To Make EV Charging Stations More Ubiquitous, They Must be More than Charging Stations

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Building a network of EV charging stations similar in size and proliferation to the network of traditional gas stations will take a huge amount of time and money. Unfortunately, the lack of EVs on the road makes most businesses hesitant to invest in a charging station that likely won't generate much, if any, revenue.

An electronic transfer merchant in Seattle, Wa. Credit: EV4 Oregon.

But one manufacturer has found a way to change the game. EV4 Oregon LLC has designed a charging station that is so much more than just a charging station. It's artistic, practical, profitable, and all green.

At Hannover Messe, the world's largest industrial technology trade show, taking place April 8 through 12 in Hannover, Germany, EV4 Oregon will be on hand to discuss what it calls the Energy Transfer Merchant (ETM).

EV4 Oregon's ETM (a play on the acronym "ATM") is a charging station that includes a canopy with solar panels. The panels are connected to a battery system, which stores the energy created by the solar array, and also to a DC fast charger system. But there's more to it than that – much more. "The solar panels fill up the battery system for storage as well as for feeding the electric vehicle," explained Hans van der Meer, president and CEO of EV4 Oregon. "The batteries can be used for uninterrupted power supply as a smart grid element."

The battery system, van der Meer said, allows for a more cost effective connection to the local grid. Most charging stations tap into the grid using a three-phase, 480-volt connection. A connection like this, van der Meer said, costs about $15,000. But EV4 Oregon's ETM uses a 100 amp connection, or what van der Meer called a "standard washer-dryer hookup."

Another benefit to the battery system is that it reduces the station's impact on the grid. The solar panels generate on average 18 kW-hrs, according to van der Meer. That's enough to fill 80 percent of a Nissan Leaf in one day. The batteries store enough power to fill about two cars. (The actual output varies, he noted, depending on the day and season, from 26kW-hrs in the summer to between 9kW-hrs and 10kW-hrs in the winter.)

The ETM uses lithium iron-phosphate batteries, rather than the more common lithium cobalt oxide chemistry. Virgil Beaston, chief technology officer for Powin Energy, which designed and supplies the batteries for EV4 Oregon, said the iron-phosphate is a more stable chemistry, and is unlikely to catch fire, as did those in the Boeing Dreamliners.

The canopy for the station serves multiple purposes beyond supporting the solar panels, and the fringe benefit of protecting the cars and drivers from the elements while they charge. It also sports an LED display that can be used to show advertisements. The size and position of the LED screens ensure that they can be seen by more than just the drivers charging their cars.

Van der Meer touted this as the key to making his charging stations not just appealing, but profitable for businesses that wish to install them on their property. Buyers of ETMs pay a nominal lease amount, and in exchange receive 5 percent of the station charges, along with revenue from advertising. Due to the small number of EVs on the road, van der Meer said, “The station won’t generate much income from charging cars. So it’s not an economic model without an alternative income stream.”

But Jeff Grumbling, Powin’s senior vice president of sales and marketing, insisted businesses may have another reason to want to install ETMs. Specifically, he points to the artistic design of the station and canopy. The structure has an organic, tree-like design. “It is an architectural piece. People want to have it on their property,” said Grumbling. Van der Meer called it “an iconic, elegant structure.”

Van der Meer is more than just an innovator of charging stations – he’s an EV driver who understands the importance of building up the station infrastructure. He has been driving a Nissan Leaf for two years. After 30,000 miles in his EV, van der Meer claimed that if it weren’t for the network of charging stations in his home town of Portland, Ore., he’d have been stranded more than once.

For van der Meer, Hannover Messe represents an opportunity to expand the company’s reach into Europe, where EVs are more prominent and gaining traction faster. In January, the E.U. Commission in Brussels announced intentions to install more than 8 million charging stations across its member nations by 2020 — a ripe opportunity for manufacturers like EV4 Oregon.