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We will see a conflict of technologies between battery swapping and fast charging: Vikramadithya Gourineni, Executive Director, Amara Raja Energy & Mobility Limited

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Vikramadithya Gourineni, executive director, Amara Raja Energy & Mobility Limited spoke to Amit Panday, Senior Research Analyst at S&P Global Mobility over a wide range of topics, including the Indian battery company's high-profile collaboration with Gotion High-Tech, capacity building at the Giga Corridor in the state of Telangana, customer engagement, tailor-made solutions for the subcontinent and specific areas where India can take a global lead. The following is an edited transcript of the conversation.

Source: Amara Raja

S&P Global Mobility: With a global slowdown in the sale of battery-electric vehicles (BEVs), several legacy automakers are beginning to increase their focus on hybrid vehicles. In India too, there are two lobbies — one that favors leapfrogging to BEVs and the other that looks at hybrids as the next best step. For Amara Raja, while hybrids and BEVs both translate into business, how do you otherwise view this transition?

Vikramadithya Gourineni: I have mixed views on this transition. Both hybrids and BEVs are equally good for us. Selling starter batteries for ICE [internal combustion engine] vehicles is good because it funds this EV [electric vehicle] journey, and we need a business that is making money. However, I also agree with the view of leapfrogging to BEVs because we should not wait for too long for others to move forward and then play catch up years later.

The fact that we want to invest in some of the future technologies now like lithium, sodium and hydrogen is the right approach. But it is yet to be seen which technology picks up in reality. Where we are lucky that our base is so low as we hardly have 22 cars for 1,000 people as compared to about 900 cars per 1,000 people in the US. As much as the automakers and their ecosystem feel they have much to lose, actually as a country we don't have much to lose.

At the same time, we have EV sales growing, even regular ICE cars will grow. I believe until we get to 100 or 200 cars per 1,000 people in India, we shouldn't worry about competing technologies. We are witnessing growth in electric two-wheelers in India. Their growth is not really stealing the share the petrol bikes and scooters. The overall base is growing. I think India will be a buffet until we reach a mature stage and certain technologies will take the lead. So, car companies that want to sell hybrids can sell hybrids.

That said, I believe hybrids cannot beat BEVs in the long term for a simple reason — when you look at the IC [internal combustion] engine vehicles and BEVs — they both run on a single powertrain. Meanwhile, in hybrid vehicles, we put two powertrains in one car. From a material point of view, when battery cost gets low enough, hybrids will be flatly outpriced. So maybe it's a good solution in the interim and may be not aligned with the leapfrogging to BEVs. Our [EV charging] infrastructure is a different story.

On the global slowdown of EVs, I think the western markets are trying to recalibrate their policies [to attract the EV and EV battery supply chain] and they are doing this for economic as well as political reasons. On the economic front, everyone is waiting for the battery costs to come down. The US and Europe are exploring how to establish a battery ecosystem without [having too much dependency on] mainland China and I think they are in different stages of finding out how difficult it is to industrialize an EV ecosystem. As a result, we are seeing that a lot of projects were announced [over the last two to three years]. But the uptake of EVs depends on the cost of acquisition, which can

come down only when the entire EV ecosystem is industrialized. So, in my view, EVs are not to be blamed for the demand slowdown but the industrial ecosystems are not able to ramp up the scale [and necessary technologies] at the moment. I believe it is clear that simply throwing money [on building gigafactories] won't work.

In [mainland] China, it takes just about 24 months [or less] to set up a factory, and that's actually called leapfrogging, especially when in the US and Europe, it takes more than twice that time to do the same. In India, we will have a little bit of our own luck, but we will face our own struggles and I don't think that we will get it correct on our first try. The types of vehicle segments that are electrifying the market for us don't event exist on that scale globally. These are largely the vehicles that are used only within the city limits such as two- and three-wheelers. That said, we are also seeing electrification in passenger cars and buses. Our needs are very different than that of the people in the west. While because of good highways people are beginning to take longer trips in India, the bulk of traffic commutes within the city limits. So, we don't need EVs with extremely long driving range. In addition, setting up the right charging network — for example installing charging stations where people reside, and their workplaces would work for us. These vehicle segments [two- and three-wheeler EVs] don't add massive capacity in terms of batteries but they do allow us to have a stable base.

