

RIELLO UPS AND AUDI FOR E-MOBILITY



AUDI Brand Experience Center at Munich Airport: Efficient energy management in the charging park for e-mobility.

The automobile manufacturer Audi currently operates 78 AC charging points and six HPC charging points at Munich Airport in order to meet the growing demand for electric vehicle charging stations. The Audi Brand Experience Center located there is consistently geared towards sustainability and has four normal charging points plus two fast charging stations. The event and conference building is equipped with over 1,650 photovoltaic solar panels, whose electricity is used to supply the building and the charging stations.

The surplus electricity from these systems is temporarily stored in two batteries. The energy management of these batteries, as well as the monitoring of the input and output currents, is regulated by the Sirio Power Supply (SPS) from Riello Power Systems GmbH. Especially when

The AUDI AG Brand Experience Center event and conference building at Munich Airport has 1,650 photovoltaic elements (dark glass surfaces) whose electricity is used to supply the building and the charging stations for e-vehicles. (Those: AUDI AG)

operating the two fast charging stations, the HE 400 type SPS ensures that the maximum output power of the Audi Park power grid of 600 kW is not exceeded. For a load of more than 600 kW, energy is drawn from the battery storage.

The AUDI AG Brand Experience Center at Munich Airport serves the automobile manufacturer as an international event and conference location in Central Europe, which is also in demand by Group companies and for external events. The connected charging park with six charging stations for e-vehicles complements this energy concept and is partly supplied by the solar system in the main building.

Two of these charging points are designed as fast charging stations, which, for example, enable an

e-tron 55 to be fully-charged within around 45 minutes. Since the peak of this charge is currently up to 150 kW and can be up to 300 kW in future e-tron models, an intelligent storage system was integrated with the Riello Sirio Power Supply (SPS) to avoid peak loads in the Brand Experience Center to recognize, balance, and control the storage and consumption of the generated solar power.

Electricity storage in second-life batteries

The 1,650 solar cells built into the facade with a total area of around 450 m² generate around 42,000 kWh of electricity per year. Depending on the weather conditions, the photovoltaic system produces more energy than the technical systems



The photovoltaic system of the Brand Experience Center is approx. 450 m² and supplies around 42,000 kilowatt hours of electricity per year. (Those: AUDI AG)

of the building and the charging stations require. The excess energy can either be fed into the power grid or temporarily stored for sustainable building operation. The two energy storage devices required for this were equipped with four high-voltage batteries from decommissioned Audi e-tron test vehicles, in accordance with the sustainability requirements of the Brand Experience Center. These batteries have a storage volume of around 360 kWh and can therefore absorb the energy yield of three days. The Riello SPS monitors the current consumption of the building, the charging stations, and the state of charge of the storage media and charges the batteries in off-peak times.

Innovative energy management during consumption peaks

In normal operation, the building technology requires up to 450 kW of power. If the two fast charging stations are occupied at the same time, up to 600 kW can be added, resulting in a total load of 1050 kW. Since small consumers are not included in the basic requirement of the building, the actual energy requirement can also be above this value. The SPS system from Riello Power Systems permanently monitors the power requirement to avoid overloading the system. This function, known as peak shaving, is necessary because when the charging stations are commissioned, large amounts of electricity are required in a fraction of a second, which could overload the network.

The value from when the electricity is drawn from the storage media is freely configurable. The protection with the SPS from Riello Power Systems enables the vehicles to be fully-charged quickly, which takes around 45 minutes. The fast charging systems charge with up to 150 kW in the first 30 minutes and achieve around 80 percent of the total charging capacity. Another 15 minutes pass before the car batteries are fully charged, as the average power is only around 90 kW during this time.

SPS combines energy management and the advantages of a UPS system

With the help of the SPS storage system, the regular power supply from the utility's network can be reconciled with the income from the photovoltaic system. The external battery storage allows the device to store energy and feed it in when required. At the same time, a UPS system



for uninterruptible power supply is also integrated, which protects the charging stations in the event of a power failure. A specially-developed battery management system is used to control and monitor the installed Audi e-tron batteries.

By integrating a UPS system, the SPS memory offers protection for all connected consumers and also improves the energy quality of the network. In this way, network problems such as distortion, voltage drops and peaks can be avoided, as well as frequency fluctuations. The system is therefore an important part of the overall sustainable concept of the Brand Experience Center.

The two energy storage devices were equipped with four Audi e-tron batteries in accordance with the sustainability requirements of the Brand Experience Center. These are used as part of a so-called second-life application and have a storage volume of around 360 kWh. (Those: Riello Power Systems GmbH)



The Sirio Power Supply (SPS) from Riello Power Systems GmbH regulates the battery management and at the same time monitors the input and output currents of the power grid to prevent overloading. (Quelle: Riello Power Systems GmbH)



Riello Power Systems GmbH is a German subsidiary of the Italian group Riello Elettronica, which has over 1,000 employees. Founded in 1996, The Bavarian agency based in Neufahrn / Grüneck was known as AROS GmbH until 2014, after which it was incorporated into the parent company's brand management. The branch's portfolio includes the development, production and sale of UPS and BSV systems as well as transfer systems, solar inverters and storage systems. The products are kept in stock in a warehouse in Germany and customers are looked after via a widespread sales and service network throughout Germany, which enables the company to achieve high quality service with quick response times.

The Brand Experience Center has four normal charging stations and two fast chargers with a maximum charging power of up to 150 kW. (Those: AUDI AG)

More info for readers / viewers / interested parties



Member of Riello Elettronica Group

www.riello-powersystems.de