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E-Vehicle

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Abstract: Nowadays, fuel economy and pollutant emissions are keenly felt topics and hybrid electric vehicles (EVs) represent the best opportunity to respond to this problem in the short term. Hybrid electric vehicles meet the high-efficiency of electric motors, with the high reliability of the internal combustion engines, granting optimal results both in terms of emissions and fuel economy. The vehicle and path features highly affect the architecture choice. A parallel architecture, having a more flexible layout and providing a higher drive power, is more suitable for long paths and higher speeds, while the series one better adapts to urban cycles, as can be switched to a pure electric mode. At the same time ,a parallel series architecture is in general a good choice.

Keywords: Electric Vehicle, Hybrid electric Vehicle

I. INTRODUCTION

The most common public transport in world is non-motorized. Stepping out and walking a few steps on road, vehicles could be seen with their pollution. Since most of the road trips are short with average distance of 3.8km, public or private transport are preferred travel mode by women, children and the older people due to their safety, security and comfort perspective. Vehicles are seen all over the country - in the capital, big cities, towns, rural areas and even in the hilly areas. to overcome the fuel crises we have made an electric vehicle which is a solar based, we have made it from scrap products from our college surrounding which is cheap in cost reliable and low cast in maintenance.

II. LITERATURE SURVEY

Paul Wolfram and NicLutsey studied that European new vehicle CO2 regulation (with a mandatory target value of 95 grams of CO2 per kilometer by 2021 for passengercars) is currently in the process of being extended to 2025. In this context, one of the key questions is at what point a significant uptake of the electric vehicle market is to be expected. In order to help in form this debate about how electric vehicle technology could fit in a lower-carbon 2020–2030 new vehicle fleet in Europe, this paper focuses on collecting, analyzing, and aggregating the available research literature on the underlying technology costs and carbon emissions. In terms of technologies, this paper concentrates on the three electric propulsion systems: battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs),and hydrogen fuel cell electric vehicles (HFCEVs). The collected cost data is used to estimate the technology cost for automotive lithium-ion (Li-ion) batteries and fuel cells. The cost of battery packs for BEVs declined to an estimated €250 per kWh for industry leaders in 2015. Further cost reductions down to as low as €130–€180 per kWh are anticipated in the 2020–25 time frame. The costs of fuel cell systems are also expected to decrease considerably, but cost estimates are highly uncertain. Furthermore, the application of fuel cells and batteries in HFCEVs, BEVs, and PHEVs is approximated using a bottom-up cost approach. Overall, the different power train costs largely depend on battery and fuel cell costs. This paper concludes that the costs of all power trains will decrease significantly between 2015 and 2030 (Figure S 1). As shown, power trains for PHEVs will achieve about a 50% cost reduction, compared with approximate cost reductions of 60% for BEVs and 70% for HFCEVs. Costs for hydrogen and electricity chargers are estimated separately.

The vehicles emitting organic compounds, Pd, nitrogen oxide and carbon monoxide have done significant pollution of air. World population is growing by an extremely high rate so that the vehicle usage is also rising with the rise of the population. Fossil fuel is the main energy resource of these vehicles. In 21th century oil production reached a peak. Estimates indicate that petroleum and natural gas will be run out by the year 2042 (Shafiee and Topal, 2009). After inventing the lead acid batteries and the electric motors in late 1800s, the first electric vehicles were invented. In the early 1900s, electric vehicles were very popular and that time is called the golden period of electric vehicles. After the arriving of gasoline powered vehicles almost every electric vehicle was disappeared due to limitation of range, long charging time, heavy weight and poor durability of batteries (Young, Wang, and Wang, 2013) (Kulkarni, Kapoor, and Arora, 2015). Because of gas emission laws and air pollution automobile manufactures were forced to manufacture low carbon emission vehicles so the electric vehicle manufacturing is increasing today (Sagar, 1995) (Kulkarni, Kapoor, and Arora, 2015). Electric vehicles present an excellent alternative to the current fossil fuel powered vehicles due to several reasons. Low noise and zero emission are some main reasons why people buy electric car now days. Electric vehicles are perfectly suitable for urban environment thus they are very compact, not as wasteful as internal combustion engines in traffic and the limited range is not a matter in the urban environment (Sagar, 1995). Internal operation of electric vehicles is similar to the internal combustion vehicles. Like in combustion vehicles, electric vehicles have an electric motor, an ECM, a battery, battery management system with regenerative braking system a

