

devices. Expensive ferrite cores are needed to create a when coils are operated at high frequency, as in IWPT needed to reduce the skin and proximity effect losses significantly affected by the coils. Litz wires are

- Smaller weight and dimensions: the cost of an IWPT is produced a lot if paramagnetic materials are closed [32]. induced on the metal object near the metal and can decreases rapidly. In addition, the eddy currents closed to the coils, the transmission efficiency on the magnetic fields. If metal material is placed
- Absence of eddy currents: the IWPT systems are based cheap metallic plates [34]. pairs and aluminum shielding, the CWPT system uses expensive coils inductors made from Litz wire, ferrite
- Lower cost of charging infrastructure: instead of using

over IWPT:

CWPT are gaining attention because of their advantages

scheme of a CWPT system is depicted in Fig. 1.

coupling is achieved by using the electric field. The block with one or more receiving plates connected to the load, the based on the coupling of one plate connected to the source assembled along with proper ferrite bars. A CWPT system is receiving coils, which often require Litz wire windings to be primarily coil loosely coupled with one or more secondary IWPT operation is based on the magnetic coupling of a

when ESKs are considered. On the other hand ESKs equivalent impedance are real and become cumbersome circuit network functions such as voltage transfer function and resistances (ESKs). This is because the expression of these neglecting the inductor and capacitor equivalent series procedure of the converter and the matching network is given operating at 5.21 kW and 120 mm airgap. The design presented in [33] compensation reaches 80.3% efficiency at a 120 mm distance, while the CGC based prototype 80.5% efficiency when operated at 5.1 kW, with the two plates. The CGC based prototype presented in [17] results in a promising solution for electric vehicle charging application.

The LCFC and CGC compensations look the more

shown in Table I.

estimated efficiency based on the recent literature results are terms of resonant frequency, output power manage and obtain the required resonant tank. The main characteristics in

Several compensation network solutions may be used to

compensation network linked with a rectifier circuit.

plates. In the secondary side the capacitor plates are connected to a suitable power converter to energize the compensation LC network and the capacitor

Fig. 1. CWPT block schematic. The primary side is composed of a dedicated

