



# REVIEW ON ELECTRIC VEHICLE CONNECTED TO MICROGRID

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**Abstract:-**Recently electric vehicles have been gaining more attention than the convectional IC engine vehicles because it prevent pollution, give high proficiency and quiet activity. Notwithstanding the upsides of an EV, the battery charging framework should be dependable and interfered. This paper present a constant energy the executives conspire for electric vehicle (EV) charging utilizing photovoltaic (PV), alternator and energy stockpiling associated to the microgrid. This research paper provides the information about self charging of an electric car by using alternator which converts mechanical movement of wheel into electricity to charge the battery.

**Keywords:** Microgrid, EV, energy storage, etc;

## I. INTRODUCTION

As well known, the environmental pollution caused by using fossil fuels and the depletion of fossil fuels are greatly hot issues around the world in recent years. The electric vehicle technology is considered to be an effective solution of these problems which are expected to reduce the pollution and fuel costs. Many studies on electric vehicles have been performed in recent many years. Electrical vehicle (EV) in light of electric impetus framework. No gas powered motor is utilized. All the power depends on electric power as the energy source [1]. In the electric vehicle, we fundamentally utilize an electric power and their stockpile is demonstrated from the battery. Battery is introduced in an electric vehicle and furthermore to be mounted with the vehicle. The exhibition of an electric vehicle is more when contrasted with one more sort of vehicle. It likewise has a most extreme result productivity rather than to that of gas powered motor. Whenever the power is utilized in the vehicle, it delivers a no level of outflow while it is running or in the underlying condition. This cycle is absolutely discharge less. It has ability to convey the vehicle at least time. An electric vehicle has very surprising work from that of gas powered motor. In an electric vehicle, all the circuit and switch are constrained by the regulator. Regulator is straightforwardly associated with the engine, battery and another lighting framework. The engine drives to the gas pedal that is controlled through the controller. In the electric vehicle, rechargeable batteries are mostly used. The battery is charged with the charging

system. In the electric vehicle the main component that we use is battery, controller, motor and another more components. Battery is charged through the charger to be plugged in with grid. The motor is installed at the rear differential between the rear wheels. Alternator works on the principle of electromagnetic induction and it also moves around its axis to produce electricity. With the installation of the alternator it increases the range of battery because alternator charge battery when electric car is in running condition[2].

This microgrid has the capacity of working freely from the focal matrix. This can be inconceivably useful for clients in areas of high gamble from cataclysmic events, for example, fierce blazes or storms. Albeit sun powered microgrids stay associated with the principle lattice all through normal use, they come fitted with observing programming that can distinguish any disturbances to the matrix and separate while required, giving sun based energy either straightforwardly from the joined exhibits or from the connected battery stockpiling. These EV microgrids give the capacity to charge vehicles during busy times, decreasing framework interest as well as power costs. The microgrid can meet the electric vehicle's heap interest all alone, lessening the general expense. Another huge advantage is that the accusing is done of clean energy, lessening the carbon impression [3]. EV is charged from the microgrid that is upheld by sun oriented photovoltaic (PV) and energy stockpiling unit (ESU) and alternator.

The global objective of the microgrid is to minimize the total cost of electricity, The second main objective of the microgrid is to be as stand-alone as possible with the use of solar and alternator energy as main source of power. The use of energy storage can help to fulfil this goal and therefore two operating main modes microgrid without the support of energy storage and microgrid with the support of energy storage[4].

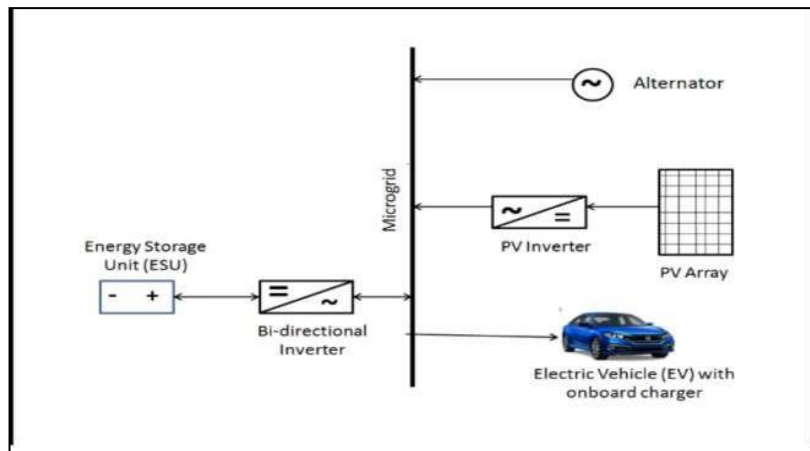


Fig.1 The structure of microgrid located in EV



## II. MICROGRID BASED EV CHARGING

This paper proposes a concept, whereby the EV is charged from small microgrid located in EV. The proposed microgrid contain two power sources PV module and alternator. Alternator worked as a source which converts the mechanical moment of wheel in electric form. PV module is long term conservative advantage since it is nearly upkeep free and natural well disposed. PV inverter changes over DC power into AC power. Two batteries are utilized in EV for energy stockpiling reason one is fundamental battery which gives direct inventory to engine and another is utilized for reinforcement reason (Energy Storage Unit). Bi-directional inverter is utilized before the ESU for bidirectional power stream reason. Whenever fundamental battery is completely energized then power from

alternator and PV is goes into the ESU through bi-directional inverter. And if alternator and PV are not capable to charge main battery then ESU charge the main battery. Operation of proposed system is explained below. The overall operation of the microgrid has been divided into three operating modes.

### Mode:1 Alternator,PV to EV:

If the Alternator, PV is sufficient to fulfill the EV battery demand, then the charging is entirely done by Alternator,PV through the onboard charger.

### Mode:2 Alternator, PV to ESU:

When the battery of EV is fully charged, then all power from Alternator,PV goes to ESU and charge the ESU.

### Mode:3 ESU to EV:

When EV battery is discharged and supply from Alternator, PV is incapable to charge EV battery then, ESU provide supply to EV battery for charging purpose [5].

## III. CONCLUSION

This paper presents EV charging using microgrid. The designed system is reliable and interrupted because it reduce the impact of EV's charging on grid especially in case of rapid and fast charging process also decrease the dependency on charging station for charging the battery. This proposed system charge the EV in running condition so it help for improving driving range of EV.

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