Universal electric car charging stations

Such a scenario may seem ridiculous, but it"s not so very different from the experience some EV drivers are having when trying to charge their cars. Universal EV charging stations are the natural answer to such inconsistencies. As the world is speeding toward widespread EV adoption, interoperability across the EV industry is the fastest way forward, so let"s explore what "universal" really means in relation to EV chargers.

A universal EV charging station is one that is compatible with all-electric vehicles. On the hardware side, this compatibility is achieved by offering openly accessible stations equipped with various connectors and adapters. A truly universal EV charging station should also be powered by hardware-agnostic software, to deliver a reliable and consistent charging experience across a broad variety of models. The result is EV charging interoperability, which makes both owning an EV and running a charging business a whole lot easier.

At the moment, EV charging station operators have to contend with many inconsistencies between different EV chargers. For one, not all chargers work with the same software, which makes it hard to efficiently run EV charging stations at scale. To go back to the scenario with square and triangular gas pump nozzles, imagine each one having different maintenance requirements for which you"d have to hire a different technician. Attempting to manage chargers not made for open protocols is a bit like that.

On the other hand, with universal EV chargers, operators can mix and match products from various manufacturers based on their budget, market demand, and charger quality instead of being tied to one manufacturer out of pure logistics.

EV drivers also benefit from having access to universal EV charging stations. Instead of painstakingly planning every trip or having to purchase charging port adapters, they can simply roll up to the closest EV charging station, get a charge, and be on their way. An abundance of universal chargers can also allay concerns about range and not being able to find a charging station that works--two major barriers standing in the way of widespread EV adoption.

Universal charging stations operate using a set of standard hardware and software components. That includes a charging cable compatible with the J1772 plug (or the J plug) for Level 2 charging. Most EVs in North America have a J plug, so carrying chargers with a compatible nozzle cable provides maximum EV interoperability. As of late 2022, Tesla"s Supercharger plug was introduced as the North America Charging Standard (NACS). The plug and connector have since been adopted by leading auto manufacturers, making NACS compatibility increasingly important as well.

On the software side, universal EV charging stations operate using an open communications protocol, such as the Open Charge Point Protocol (OCPP) which enables chargers to communicate with all OCPP-compliant software. In other words, EV chargers and charging station management software (CSMS) that use an open

protocol share a common "language" that allows them to work together even if the chargers and the software were created by different manufacturers.

This is great news if you"re a charger operator looking for rapid growth because it means you can manage a variety of chargers with one CSMS. For example, here at ChargeLab, our customers can connect any approved OCPP charger to our hardware-agnostic platform, allowing them to build a robust EV charging system with fewer barriers.

This lack of consistency and reliability makes charging your EV more complicated than it has to be. It also makes running an EV charging business unnecessarily complicated. Figuring out installation and maintenance issues with a non-universal charger can be tricky--how easy is it to get the manufacturer on the phone? If you"re locked in with proprietary hardware or software, you"ll also find it difficult to switch if things go south.

Though we"re not quite there yet, full interoperability is undoubtedly in the future. Increasingly, lawmakers and industry leaders are recognizing that access to reliable EV charging stations is key to transitioning the driving public to EVs.

Earlier this year, the Biden administration announced its plan to add 500,000 chargers to the existing public EV infrastructure. To increase interoperability, EV charging stations built with public funds through the new NEVI program have to work as universal EV charging stations. California has a similar requirement as part of its measurement standards regulations for EV vehicles, but the rules apply to all EV charger manufacturers operating public chargers in California, regardless of funding.

The industry itself seems to be moving toward interoperability, with Tesla--the long-time holdout in allowing other EVs to use its charging stations--making NACS chargers interoperable. Meanwhile, organizations like the Open Charge Alliance and the EVRoaming Foundation are working with EV charging businesses to increase the adoption of open standards.