitation coil, the capacitance of the energy storage capacitor, the charging voltage and the ambient temperature are ...

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