

Electric Vehicles - a step towards sustainability but it's waste?

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Electric Vehicles have garnered massive attention globally in recent years, owing to the sustainable transportation option it offers. It has got automobile industries and media to its attention, marking the progress it has made in the mobility sector. Domestically, EV makes for a debate considering how long will India take to get its own EV charging infrastructure? or the affordability of EVs for common man largely at present depending on fossil fuel driven transportation?

While the innovations brought by EV are exciting, not many have explored the possibility of seeing what's hidden in plain sight. The EV boom has a greater impact on the 135 Cr population of this country which needs to be noted. The article brings to you a few notes that will make you ponder India's preparation for adopting EV. A sincere hope of this short read is to make you ponder on the issues of waste management in times of EV revolution, sparking new thoughts.

To stimulate thoughts, noted below are a few challenges and suggestions that need to be answered before getting on to the bandwagon of switching to Electric Vehicles.

1. Industrial and Hazardous Waste from Refineries

Battery manufacturing of an EV is hindering the environment. Mining of lithium delivers a ton of ozone depleting substances. Greater the storage capacity of the battery, the more CO₂ it takes while underway. Batteries have in them the composition of Lithium and cobalt.

N.B.: More than half of the world's lithium supply comes from the lithium triangle-Chile, Bolivia and Argentina. Presently, these regions are facing diminished water supply to their farmlands and are likewise confronting the issues of harmful material stores.

2. E-waste

India produces 18.5 lakh MT of e-waste every year. While PCs structure a major lump i.e. 70% of absolute electronic waste, media transmission gears compensate for another 12%. Old workstations, PDAs, cameras, TVs, climate control systems and LED Lamps establish the e-waste materials. The Indian E-waste industry is blasting with a CAGR of 30%

The E-waste generated in India can easily be turned into an extraordinary donor of battery creation. With countless metals utilized in batteries, similar to nickel, cobalt, copper and lithium can be acquired from using the existing E-waste reserves.

3. Dumping or Recycling of Li-ion Batteries

Reusing metals is 2-10 times more energy-effective than metals purified from minerals. Lithium is a profoundly flammable material, thus, Li-particle batteries cannot be simply disposed of to a landfill as they are likely to burst into flames when exposed to higher temperatures.

Handling of old batteries is perilous in view of higher odds of blast and flames that may emerge because of storing of spent batteries. Thus, stressing on the need to have more battery reusing plants in our nation to be prepared to handle the mammoth test of utilized EV batteries.

4. Brake Pads (Frequently changed in ICE based vehicles. Whereas in EV it supplies energy)

The Indian Original Equipment Manufacturer (OEM) prescribe one to supplant the vehicle's brake cushions at whatever point one hears a crushing commotion, vibration or appears to be exhausted . This proposal acquires merit in view of the potential results of not having a decent stopping mechanism set up when one needs it the most. In this way, one needs to spend on another brake cushion for present vehicles.

However, there's no unmistakable information on how these brake cushions are unloaded and what befalls them after they arrive at their finish of life. Do they wind up creating more waste and falsehood some place in a landfill or a go-down far away?

On account of Electric Vehicles, regenerative slowing down broadens the lifetime of brake cushions that normally reside inside 10 years. It does so by decreasing the incessant utilization of brake cushions that are generally kept in consistent use in conventional Internal Combustion Engine based vehicles.

N.B.: Regenerative slowing down is utilized to ration energy. Energy is changed from the put away motor energy of the vehicle to electrical energy as opposed to dissipate it as warmth

5. Remote Diagnostics, Predictive Maintenance and online service scheduling

Gathering pre-owned batteries towards the finish of their life cycle is one more issue nearby. What's more, refining the materials inside the batteries is an additional issue to determine at the soonest. The base metals can be refined and recuperated to the battery grade materials so that they can be put to reuse and sold back to the business. Association models should be created among e-waste assortment organizations, reusing plants and organizational drives (Swachh Bharat Abhiyaan) that can assume a significant part on this front in light of their inescapable reach and assortment endeavors. Far off Diagnostics will help in getting continuous information on vehicle related execution and quality information by the utilization of programming introduced in the vehicle. This will help in checking the battery execution and diagnosing the issues at the earliest..

While prescient support will help in cautioning the finish-of-life cycle and help in revealing the information to the proprietors and car makers with the goal that game plans can be made ahead of time. Additionally, it helps in following and checking of within hardware to ensure completion of support even before a glitch is noticed.

The Li-ion battery life for use in EVs is around 5-6 years. Indian EV makers are likewise offering battery guarantees of as long as 8 years/1.6 lakh kms. Yet, according to the states of utilization cases in India and in the event that we additionally take the various landscapes of our country, the battery life may get various cases by the makers as a result of the heap bearing limits.

6. Reusing

A pre-owned Li-ion battery from the EVs can in any case discover its utilization in applications like forklift activities, uninterrupted power supply (UPS), inverter batteries and some minor purposes that go far in saving it from being unloaded.

Nickel, cobalt and copper can be repeatedly reused. The extended development for lithium-particle batteries is fixed to develop from 44.2 Bn dollars in 2020 to 94.4 bn dollars by 2025 for the most part because of interest in electric vehicles. (Source: Marketsandmarkets) This information focuses towards the requirement for bunches of assets.

Since we realize that batteries are a blend of metals and minerals, including nickel, cobalt, lithium, graphite and copper that come from everywhere in the world, a huge deficiency is likewise apparent ahead in view of exhaustion of these assets.

It's fitting to reuse them rather than essentially striking them off from dynamic use.

CONCLUSION

The progressions in the mobility sector are coming at an exceptionally fast speed, giving rise to genuine inquiries on the availability of a nation to battle the issues that will emerge soon. The article shared a 10,000 foot perspective of on-ground experiences that EVamp Team faces while directing examination for EV Charging Infrastructure. It might go to your notice that little advancement may have begun in addressing these issues but in any case, these are the areas that request focal core interest. We can even expect more difficulties coming up when Electric Vehicles acquire a large client base in India.

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