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Magnetically Charged: The Future of Electric Cars in Motion

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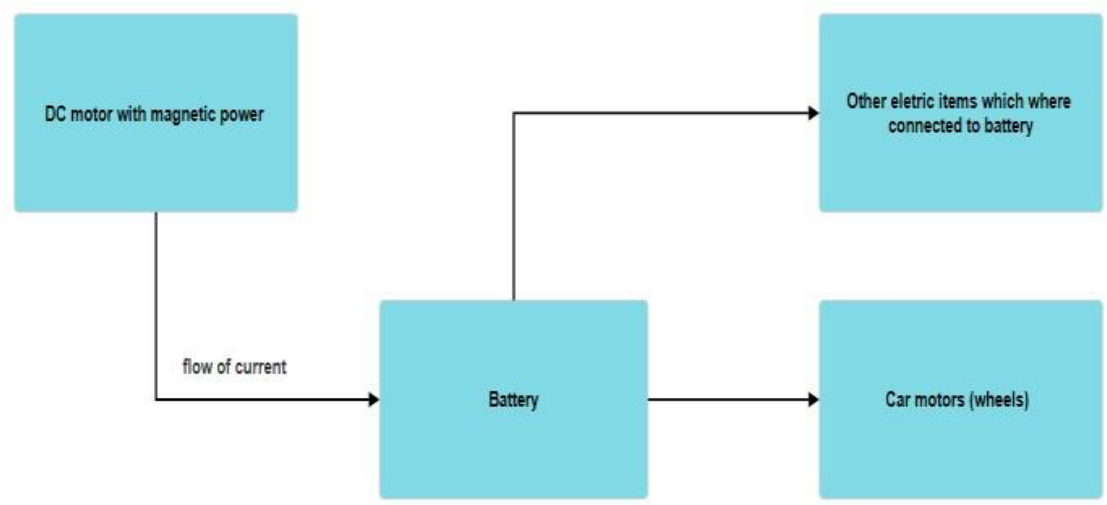
Abstract:
From the last 10 years automobiles were increased rapidly with the increase in automobiles lot of problem were raised like an increase in fuel prices, decrease of resources like fuel quantity, an increase in pollution etc. to sort out this issue electric vehicles were introduced to maintain a sustainable environment, But the problem with these vehicles is that Electrical vehicles were taking at least 4-5 hours to make the battery full while it is consuming a lot of time for a person and also need to search for a power point station when the battery is low to fix this issue we introduced auto rechargeable car through the magnetic power. The main element in the project is magnet with the use of magnet we are trying to run Dc motor so that it can generate electricity and suppied to battery of the car. It is clearly shown in the diagram below.

Introduction:
In recent years, the automotive industry has witnessed a profound shift towards sustainability. Electronic vehicles have been found as a solution for pollution control all over the world. However, these cars have some challenges like limited battery range, extended charging times and infrastructure constraints. In response, researchers also proactively trying the solve this issue, in the context of magnetic propulsion free power is generated and it will be sustainable. This project saves time, cost and fuel this can be a big breakthrough for the developers.
To demonstrate this project, we built a Wi-Ficontrolled car that can connect to the internet and remoted through blynk app. It is adjustable to speed about min/max depends on its capacity. Two that batteries 12v DC motor was used and for propelling of that DC motor magnets were used. This process takes a significant place in the project, and it is the main motto to show the project that we can improve the range of the car and also can become ecofriendly to nature and this project can work in any kind of environment at any place and moreover this model can work in satellites as well. It also monitors the battery to prevent overload the battery there we fixed a battery indicator if the power recorded above 90% the charging cable is suspended, and it starts only the if the battery got down below 50%. Turning on/off propulsion of DC motor which is fixed to magnet should be manual work. It saves the heavy impact on batteries to avoid damage to the vehicles.

Block diagram:
The diagram below shows the two main block in the project. One is current generation and second one is infrastructure of the car.



