Inductive power supply system

1 INTRODUCTION. Due to its advantage of energy density, inductive pulse power supply (IPPS) has become a promising type of power supplies for the electromagnetic launcher (EML) [1, 2].According to electrical circuit topology, IPPS can be divided into two categories: one is the XRAM class circuit, which was first proposed by Werner Koch et al. in 1967 [], utilising ...

This review presents historical background together with applications of low power and high power WPT systems. The review emphasizes on two main design facets of WPT system ...

Fig. 1. A block diagram of an inductive power transfer system. The DC power source outputs high-frequency AC power through the inverter module. The AC power supply is connected to the transmission coil through a compensation network, increasing the transmission voltage at the transmission coil, thereby improving energy transmission efficiency.

Inductive power transfer (IPT) was an engineering curiosity less than 30 years ago, but, at that time, it has grown to be an important technology in a variety of applications. The paper looks at the background to IPT and how its development was based on sound engineering principles leading on to factory automation and growing to a $1 billion industry in the process. ...

The inductive power transfer offers low efficiency when the air gap is increased between charging coils and also involves wired chargers, while the designs for full wireless charging systems have been developed to overcome the deficiencies of IPT and make the charging system convenient for the users.

A narrow-width power-invariant inductive power transfer system (IPTS) along the driving direction is newly proposed in this paper. The conventional I-type power supply rail for on-line electric vehicles (OLEVs) has a very narrow power supply rail with 10-cm width and exposes pedestrians to a very low electromagnetic field due to its alternatively arranged magnetic poles ...

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This paper presents an integrated coil design method for inductive power-transfer (IPT) systems. Because a medium-voltage direct current (MVDC) distribution network transmits power at relatively high voltages (typically in the tens of kV), accurate fault diagnosis using high-performance sensors is crucial to improve the safety of MVDC distribution networks. With the ...

Inductive power transfer systems have many advantages towards wired solutions, such as the elimination of disturbing wires, the omission of open contacts and the simple overcoming of air gaps. Thus, this technology offers added value in a wide range of applications, for example:

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The IPSP(Inductive Power Supply and Pickup) system for the On-Line Electric Bus that can pickup inductive power from underground coils with high power efficiency has been developed recently and is now proposed in this paper. The presented IPSP system consists of four parts, that is, power inverter, road embedded rail, pickup module and a regulator. From the ...

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 the charging operation.

With the expansion of mid-voltage DC distribution, inductive power transfer (IPT) systems supplied directly by DC distribution with a high input voltage become a possibility. A high input voltage leads to an enhanced power transfer level and low losses with the DC bus under a certain power transmission. However, the ultra-high input voltage of single-channel IPT is ...

oBiomedical (inductive interface to power implantable biomedical devices) 2. Present challenges 2.1. Theoretical developments The aim of an inductively coupled wireless power transfer (ICWPT) system is to provide power to a movable object across a gapped magnetic structure. Its theoretical development relies on

It is concluded in the mentioned study that the inductive power transfer (IPT) is the most suitable technology for EV charging, and high efficiency and power transfer levels are achievable. In IPT systems, energy is ...

Inductive Power Systems with Class E Power Amplifi ers Figure 1 shows a schematic diagram of an IP system with a Class E PA which uses dynamic control to compensate Dynamic Control of the Output Characteristics of an Inductive Power Supply System for Implants with a Class E Power Amplifi er E. V. Selyutina, É. A. Mindubaev,* and A. A. Danilov

A generic IPT system consisting of two magnetically coupled coils can be modelled by means of the so-called T-model of a transformer as shown in Fig. 1a, where R p is the resistance of the primary coil, L p is the self-inductance of the primary coil, M is the mutual inductance between the primary and the secondary coils, R s is the resistance of the ...

Inductive power transfer (IPT) allows power transfer over an air gap without physical contact between the primary and secondary side. This is attractive for applications such as ultraclean environments and biomedical implants. It is also an approach for the charging of electric vehicles.

4 days ago· The object of the study was a previously described inductive power supply system for medical equipment within a medical room [].The system includes an inductive pair consisting of a transmitting inductance coil built into the floor (outer radius 3 m) and a receiving inductance coil moving freely around the room (outer radius 0.22 m).

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 ...

Overhead high voltage power line (HVPL) online monitoring equipment is playing an increasingly important role in smart grids, but the power supply is an obstacle to such systems" stable and safe operation, so in this work a hybrid wireless power supply system, integrated with inductive energy harvesting and wireless power transmitting, is proposed. The energy ...

Along with the technology boom regarding electric vehicles such as lithium-ion batteries, electric motors, and plug-in charging systems, inductive power transfer (IPT) systems have gained more attention from academia and industry in recent years. This article presents a review of the state-of-the-art development of IPT systems, with a focus on low-voltage and ...

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 ...

This paper answers the research question: Can the contactless induced energy supply from a novel inductive floor be used to navigate omnidirectional automated guided vehicles (AGVs)?In contrast to existing systems a novel inductive floor enables AGVs traveling through production without charging breaks. This floor consists of tiles with inductive modules, which ...

Inductive power transfer (IPT) is an efficient technique that is suitable for supplying contactless or wireless power to numerous applications. IPT systems with the capability of bi-directional power flow are attractive for applications, such as vehicle-to-grid systems and moving equipment that require contactless charging and discharging, and ...

Inductive power transfer (IPT) technology solves simultaneously the electric hazard risks of conventional power cord battery chargers, but specially EV limited autonomy and related anxiety and even security. In this context, this chapter presents the past, current, and future research areas of IPT systems.

In this paper, a new industrial direct-current (dc) power supply system with the four-winding inductively filtered rectifier transformer (FW-IFRT) is proposed based on an inductive filtering (IF ...

This study establishes an intelligent battery charging system using inductive transmission of power and fast full-duplex information. The inductive charging system improves the drawback like failure connection, sparking and the risk of electrical shock of the conventional charging system. Inductive transmission of power and information has the advantages of safety, reliability, and ...

1 INTRODUCTION. Wireless power transfer is the method that could deliver power without physical contact [1-5].Several methods of wireless power transfer have been introduced including near-field wireless power ...

It is concluded in the mentioned study that the inductive power transfer (IPT) is the most suitable technology for EV charging, and high efficiency and power transfer levels are achievable. In IPT systems, energy is transferred between two magnetically coupled coils.

Electric vehicle wireless power transfer (WPT) systems-Part 1: General requirements: IEC 61980-1 Ed. 2.0: Electric Vehicle Wireless Power Transfer (WPT) Systems-Part 1: General requirements: IEC/TS 61980-3 Ed. 1.0: Electric vehicle wireless power transfer (WPT) systems-Part 3: specific requirements for the magnetic field power transfer ...

Inductive power transfer also requires optimization. In dynamic charging, multiple transmitter pads are used along the track, and they are placed immediately adjacent to each other due to mutual inductance issues between transmitters.

However, in conductive charging, vehicles need to be parked and plugged into charging outlet. As an alternative, inductive power charging concept has been introduced and mostly known as inductive power transfer (IPT). In IPT, the energy from power outlet is transferred to the onboard battery magnetically.

Inductive power transfer systems have many advantages towards wired solutions, such as the elimination of disturbing wires, the omission of open contacts and the simple overcoming of air gaps. ... Auxiliary supplies (e.g. form 48 V to 48 V or 24 V to 24 V) Wireless plugs for demanding ambient conditions; Energy supply for moved electrical loads ...

This paper proposes a novel controllable inductive power filtering (CIPF) method to solve the power quality issues existed in the industrial DC power supply system. This method is based on the theory of magnetic potential balance and ...