Amara's giga corridor project entails 16 GWh of battery cell manufacturing and 5 GWh worth of battery module assembly, which is already operational. While 16 GWh is very small when seen in global context, it is a very significant capacity for India's current EV market. We can recall Britishvolt's collapse in the UK last year. They wanted to build a 38 GWh gigafactory but could not secure any significant OEM deals to back their investments and soon ran out of funds. Can you tell us about OEM deals for Amara that would consume the capacity you're building?

I think battery business is a hot topic in Europe, and Britishvolt banked on it to raise money before they burnt all the funds and crashed. For us, we are not in a fundraising mode. We are looking at the market in a very calibrated manner and we have a very conservative approach when compared to the India battery market size estimations that we hear from multiple sources. So, we are running our calculations very carefully and at Amara Raja, we don't really want to overpredict or overstate anything.

Secondly, when compared to Britishvolt, we have an existing battery pack business, which is growing. Today, it is in 100s of MWh and will probably reach 1 GWh very soon. We know that in our first phase [of starting operations at the battery cell manufacturing facility], how much can we consume in our existing battery pack business.

We did not have any offtake when we had announced this [16 GWh cell manufacturing capacity]. But I will say now that we have a partnership in place [with Gotion High-Tech], we are witnessing renewed interest and renewed curiosity from customers. If anything, either that number will stay the same or only go higher. Our customers are happy with our partnership with Gotion as they acknowledge that our manufacturing, processes, technology and supply chain are going to be secure.

Gotion's operations are vertically integrated, which means that they have mining rights to lithium mines to material processing and battery manufacturing. While this also means that they are going to have a stable supply of lithium and other battery materials in the times of shortage, was that a key reason behind signing up a strategic partnership with Gotion? Or that they have a good understanding of Indian conditions as they have

worked with Tata AutoComp earlier?

Yes, there are a lot of reasons behind why we signed up with Gotion. While vertical integration is important, the second reason you touched on is also true. Gotion is highly respected and proven in India already. So, the partner's name is not difficult as customers already know about them. For us on the raw material security, I want to start exploring all Indian suppliers for our first gigafactory but not every battery component is going to be localized in time. So, I think there's going to be great synergy with Gotion. Moreover, compared to a lot of other battery makers from [mainland] China, Gotion held a global point of view from very early on. Our strategic partnership with Gotion is the first of its kind (in India) as usually battery makers support the vehicle manufacturers.

Will this technology licensing with Gotion also include borrowing the production equipment from them on a royalty basis? How does this work?

We will be buying our equipment new, but it will be a joint effort. Gotion has showed us how they set up their [battery assembly] line, equipment vendors they use, their benchmark pricing, among other things. This is a very turnkey kind of [a] relationship where [we are working together on] battery design(s), making sure that we use exact equipment. Maybe for factory 2 and 3, we may take some liberty to explore our own choices. To begin with, I think the teams from both the companies will sit together, they will do the factory inspections and look into other aspects together. More or less, we will stick to given specs to begin with.

In your letter to the shareholders from the last annual report, I noticed that you spoke about urban mobility and affordability of EVs. I'd like to pick CATL as an example of trying out other models such as battery swapping beyond their usual business of producing batteries. Although in a pilot stage, CATL is rolling out their own battery swapping stations across select cities with a focus on reducing costs, making EVs more affordable. As a leading battery maker in India, have you looked at battery swapping as a business yet? What is your outlook on it?

We were one of the early players to try out battery swapping with Sun Mobility in India. We had set up some pilots and we ran our own electric three-wheeler fleet in Tirupati with a few swapping stations. I believe that as all the OEMs [original equipment manufacturers] (in India) are starting up right now (on EVs) and are looking to differentiate with each other, it's a bit of a challenge coordinating with them. Driving standardization is a very difficult task but there are some small wins along the way. For example, Ather has successfully defined the charging port design and all the other two-wheeler OEMs have followed that without much problem, which is a very good start. Luckily, we have Ather as our first announced customer, we will hopefully work with them beyond the battery and charging, among other things. Driving standardization is something we would like to take a lead on but once we get our initial relationships established with all key players on the EV side.

