

SURVEY ON ELECTRIC VEHICAL CHARGING STATION

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ABSTRACT

In today's era, EV vehicles are being seen more and more. This is the coming future that most of the vehicles are going to remain electric vehicles. According to this we will get to see mostly EV charging stations. The electric car driver will mostly take the car to the charging station itself for charging. So we are making an app for EV rider which will help to find EV charging station and book charging slot. This app will show all the stations around the rider. Rider can easily access any station information. Like whether there is a slot available at the charging station or not, the rider will know on the app. And rider can book charging slot from this app, they can book charging slot at particular time or any date. And the rider can pay the payment through this. With the help of this app, the rider can save his time and get the right information and stay updated User can use this app easily and improve your journey.

Keywords: Charging Station, Electric Vehicles, Power Dispatch, Charging, Distributed Energy Management, Game Theory, Multiple PV-Based Charging Stations, And Consensus Network.

I. INTRODUCTION

The electrically-powered machines manufactory is uplifting fast nowadays. Numerous persons scanning for EV charging station finder and slot booking app evolution to encapsulate a broad user base. This app helps users to uncover closer EV supply equipment. Also the users can perform slot bookings previously. The factors of the system permit electric automobiles users to detect and uncover the electric power supply equipment near them and reward respective sum for charging by reserving the intervals. Some EV holders have insufficient space or don't have latent to charge the EVs from home. Even while user is charging the EV at home one can get discharged in between the journey. Therefore the user needs reviving support. Hence using EV charging stations at the condition of emergency is convenient. Eventually the driver does not have to alter their trip to return home. The entry of EVs is the more important enterprise on a way of going eco-friendly and assembling our surroundings cleaner. Among the transformation in an automobile manufacturing the EV's market has skilled up great progress over past years. By establishing an application it gets effortless for EV users to discover the nearest EV charging stations. It is an EV charging station finder and slot booking app which displays closer charging stations in area where the user is present. Over this application users get approach to the instantaneous availability, images, grading & illustrations of the charging points.

II. RELATED LITERATURE

A renewable energy-powered charging station combines electric vehicles and renewable energy sources, and it has a great deal of potential to be an important charging infrastructure. As the When the number of electric vehicles rises, the issue of charging become important and urgent. Such gratifying charging Demand for charging stations at the same time is anticipated. That is a charging station that is combined with paper grid-tied system power, battery storage, and solar systems a technique for dispatching electric vehicles in an electric vehicle charging station, and this approach is predicated on the unwilling The charging power is dynamically adjusted in the game. The Outstanding benefit is that this strategy allows for charging simultaneous service for all electric vehicles, particularly in the circumstance where there is a shortage of charging power.

When compared to the prevalent constant charging system, based on the simulation results, the suggested charging technique can increase the rate at which services are charged and the use of the charging pole within the charging station.

This research proposes and analyses a hierarchical distributed energy management for multiple photovoltaic (PV) based electric vehicle (EV) charging stations (PV-CSs). PV-CSs are modeled at the station level as autonomous players with the goal of stabilizing the average available capacity (AAC) of the storage battery tank. EV owners are depicted as players with the goal of maximising their charging power in the EV level. The power distribution issue is then modelled at the station and EV levels using a two-level power distribution game. A distributed cooperative and generalised Stackelberg equilibrium is obtained at the station and EV levels by using a consensus network-based learning technique. In order to confirm the results of one case study, the two station case, The proposed technique will perform more efficiently and effectively with a hierarchical distributed energy management. The simulation findings demonstrate that the suggested energy management performs superbly in both scenarios and when compared to stations without management. In this research, we investigate how a solar power plant's electricity production affects the load curve, sometimes referred to as the duck curve, and we propose an alternative: charging electric vehicles at multi-level IOT-integrated charging stations. By generating alternate loading on the powergrid, an effort is made to innovate the load curve by neutralising the dip and abrupt rise in the duck curve. By enhancing charging technologies with the use of an IOT interface and offering incentives to consumers to use EVCS at work, it also helps the promotion of EV usage. In order to promote green mobility, it also discusses the notion of switching from a fossil fuel-based revenue structure to one that is centralised and taxes EV charging.

III. OBJECTIVES OF THE STUDY

The goal of EV charging station finder & slot booking app is to minimize difficulties coming to the EV riders in phase of reviving their electrically-powered automobiles. The user can see which recharging points obtainable. The users can easily get the charging stations. The main goal of evolving this kind of application is to provide as many as possible services to electric vehicle users on spot. Once the goal of growing the app for searching EV charging stations and slot booking is achieved user will able to get the services at their location. In the system user have control on all their EVs present in app. As well they have previously book a slot facility.

