EV market: Can battery lease model give 'power' to the people?

The pros & cons are obvious. Some 'jugaad' engineering may help create a safe EV ecosystem

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The initial, tottering move towards electric mobility in the country has now become a steady positive flow in that direction. Everyday, new developments, reinforcing the potential for growth of the battery electric vehicle (EV) ecosystem, are being announced — be it new investments into setting up the charging infrastructure or new start-ups in the field of battery manufacture or another traditional fossil fuel original equipment manufacturer (OEM) entering the fray with its own EV.

While the economics and regulatory environment surrounding EVs has been improving during the last few months, there is one enabling regulation that has stirred up a lot of interest amongst all the constituents of the EV market. Manufacturers can now sell their EVs without a battery and the consumer can choose to lease or buy the battery from another source. With the cost of the lithium-ion battery being 50-60 per cent of the EV's price tag, it is easy to see why the option of buying one without it may be an attractive proposition.

For the EV maker, this will instantly help match prices with fossil fuel counterparts and for individual buyers, for whom the high price as entry barrier has been the pain point, leasing the battery can potentially make it financially viable despite low daily usage. For the government, which has set seemingly over-ambitious EV penetration targets, and has limited allocations being committed into the EV incentives kitty, this new regulation could help push numbers.

But, in the absence of a fixed battery, the lease model will lead to the creation of a battery-swapping network and that is where a lot of the problems could arise. On paper, the system seems perfect — buyer gets his vehicle without a battery, pays only as much as an ICE (internal combustion engine) vehicle costs. He leases the battery for a small monthly rental. The battery slides into a slot and can be charged at his home or he can simply exchange it for a fully charged unit at a swapping station that only takes a few minutes for the service and charges him only for the electricity.

The infrastructure is scalable and can potentially be useful for fleet operators with a network that has a controlled environment. But, it could be fraught with risks if the issues surrounding reliability and safety aren't addressed before any attempt at promoting mass adoption of EVs. This also cannot be a solution to all types of BEVs.

Safety and scalability issues

Says CV Raman, Head of Engineering, Maruti Suzuki India, "The swapping concept should primarily relate to two- and three-wheelers, where the lower voltage application and the smaller battery capacity can then make it feasible. These are typically 48-volt applications, with a storage capacity of 1.5kW to a maximum of 4kW".

Raman adds that manufacturers also can't offer any performance guarantees, if there is no consistency to the quality of the batteries being swapped. He says Maruti will not be getting into the battery swapping business because typically it will be high-voltage batteries that will be needed for cars. "The battery pack is usually integrated and built into the platform and if it is a high-voltage battery, which also involves an active cooling system, etc., then handling these types of batteries becomes a big safety risk."

The battery swap model has been attempted before in other countries like France and Taiwan, where it hasn't been very successful. Small, simplistic applications on low-speed two-wheelers and the lead-acid battery models of the past may have been easier to handle, but the more powerful e-scooters, e-bikes, e-rickshaws and cars with lithium-ion batteries need much higher levels of protection and safe handling.

Compromising battery integrity is a risk factor even in some of the most sophisticated cars like Teslas, which have inch-thick aluminium housings for the battery pack. And since the pack is often located under the floor of the vehicle, extra protection is essential. Punctures, cuts and electrical shorts can lead to fires. The risks would be that much higher with a removable, swappable battery pack.

Says Dr V Sumantran, Chairman, Celeris Technologies, "If the battery swapping model was to catch on, to serve the high volume of EVs we will need a very large floating inventory of batteries to be available, and if necessary to be repositioned where they will be called upon to use. There is also the risk associated with contact resistance. The battery terminals and the connectors in the vehicle are extremely critical for ensuring integrity, and their wear and tear due to repeatedly connecting and disconnecting the swappable battery pack could be a risk."

"A further challenge, particularly for buses with swappable batteries, would be the infrastructure that would be needed to remove and insert oversized battery packs, each of which could probably weigh as much 80 to 100 kgs. This can't be done manually and will require a fair degree of automation and material handling equipment", adds Sumantran.

All of these point to the additional infrastructure and skills that the people involved in the EV ecosystem will need before a large volume can be handled. And this is not going to be as easy as setting up a charging network. Maruti's Raman says "Skilling up our people both upstream and downstream will be a huge task. And ensuring safety after the car is delivered is another issue, where public services personnel like Fire and Rescue will need to be trained on how to deal with a crashed EV. These are practical issues on the ground that need to be addressed even before we can expect to push for mass adoption of EVs and this discussion needs to be happening now. So, a step-by-step approach growing from mild-hybrid all the way to a BEV is a sensible approach.