Meanwhile, fleets are asking for battery charging infrastructure a bit more actively. Companies like Delhivery and Amazon are exploring reliance on public EV charging ecosystem. But for a public EV charging infrastructure, utilization is the most important thing. In India, the last mile delivery ecosystem operates on steroids and the fleet operators have started looking at their own captive EV charging infrastructure. I believe we will see a conflict of technologies between battery swapping and fast charging. Gotion is more aligned with fast-charging battery technologies. Somewhere I believe both the users and the OEMs are more comfortable with a fixed battery that can be safely charged faster without any detriment to its cycle life. Higher temperature electrolytes and slight tweaks in the chemistry have been able to achieve that to an extent, and obviously this comes at a

slight cost. In India too, we are beginning to see startups working on fast-charging battery technologies and I personally believe that's the way to go.

The other notable focus area you had mentioned in your letter was being open to exploring global partnerships on battery technologies that are suitable for India. Amara Raja has signed one with Gotion. But are you open to forging more partnerships of similar nature?

Largely for these traditional chemistries, we are set on the basic cell technology. It's not something that we won't seek out other partners for basic cell chemistry. But when we look at future road mapping such as sodium-ion and solid-state [battery technologies], we will obviously first check with Gotion on those technologies. But if we have to, we will dabble on selective startups like we have in the past to ensure that we have a foot in the door with things that have to come next. More than chemistry, we feel secure on anything with real technical innovation such as on manufacturing, where we are seeing very interesting breakthroughs. This is where I think India can take lead where the Chinese [companies] have not been that active. For example, western companies such as Tesla and Rivian, although they are not as competitive as the Chinese [companies] on the battery side, they have been extremely competitive on data as a tool. So, they bring data as a resource out of the vehicle. Tesla collects data on everything, and they have used that data to make their vehicles very efficient in terms of how they consume power. With innovations like that, you can actually get the same driving range despite reducing the battery capacity. There are Indian companies working on such innovations. Our software background has to go up a notch, and I believe India can lead on this front as we have all the requisite skill sets available here. That's one area we would be more interested to take up.

Volkswagen [VW] is an investor in Gotion and they have taken note of Amara Raja's partnership with Gotion to localize LFP batteries in India. Interestingly VW also has an arrangement with Mahindra and Mahindra (M&M) to supply EV components. So, do you see the EV ecosystem coming together to secure local supply of batteries? Please tell us about the ongoing talks with the OEMs.

Volkswagen has also recently invested in Rivian, and as a legacy carmaker they are making some very interesting investments. On the ongoing talks, nothing is really final. But because of Gotion's existing relationships, who they're talking to, the type of solutions they have, it opens new doors for us. We get to sit and chat and explore if there's something we can do to support their localization plans. Actually, all players are talking to each other, and I would love to be the conduit that kind of glues and connects all of them. So, there are discussions happening in that direction but there's a lot more to their decision making.

As a battery company, how do you view the reports of discovery of lithium reserves in India, although we are not sure if the lithium we have found is of relevant quality or can be processed into battery-grade raw material?

I think this is a very optimistic piece of news. But maybe they [relevant authorities] need to fast-track the next steps and processes. I know there are a couple of stages before they could really go for commercial tenders and the global corporations come in and take up those reserves. It is not factored into our plans; I don't think it can play any role in our commercialization plans over the next 3-4 years. But we will keep an eye on these developments.

With an impressive order book, charging equipment and power electronics are a very rapidly growing business for Amara Raja. How do you view this space coming along in the

mid-term?

I am quite proud of the way our charging equipment business is growing but I am also quite disappointed as I have been busy with the battery cell side of things, finalizing the deal, working out the cell factory design and other aspects over the last six months. However, what we have done recently is we have completely reconstituted our teams for our charging and ESS businesses. We now have dedicated, standalone teams for different divisions such as the charging and power equipment. This is helping us focus more on these businesses. Behind the scenes, we are putting together our technical alliances, we are also quickly developing a range of products in this area. Sales in this domain are picking up and they are mainly coming from the portable EV chargers. We have just started mass production of these chargers, and with them, we are going to cater to the electric three-wheeler segment. These will follow EV chargers aimed at the electric two-wheeler market. Price is very competitive, and we are trying to see how to localize the last remaining components of these EV chargers. We are trying to localize the semiconductor and MOSFET [metal-oxide-semiconductor field-effect transistors] parts as well through some of our partners.

In addition, DC fast chargers are also expected to take off very fast. There already are some companies [in India] that have been successful with these. The right technical solutions are now being put together with a lot of input from our collaborations and in-house developments. We are very bullish on the Indian market and India's ability to cater to the global markets.

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