A Review on Electric Vehicle Charging Station For E-Bike

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Abstract- *This report discusses about the potential need for electric vehicles (EV), charging station (CS) infrastructure and its challenges for the Indian scenario. With increase in liberalization, privatization and expansion of distributed and renewable power generation of Indian electricity market, transmission and distribution, as well as market processes related to the allocation of energy and energy mix are undergoing an evolutionary development with improved efficiency and reliability. A structured analysis of respective parameters is performed for the commercial scopes of electric vehicles in existing energy market. Market-based and regulatory concerns are considered to outline a scenario where an aggregator controls the charging of electric vehicles and provides ancillary grid facility. Searching charging stations for electric vehicles is an important issue for the drivers which need the implementation of smart charging infrastructure network. Selecting the location for installing electric vehicles charging stations is important to ensure EV adoption and also to address some of the inherent risks such as battery cost and degradation, economic risks, lack of charging infrastructure, risky maintenance of EVs, problems of its integration in smart grid, range anxiety, auxiliary loads and motorist point of view.*

Keywords- Electric vehicle, Charge scheduling, smart charging, charging stations, electric vehicle battery, charging stations location conditions, infrastructure.

I. INTRODUCTION

An electric vehicle, also called an EV, uses one or more electric motors or traction motors for propulsion. An electric vehicle may be powered through a collector system by electricity from off vehicle sources, or may be self-contained with a battery, solar panels or an electric generator to convert fuel to energy. EVs include, but are not limited to, road and rail vehicles, surface and underwater vessels, electric aircraft and electric spacecraft.

EVs first came into existence in the mid-19th century, when electricity was among the preferred methods for motor vehicle propulsion. Commonly, the term EV is used to refer to an electric car. In the 21st century, EVs saw a resurgence due to technological developments, and an increased focus on renewable energy. A great deal of demand for electric vehicles developed and a small core of do-it-yourself (DIY) engineers began sharing technical details for doing electric vehicle conversions. Government incentives to increase adoptions were introduced, including in the United States and the European Union

II. LITRATURE REVIEW

[1] Trends In Electric Vehicle (EV) Charging and Key Technology Developments IJERT,2020
Mr. Navpreet Hans, Mrs. Shikha Gupta
Technique Used :Conductive charge Inductive charge Battery swap
Outcome : Starting from different charger types used in the various regions of the world to working on wireless and battery swap technology.

[2] International Journal of Research in Mechanical Engineering & Technology, IJRMET 2017
Mr. Kunjan Shinde
Technique Used : Electrical Energy is provided from Solar Panel Outcome : Electric bike is a modification of the existing cycle by using electric energy and also solar energy if solar panels are provided, that would sum up to increase in energy production

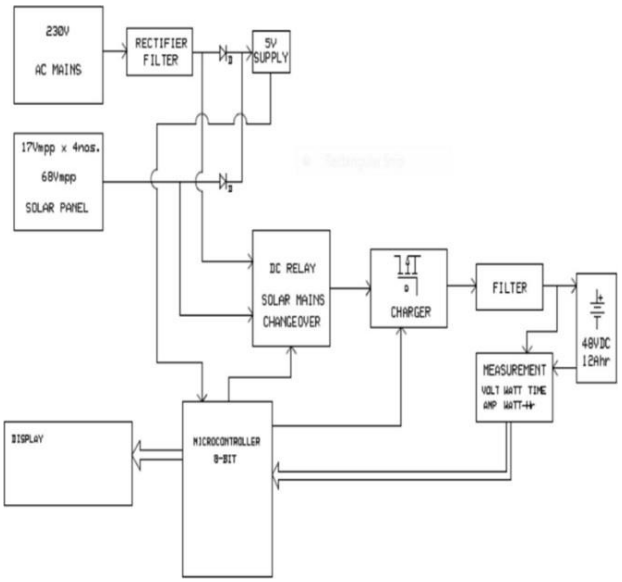
[3] Electric Vehicle Charging Station, JETIR April 2020 Avinash Shrivastav, Rahul Gupta
Technique Used : Smart Charging ,Fast Charging , Easy To install anywhere & eco friendly.
Outcome : In over research we find some places where we established the charging station & as well as EVcharging Stations to allow EV driving anywhere in the country to provide EV charging station at all petrol stations and malls etc.