In the above diagram it is clearly shown that power supply is the process of Electric current generation it means the electricity is generated and supplied to the battery the battery supplies the power to the Microcontroller which is Esp32 and to the motor driver. So that the motor driver controls the wheels of the car. The motor driver will receive the commands from the controller and that controller (Esp32) has been connected to wifi and that is remoted through the internet. Using that internet, we can operate that car through our mobile phone also using the Blynk application. The server command lines were already uploaded in the microcontroller.

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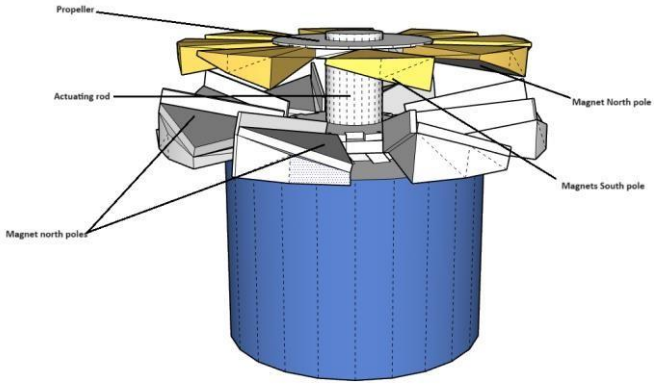
9. Aqueel Ahmad; Mohammad Saad Alam; Rakan Chabaan This paper offers a thorough, up-to-date analysis of all electric vehicle (EV) wireless charging methods, including their features, standards, and potential safety precautions. It also discusses the sustainable implications of these technologies and their availability in the public domain. Published in: IEEE Transactions on Transportation Electrification (Volume: 4, Issue: 1, March 2018).
10. M. zahir hussain, R. Anbalagan, D. Jayabalakrishnan and D.B. naga Muruga [2021] their Idea is charging the battey using the wing power by fixing the turbines on the top of the car vertically, here the rotation of speed of the turbine is not constant, it depends on speed of the car. They also analysed that when vehicle moves at a speed of 25m/s it produces 1kw of power. It need a special design for the baldes and propellers also the adjudtment of turbines on the car.
11. Mukul Singh, omveer Singh, vishwamitra Singh and simran chaubey[2022] built a car that is charged by solar power. The battery is charged which the car is not in motion. The motion is detected by a motion sensor(PIR) and the battery is charged during day time only. This project reduces the cost of time. They also compared the performace of the car which means the range of distance with the solar panelled car vs without solar panelled car.

Description of the project

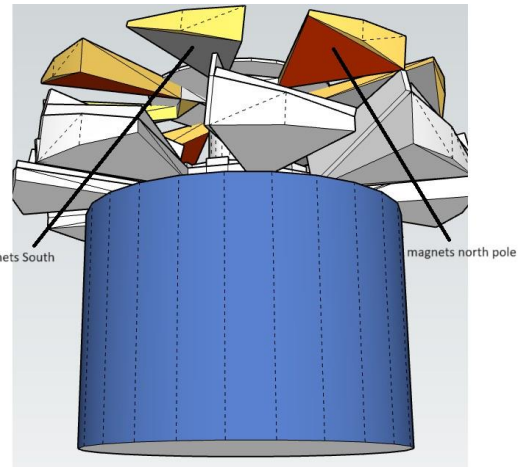
Magnetically charged: the future of electric cars in motion. In this project we want to show that battery can be charged using the magnetic power and it can be used for car. It places on trunk of a car like in a box. While using the magnetic power we can generate the free electricity/current and that is supplied to the battery. We also took the necessary steps to avoid battery overload. There is one indicator is fixed if the indicator shows that the percentage of battery arises above 97% then the connection of the circuit is suspended and if the battery records below 40% then the connection is reestablished using servo motor. This avoids the battery to damage. The other part is about the car, the battery capacity of the car varies from every model. Every EV vehicle has different capacity of battery and various speed limits so same type of DC motor cannot produce that much if energy to every car we have to take the motor and magnets according to the size and capacity of car.