charger and a cooling and heating system. There are two types of motors used in electric vehicles AC motors, and DC motors. DC motors are easily control when comparing with AC motors and also less expensive than AC motors. However, DC motors are larger and heavier than the AC motors. Hence the electric motors have high torque acceleration of an electric vehicle is quicker than the internal combustion engine. That property can use to build fast electric racing cars because in races instant torque is much help full. Electric vehicle also has a feature called regenerative breaking and by using that feature the vehicle can generate electricity by own kinetic energy that can be stored in super capacitors. Electric vehicles sales are increasing rapidly when we compare the sales data for previous years. That shows that the demand for electric vehicles is higher now days. With the rise of the demand, much more research must be done to develop the EV technology.

Recently, Malaysia is owned their first homemade pure electric car, officiallyknown as Proton Saga EV Green Propulsion concept. The whole concept behind thisis to produce a fully functioning electrical vehicle with zero emission incorporateswith key technology such as battery management system. In order to achieve to this,proton place more attention on the heart of the vehicle (Lithium Balance). ThisLithium Balance battery is placed together with plug in and play concept, with builtin management electronic (SandeepDhameja,2002).The whole idea behind this concept is basically to develop a system that doesbattery monitoring, in which it keeps track on the operational parameters chargingand discharging. This may also include voltage, currents, battery internal andambient temperature (temperature surrounding the vehicle). The controller in thiscase, must be smart enough to provide proper protection to the system by providingan appropriate indication to sound an alarm or electronically disconnect the batteryfrom the load if any of the parameters exceeds its limit.There are mainly three objectives of having a BMS (Battery ManagementSystem) inside an EV which are protecting Lithium Battery from any damagetypically by protecting the cells, prolong the lifespan of that battery and to maintainthe battery states in which allowed the system to run specific functions andapplications specifically attached to it.The primary application of this BMS is to provide necessary monitoring andcontrol, avoiding the cells from damage due to over rating temperature condition.This is essential as the vehicle may be working under harsh condition or evendifferences in climate (Tropical Climates, Subtropical Climates, MediterraneanClimates, Temperature climates, Arctic temperature and Desert Climates) within aparticular continent which affect the overall ambient temperature. Hence, individual cell in the automotive must be protected by isolating the battery detect the cause ofthe fault when an external fault takes place. To illustrate this, disconnect the batterysource when the heat generated within a system is severe. However, for non-severecases, we may turn on an additional fan attached in front of the battery.

III. CONCLUSION

The whole concept and purpose of building solar battery charging station is mentioned inthis chapter. From the data obtained, we can conclude that within 6 to 8 hours, four 12V 42Ah batteries gets fully charged provided that the average panel supply current is around3A. A significant amount of energy will be saved with the commercialization of such type ofcharging station in future and thus save energy from the national grid. We should make some innovative so which helps to increase the uses of renewable energy sources by considering this point we decide to make E-VEHICLE which helps to more solar

REFERENCES

[1] Ashish Saini and Abhishek Nahar .Solar Panel Cleaning System. ijir.2017; 3(5):1222-1226.

[2] M. Mani, R. Pillai, "Impact of dust on solar photovoltaic (PV) performance: Research status challenges and recommendations", Renew. Sustain. Energy Rev., vol. 14, no. 9, pp. 3124-3131, 2010. https://ieeexplore.ieee.org

