Theme : Ultracompact Power Conversion Platform

- Sub Theme : Ultracompact Power Conversion Platform for Wireless Rapid Charging System

Wireless power transfer systems are expanding their applications toward smart machines such as service robots, automated guided vehicles, unmanned aerial vehicles, electric vehicles, and many more. At the same time, to extend the operation time after single charge, an urge for upsizing the battery capacity of such machines is growing. In order to reduce the charge time of such battery, i.e., the rapid charging, the on/off-board charging system needs to handle a higher power, resulting in costly, heavy and huge volume/size, which is inappropriate for practical commercialization.

We are aiming to seek a novel ultra-compact power conversion platform for the wireless rapid (higher power) charging system. Through innovative ideas with an unprecedented power electronics, we would like to overcome the size limitation of present wireless power transfer systems for the smart machine applications.

- Novel and/or improved power conversion architecture/topology to reduce the size, weight, and cost for the conventional power conversion blocks such as PFC, DC/AC inverter, DC/DC converter, rectifier, etc.
- Compact wireless power transfer system using novel and/or modified power conversion techniques (e.g. AC-AC direct conversion)
- System-level multi-objective design methodology for efficiency, regulation, cooling, controllability (CC-CV), size/volume, cost, etc. simultaneously.

※ The topics are not limited to the above examples and the participants are encouraged to propose original idea.

※ Funding : Up to USD $150,000 per year