Project Methodology:



DC generator

The methodology of this project begins with extensive research into magnetic technology. This project is to clarify that auto charging the battery of EV vehicles, it means fixing the generator in that vehicle and continuous free power supply. In this the power is automatically generating using the magnetic power, as shown in the diagram we need a DC motor and specially designed magnets. As we studied that likes poles repel each other and unlike attract each other, like in the same way we take holder and that should not rotate is fixed to the motor as shown in the diagram above and all the magnets attached to that holder should be facing north pole to the upward direction and the propeller which we fix over the holder were attached by the magnets.



The position of magnets on the propeller should be alternative to each other it means one should face north to the bottom magnets and second one should face south likewise all the magnets should face in the alternate directions, one magnet should attract the surface and next magnet should repel their position so that in the same. The design of the magnets makes the propeller rotate and rotation of propeller means rotating the actuating rod this leads to generating of the current.

Battery Managment:

In this model we used a program of auto suspension of the power supply to the battery it avoids the battery to damage. When the battery records above 97% the actuator arm slowly rises so that the propeller gets out of the magnetic field and the rotation will be haulted and when the battery power records below 40% it is repositioned again to its same place as usual to the same place. It also has the second option for more safety a servo motor is fixed between the circuit so that it connects the DC generator and the battery if the

battery gets overloaded the connection is suspended and when the battery falls the minimum percentage the connection is re-established.

Capacity and constrains.

Every EV vehicle has it own battery and the capacity of the battery depends on size and quantity of the vehicle. So that every model has different battery capacities, so the power supply to that battery may also differs, we need to look into that also. To sort out this problem we got a concept.

Capacity of power supply depends on RPM(Rotation per minute) of the DC motor. If the RPM increases the voltage of power supply also increases, as we have the formula

$$V = K * RPM$$

Here V is the voltage generated by the DC motor

K is a constant specific to the motor it depends on the capacity value which means the constant value of the motor it helps to extract the relationship between the rotational speed and voltage produced by the motor.

The RPM of the motor is completely depending on the magnetic power, If the magnet have more number of tesla units, then the speed of rotation of the motor increase that results increase in the voltage of current leads to faster charging of battery. This faster charging of battery will be useful for heavy E-Vehicles like containers, trucks etc. for example:

