

90 Degree Steering System

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Abstract - We develop a system, In which vehicle wheel can turn into 90 degree. This system mostly suitable for India. We know that already some system is using technology like automatic parking system but this system is high costly and takes more power of engine. So our project gives the simple construction and also it is cheaper than other. In conventional steering mechanism it uses Davis steering mechanism or Ackerman steering mechanism, but in this system some disadvantage occur just like minimum turning radius is obtain. With this system does not obtain the 90 degree steering radius.

The idea is to use electric motor at each of the wheel for turning the wheel. The advantage of this system is that it requires limited space and it reduces efforts and time require for turning the wheel that's why this system is more flexible than other. Application of this system is parking, farm vehicle, trucks etc.

Key Words: Mild steel Frame, Battery, Motor, Wheels, Switch

1. INTRODUCTION

Now a days four wheel parking is the most difficult problem, when we travel in the city. If frequently parking spots are located on the side of the road, leaving the driver with no option, but to attempt parallel parking, it is challenging to the driver for parking it require vehicle to take in reverse direction and it difficult to stand in correct motion of the car. Some driver is expert in parking the vehicle at the road but other driver have to perform multiple correction before they park the car properly. In the worst case an accident can occur. A car with 90 degree steering system save the driver time and effort, those who are not perfect in parallel parking. In present days in automotive sector 90 degree steering system is not implemented. A lot of researches have been done on this field for implement this system. The idea is to use the four motor attach wheel for turning the wheel in 90 degree. This mechanism is works at low speed or at stationary position of vehicle.

2. PROBLEM STATEMENT-

Due to many number of cars and conjoined space available in city that's the reason of parking difficulty for any driver. The mostly used type of steering, are using the front two wheels of the vehicle. This type of steering mechanism require larger turning circle radius it require high effort to turn the wheel. Motor mechanism design has the advantage of a large degree of turning radius circle.

Due to high turning radius, parking is difficult. In small parking area it is difficult to steer and park. Thus to overcome this problem, we design the new steering mechanism which can steer the four wheels individually by using the motor mechanism.

3. OBJECTIVES-

The aim is to create the specifications of the 90 degree steering system for transverse parking system. As part of the need of the project number of goals were produces to measure the success of the project. The main objectives of this project are as follows:-

1. Better parking in home in minimum space.
2. This type of vehicle we can use in heavy traffic also.
3. Saving time.
4. Saving fuel.
5. Use of electrical equipment to increase efficiency.
6. Vehicle can steer easily.
7. Maintenance of this vehicle is very low.

3. CONSTRUCTION-

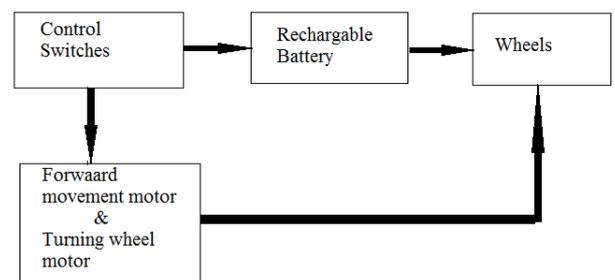


Fig. 1 Block Dia. Of 90 degree steering wheel

1. FRAME – It is made up of mild steel rectangular rod. The inner frame takes weight of battery, and all other system. its measurement is 60X35 cm .
2. BATTERY-A battery which is convert chemical power into electrical power. We use the rechargeable battery of 12V 1.3A.

3.WHEEL- Steering wheel handles the steering operation. It is made of plastic material outer cver if rubre.for moving the vehicle.

4.DC MOTOR – DC motor stands for Direct Current. A machine in which electrical energy into mechanical energy. We use the two types of motor i) 500 rpm speed motor.

ii) 200 RPM speed motor.

3.1 Solid Modeling

The 90 degree steering system is modeled by using CATIA. It is one the world’s leading CAD/CAM/CAE packages.

Following fig shows component of 90 degree steering system.

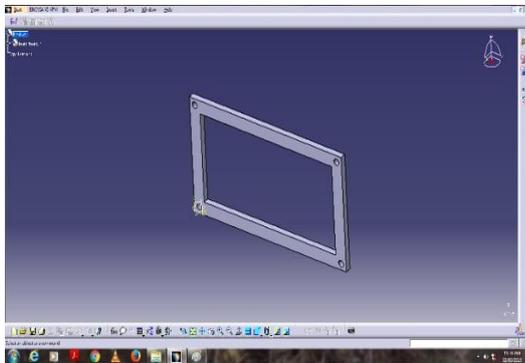


Fig no 2 – Frame

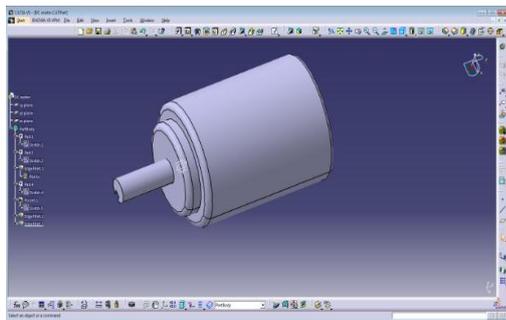


Fig no 3- Motor

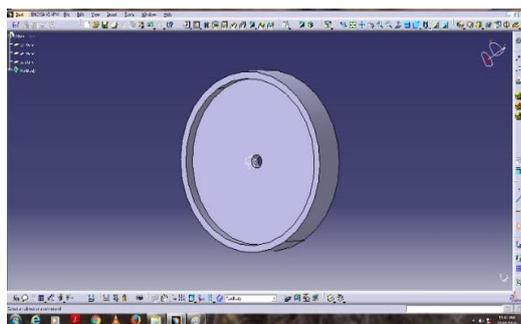


Fig no 4- Wheel

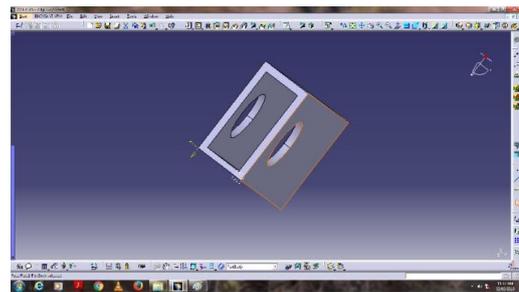


Fig no 5- Clamp



Fig no 6-Assembly

4. ADVANTAGES-

1. It improves cornering stability.
2. High speed straight line stability.
3. Improvemet in rapid lane changing.
4. Smaller turning radius improves steering efficiency.
5. Comfortness is increases from driver point of view.
6. Improved the traction and handling ability.

5. DISADVANTAGES-

1. Require eight motors
2. Only used in individual drive system.

6. APPLICATION-

1. Electric vehicles
2. Parallel parking
3. Slippery road surface
4. GO kart (mini race car)

7. CONCLUSION

We know that power transmission is not possible in 90 degree, but by using various speed motors we can turn the wheel in 90 degree that’s why we can easily park the vehicle in side lane of the lane. From this project prototype we can create a low cost and user friendly vehicle. Also material used in this project is easy to manufacture or easily available in market, and it is low in cost. The vehicle weight is light and we can implement in car.

8. ACKNOWLEDGEMENT

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