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Electric Hybrid Cars: A Review and Advantages

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Abstract:- In suffocating atmosphere of our living world electric hybrid vehicles are showing ray of hope. Electricity has proven to be clean and efficient means of delivering energy.While an electric car's power source is not explicitly an on-board battery, electric cars with motors powered by other energy sources are generally referred to by a different name: an electric car carrying solar panels to power it is a solar car, and an electric car powered by a gasoline generator is a form of hybrid car. Thus, an electric car that derives its power from an on-board battery pack is a form of battery electric vehicle (BEV). Most often, the term "electric car" is used to refer to battery electric vehicles. In this paper we have used electric energy harnessed from various sources to gain run time energy from moving vehicle.

Keywords: *Electricity, on board battery, battery electric vehacile used.*

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I. INTRODUCTION:

The electric car is a relatively new concept world of the automobile industry. However few companies have their entire model of cars around based on being proactive and electricity, some also offer better hybrid vehicles those work off both electricity and gas.

These vehicles produce no pollution from their tailpipes because they don't have tailpipes—or an engine, for that matter. Instead they use electric motors and power themselves from electricity stored in onboard batteries, which means they use only about one-third the energy of gas-powered vehicles. An electric car such as

- Nissan Leaf,
- Ford Focus Electric
- BMW i3
- Mercedes-Benz B-Class Electric Drive
- Smart ED
- Mitsubishi i-MiEV
- Tesla Model S,
- Chevrolet Volt

These cars (BEV)s powered by renewable energy sources like wind or solar are virtually emission-free. Not using gasoline or diesel also means that battery electric cars are significantly cheaper to fuel than conventional vehicles. Exact comparisons depend on the vehicle model and fuel prices, but driving a These cars (BEV) can save drivers over $1,000 annually in gasoline money.

Fig.1. Central and distributed generation

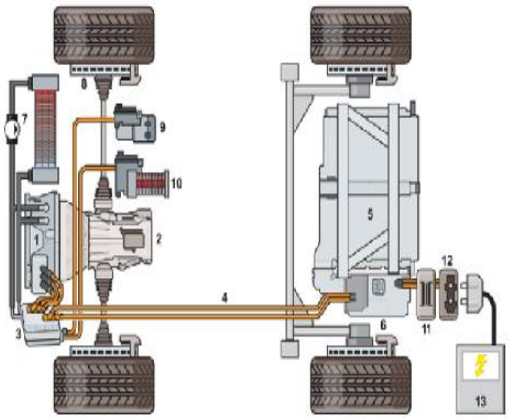
Although some electric vehicles really have small motors, 15 kW or less and therefore have modest acceleration, many electric cars have large motors and brisk acceleration. In addition, the relatively constant torque of an electric motor, even at very low speeds tends to increase the acceleration performance of an electric vehicle relative to that of the same rated motor power internal combustion engine.

Electric vehicles can also use a direct motor-to-wheel configuration which increases the amount of available power. Having multiple motors connected directly to the wheels allows for each of the wheels to be used for both propulsion and as braking systems, thereby increasing traction. When not fitted with an axle, differential, or transmission, electric vehicles have less drive train rotational inertia.

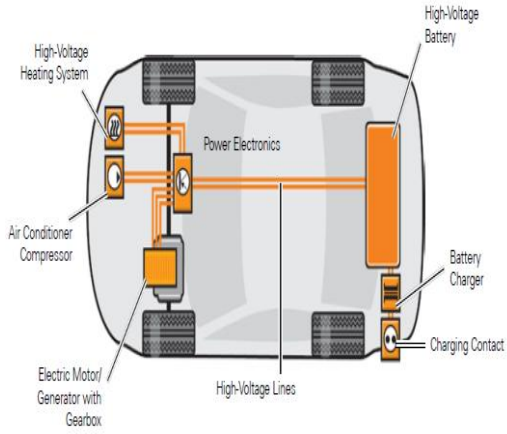
Are great options to not only save money, but also help contribute towards a healthy environment? Cars producing lot of carbon emissions ejected into our natural atmosphere, leaving us vulnerable to things like pollution and greenhouse gases. In order to help positively the environment we live in, an electric car is a great step forward.

By buying an electric car, you can also receive government subsidies for being environmentally conscious. Although you may end up paying more for your vehicle, the positives greatly overshadow the negatives. However there are still two sides to consider when you're thinking about investing in an electric vehicle.

EV's get their power from rechargeable batteries installed inside the car. These batteries are not only used to power the car but also used for the functioning of lights and wipers. Electric cars have more batteries than normal gasoline car. It's the same kind of batteries that are commonly used when starting up a gasoline engine. The only difference comes in the fact that in electric vehicles, they have more of them which are used to power the engine.



