SMART BATTERY CHARGING FOR EV

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***Abstract*—Transportation through electrical battery-powered vehicles can facilitate a decrease in fuel expenses and cut greenhouse gas emissions. Electric transportation requires a large kind of charging network to be established during an eco-friendly atmosphere. In this paper it is proposed to design a system to create and handle Electric Vehicles (EV) charging procedures, based on intelligent processes. Electric Vehicles charging should be performed in a balanced way, considering past experience, weather information based on data mining, and simulation approaches. The present project work includes possible solutions for Energy Storage Systems (ESSs), that are important for the integration of EVs fast charging stations of the last generation in smart grids.**

***Keywords*- Electric Vehicle, Energy Storage System, Smart Grid.**

I.INTRODUCTION:

Electric vehicles are getting veritably popular in recent times. Governments around the world are encouraging the transition from combustion machine vehicles to EVs with colorful enterprise. The redundant demand for energy faced by the electricity grid to charge EVs is a challenge that needs to be addressed. Smart charging provides the result to this demand. Interest in electric vehicles (EVs) has lately grown due to calls for terrain-friendly transportation. Electric motorcars or draw- in EV motorcars, which produce zero tailpipe emigrations, offer significant eventuality in perfecting sustainability and environmentally safe civic areas. These motorcars bear a large battery for a long service time. Unfortunately, the huge capacity of the batteries of current EV motorcars prevents them from getting accepted as a mainstream mass conveyance result. The current problems of draw- in EV motorcars are the long functional inactiveness during the battery charging time, the high cost of the battery, and the huge weight of the battery. Dynamic wireless charging (DWC) systems have surfaced as a cover to address the challenges caused by the current battery technology. Still, inductive charging requires that the secondary receiver coil has to be deposited above the primary transmitter coil in order to achieve a high- power transfer and effectiveness. A good option to start is by comparing the smart charging with the normal charging electric vehicles. To charge an EV using a normal charging system, you can simply plug your vehicle into a charge point that connects directly to the main electricity grid. The vehicle would charge at maximum power until the point at which the EV battery gets to 100 SOC. At this point, the charging process will automatically stop. In discrepancy, smart charging is an automatically well controlled and coordinated way of charging an EV. A Central computer system takes care of the charging, which eliminates the less effective approach of using maximum power until the battery is full. The smart charging system applies an effective decision-making process that automatically adjusts the power affair from the charging station. The smart system can, at any applicable time, increase power, drop power, or delay the charging process.

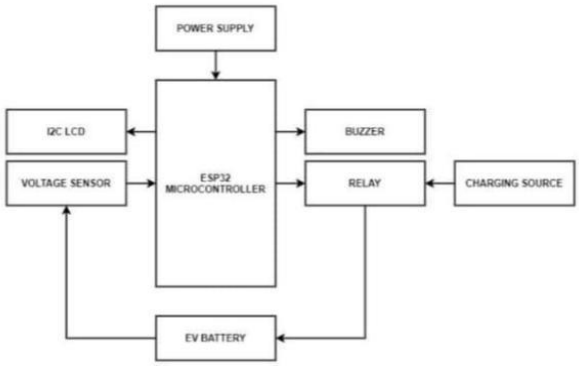

Fig: System Architecture

II.LITERATURE SURVEY:

Energy vehicles represent the largest proportion of the transportation sector. Due to increase in prices of energy and environmental consideration, development of the electric vehicle is an important measure to reduce greenhouse gas emigrations and reduce dependence on fossil energies. With the advance of EV technology, especially the development of battery technology, and the strong policy support in some countries, EVs have developed fleetly over the past decade. Lately, the development of electric vehicles (EVs) has made benefits to easing the global energy extremity and reducing CO2 emissions.However, it also introduces the EVs charging issue. With the rising number of electric vehicles, the demand for client friendly and innovative results for the charging structure is growing steadily. Robotization plays a decreasingly important part in the global frugality and in diurnal experience.So, this also serves the design and perpetration of an intelligent auto parking system at the charging station.

Wireless charging for vehicles reduces the space constraints and staying time of consumers to recharge.Factors affecting the wireless charging are following, how numerous motorists are going to use the charging in stir services, in which locales, and at what time frame; what position of power demand thegrid is awaiting in locales, an optimal operation plan for electric power distribution to respond demand. It increases the range of traveling of electric vehicles, because power consumption of EVsislower than Energy powered vehicles. But Rate of speed of vehicles affects the charging rate. Complex Traffic operation system needed to control when the number of vehicles increases. InOptimalDeployment of Charging Stations for this system uses a inheritable programming approach andfindsavirtually- optimal charging station deployment which confluence is veritably much dependent on original result. Rate of speed of vehicles affects the charging rate.

III.METHODOLOGY

1.The system uses ESP32 as the microcontroller. 2. ESP32 proves beneficial as it has Wi-Fi inbuilt in it which makes it suitable for IoT Applications. 3. Users can either charge or replace the battery. 4. In the case of replacement, if the user collects a battery with x percent charge and leaves his battery having y percent charge, the user will be charged an amount for x-y percent through the app. 5. If the user chooses to charge the battery which is initially at x percent and the user disconnects it a percent, the user will be charged an amount for x-y percent through the app. 6. Voltage sensors are used in order to find out battery status after which amount for replacement of charging is calculated. 7. ThingSpeak is used for cloud storage while an Android App is developed for monitoring transactions which also provides insights such as battery performance.

IV.SIMULATION RESULT

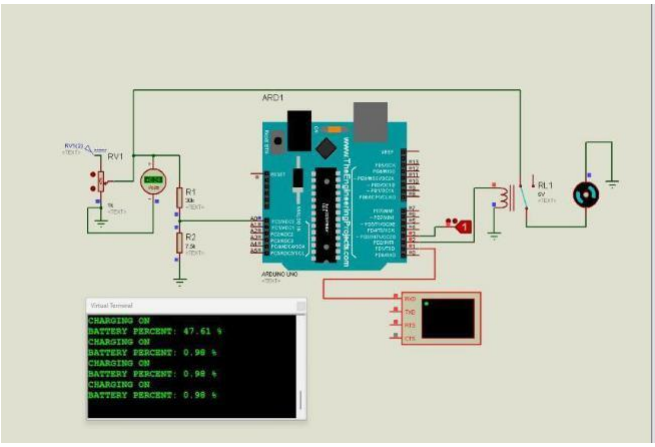

Fig: Simulation Results

V. CONCLUSION

The system proposed in this paper provides benefits in several aspects to the customer and is also beneficial to the environment. Since electric vehicles eradicate use of non-renewable energy resources hence it reduces the issues of pollution due to vehicles to a great extent. The cost for fuel is increasing day by day which makes it expensive and unaffordable. Use of EVs reduces the cost remarkably. Proper analysis provided through apps increases the chances of a large number of users to adopt the use of EVs instead of fuel-based vehicles. An Android App along with a smart charging station is proposed which displays the current status of the battery along with transactions for charging or replacing a battery. It also shows the efficient performance of the battery. Hence the system provides a unique solution due to which it has wide scope in today's time. The system not only provides a unique solution but also provides ease of access along with proper framework.Monetization of the system is also done due to which the system has a great market potential.

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