

## Topology comparison for an On-Board charger (OBC) for Vehicle to Grid (V2G) applications

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**BRUSA HyPower AG** is developing and producing high performance energy conversion systems for the electro mobility applications. Highly efficient, cost effective and volume constraint systems make the design and implementation of them quite challenging. On-Board chargers require bidirectional power transfer capability and high efficiency, while cost and volume need to be further minimized.

In this work, a Dual Active Bridge (DAB) topology is compared to a resonant topology (CLLC + Half Bridge) applied to the second (DC-DC) stage of a dual-stage bidirectional OBC for Vehicle to Grid (V2G) applications. The existing DAB design is used as a reference and is compared to a new resonant topology (CLLC + Half Bridge) design. The goal is to identify the topology that outperforms in terms of volume (also considering EMI), cost, efficiency and feasibility. After the comparison is performed, a prototype converter is built to validate the comparison

The project is carried out in an industry environment at **BRUSA HyPower AG**.

### **Type of work**

Master thesis (6-9 Months, full time)

### **Content of work**

10 % Topology Analysis

30 % Design

40 % Prototype

20 % Measurements

### **Requirements**

Hands on experience in the laboratory, studies in electrical engineering (focus on Power Electronics)

### **Contact**

**Riccardo Tinivella** (BRUSA HyPower AG)

E-mail: [riccardo.tinivella@brusa.biz](mailto:riccardo.tinivella@brusa.biz)