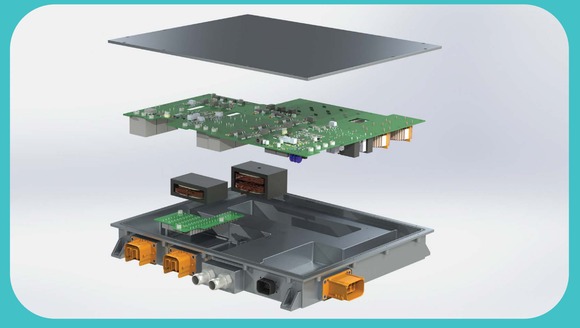
THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

PolyImpact

Multi-Functional High-Power-Density Integrated Onboard Charger for Electric Vehicles

高集成度多功能電動汽車車載充電器



Electric vehicles are usually charged using conductive (plug-in) charging. However, wireless charging is becoming more popular and has many advantages. Future electric vehicles are expected to have both conductive and wireless chargers. Very few solutions currently combine both types of chargers. Those that do have disadvantages such as a large number of components, an inefficient conductive charger, or a slow charging time because it is not possible to energise both chargers at the same time.

This new multi-functional integrated on-board charger (IOBC) overcomes these problems by offering both conductive and wireless charging in one compact design. By sharing the pickup coil of the wireless charger with the conductive charger, the IOBC does not need additional components and can control both chargers independently. This achieves efficient, simultaneous power transfer with minimal components, volume, and cost.

Award:

Gold Medal - The 49th International Exhibition of Inventions Geneva

電動汽車通常採用傳導式（插拔式）充電管道。而無線充電正越來越受青睞，並具有許多優點。未來的電動汽車有望同時配備這兩種充電模式。現時，將兩種充電器集成在一起的解決方案寥寥無幾，並且這些方案普遍存在比如器件數量多、傳導式充電器效率低、或兩種充電模式無法同時工作等缺點。

這種新型高集成、多功能車載充電器（IOBC）解決了這些問題，在緊湊的設計中同時提供傳導和無線充電兩種模式。通過無線充電器與傳導充電器共享接收線圈，IOBC無需額外的器件，就能獨立控制兩個充電器。因此，它能以最少的器件、最小的體積、和最低的成本實現高效、同時的功率傳輸。

獎項：

第49屆瑞士日內瓦「國際發明展」金獎

Principal Investigator:

Dr Chi Shing WONG
Dr Ka Hong LOO
Dr Junwei LIU
Department of Electrical and Electronic Engineering, PolyU

KTEO Knowledge Transfer and Entrepreneurship Office 知識轉移及創業處
+852 3400 2929 info.kteo@polyu.edu.hk
www.polyu.edu.hk/kteo