IV. METHODOLOGY

Non-contact charging utilizes magnetic resonance to transfer energy in the air between the charger and battery. This achieves a highly efficient energy transformation.^[7] As the non-contact charger could keep charging the vehicle, it allows EVs to have a smaller battery. By itself, it is more economical, safer and more sustainably developed. Since the battery is the major contributor to the cost of an EV, the MSRP of an EV is lowered as a result of the use of non-contact charging. However, developing a non-contact charging system involves huge financial support. For example, to realize real-time charging on the road, it requires installation of receiver coil under the car and reconstruct the road and put transmitter coil under the power supply track. In this way, it allows car to be automatically charged while operating on the road.^[8] Due to this, many EV manufacturers are using traditional charging methods to keep costs low. Since non-contact charging systems rely on the electromagnetic field as their mechanism of action, electronic devices in close proximity to the charger may be negatively affected during charging. There is also the possibility that animals may be influenced. Efficiency is another concern for researchers.

V. ADVANTAGES AND DISADVANTAGES

Advantages of EV Chargers

- One of the best advantages of using the EV is it saves the environment to be polluted from the fossil fuels. With the increase in the population and their desires which is causing global warming can be reduced with the EV.
- More quiet
- Cheaper and easy to charge.
- Best speed experience

Disadvantages of EV Chargers

- It consumes time depending on the charger source is used.

- The unavailability of the required charging stations in India.
- It's expensive
- Minimal amount of pollution

Apart from AC chargers, DC chargers are more powerful and faster, they can charge an electric car with a maximum range of 40 miles in just one hour. But, DC chargers are very expensive. Though EV has better facilities to its consumers it also has both advantages and disadvantages.

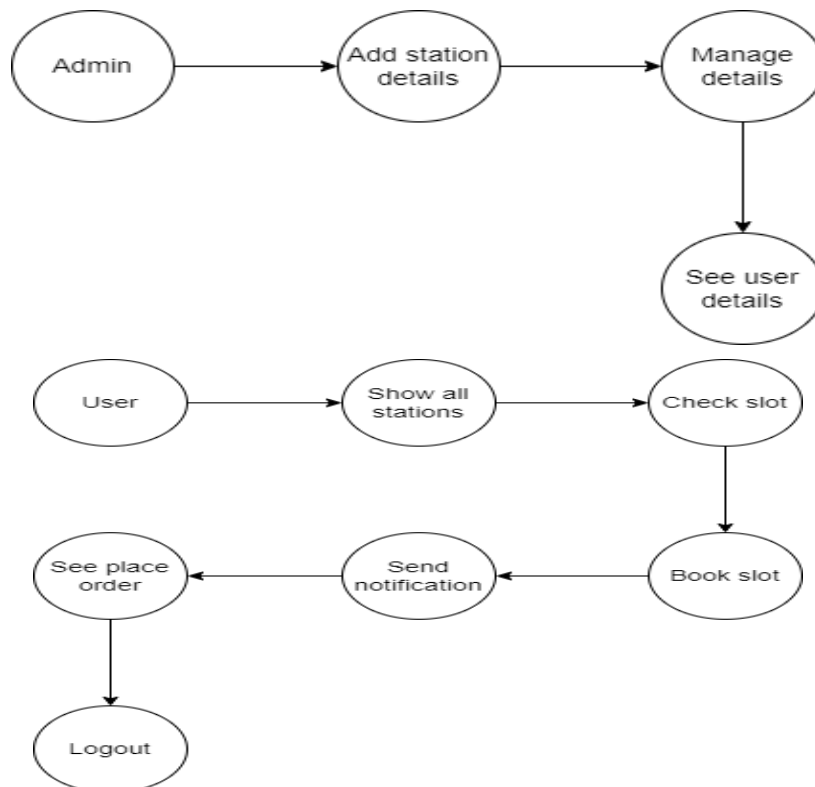
VI. REQUIREMENT ANALYSIS

The structure of the integrated optical storage and charging power station is shown in the Figure 1, which is mainly composed of power supply and distribution system, charging system, monitoring system, energy storage system and photovoltaic system.

Photovoltaic power generation system is greatly affected by environmental and other factors, and power generation is intermittent. Therefore, cooperating with energy storage systems to turn unregulated clean energy into dispatch able is necessary. The energy storage system will store low-priced electrical energy when the power is low, and send the stored electrical energy to the charging station when the power is peak, to achieve peak shifting and valley cutting.

Lithium-ion battery energy storage system have become one of the main options for integrated optical storage and charging power stations due to its advantages in power density, energy density, cycle life, and price . The charging system is the core part of the entire charging station, which mainly works for the safe charging of EVs. The monitoring system is responsible for providing open, easy reading and backup data, which mainly including the monitoring data of the storage device operation.

VII. ER DIAGRAM



VIII. CONCLUSION

With increase of EVs on the road, charging of EVs possess as a critical issue. A charging station with solar, battery storage system with additional grid support gives a promising solution for satisfying charging requirements of all EVs connected throughout the day. Using PID, current control and voltage control desired power is obtained by maintaining the DC bus voltage constant for the station. The design and its power

management of the proposed station is explained and validated in MATLAB/Simulink considering 5 different modes of operation and studying 2 cases of EV requirement thus making the design and algorithm robust. This can be adopted in large power rating and capacity for providing as the power outlet for EVs at workplace or parking lot.

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