SOLAR POWERED WIRELESS CHARGING STATION FOR ELECTRIC VEHICLES WITH IOT

AIM:

Design and development of solar powered wireless charging station for electric vehicles with IOT.

PURPOSE:

Growth of Electric vehicles increased day by day. Economically and pollution wise E-vehicles are the best solution. With current battery technology the average E-vehicle range is around 200km with full charge. But, it effects to highway journeys for long drives. To solve this problem we have to increase charging station with free charge setup. Solar power is free and more reliable. Wireless power charging is additional advantage for E-vehicle charging and it doesn't required cables to charge vehicle.

DESCRIPTION:

Project consists of two sections. One is transmitter which is wireless power transmitter. It will take power from Solar panel and this power stabilized by voltage stabilizer and amplified by booster. This amplified power transmitted through coil. Receiver part is nothing but vehicle or car which has arduino, battery, booster and wireless power receiver. It receives power from transmitter and charge battery. Voltage and current sensor reads battery voltage and charging current status. These two sensors connected to arduino analog pins.

WORKING:

When vehicle comes over transmitter coil, battery will charge. Arduino displays charging voltage and charging current on LCD display. This data will upload to iot server through WIFI module.

TECHNICAL SPECIFICATIONS:

HARDWARE:

Microcontroller	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16x2 LCD display
WIFI Module	:	ESP8266
Copper coil	:	25 gauge
MOSFET	:	IRFZ44
Solar panel	:	5Watt
Voltage booster	:	MT3608
Battery	:	12V DC
Power Source	:	12V 1 amp DC battery

SOFTWARE:

Arduino IDE

Proteus based circuit diagram

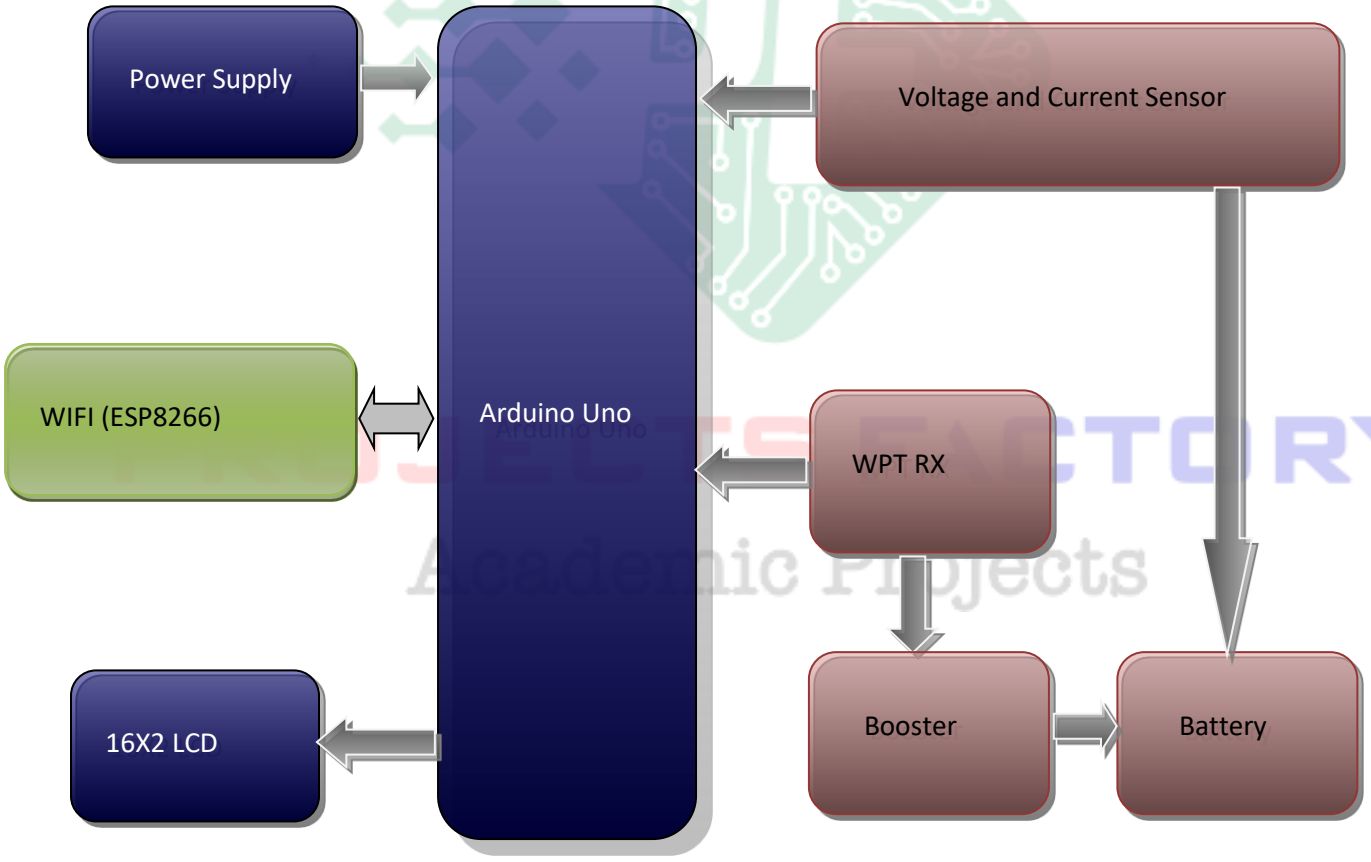
APPLICATIONS:

- Smart charging stations for E-vehicles
- Wireless power transfer systems
- Battery charging systems
- Solar based charging stations

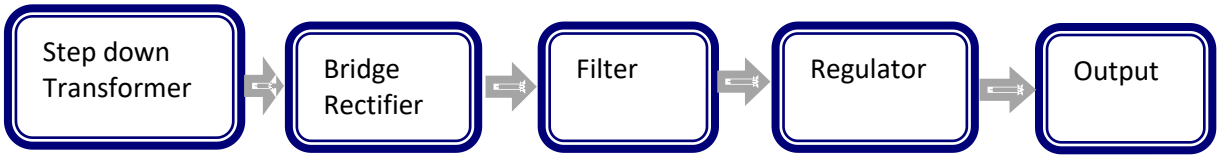
BLOCK DIAGRAM:

Transmitter:

Receiver/Vehicle Section:



POWER SUPPLY BLOCKDIAGRAM:



INTERFACES COVERD:

- We have covered Arduino programming
- Wireless power transfer module design