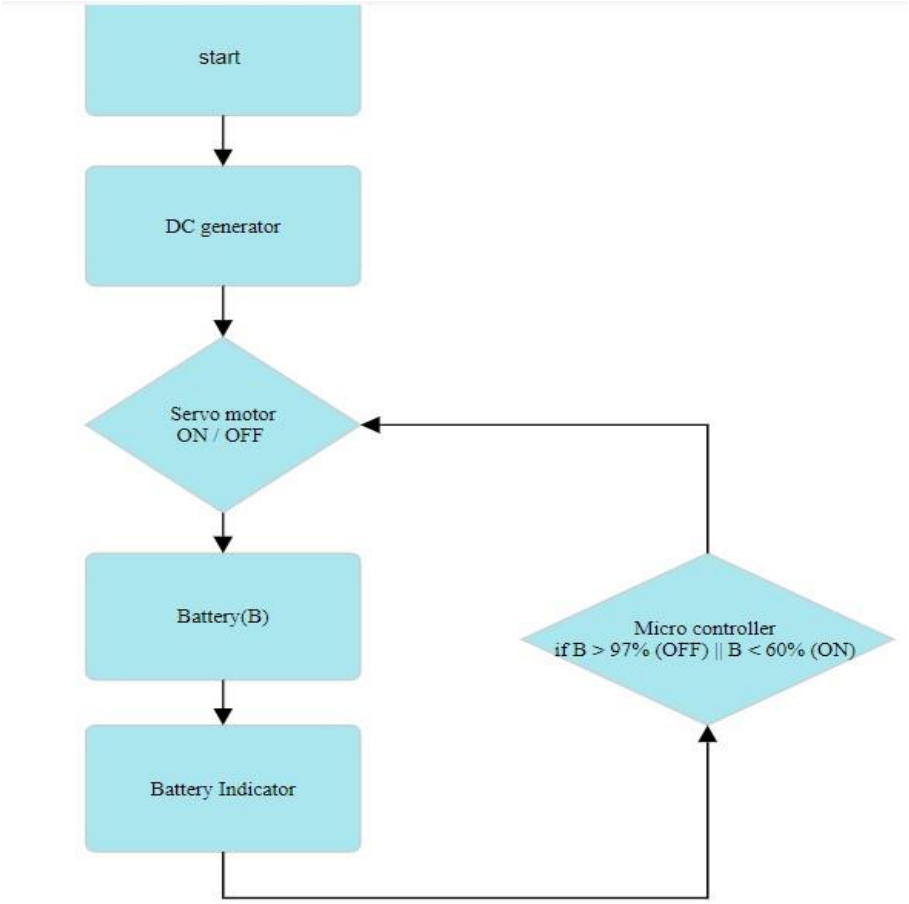
There is a car with 100KV battery power it needs at least 5kv of volts to cover 5km likwise it can cover over 500km with its whole capcity. If we used the basic 24v DC generator in the car, let's give magnets which can rotate 120 rpm by relatively it can produce at least 100 volts of current while consumption of car per every kilometre us 200kv then producing is 100KV which increases range capacity and constrains.

Efficiency and sustainability: Efficiency and sustainability are this modal is good for the environment in the project we do not need any gasoline run out to cause pollution. We use renewable energy sources, making the air cleaner nature. This improves sustainability saves power at stations and time.

Innovative design: The electric car feature innovative design that adding seamlessly with the magnetic charging infrastructure Saving the battery life auto cut before full charge protected of the damage friendly to environment doesn't use gasoline to cause air pollution.

Range and performance: we are using charging method to develop the project its work as long way and work Relly well. We made sure it uses energy wisely and has good battery, so its charge one time work as so far Run as smoothly. It also increases the range of the car, but it limits the speed of the same car. There is one safety point which is better to main that normal speed if that limit exceeded then level of consumption exceeds generation of current which may leads to empty of battery quickly and also that performance of the car becomes better.

Flow chart:



Scope of the project :

Future Potential is project that there's a new way to charge electric vehicles using magnets. This technology is a big deal because it can make transportation better for the environment and makes durable. This cocept of magnetically charging can also be used in various vehicles according to their capacity. Not only in road ways now a days electrical ships also introduced this concept will also works on it and moreover it can be used in the satellites in space like most of the satellites were using solar panels for recharging the battery in space when the satellite enters into the eclipse zone solar panels also will not works but this model will works at any place and at any time while it needs only particular positioning of the magnets. If this developed more in future we may have sustainable vehicles which is eco-friendly to the environment.

Safety measures:

- We need to put the DC generator in the most flexible area in a car. That magnets may damage when it collides with each other.
- Continuous running of generator leads to overheating of the motor it may damage the battery and circuit. So we need to set the cooling systems or need to give some breaks to that generator.
- We are using the magnets so we should not use iron or any ferromagnetic metals for safety. We need to use non-magnetic metals tightly. So that it should not disturb the generator.

Conclusion:

To conclude we have designed a DC generator which supplies power to the battery continuously. It is most useful for the EV vehicles that normal electrical vehicles take more time for charging to get the battery

full and it also difficult to search for a power station when the battery is low in the same way it is not possible to carry extra fuelling in the car and we cannot help from other vehicles. This project can fix all the issues of the EV vehicles. This is long lasting, durable and time saving. This generator can work at any place and at any time. Some safety measures were also to prevent the battery overload and there is a program for auto suspension and reestablishment of the connections.

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