A greener future for EV charging

Electric vehicles play a key role in society's drive towards net zero. But the cost of charging them is likely to be a barrier to their popularity. PES was delighted to hear from Alfred Karlstetter, General Manager at SolarEdge Europe about the possibility of EV charging using solar technology. Could our cars be powered by the sun in the not too distant future?

Alfred Karlstetter

PES: Welcome to PES Alfred. Let's start with a little bit about SolarEdge to get us up to date if we may?

Alfred Karlstetter: As you probably know, SolarEdge is one of the world's leading providers of solar energy solutions for residential and commercial applications. Our PV systems consist of intelligent inverters that manage solar production, Power Optimizers that implement module-level DC optimization, and a monitoring platform for real-time, online module-level performance tracking and remote maintenance.

SolarEdge has helped companies around the world, of all sizes, move to profitable and clean renewable energy. In fact, more than 30% of Fortune 100 companies have SolarEdge PV systems. Our commercial solar solutions address a broad range of applications and installation types including commercial rooftops such as carports, gas stations, shopping centers, and hotels; industrial rooftops for manufacturing sites and factories; farming and agriculture; public buildings; ground mount projects and floating systems.

PES: Let's focus on EVs. How can electric cars help overcome energy uncertainty?

AK: There is an interesting synergy going on now between the transition in the automotive industry to electric vehicles and fuel prices. On one hand, rising oil costs and supply uncertainty could easily encourage motorists to check out the latest EV models. On the other hand, electricity rates are also increasing, which of course impacts EV charging costs and the total cost of EV ownership. For example, you could buy an EV today and expect to pay 0.30€ per kWH to charge it, while in 10 years the cost could be double or more.

At SolarEdge we're enabling EV owners to mitigate the risk of rising fuel costs today and tomorrow with solar-powered EV chargers. Unlike fossil fuels and electricity, the cost of sunlight is predictable and solar systems have relatively low OPEX over the system's lifetime.

Our new SolarEdge EV Charger is a Mode 3 charging station with up to 22kW charging power, which can be used for single and three phase installations in both indoor and outdoor use. SolarEdge EV Chargers are part of our new residential SolarEdge Home smart energy ecosystem and we are also beginning to deploy them in small scale commercial and industrial applications. This represents an increasingly important component in the PV system value chain and a great opportunity for installers to expand their commercial and residential customer offerings.

PES: What types of EV charging-related incentives can companies offer their employees?

AK: A high percentage of EV owners are interested in the convenience of workplace charging. As a matter of fact, Glassdoor and other employee review portals are rating EV charging as an important employer incentive. There are a number of benefits for employers to provide solar powered EV charging services. These include green tax government incentives, promoting EV charging as part of the company's sustainable energy program, and offering free EV charging to attract and retain employees.

Imagine a carport covered with solar panels providing both shade and free sun powered EV charging to the cars below.

PES: How can EV owners who charge their company cars at home get reimbursed for EV charging?

AK: SolarEdge has a solution that supports reimbursement for home EV charging. Many employers give their staff cards that they can swipe at charging stations, so the company

pays for the energy. The SolarEdge EV charger can work with these corporate cards so employees can swipe at home and fuel up, either on solar power or late at night on grid power when the tariffs are at their lowest. SolarEdge Home system owners will be able to generate detailed EV charging reports via the mySolarEdge app, export them and send them to the employer for reimbursement each month.

We are also offering the option of generating EV charging records in compliance with EU MID-metering, a standard required by some companies for reimbursing employees. In the future, we plan to offer another billing method via the OCPP communication protocol, which we developed as a cloud application that integrates our EV Charger into the mySolarEdge app.

PES: What kinds of commercial opportunities are there for EV Charging in retail environments?

AK: There are tremendous opportunities for retailers to leverage EV charging as a customer incentive. It could be tied to loyalty programs or applied in a variety of other business models. EV charging constitutes a highly visible commitment to sustainability, which can build customer preference and loyalty. We are already seeing businesses like IKEA and Starbucks in the US and Lidl and Aldi in Germany beginning to provide EV charging services to their patrons.

We may find in time that charging an EV keeps customers in store for longer periods, which can lead to higher retail sales.

In addition, EV manufacturers such as Volvo, BMW and Mercedes, in partnership with EV charging networks, are offering their buyers limited-time free EV charging and/or EV charging at fixed advantageous rates.

PES: How does EV charging impact the power grid?

AK: The electrical infrastructure in use today was designed at a time when people only drove cars with internal combustion engines (ICE) and used far less electricity than today. They were not built to handle the exponential growth of electric vehicles and the charging they require. According to Bloomberg, the number of electric vehicles is expected to reach 40 million by 2030.

According to the IEA 'increasing EV uptake can overload distribution networks and necessitate local power grid upgrades such as transformer replacements and cable reinforcement.' Sustaining the rapid growth in electricity demand and building more reliable grids would take quite a long time and would be very expensive.

Controlling the charge power based on the locally available PV surplus and the import limit, as well as dynamic time-of-use tariffs will reduce the impact of EV charging on to our electricity grids. Bi-directional EV charging will further contribute to grid stability by enabling homeowners to discharge their EV batteries to the grid in return for financial incentives from the utility.

All of this points to the need for solar powered EV charging stations in as many applications as possible.

PES: How does SolarEdge see the convergence between green energy production and commercial EV mobility?

AK: Our SolarEdge e-Mobility division is working to bring together solar energy production, energy storage, decentralized energy autonomy, and EV charging and usage. The division has launched the Telematics platform for vehicle manufacturers and electric fleet managers. Connecting vehicles to the Telematics platform collects data from the main EV components: Batteries, ECUs, inverters, on-board chargers, etc. This data is stored in the Cloud where a data analytics engine produces and reports on all actionable insights.

EV manufacturers can offer this data platform as a value-added service to fleet managers, resulting in recurring revenue, feature customization and deeper customer relationships. For fleet managers it means data-driven predictive maintenance, less vehicle downtime and lower total cost of ownership.

PES: What is SolarEdge's role in the future growth of EV Charging?

AK: SolarEdge is uniquely positioned to lead the green EV charging revolution. We provide both residential and commercial solutions for solar production, storage, and e-Mobility, coupled with over 15 years of experience and presence in more than 130 countries.

Our new SolarEdge Home 24-hour personal energy management system optimizes both solar energy production and consumption. Its scalable ecosystem enables the homeowner to add new features and capabilities according to their energy needs, including integrated EV charging.

We welcome opportunities to partner with companies that would like to join us in helping the world drive on sunshine.

www.solaredge.com

Biography

Alfred Karlstetter is General Manager for SolarEdge Europe, which he joined in 2015. Prior to that, he was the Vice President of Global Sales for Samil Power, a global inverter company headquartered in China.

From 2009 to 2012, Alfred was the Vice President of European Sales and Global Accounts for SMA, the leading inverter company at the time. Before entering the PV industry, he held senior technology and sales positions in the semiconductor and electronics industry at KEMET Electronics and Epcos. Alfred resides with his family in Germany.