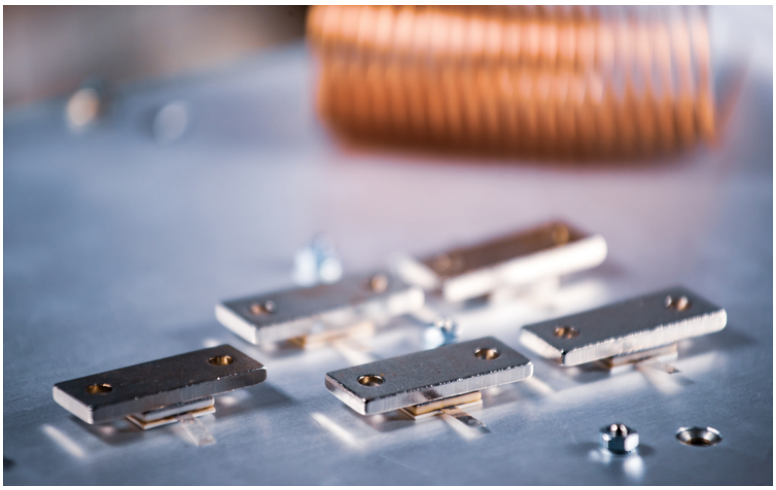
INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

Wireless Power Transfer Using Multiple Near-Field Plates

TECHNOLOGY NUMBER: 6853



OVERVIEW

Enhanced wireless power transfer using magnetic near-field plates on both loops

- Significantly boosts power transfer efficiency and reduces undesired magnetic fields
- Charging consumer electronics, medical implants, electric vehicles

BACKGROUND

Wireless power transfer has been a transformative technology, allowing for the transmission of electrical energy without physical connectors. Traditional approaches, including resonant magnetic coupling, have enabled wireless charging for devices like smartphones and electric vehicles. However, achieving high efficiency over varying distances remains challenging. Conventional systems often struggle with power loss and undesired magnetic radiation, limiting their effectiveness and safety. The introduction of near-field plates with the transmitting loop has been one step toward improving efficiency, but these methods can still fall short in changing operational conditions or when distance increases. The need for an advanced solution is underscored by the growing demand for efficient, safe, and reliable wireless power systems that can operate over various distances and orientations without compromising performance or safety.

Technology ID

6853

Category

Manufacturing Process
Engineering & Physical Sciences
Semiconductor, MEMS, and Electronics

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INNOVATION

Researchers at the University of Michigan have developed techniques to enhance wireless power transfer systems utilizing magnetic near-field plates in both transmitting and receiving loops. By strategically positioning these plates, the technology optimizes magnetic fields to improve power transfer efficiency significantly. Employing an optimization algorithm, the system tailors the reactive elements in the near-field plates to maximize performance, minimize energy loss, and suppress unwanted magnetic fields. These technical advances cater to a range of real-world applications, including the wireless charging of consumer electronics and the powering of medical implants and electric vehicles. The adaptability of design—such as variable operating frequencies and configurations—underscores its versatility, potentially revolutionizing how power is delivered to diverse devices and platforms. The invention meets the demands of modern technology and societal needs for more efficient and safer wireless power transfer solutions.

ADDITIONAL INFORMATION

INTELLECTUAL PROPERTY

US9793720 "Wireless power transfer using multiple near-field plates"