V2G: Vehicle to grid charger

OVERVIEW

The V2G charger system is a power electronics based platform designed to fully be able to charge and discharger an EV in the grid.

As a bidirectional equipment it has the advantage to be able to use the energy wherever it is needed in every moment. It is possible to charge the EV by night, in order to use it for transport the following day, and it is also possible to use the EV as a battery, using the exceeding energy to help your home/industrial electric system to have a boost in the electricity most expensive hours of the day, or even use it if there is an electric problem with the grid.

The V2G system can be designed to charge batteries from $50 \text{ V}_{\text{DC}}$ to $700 \text{ V}_{\text{DC}}$ and different power ranges (available models): 10 kW, 20 kW, 40 kW, 60 kW and 100 kW.

Applications and usage

- CHAdeMO fast chargers
- EV bidirectional charge
- Vehicle to grid electricity charging

Main features

- 10 kW, 20 kW, 40 kW, 60 kW and 100 kW output power
- EV batteries from $50 \text{ V}_{\text{DC}}$ to $700 \text{ V}_{\text{DC}}$
- CHAdeMO compliant
- Can charge different battery technologies
FEATURES

The Vehicle to Grid charger system is designed to exchange power and CHAdeMO communications with EVs. It is based on power electronics and can perform bidirectional power flow.

A touch screen interface is used to operate the system. Information about the process can be analyzed using this interface or by communication to an external host.

Also custom dynamic charging/discharging process can be parametrized for thermal and reliability test of EV chargers.

All the configuration parameters are sent to the EV charging system. The touch screen interfaces shows main data for process monitoring: voltages, currents, SoC, evolution of the CHAdeMO charging process and other useful information.

Also the real time data can be retrieved by using the communication interfaces.

TYPICAL CONFIGURATION

Connecting the EV charger test system in an optimized configuration diagram reduces energy consumption, resulting in a more efficient testing process.

The V2G charger system is galvanically isolated and can be connected to any DC or CHAdeMO compliant EV charger. Due to its DSP control of the input and output converters, the input current has unity power factor, and the output time response is very high.