EV PLUG

**Date**: 29-08-2022

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1. Project Overview?

In the recent decade we have witnessed monumental advancements in electric vehicles and the charging technology. Along with helping cut down on emissions, electric vehicles also have a better power delivery and prove to be far more efficient as they are able to employ regenerative braking to recharge their batteries while on the move.

Despite their many advantages, electric vehicles still fall short when it comes to aspects such as finding charging stations. Unlike people driving conventional cars, EV owners can’t have their vehicles refueled at any fuel station. Drivers with electric cars have to keep their car charged well in advance before departing.

The need for developing infrastructure such as charging stations is undeniable.

This EV PLUG site has been developed to help EV drivers locate available charging stations near them. After locating a charging station, users can also book a slot at the station to charge their vehicle.

EV owners can also use this system to plan their trips more efficiently. Users simply need to specify the source and destination. Based on these two parameters, this system prepares a roadmap with all available charging stations along the journey.

1. To what extend the system is proposed for?
2. Finding Charging stations is easy with multiple Filters.
3. Road map is provided in the system
4. Charging slot can be booked in advance.
5. Specify the Viewers/Public which is to be involved in the System?

In this system, the User is able to manage All his EVs inside the EV PLUG site he/she has search/book a slot in advance in the charging station. The User can also search an EV station based on nearby, city or kilometers. The System also provides a Roadmap if you enter source & destination with the charging stations on the way according to the kilometers entered.

Admin will manage all the stations and slots

1. List the Modules included in your System?

The system comprises of 2 major modules with their sub-modules as follows:

**Admin:**

* **Login:** 
  + Admin can login using id and password.
* **Manage Stations:**
  + Add/update/delete/view Stations
  + Enable/Disable
* **View Bookings:**
  + View registered users
  + Cancel booking if station is broken etc
* **Manager Add:**
  + Add/update/delete/view Managers
  + Assign Stations
* **Service Add:**

**Manager:**

* **Login:** 
  + Manager can login using id and password.
* **Manage Stations:**
  + Enable/Disable Ports
  + Manage Slots - Add/Update/Delete/View
  + Slot price

**User:**

* **Register:**
  + User can register using personal details.
* **Login:**
  + User can login in his personal account using id and password.
* **Profile:**
  + View and update
* **Change Password:**
  + can change the password within app
* **Manage EV Vehicles:**
  + Add/Update/Delete/View
* **Find Stations:**
  + filter by nearby/city/kms
  + choose station
  + choose slot
  + select date/time
  + Payment (Dummy)
* **View Bookings:**
  + Road Map
  + Choose source/destination and kilometres and
  + the system will make a roadmap with charging
  + stations on your journey.
* **View Bookings:**
  + filter by date
  + Cancel under a particular duration

1. Identify the users in your project?

- Admin

- Manager

- Customers

1. Who owns the system?

*- Admin owns the system.*

1. System is related to which firm/industry/organization?

- Electric Vehicle Industry.

1. Details of person that you have contacted for data collection?

*- Mr. Jaise George(Manager, Tata Motors, Ernakulam).*

1. Questionnaire to collect details about the project? (min 10 questions, include descriptive answers, attach additional docs (e.g. Bill receipts, certificate models), if any?)

#### Types of Electric Vehicle Chargers

Depending on the degree of charging that they give, there are three types of electric chargers available for EVs:

* **Level 1 Charging (Slow Charging):** It is a primary charging device that charges at a sluggish rate. It may be used on residential circuits and runs 120 volts (V) using an Alternating Current (AC) connector. This device takes around 8 to 12 hours to charge a battery. It is primarily used in households to charge electric vehicles overnight.
* **Level 2 Charging (Standard Charging):** A 240 volts (V) AC socket allows for a charging duration of 4 to 6 hours on average. It works with all-electric vehicles, including plug-in hybrids. The majority of these stations are found in public parking lots and business and residential structures.
* **Level 3 Charging (Rapid Charging):** Using a 480 volts (V) Direct Current (DC) socket can charge a battery up to 80% in 20-30 minutes. It is not, however, compatible with all-electric vehicles. They are only put at public charging stations.

### How long does it usually take to charge an EV?

That depends on the type of charging station you use, your EV's battery capacity, and how much you drive. Regardless of the type of charging station, the speed at which an EV battery charges is always limited by the maximum amount of power it can handle.

### How fast does my EV go?

It depends on the model. The average top speed of an electric vehicle is 180 kilometers per hour, but some can reach up to 320 kilometers per hour.

1. What are the problems we’re solving by using EV charging station pre booking site?

* Saves Time: The application allows you to book the charging slot in advance and saves your time from waiting in the queue.
* Emergency: It is needless to point out that the app will locate the nearby stations at the time of urgency.
* Easy Transaction: You can easily transact the amount and keep the history of transactions in the app itself.

1. Does Every EV uses same type of battery?

* The lead-acid battery.
* The nickel-cadmium battery
* The nickel-metal hydride battery
* The lithium-ion battery
* The solid-state battery

Lithium-ion batteries are currently the most widely-used

1. What kind of after sales provided for an EV?
2. What are the EV branches and their Models in India?
3. Tata Motors  - [Tigor EV](https://e-vehicleinfo.com/tata-tigor-ev-price-in-india-launch-date-feature-highlights/) and Tiago EV
4. Mahindra Motors - eVerito, eSupro, Treo, eAlfa Mini, and e2oPlus
5. MG Motor - MG Hector, Gluster, ZS EV
6. How long does the manufacturer provide a warranty over a battery and how long does it last?

* A car battery warranty typically covers for 24 months or 36,000 miles from the date of purchase of the battery. Some warranties have a cover of even 5 years. The warranty can be part of the car insurance, or you can purchase it separately.
* Most manufacturers have a five to eight-year warranty on their battery. However, the current prediction is that an electric car battery will last from 10 – 20 years before they need to be replaced.

1. How many EV stations are currently working in India?

India currently has 2,826 public charging stations that are operational in the country,

1. What are the payment methods used in existing charging stations?

There are a variety of options for open EV charging payments, including bank cards (credit/debit), smartphone wallets, and eCommerce (website payments/QR codes)

1. How is the electricity generated in charging station?

They’re connected to the larger municipal grid and then you essentially pay the owner of the charging station to hook up through their outlet to that larger power source (grid).

Sometimes the charging stations use other energy sources that the owner of the station has utlized. Sometimes these can be solar, natural gas, or other sources.These chargers are powered by renewable energy sources like wind, solar, and hydropower.

1. What is the average cost is used in existing charging station ?

Charging a vehicle between 10 pm and 6 am will cost Rs 10 a unit,while it will be Rs 12 between 6 am and 6 pm. During the peak 6 pm to 10 pm, the rate per unit will be Rs 15.

13)What is average number of vehicle charge per day?

Kerala aims 1Million Electric vehicles by 2022, Source : Economic Times.