1 Electric motor/generator, 2 Transmission with differential
3 Power electronics 4 High-voltage lines
5 High-voltage battery 6 Electronics box with control unit for battery regulation
7 Cooling system 8 Brake system
9 High-voltage air conditioner compressor
10 High-voltage heating11 Battery charger
12 Charging contact for external charging



II. COMPONRNTS OF ELECTRIC VEHICILE

The electric vehicle drive system includes:

- High-voltage battery with control unit for battery regulation and charger
- Electric motor/generator with electronic control (power electronics) and cooling system
- Transmission including the differential
- Brake system
- High-voltage air conditioning for vehicle interior climate control

III. ENERGY EFFICIENCY

The efficiency indicates how much of the energy that is invested into charging can be made useful again when the battery is discharged. A battery can never. Internal combustion engines are relatively inefficient at converting on-board fuel energy to propulsion as most of the energy is wasted as heat. On the other hand, electric motors are more efficient in converting stored energy into driving a vehicle, and electric drive vehicles do not consume energy while at rest or coasting, and some of the energy lost when braking is captured and reused through regenerative braking, which captures as much as one fifth of the energy normally lost during braking Typically, conventional gasoline engines effectively use only 15% of the fuel energy content to move the vehicle or to power accessories, and diesel engines can reach on-board efficiencies of 20%, while electric drive vehicles have on-board efficiency of around 80%.

IV. ENERGY DENSITY

This figure indicates the performance of a battery related to its weight. The higher the energy density, the more energy can be stored and then released again. The unit of energy density is watt hours per kilogram [Wh/kg] and is calculated from the electrical work [Wh] and the weight [kg] of the battery. The range of an electric vehicle can be determined from the energy density.

V. LIFE

The cycle stability of a high-voltage battery is set at a total of 3,000 cycles over a period of 10 years. On the basis of this property, so-called “automotive batteries”, i.e. batteries for use in a high-voltage vehicle, cannot be compared with the “consumer batteries” used in laptops or mobile telephones.

VI. ADVANTAGES

An electric car is really a great way for you, as a consumer, you can save a lot of money on gas. However, there are so many different reasons why you should invest in an electric car in the modern day of technology.

1. Cost Effective: Earlier, owing an electric car would cost a bomb. But with more technological advancements, both cost and maintenance have gone down. The mass production of batteries and available tax incentives have further brought down the cost, thus, making it much more cost effective.

2. No Emissions: Electric cars are 100 percent eco-friendly as they run on electrically powered engines. It does not emit toxic gases or smoke in the environment as it runs on clean energy source. They are even better than hybrid cars as hybrids running on gas produce emissions. You’ll be contributing to a healthy and green climate.

3. Reduced Noise Pollution: Electric cars put curb on noise pollution as they are much quieter. Electric motors are capable of providing smooth drive with higher acceleration over longer distances. Many owners of electric cars have reported positive savings of up to 100 of thousands of rupees a year. Considering the demand for oil will only be going up as the supplies run out, an electric car will most likely be the normal mode of transportation in the coming future. Companies like Nissan and Tesla offer great electric models with an outstanding amount of benefits for people who decide to invest. You’ll be saving not only yourself, but also your family a huge amount of money. The environmental impact of an electric car is zero, as well – meaning you’re reducing your carbon footprint and positively affecting the economy.

4. Popularity: EV’s are growing in popularity. With popularity comes all new types of cars being put on the market that are each unique, providing you with a wealth of choices moving forward.

5. Safe to Drive: Electric cars undergo same fitness and testing procedures test as other fuel powered cars. In case an accident occurs, one can expect airbags to open up and electricity supply to cut from battery. This can prevent you and other passengers in the car from serious injuries.

6. No Gas Required: Electric cars are entirely charged by the electricity you provide, meaning you don't need to buy any gas ever again. Driving fuel based cars can burn a hole in your pocket as prices of fuel have gone all time high. With electric cars, this cost can be avoided as an expenditure 120000 – 240000 on fuel each year. although electricity isn't free, an electric car is far cheaper to run.

7. Low Maintenance: Electric cars runs on electrically powered engines and hence there is no need to lubrication. Other expensive engine work is a thing of past. Therefore, the maintenance cost of these cars has come down. You don't need to send it to service station often as you do a normal car.

8. Savings: These cars can be fuelled for very cheap prices, and many new cars will offer great incentives for you to get money back from the government for going green. Electric cars can also be a great way to save money in your own life. Plus Tax benefits.

VII. CONCLUSION

In this paper attention has been drawn towards the optional future energy. The electric vehicles are more cost efficient and environment friendly. Electric energy is the best of what's currently available among affordable energy. It's also a handy, useful, and practical package that hasn't made sacrifices in its transition from gas to electric power, and the price is reasonable if you qualify for the full tax credit. Hence, If price is no concern for you, get it as it is the best of what you'll find out among the rest of specifications.

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