

THREE INDICATORS FOR EVALUATING RELIABLE DC FAST CHARGERS



As demand for electric vehicles continues to soar, so does the market for DC fast chargers (also known as Level 3 chargers). But with so many types of these chargers flooding the market, how can you be sure you're getting a reliable EV charging station that gives you the best possible return on investment?

With this in mind, here are three primary criteria that operators of commercial or public charging stations should consider prior to purchase:

Construction: Is the EV Charger Built to Handle the Elements?

Level 3 EV chargers need to stand up to everything mother nature throws at them. Whether it's freezing or scorching temperatures, salt water spray, rain or blizzard conditions, a quality DC fast charger should be able to provide safe and efficient charging in any environment.

However, not all Level 3 EV chargers are built to be impervious to the elements, according to Steven Sumner, Vice President of

Global Equipment at Lincoln Electric.

"We see competitive products with a range of environmental protection – from none at all, to only cursory protection," Sumner said.

To identify Level 3 EV chargers with good build quality, potential buyers should look for:

- Potted PC boards for critical power conversion and controls encapsulated in a urethane/epoxy (to protect against moisture, dust, vibration and extreme temperatures)
- Adequate spacing between high-voltage elements (to prevent electrical arcing or short circuits that can be caused by the presence of moisture)
- Filters with high particle filtration efficiency to keep out dust, dirt and moisture (on air-cooled charging systems)
- Waterproof sealing of cabinetry

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Without these preventative features, your EV charger may not be able to charge properly, need to be repaired or worse – require total replacement.



Compatibility: Can the EV Charger Communicate with the Car?

Another important factor to consider is how well the charger works with all types of electric vehicles including passenger cars, commercial vehicles and eventually over-the-road trucks.

To determine charging compatibility, here are three questions you should ask regarding plug design, communication protocol and internet connectivity:

Is your goal to provide electric power to the largest number of vehicles in North America?

Then you'll want to make sure your charger is compatible with both the Combined Charging Standard (CCS1) and the North American Charging Standard (NACS).

Can the EV charger communicate with the car?

You should know if the charger's software and vehicle's software can successfully talk with one another to initiate and manage the charging process.

To avoid charging compatibility issues, you should look for charging companies with a robust interoperability testing program and a large inventory of tested and approved vehicle-to-charger communications.

Is there only one way the charger can connect to the internet?

If that is the case, it's not good news. If there's a problem and the internet goes down, no charging can take place until that one connection is restored.

To prevent the potential for downtime and revenue loss, you should look for chargers that have multiple connectivity methods, such as cellular and hard-wired connections, Sumner said.

"Customers should look for the opportunity to create redundancies," Sumner said. "Many times, competitors will provide you only one way to connect. We think it's a good belt and suspenders approach to have fallback positions."

Warranty and Service: What Happens if There's a Problem?

In addition to the physical product, evaluating the warranty and level of service support offered is critical.



Broken electric vehicle charger leads to maintenance calls.

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How quickly you can schedule service and get a charger back online is especially important considering several recent studies highlighting the frequency of charger downtime. According to a May 2022 article in The San Francisco Chronicle, one study found more than 25% of charging stations in the Bay Area were broken or unusable.

Bearing in mind that several states have encountered similar issues with EV charger operation, it's a good idea to partner with an EV manufacturer who can offer a high level of responsiveness and technical support beyond the sale.

"Customers report to us that in many cases, it takes up to four weeks for a charger manufacturer to get out there and make repairs," Sumner said.

"If I'm an operator and lost one month – roughly 10% of my opportunity to make money – then my return on my investment just went to hell in a handbasket. So, you want to get a charger from somebody you know who's going to be there if something happens."

Some manufacturers offer remote monitoring that allow charging operators to be proactive about maintenance. They may also provide repair services or work with other service partners to resolve problems. In this case, you should ask

whether the manufacturer has an authorized service network with trained technicians who can service your area.

In terms of warranties, 2-3 years is considered reasonable for EV chargers. However, some manufacturers may offer longer periods for specific components or features. A good warranty should also include repairs for faulty components or the entire charger if necessary.

Putting Things in Perspective

A good rule of thumb when evaluating any product – but especially EV chargers – is to look at the total cost of ownership.

Opting for a cheaper EV charger with questionable build quality and vehicle compatibility is not as cost effective as it seems. This approach often leads to increased expenses due to frequent repairs and significant downtime.

Ultimately, owners of EV charging stations can't provide their charging services and make money if a charger isn't working. By prioritizing construction quality, compatibility and service upfront, you can put your operation in the best position for securing sales and success over the long-term.

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