OPEN ACCESS Freely available online

Advances in Automobile Engineering

ISSN: 2167-7670

Short Communication

The Use of Advance Batteries in E-Vehicles

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DESCRIPTION

The limited supply of fossil fuels, strict laws such as CO_2 limitations and a desire for pollution-free mobility have resulted in a wide range of electric drive systems for both road and off-road vehicles. In addition to numerous hybrid propulsion methods, there are battery-electric and even fuel cell-electric concepts. The battery technologies are crucial in meeting the multiple needs of the vehicle ideas exhibited. This chapter serves as a general introduction to the entire variety of electric drives available for various purposes. A battery is a device that uses chemical energy to produce electricity. Battery electricity is used to power electric cars [1]. There are various types of batteries on the market. Lithium-ion batteries, solid-state batteries, nickel-metal hydride batteries, lead-acid batteries, and ultra-capacitors are some of them. The most economical and recommended batteries are Lithium-ion 400+ batteries. Because of their high energy compared to other electrical energy storage methods, lithium-ion batteries are currently used in most electric vehicles. They also have a high power-to-weight ratio, excellent high-temperature performance, and low self-discharge. The majority of lithium-ion battery elements can be recycled [2]. The majority of today's electric vehicles use lithium-ion batteries, albeit the chemistry varies from consumer technology batteries. There is ongoing research and development to lower their relatively expensive cost, increase their usable life, and address safety concerns about overheating. Lithium-ion refers to a variety of chemistries, but it all boils down to a battery with a lithiated metal oxide cathode and a graphite anode that charges and discharges. Nickel Manganese Cobalt (NMC) and Lithium Iron Phosphate (LIP) are two of the most regularly utilised lithium-ion chemistry. From electric vehicles to home batteries to grid-scale applications, lithium-ion batteries are employed in a number of ways. In terms of energy consumption, Na-NiCl2 batteries have proven to be the best option (12.6 kWh/100 km). Other important features are their low cost, longer longevity, and impressive performance under typical conditions in difficult locations. The increased operating temperature of these batteries causes the battery electrolyte to solidify if the vehicle is not used, which is a disadvantage [3]. As a result, an external mechanism is required to keep the battery's operating temperature within functional norms. Li-ion batteries are the most common type of battery used in electric vehicles today. Li-ion batteries are an excellent alternative in this industry because of their moderate energy consumption (14.7 kWh/100 km), continuing cost drop, advanced production technology, enhanced cycle life, low weight, and great energy storage capability. High operating temperatures are a drawback, as they may have negative consequences for their energy performance and longevity [4,5].

CONCLUSION

When batteries perform as expected, they are typically undervalued, but when they do not, they are fiercely condemned. The technologies mentioned above are far from complete. With the advancement of battery technology, electric vehicles will surely become more prevalent. Battery advancements could have a big impact on global energy markets in addition to transforming the transportation industry. The use of batteries in conjunction with renewable energy sources would dramatically reduce the need for oil, gas, and coal, upending many of our current economic and political standards. We don't have to wait for the "ideal battery" to notice measurable performance gains.

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Received: 27-Jul-2022, Manuscript No. AAE-22-17401; **Editor assigned:** 29Jul-2022, PreQC No.AAE-22-17401 (PQ), **Reviewed:** 16-Aug-2022; QC No. AAE-22-17401, **Revised:** 22-Aug-2022, Manuscript No.AAE-22-17401 (R); **Published:** 29-Aug-2022, DOI: 10.35248/2167-7670.22.11.199

Citation: Rokkala A (2022) The Use of Advance Batteries in E-Vehicles. Adv Automob Eng. 11:199.