

Exclusive interview with Bret Aker: “Standardization is the key”

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Cars21.com had the chance to meet EV charging pioneer Bret Aker, CEO of Aker Wade and Dagfinn Sivertsen, Aker Wade Europe, to talk with them about the potential of fast charging stations, the ground-breaking role of Japan and other major developments in the EV industry.



**Bret Aker and Dagfinn Sivertsen,
Aker Wade Power Technologies**

[Aker Wade Partner section](#)

cars21.com: We are here today with Bret Aker, Chief Executive Officer and founding principal of Aker Wade Power Technologies. Aker Wade is based in the state of Virginia in the US and designs, manufactures and services advanced fast charging systems for electric vehicles. Since when has your company been involved in fast charging and what were the development steps?

Bret Aker: We started our company back in 2000 and first we were targeting fast charging markets for the forklift markets. We have taken a number one position there around the world with over 10.000 fast chargers in operation today. Over three years ago we started targeting the EV market realizing it was waking up. Basically, we have taken our core technologies developed by power electronic specialists from the Virginia Tech Program that is one of the top power electronic programs in the country and leverage those technologies now into the EV charging arena.

cars21.com: How fast can you charge the full electric Mitsubishi i-MiEV today and what could be possible in the future as regards the charging time?

Aker: Right now, we are offering a so-called 2-state charging. This means you can charge twice the battery state of capacity. If you take the example of the i-MiEV, we are able to charge it today in 30 minutes. As far as the future, we see 10 to 15 minutes as a true possibility in the next two to three years. So the charging times are coming down rapidly with the advancements in the li-ion chemistries. We are unlimited as to the power we can deliver. It is the limitation of the chemistries that creates the issues right now.

cars21.com: Aker Wade is collaborating with battery companies, infrastructure suppliers and EV manufacturers, including EnerSys, A123, Coulomb Technologies, and Tokyo Electric Power Company (TEPCO). How does your collaboration look like and why do you think it is important to work together across these sectors?

Aker: No single party can do it all. We are experts at making high-powered chargers and we need to work with other parties for the other parts. Our partnership with Coulomb Technologies provides a sophisticated network level that different parties can access such as the utilities as well as the organizations buying these charging stations and put these up in their parking lots. Having these partners that put the other pieces of the puzzle together are critical to provide the next generation of Level III chargers. We do not want to do it all, we want to concentrate in our area of expertise and find partners that can help us in the other areas.

cars21.com: When you work together with these different partners, standardization becomes an issue. How important do you see this? We also heard about the group that is being brought together with TEPCO and yourselves and many other companies called Chademo. You having lived in Japan, maybe you can explain us what this stands for?

Aker: First of all CHAdEMO stands for CHARge de MOve. And in Japanese it means “would you care for some tea”. It is a cute naming for a very serious mission. Tepco let a coalition of all the vehicle and charger makers in Japan and now also internationally to create a standard for fast charging. They have realized how important this is for the adoption of EVs. People have to see it in action, that it is working and that they can feel comfortable about the fact that they will run out of power somewhere on the edge of town. So standardization is key and there is a very serious commitment to this technology and one standard that EVs are already using.

cars21.com: Besides the US, you worked and lived many years in Japan. How would you compare the US, Japan and Europe in terms of electric vehicles? What is the big difference?

Aker: The three areas are at different stages. Japan is investing heavily in EV and battery technologies but when it comes to charging, they have already 150 fast chargers in the country working, 1000 more fast chargers planned to go in the next year. I see in Japan is a very much advanced experiment that we all can learn from. They will go into these technologies first, they will learn a lot of lessons from them and the best will go out to the rest of the world. It is key for us to stay in tune there and that is why I am in Japan several times a year. I encourage everyone to go to Japan to learn from this.

As regards North America, I think that the standardization is a little bit behind Japan. Several thousand Nissans Leaf will be coming to the US at the end of 2010, early 2011. And they will be using the Chademo specification for fast charging, which is a necessity because the SAE standardization has not made a decision yet on the level III plugs.

