The industrial project “Inductive Charger”

Testing a charging system for electric vehicles

Equipment used from the portfolio of Schulz-Electronic:

- 2 AC sources 61511
- 2 slave modules
- 3 bidirectional DC power supplies TC.GSS 32.500.400.S
- 1 BatSim software program

The Challenge

Many enterprises are working just now on the inductive charging of electric cars, because it greatly simplifies recharging, In future, inductive charging should make the charging of electric cars easy and vandal-proof – maybe even during a short stop at the traffic-lights ...

A customer of Schulz-Electronic is also developing inductive chargers of this kind and needed a power supply solution for this purpose. In concrete terms it concerned the equipment for comprehensive testing of the whole chain.

The Solution

An inductive system consists of a stationary charging plate with a coil either on or under the ground, and a coil in the electric car. The primary coil in the stationary charging plate generates an alternating electric field that wirelessly induces alternating current in the secondary coil in the vehicle. This is then converted to direct current, so that the vehicle’s battery is recharged with an appropriate DC voltage.

For the inductive charging apparatus Schulz-Electronic selected two “61611” AC sources by Chroma. Each of these devices has an output of 28 kVA and offers many degrees of freedom for tests. The output voltage can be sinusoidal, square wave or triangle wave between 0 and 300 V. The frequency is variable between 15 and 1,500 Hz. The maximum output current is 96 A. One AC source was used to simulate the stationary charging plate, and the other to simulate the secondary coil in the vehicle. Two slave modules were used for the inductive coupling of the devices and the simulation of the inductive coupling, with variable parameters such as phase shifting, efficiency, spatial separation of the systems, air quality and atmospheric conditions, the influence of damp, and more.

For an optimally functioning simulation of the vehicle battery, three bidirectional DC power supplies were used. Here, too, the “BatSim” simulation software simplified the simulation of various different battery technologies.