New e-rickshaws lined up and ready for inauguration by Chennai Municipal Corporation. Nearly 7,000 of these have been procured and are to be deployed for garbage collection in the various zones of Chennai. They feature rechargeable batteries and will be mostly driven by women. These are the kinds of applications where swappable batteries can be easily used within a controlled environment PICS: S MURALIDHAR

> **The battery swap model has been attempted before in other countries like France and Taiwan, where it hasn't been very successful**

Jumping that curve is not easy and to make it without making any compromises along the way is the biggest challenge."

Mitigating risk factors

Given the high cost-sensitivity in the Indian context and the fact that today's e-scooters and passenger BEVs are almost twice the price of their ICE counterparts, the leased battery model could make business sense in a limited environment. This could also help develop the nascent battery manufacturing industry in the country. Many of these players are start-ups that have been founded by young technocrats who are keen on disrupting the market with their innovations.

One of these is Grinntech Motors, founded by IIT engineering grads and incubated at the IIT-Madras Research Park. The start-up has developed battery platforms for two- and three-wheelers and even for cars, LCVs and tractors.

Says Nikhilesh Mishra, Co-founder and CEO of Grinntech, "our business model includes supplying batteries to OEMs (fixed), but also directly to the end consumer (swappable). So, while we welcome the decision, it is important to accept the challenges and then work on mitigating the risk factors. They can be dealt with by setting clear standards, and of course, there will be a learning phase when some of the problems during operation of swappable batteries will manifest themselves."

Mishra admits that there are a number of safety risks like contact resistance, fires or other such risks if the battery falls or its integrity is in any other way compromised. "There are also other uniquely Indian challenges like vibration tolerance and poor ambient operating conditions," he adds.

But, the leasing model as an economical solution has been around amongst conventional fuel rickshaws and taxis that were run by people who were effectively leasing the vehicle for a daily rental. "Today e-rickshaws are available on rent for a few hundred rupees per day. So, leasing the battery separately for a vehicle you bought without the pack will only be an extension of this model. Daily or annual lease charges may not make it the most economical option, if you talk in terms of ROI (return on investment), for the vehicle owner. But if his budget was limited at the time of purchase, leasing the battery may be the next best choice", points out Mishra.

The battery swap model may be best attempted by fleet operators or public transport corporations which can ensure a controlled, safe environment. But, with dedicated parking space, these are the outfits that can easily ensure overnight charging for their vehicles, making battery swaps unnecessary. On the other hand, individual EV owners who will need to park on the streets and don't have adequate access to charging stations will probably appreciate both the lower price of leasing batteries and a swap-station network. But, the infrastructure needs to be safe and foolproof.

The onus now lies with the Government in creating safety standards that must be implemented and monitored to eliminate the risks.

NEWS

ACG expands research footprint by picking up stake in CRO

OUR BUREAU
Mumbai, November 3

The ₹4,000-crore ACG has picked up "significant" stake in Mumbai-based contract research organisation IQGEN-X, in an effort to expand its research footprint.

The CRO has divested 32 per cent equity, has about 30 people and has filed three patents, ACG Managing Director Karan Singh said in response to queries from *BusinessLine*. ACG is a supplier of integrated pharmaceutical manufacturing solutions and is the country's largest capsules-maker.

IQGEN-X was set-up in 2016 to deliver niche and complex drug development technologies for the pharmaceutical industry. The CRO's revenue is about ₹15 crore.

Though cost of acquisition was not disclosed, ACG's move reflects its intent to get further into aspects of drug development. The funds infused by it would be used to set up "a GMP (good manufacturing practices-aligned) facility and also the development and filing of new ANDAs (Abbreviated new drug applications)," ACG said.

"This is coming up in Navi Mumbai in an industrial area," Singh said, indicating it was an expansion of the existing facility. It would be for the clinical supplies and development batches for new product development and would involve an investment of ₹10-15 crore.

The investment by ACG also comes at a time when the Indian government is said to come out with a policy to globally benchmark its research and development ecosystem by incentivising innovation and science, the note pointed out. Singh sees the partnership help in expanding group capabilities, besides accelerating its innovation strategy of disciplined investment and execution to drive sustainable long-term growth with drug companies in India and overseas. Dr Mandar M Kodgule, Chairman and Chief Executive, IQGEN-X, said ACG's investment would augment their technical expertise and vision to create a robust portfolio of limited competition complex products for regulated markets.

Neuland Laboratories posts ₹21 cr net in Q2

OUR BUREAU
Hyderabad, November 3

Neuland Laboratories has posted a profit of ₹21.3 crore for the quarter ended September 30, 2020, as against ₹8.6 crore for the corresponding quarter, registering a growth of 149 per cent. The company posted revenues of ₹242 crore for the second quarter, up 29.6 per cent from ₹186.8 crore for the corresponding quarter of last fiscal.

The Hyderabad-based pharmaceutical manufacturer provides active pharmaceutical ingredients (APIs), complex intermediates and custom manufacturing solutions (CMS) services to customers located in around 80 countries.