

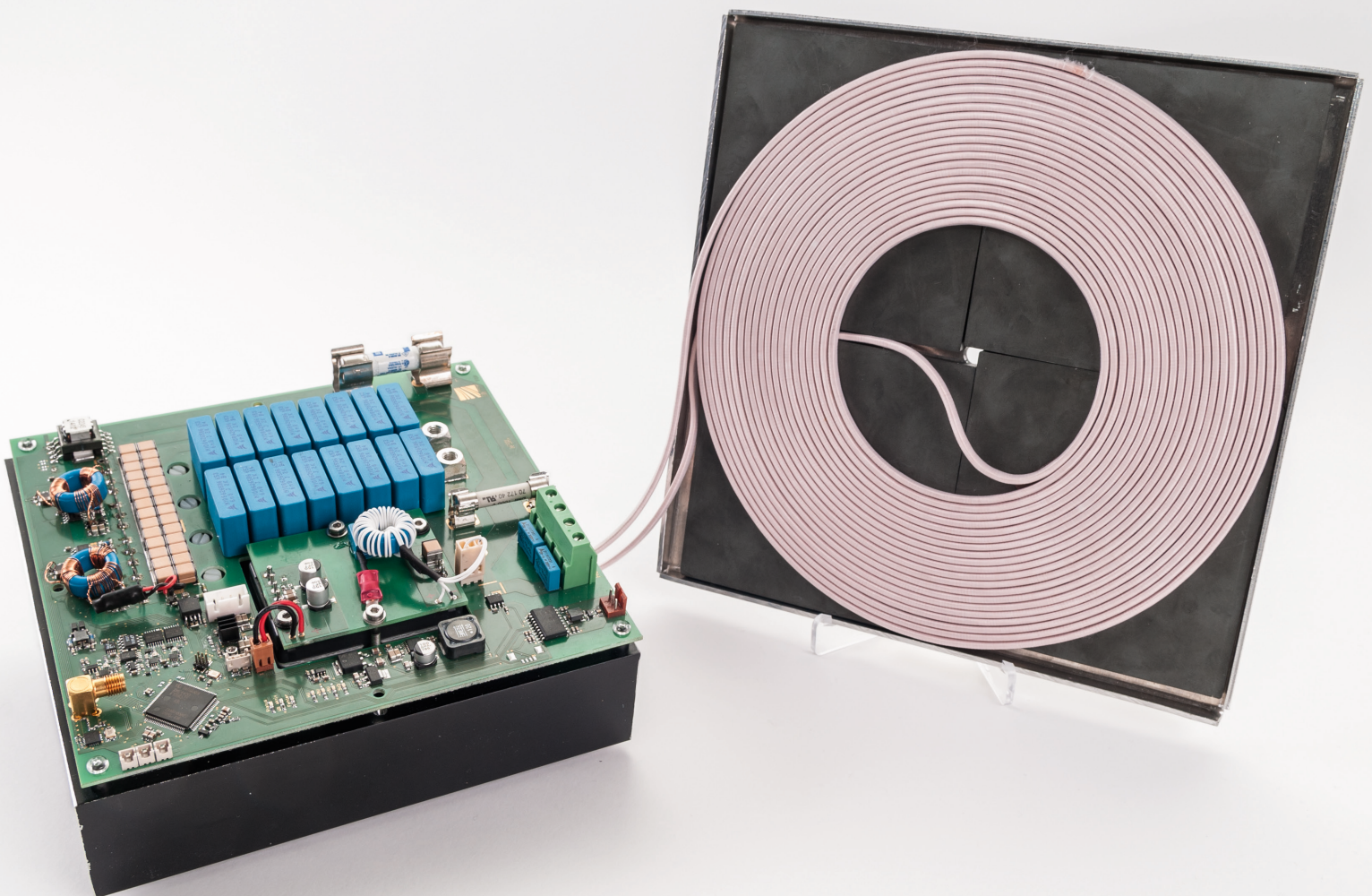


Fraunhofer

IISB

FRAUNHOFER INSTITUTE FOR INTEGRATED SYSTEMS AND DEVICE TECHNOLOGY

Development of Inductive Power Transfer Systems





Application

Inductive power transfer systems have many advantages towards wired solutions, such as

- Elimination of disturbing wires
- No open contacts
- Simple overcoming of air gaps

And thus offer added value in a wide range of applications, for example

- auxiliary supplies (e.g. from 48V to 48V or 24V to 24V)
- wireless plugs for demanding ambient conditions
- energy supply for moved electrical loads
- wireless charging for electric vehicles

Reference Projects

- 3,5kW wireless charging with 96% DC-to-DC efficiency (see large picture)
- 1kW wireless plug with 98% efficiency
- 140W auxiliary supply for 24V
- 20W wireless power transfer for ball bearings

Fraunhofer Institute for Integrated Systems and Device Technology IISB

Schottkystrasse 10
91058 Erlangen, Germany

Contact

Christopher Joffe
Tel.: +49 9131 761-296
christopher.joffe@iisb.fraunhofer.de

www.iisb.fraunhofer.de

Our Service

We develop and realize complete inductive power transfer systems. From the FEM-Simulation, over power electronics analysis/simulation and mechanical integration to the realization of complete prototypes.

Magnetic Design

We use a computer-based system design algorithm. Our loss models are based on self acquired material data. Therewith, we are able to:

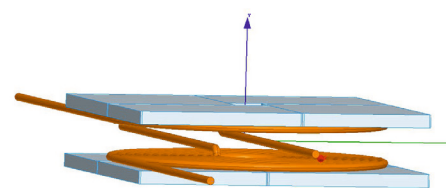


Fig. 1: 3D-FEM-Model of coils with ferrite

- calculate the magnetic parameters
- calculate the winding losses (also litz wires) and core losses
- perform multi-criterial optimization (e.g. efficiency, power density, costs)

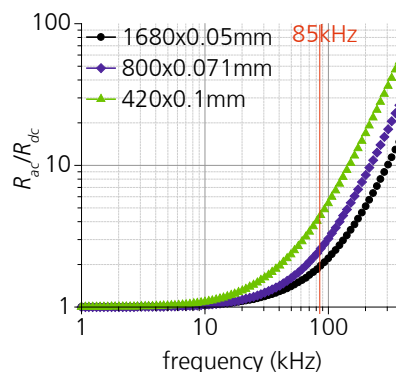


Fig. 2: Simulation of litz wire winding resistance

Electrical Design

In order to find the best electrical design for your application we offer:

- Comprehensive topology studies
- Detailed converter and system simulation

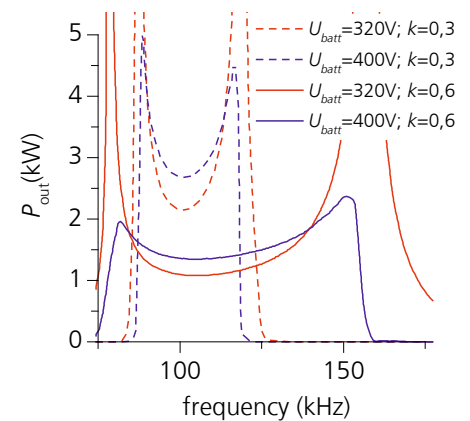


Fig. 3: simulated transfer characteristic of a series-series compensated system

- Development of fully controlled power transfer system including communication
- Design of highly integrated power electronic components (e.g. converter)



Fig. 1: Intelligent 48V-GaN based primary resonant converter ($P=250W$ and $f>1MHz$)

Contact Us!

The Fraunhofer IISB is your research and development partner for inductive power transfer.