[4] Sustainable E-bike Charging Station . MDPI 2020 Gautam Ramchandra Mouli, Ajay Jamodkar
Technique Used : Wireless Charging From Solar Energy
Outcome : The DC charging system uses current-mode

controlled flyback converters to charge 24–48 V e-bike batteries from the 48 V DC nano grid.

[5] Comprehensive Review on Developments in Electric Vehicle Charging Station Infrastructure and Present Scenario of India, Sustainability 2021
Shubham Mishra , Shrey Varma, Ambar Gaur Technique Used : EV charging Station Infrastracture.
Outcome : Adoption of new technologies like V2G, Smart Grid, Smart charging technique, etc., for EV charging will be very helpful in maintaining the energy balance of the power system and effective utilization of available renewable energy. It will also help in meeting customer satisfaction and economic charging rates

III. BLOCK DIAGRAM



IV. PROPOSED METHODOLOGY

Electric Vehicle Charging- There are three levels commonly used to describe the charging power of EVSE: Level 1, Level 2 and DC Fast Charging. Level 1- 120 Volt Charging- This simplest form of charging uses a 120V AC connection to a standard residential/commercial electrical outlet capable of supplying 15-20 amps of current, for a power draw usually around 1.4 kW when charging. EVs come equipped from the manufacturers with portable Level 1 chargers. AEVs with 60-80 miles of range will require 10-14 hours for a full charge using Level 1 EVSE. Level 2- 208/240 Volt Charging- Level 2 charging requires a 208/240V AC power connection and significantly reduces charging time. Home users commonly use 240 V power for electric clothes dryerappliances and many commercial customers have 3 phase electric service with 208 V power. Either voltage works well for "Level 2" charging. The J1772 standard connector used by most EVs can theoretically provide up to 80 amps of current (19.2 kW), although most vehicles presently available only use up to 30 amps for 3.3 to 6.6 kW6 charging .

AEVs with 60-80 miles of range will usually require 3- 7 hours for a full charge using Level 2 equipment, depending on the capacity of the EVSE and the vehicle demand. EVs with smaller batteries, such as a PHEV with 10 miles of range (e.g. Toyota Prius Plug-in) may require less than an hour to reach a full charge. Although the rechargeable electric vehicles and equipment can be recharged from a domestic wall socket, a charging station is usually accessible to multiple electric vehicles and has additional current or connection sensing mechanisms to disconnect the power when the EV is not charging.

V. CONCLUSION

EV are a fundamental element in recognized plans to increase the Indian energy independence and improve the environment.

EV owners do not enjoy the benefits of the standardized refuelling facilities familiar to the owners of conventionally-powered vehicles, and there is limited consensus on how to standardize and expand the EVSE infrastructure.

Existing EV and recharging facilities are safe and effective to get to the next level of EVSE availability. The benefits of EV's and the need to support drivers of EV's will simulate the installation and use of EV charging stations in industrial and commercial power systems. EV charging stations constitute a significant load. In serving a concentrated number of EV charging stations, the distribution system serving these loads will need to have a much higher capacity than previously used in vehicle parking applications

VI. ACKNOWLEDGEMENT

We shall be failing in our duty, if we will not express our sincere gratitude to all those distinguished personalities with the help of whom we have successfully completed our project. My deep gratitude to Dr. Arun Kumar, PRINCIPAL, VIVA INSTITUTE OF TECHNOLOGY, who always been playing a great role in all round development of the student. My deep respect to Prof. Bhushan Save, THE HEAD OF ELECTRICAL DEPARTMENT and our project coordinator **Prof. Mukeshkumar Mishra** and our project guide **Prof. Kavita Mhaskar** for his valuable guidance, advice and constant aspiration to our work, teaching and non-teaching

staff for their kind support, help and assistance, which they extended as and when required.

Last but not the least I wish to thank my friends for providing technical and moral support . I hope that this project report would meet the high standards of all concerned people and for their continuous co-operation during the whole period of period of project that helped us in enhancement of this project .

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[15] Www.navigantresearch.com/newsroom/more-than-1-8-million-plug-in-electric-vehicles-willbe- sold-in-the-largest102- u-scities-from-2012-to-2020.www.fueleconomy.gov/feg/evsbs.shtml.