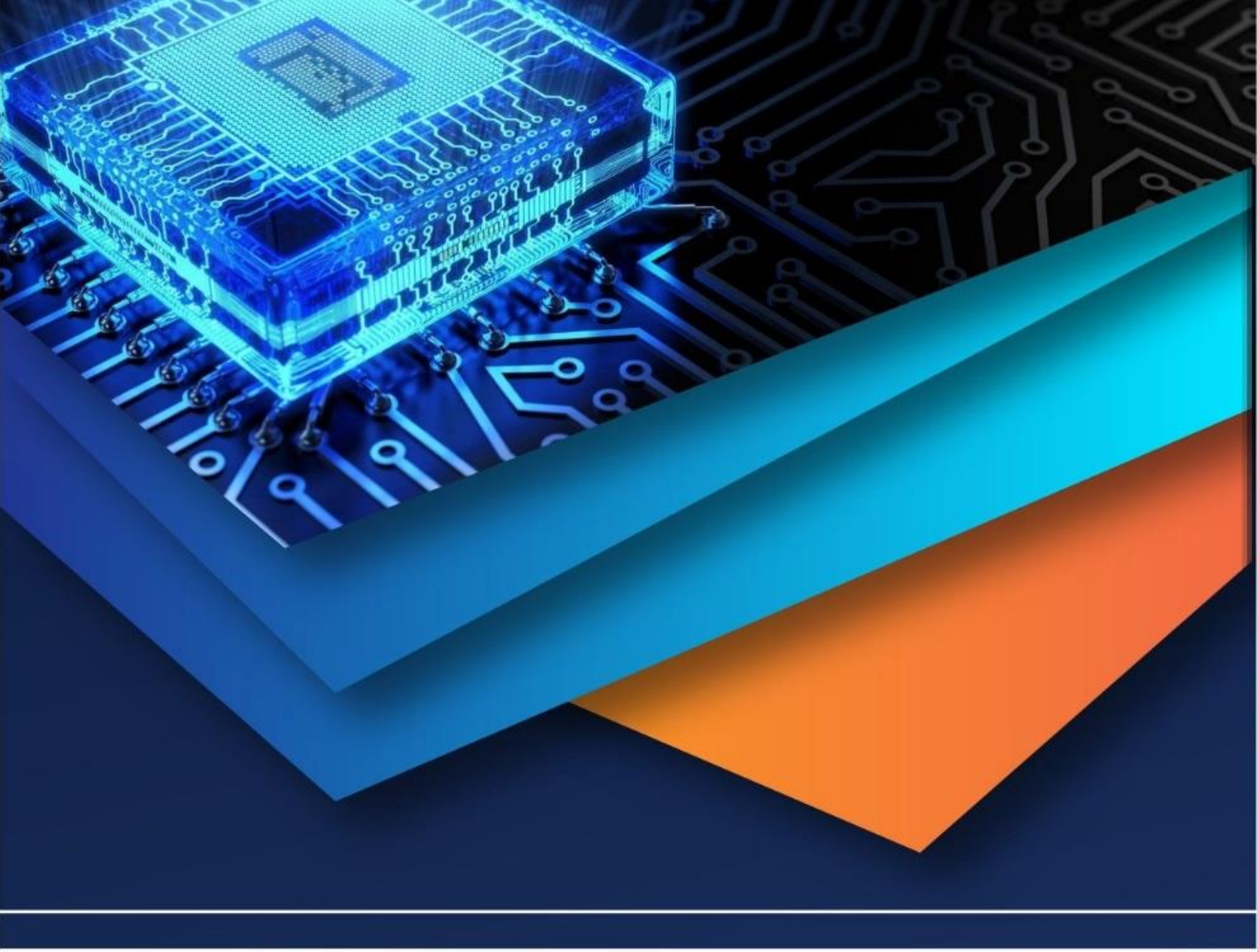
[3] "The Hidden Dirt On Solar Panels." The Hidden Dirt On Solar Panels. HELIOTEX, n.d. Web. Dec. 2012. https://www.solarpanelcleaningsystems.com/protecting-your-investment.html

[4] "How to Clean Solar Panels." WINSOL Laboratories. N.p., n.d. Web. Dec. 2012.

[5] satishpatil, mallaradhya h m.design and implementation of microcontroller based automatic dust cleaning system for solar panel.ijerat.2016; 2(1):187-190.

[6] S. B. Halbhavi. Microcontroller Based Automatic Cleaning of Solar Panel.IJLTET.2015; `5(4):99-105.

[7] Dr.G.Prasanthi ME, Ph.D., T.Jayamadhuri. Effects Of Dust On The Performance Of Solar Panel And Improving The Performance By Using Arm Controller And Gear Motor Based Cleaning Method.IJISET.2015;2(9):329-334.



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