

Parking and refuelling at the same time

– more dynamics for e-mobility

CONCEPT

“solar filling station Euskirchen”

A parking deck on two levels, which simultaneously functions as a large solar filling station with 32 fuel pumps for electric cars, was built at the end of 2017 in the city centre of Euskirchen. The owner of the multi-storey car park is Euskirchener Baugesellschaft mbH (Eugebau). ▶▶



TECHNICAL APPLICATION

In a first step, 17 parking spaces were given a ceiling e-charging point.

The cable run for the remaining parking spaces in the basement has already been provided by means of an empty conduit system. 12 further outdoor parking spaces on the property in front of the building are also equipped with e-charging points.

The futuristic main feature of this lighthouse project is the total of six LS4 e-charging stations from the Swedish company GARO AB, each with two charging points that draw attention by means of LED strips. The stable aluminium columns in the outdoor area have a charging power of up to 2 x 22 kW. This multi-storey car park is not only one of the largest solar filling stations for electric vehicles in North Rhine-Westphalia. According to the clients, this construction project will also play a leading innovative role nationwide.

Solar-protected and sustainable

In regards to power generation, they were relying on sustainability: The electricity for charging the vehicles partly comes from the solar system on the green roof of the multi-storey car park. The supply is supplemented by green electricity from 100 percent hydropower. If no vehicle is charging, the current is fed into a stationary intermediate battery storage. Only when this is fully charged is excess energy fed into the grid.



The advantage of the ceiling charging points above the individual parking spaces is that, in contrast to a classic charging station, they are not physically damaged by vehicles and can above all be used in a way that they save space and costs. The parking area can be fully utilised.

22 kW ceiling-charging station LEVIAMP

The ceiling-charging stations LEVIAMP from EASYCHARGE.me GmbH installed in the multi-storey car park do not differ that much visually from the larger,

oval ceiling lights of the garage. The 180 degree-swivelling charging arm, on which the socket is located, conveniently and flexibly reaches all charging devices on all types of electric vehicles. After use, it can again easily and compactly retract under the ceiling.

All charging points in Euskirchen can deliver up to 22 kWh. However, since almost all electric cars can currently only charge up to 11 kW, the high charging power means that the infrastructure of this project is future-proof for the next few years. The charging points are interconnected with each other via a controller, which can be used to control the delivery of current from each individual charging station. This dynamic load management enables the intelligent distribution of the total output, so that a normal grid connection of 80 kW is sufficient to serve the vehicles refuelling with electricity.

Bender controls and monitors

The core of the LEVIAMP ceiling-charging solution and also of the LS4 charging station in the outdoor area is the CC612 charge controller from Bender Co. KG, which monitors the internal hardware of the respective charging system. Due to its compact design and size, the charge controller fits seamlessly into the design of LEVIAMP and LS4. The CC612 Charge Controller, which can also be used (as a product variant) in other charging systems such as meters, user interface

modules or sockets, impresses with its sophisticated technology and meets all modern charging control requirements. Various back-end systems can be easily connected via the open communication protocol Modbus. Since most back-end providers work strictly according to the Open Charge Point Protocol (OCPP), the charge controller is compatible with OCPP 1.5 and OCPP 1.6. The charge controller supports the mobile radio standards 2.5G-Edge and 3G-UMTS, therefore guaranteeing reception all over the country and high data transmission rates. WiFi interfaces provide access to home applications. Local configuration and software updates can be conveniently made via other interfaces. With Power-Line-Communication (PLC), the charge controller has a trend-setting technology to automate "Plug & Charge", load management or "Vehicle-to-Grid (V2G)" applications.

Participating companies – together into the future

Completion of the project was made possible in cooperation with the Berlin start-up companies and Bender partners Ebee Smart Technologies and PlugSurfing GmbH, among others. Ebee Smart Technologies supplied the charging points, PlugSurfing GmbH the billing system. If you want to charge your electric car in the parking deck or in front of it, all you need do is register beforehand. The electricity bill is settled via PlugSurfing GmbH. The kilowatt hour costs 30 cents.

Every company involved in this project was and is absolutely determined to develop further. From a technical, commercial and legal perspective, new ground was broken. In addition to parking stations on the roadside and the domestic garage, multi-storey car parks such as these offer great potential for the expansion of the charging infrastructure and the electric mobility age. The car can be conveniently "refuelled" with electricity while the driver is working or shopping. And the combination of e-mobility and green electricity - with "sun in the tank" - makes driving truly environmentally friendly. ■

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S.A.F.E Initiative

The S.A.F.E Initiative, which was originally founded by the Physikalisch-Technische Bundesanstalt, has already been joined by 30 companies, including several charging station manufacturers.

The aim of S.A.F.E is to make the charging of an electric vehicle at the charging station legally secure (in compliance with calibration law). The key topics are:

- **the encryption in the counter**
- **a transparency software**
- **the type-examination certificate.**

The Austrian company has-to-be and ebee Smart Technologies from Berlin, a subsidiary of the Bender Group, is involved in the development of the transparency software. This manufacturer-independent transparency software for electromobility makes it possible to carry out the signature checks for digital measured values in compliance with calibration law.

Benefits of the transparency software:

- Customers receive a transparent and forgery-proof invoice.
- Manufacturers of charging stations use them to carry out conformity assessment procedures.
- This enables the calibration authorities to carry out their calibration checks with absolute certainty.