Wireless power transmission over long distances with small-scale coils

Christopher A. Tucker1\*

*1Institute of Wireless Engineering, Cartheur Robotics, spol. s r.o., Prague, 150 00, Czech Republic*

The concept of wireless power transfer has been investigated intensively the past few years for large diameter coils in small and large power ratios over short and medium distances. The primary aim has been to reexamine a body of work which took place over the period of 1895 to 1925 and 1960 to 1970 to understand what the ascertainable differences are between transmitting information (signaling) and power transfer, as related to applicable theories from electromagnetism, especially those of J. Clerk Maxwell. What has been curiously absent from the discussion is how a circuit-antenna arrangement at the interface of free-space goes about coupling to long-distance circuits greater than three meters away and why potential linking is an important concept to achieve this. Regardless, an arbitrary stipulation has emerged that long-distance transmission is limited to an integer multiple of the transmitting coil’s radius. Along these lines, the various works have yielded a more-or-less uniform proposal of the transformative properties of a sinusoidal signal with large field magnitudes derived from Faraday. Classification of this phenomenon has been restricted to the near field and mid-range. In pursuing a solution to long-distance wireless power transmission, it would be ideal to find an arrangement that operates in both the mid-range and far field. One avenue has been the notion of manipulating magnetic field orders in electrically-short coils to increase coupling and the magnitude of potential linking. This paper will discuss such an arrangement of wireless power transfer at distances of ten meters using small scale coils.

The copyright of the Abstract belong to the authors. The North Sea Conference & Journal Ltd has a right to publish the Abstract on the conference website.

Keywords: wireless power transfer; long-distance transfer, far field; magnetic field propagation

能源挑战与力学国际研讨会摘要模板

John Smith1\*，張三2 ，李四3

1*School of Engineering, University of Aberdeen, Aberdeen AB24 3UE, UK*2*Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA*3*中国 北京清华大学工程力学系，北京100084*

文件定义了摘要的各个组成部分，包括标题和全部作者，以及每个作者的所在单位、单位地址和电邮地址。作者列表中标有\*号的为报告作者。请不要改变文件书写风格，包括字体、文字大小和段落间距；不要在文件中使用特殊字符，符号或方程。

摘要将以英中文双语出现在研讨会文集里。美式和英式英文，简体和繁體中文都被认可。作者可以用英文或英中文双语（首选）提交摘要；如果只收到英文版本，我们将提供论文摘要的中文翻译。在英文版本的摘要中，单词总数必须在250到350之间。

论文摘要的版权属于作者。北海期刊会议有限公司有权将摘要发表在会议网页上。

关键词：摘要；模板；英文；中文（最多5个关键词）