In Europe you have a rather confused situation because Mercedes and Renault are looking at AC level III fast charging and it is yet to be seen what is going to happen in Europe. Although I try to simplify matters and say: Listen it is all about following the car. If you want to charge a Mitsubishi i-MiEV or a Nissan Leaf, you use the CHAdeMO Protocol. We have been following that strategy and we get a lot of interest from the cities that are importing those vehicles. Although this is a Japanese standard it is becoming a worldwide standard as those vehicles leave Japan.

cars21.com: Now moving towards the consumer, we all hear about range anxiety. How does fast charging solve this problem?

Aker: Range anxiety is indeed an interesting phenomenon. TEPCO has shown that installing fast chargers around the city can help already to overcome this anxiety. People feel more comfortable and will drive over 50% more. It's a known cure for a known phenomenon. Cities around the rest of the world are learning this lesson and will make sure that you have at least some fast chargers installed. The people that are buying EVs can realize that they will not get stuck. If people asked me whether they will be ever as many charging station as gas stations, I answer, that this will probably not be the case. However, fast chargers have a crucial role to drive the adoption of EVs.

cars21.com: What single piece of legislation or policy action would make your life easier and drive the uptake of EVs?

Aker: Thomas Friedmann said it best: “The best way to drive adoption of EVs is to tax gasoline heavily.” Now in Europe there are already high taxes on gasoline and you pay 2 to 2,5 times as much as you pay in the US. This will naturally drive the adoption of EVs. To drive an EV costs about 2 cents per mile. There is already an economic benefit. If you really push the consumer and make them pay for the true cost of gasoline, as we know that gasoline is subsidized in the US, this is would be probably the single most effective way to drive adoption.

cars21.com: Many experts talk about tax credits. Is this another area, that you would recommend?

Aker: Yes, this will be very important as well. Right now, the batteries are the most expensive piece of technology in an EV. The 60kW batteries in the Nissan leaf will cost around 20,000\$. In time and with mass production, the prices will come down half the price. However, in the meantime, it is key to provide tax credits to cover these additional costs. Already many forward-thinking governments around the world are taking these measures. I recommend to make them as large as possible and we are also pushing our legislators to do more especially in the early days.

cars21.com: How do you see the industry in the next years?

Aker: I believe it is an amazing period we are entering. All major cities, all major countries have serious EV projects. We will be learning from this and EV transportation will have a place. We figure out what the best ways are to charge vehicles also on a psychological level. Maybe the supermarket will not be the right place but the mall. Questions like these will be answered. And then the technologies will be going to mature and price ranges will be coming down. We will see a push to reach the masses and we are excited to be part of that.

cars21.com: What is the green impact of EVs and how fit you into that picture with fast charging?

Aker: There is controversy around this question. If you put the EVs to a grid that is mainly powered by coal like in Germany, it is not green. This is actually true, however, there are two problems here that have to be solved in parallel. First of

all, we have to solve the issue of putting the cars onto the grid, as we have to prove that this is a viable and reliable concept. Secondly, we have to make the grid green and move to green sources of energy.

Our fast charging stations are actually perfect to combine these two problems. Wind power utilities cannot use efficiently the wind power produced by night, as they cannot store it. A good solution is to put the energy produced now to banks of batteries to store the power that for example is produced by wind or solar power. This allows the power energy utilities balance it out with the actual demand. If you think of a gas station model, where you have several fast chargers on top of a huge bank of batteries, you can fill these with energy at night with wind energy that will cost you pennies and then during the day you will be able to use these energy onto the cars. You then use very green, very cheap energy and in addition you are not reliable on the grid. There is a perfect marriage coming of all these technologies. We fully believe that you will see charging stations in the future like gas stations, which have instead of gas tanks underneath, huge packs of batteries for the use of green energy. This is concept will revolutionize not only the car industry but also the energy supply industry in terms of using green technology and manage the energy storage in a better way.

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