



Materials Today: Proceedings

Volume 37, Part 2, 2021, Pages 351-353

Design and material characteristics of hybrid electric vehicle

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<https://doi.org/10.1016/j.matpr.2020.05.352> 

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Abstract

The environmental pollution has turn into a serious problem in the country, especially in countries where urbanization lead to crowded atmosphere with stuck traffic in the road. Very big amount of pollutants are emitted from the vehicles day by day. Engineers initiated to monitor various technologies to deal with the pollution issues. The electric vehicles (EV) are enable full consumption of energy and produce almost zero emission. Hybrid power system is conceived to give back for underperformance in the battery. A HEV consists of I.C engine vehicle with battery and electric motor. The benefits of HEVs comprise good fuel economy and less emission. The natural flexibility of HEVs will permit them to be utilized in wide range of applications. A HEV provides increased fuel efficiency and emissions are decreased. HEVs can minimize dependence on fossil fuels. Global automobile giant are research and developing the concept HEVs.

Introduction

The pollution is a severe issue in the country and leads to affect the environment with stuck traffic in the roads [1], [2], [3]. Large amount of CO₂, CO, SO₂, NO_x particulates are released from vehicles day by day and affecting the human being as well animals and plants. Hence Electric vehicles introduced and it produces almost zero emissions and minimizes the pollution [4]. Generally the Electric vehicle is run

by batteries; hence the distance travel is limited. The EV is propelled by electric motor. There are different types of battery are used to store the electricity [5], [6], [7], [8]. The EV battery must be replenished by plug in the vehicle to a power source. Even though the range of an EV, around 80 mile, is regularly limited by weight, design and battery used are well matched for the vehicle [9], [10], [11]. Battery vehicle have an merits over the fuel cell electric vehicle due to they do not need costly membranes made of platinum and other metals for store the energy [12], [13], [14], [15]. EV has been renowned for being high environmental friendly than the conventional I.C engine. Even though the power for the vehicle still has to be generate from the source, centralize power production in large rather than in small engines is shown to minimize pollution and improve fuel efficiency [16], [17], [18]. Electric engines are many times high efficient than the I.C Engine due to they have one moving part and often do not need a transmission and also reclaim kinetic energy when braking throughout a regenerative process [19], [20].

Section snippets

Battery electric vehicle

A battery-electric vehicle is one which run solely on the power provide by the battery that is recharged by being plugged in to the power grid. The driving range of EVs is increasing and advanced battery is developed and commercialized. The EV vehicles are CAN able to travel up to 180 km on a single charge. This range far exceed the usual need for the most fleet vehicles and can simply keep happy for commuting needs of the majority of the consumers....

Vehicle data

Wattage : 351 – 500 w

Voltage : 48 V

Frame : Aluminium Alloy

Foldable : No

Max Speed : 25–50 km/h

Power range : 30–65 km

Range : 40 km (Throttle only), 65 Km (Pedal Assistant)

Speed : 35 km/h...

Energy storage technologies

The battery technology is the major energy storages strategies that being consider to various applications with EVs. The Department of Energy (DOE) has investigate the various technology, namely ultra capacitors and flywheels, but is focus on the battery improvement the most talented for the energy storage. The New Generation of Vehicle high power energy storages needs 70 mpg automobiles are considerably higher demanding than the EV. The power to energy ratio, a key determinant of battery cell...

Conclusion

Though electric vehicle has many merits over I.C engine they are not used as daily vehicles today. This is because they are much costlier to buy and run when compared to the IC engine counter parts. The research and developments done by various automobile giants like DaimlerChrysler, Ford etc provide hope for the induction of HEVs in to the world markets. The future is ready for a radical change in automobiles....

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper....

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2020, Materials Today: Proceedings

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...These bacteria absorb nanoparticle on the cell surface and decrease the amount of bacteria concentration on the bacterial culture plate. Therefore, silver nanoparticle synthesized from the seaweed *Gelidiella acerosa* can be regarded as promising candidates for inhibiting bacterial infections [28–36]. Shown in the table 2....

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...Ref. [15] recommended that AFB (Abrasive Fluidized Bed) technique improved the surface finish in machining flat DMLS AISi10Mg part. Ref. [16–18] studied the temperature distribution in DMLS by means of discrete element model (DEM) on particle-based. The temperature of powder bed is proportionate to laser power, did not effected with small laser hatch spacing and laser scan speed....

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