



Smart Hybrid Charging Station for Super-capacitor Based Electric Vehicles

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ABSTRACT

This project describes a smart hybrid charging station (SHCS) using Main supply and wind-Piezo generator system for uninterrupted charging for Electric vehicles. smart hybrid charging station to generate power to charge battery packs for electric vehicles (EVs). The renewable charging station consists of a wind generator and Piezo generator along with main power supply unit, this sources makes more impact in Electric vehicles charging industries. This project discusses the use of a Hybrid charging system in the design of supercapacitor based electric vehicles charging station. Also the algorithm is proposed and used to extract effective charging. This can reduce the need to pull power supply lines and we can control the need for load at very high times.

Introduction

Every year electric vehicles become more affordable which leads investors to start investing in charging stations due to the growing demand for them. At present, power grids are more dependent on fossil fuels than on renewable energy.

Although EVs are powered by electricity, they will also contribute to harmful emissions as power generation at the charging stations should also be considered which will be an additional production from mineral oil.

Therefore, in order to minimize the impact of harmful emissions, renewable energy, especially Wind-Piezo generator powered charging stations, can be built.

app aims to bring together brilliant ideas with enthusiastic developers to create a dynamic, ever-evolving platform.

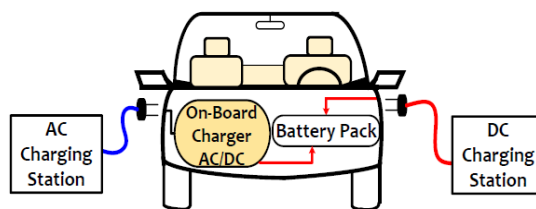
This project provides the best DC connector solution for Main-wind-Piezo power system. On other hand Super capacitor based Electric Vehicles will charges through such charging station. Making more impact in Electric vehicles industries .

Super-capacitor based Electric vehicles can stored large amount energy in it, this will used to drive more distance as compared to Normal Electric Vehicles.

In this Arduino 328p microcontroller unit is used to periodically check the status of power stored in Hybrid power charging station. A constant voltage can be maintained in all sources for any nitruption in charging EV. System for charging station is smart , as it is equipped with sensor technology. Once any Electric Vehicles enter into station for charging as per time record charging payment will shown on LCD display.

The main idea of this project is to prevent the loss of power factor due to charging stations at very high hours.

Methodology



Fast charging as an in-house EV board is hampered by the cost of the electronic components required for power conversion, which increases the total cost of EV. However, in-board chargers cannot provide fast EV charging due to the high cost of EV-related electronics and the need to increase the charger capacity of the car.

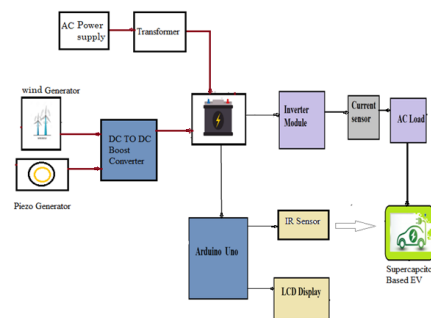
- To ensure faster EV charging, off-board chargers that provide high DC power are used. It is noteworthy that, for off-board chargers, all AC / DC power conversion is done with an independent inverter.
- Therefore, it is important to increase the power of the converters to ensure faster car charging. The findings of several published studies

have been used on EV charging stations to design and develop efficient and reliable EV charging systems.

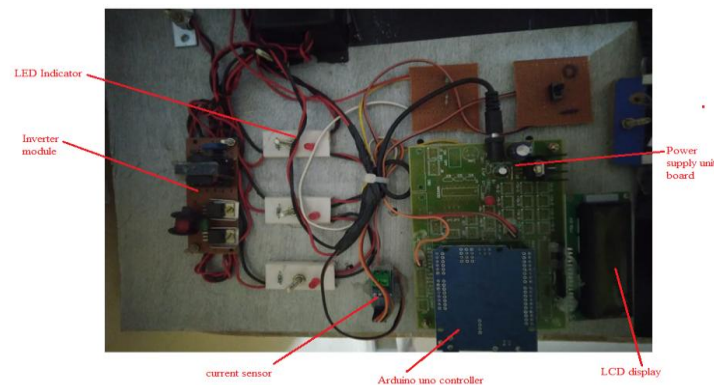
ADVANTAGES OF APPLICATION

- The system shall be designed for large current ratings in Ampere.
- Microcontrollers are implemented which are intelligent chips. Hence the system can be modified as per the need of application.
- Use of microcontroller ensures reliability of the system.
- The system is user friendly hence can be easily operated by users.
- System will be compact and handy

Working



- The project gives a clear view of Main supply-wind-piezo power hybrid charging system. And it is an easier technique to replace the battery with continuous power supply to charging station, incase of any repair.
- This work is done considering the charging stations that are going to come in near future. The performance of the proposed centralized energy management strategy together with interleaves conversion stages is studied and validated with different real-time scenarios.
- .Arduino 328p controller is used to operate all the power charging function. LCD Display shows the real time power monitoring system.
- Used of main power supply with transformer will stored the DC energy into battery. Also from wind and Piezo generator along with DC boost Converter is used to stored the energy into battery.
- At last Inverter module is used to convert DC to AC for direct charging Electric vehicles.
- We used IR based sensing system to sense any Electric Vehicle , as per time required to charged the Electric Vehicle , Payments will be charged and that shows on LCD Display.
- Prototype form of super-capacitor based Electric vesicle is used for charging in this smart hybrid power station.
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CONCLUSION

In this paper, we have merge two concept electric vehicle charging station electric vehicle vehicle based on li-on batteries, but Super-capacitor is more efficient from it. In our project we are showing peizo and wind. but the word smart indicates the how many time the vehicle charges on station the charges will automatically debited. we can make smart hybrid system using the wind and peizo along with the it can use in Super-capacitor based electric vehicle we have making the proposed model

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