

A REVIEW PAPER ON 360 DEGREE ROTATING CAR AIDED FOR PARKING

Sk. Naseer¹, Y. Sai², P. Michael Joseph Stalin³

^{1,2}UG Students, Department Of Mechanical Engineering

³Professor In The Department Of Mechanical Engineering
Audisankara College of Engineering & Technology, Gudur, India

ABSTRACT

In the developing modern era, there are many types of the vehicles developed in this society, yet many places in this system has very few parking facility and there may be a tough challenge for the parking and retrieving the vehicle which is parked. So we have developed a new way of parking of the vehicles as a project for parking of the vehicles easily called 360 Degree car rotation. This project hopefully helps in the parking of the vehicles such as cars easily in the parking lot and can also retrieve the vehicles from them. In this project we are using spur gear and worm gear with motor mechanism for lifting and rotation purpose.

1. INTRODUCTION

Automobiles are synonyms for mobility and freedom. An amazing increase in the growth of population in this world leads to the rapid increase in the number of vehicle being used. With the increasing number of vehicles and the shortage of parking space, we cannot park and retrieve our vehicles safely. In densely populated areas they are mostly useful. In this situation there is the need for an automated parking system that regulates parking in a small area. **360 degree rotating car systems** is the sole solution to park as many cars as possible in as little space as possible. 360 degree rotating car is based on the most modern technology of storage systems. We are presents a prototype model of an automated car rotating system that help cars for parking and retrieving in a small space at minimum time. In our system it consist of 2

Demotors, one is for lifting the car and the other is used for locking mechanism. Switch one is used for lifting the car and rotating the car clockwise or anticlockwise. Switch 2 is used is used for locking.

2. RELATED WORK

Arunkumar S M, Chandan Kumar Sahu, Yubaraj G M, Jahangeer A B [18] proposed a system of consist of steering, chain sprocket, DC motor, wheel, bearing, iron pipe, battery and chain drive. In this system first the vehicle is stopped and wheels are then turned in the required direction with help of steering system and DC motor. For the forward and backward movement of this vehicle, DC motors are used in wheel and a battery is used to provide electrical energy for the DC motor. It has turning radius nearly equal to negligible of length of the vehicle itself. This system is to be useful in hospitals, small industries and also on railway platforms. Sudip Kachhia [2] proposed the idea of allelectric concept of vehicle is that if it becomes a reality would prove to be a lot of fun to drive in the city. The vehicle works on 8 electric motors, four motors attached uniquely to each wheels and it can rotate 360 degrees. The wheels of the car are magnetically coupled and it is controlled by magnetic fields. Hence the car is rotate fastly and effectively.

3. COMPONENTS

A. BATTERY :

In our prototype 12v 7A rechargeable battery is used The battery charger is an AC generator or

alternator with rectifier diodes, driven by a belt from the engine. When you start the car, the battery supplies the cranking power. Once the engine is running, the alternator charges the battery. It is not necessary for the car to be

moving. A voltage regulator is used in this system to maintain the output at approximately 13 to 15 V.

B. DC MOTOR

Two DC Motor with 12V and 90Watt 60rpm permanent magnet used in this model.

C. SPUR GEAR

1:2 and 1:9 spur gears are used . It is made up of cast iron.

D. LEADSCREW

Two lead screws of 20mm diameter is used for up and down mechanism.

E. GUIDE STOP

It is used for lifting the car system upward and downward. It is 15mm diameter. It is made up of mild steel.

F. GUIDE BUSH

It is special type of bush used in the guide ways. It is of 25mm diameter and 2 inch in length .it is also responsible for the upward downward movement of the system.

G. LIFTING PLATE

Here a circular disc is used. It is made up of mild steel. The diameter of the lifting plate is 40cm. It has 12mm thickness. The lead screw apparatus is welded on the centre of the lifting plate.

4. WORKING

It consists of 2 Dc motors, one is for lifting the car and the other is used for locking mechanism. Switch one is used for lifting the car and rotating the car clockwise or anticlockwise. Switch 2 is used is used for locking. As the switch is turned ON, the lifting plate goes downward and it touches the ground. After the lifting plate touches the ground, the switch s2 of

the locking mechanism is turned ON. The locking mechanism is provided to prevent the rotation of car while lifting. After acquiring particular height the locking mechanism is automatically detached and the car starts rotating. The rotation can be done in both in clockwise and anticlockwise direction by operating switch forward and backward. After achieving the particular direction the locking mechanism is switch on to prevent the rotation of car while moving downward. After that s1 switch of the lifting mechanism is turn ON and the mechanism is completed.



Fig-1 Image of set up

The image of the prototype system is shown in the fig 1. It consists of a lifting plate, lead screw, spur gear, 2 dc motor. The dc motor is operated by 12v 7A rechargeable battery. The frame is made of mild steel .There are some slot is attached concentrically on the lifting plate.

5. CONCLUSION

This project work has provided us an excellent opportunity and experience, to use our limited knowledge. We gained a lot of practical knowledge regarding, planning, purchasing, assembling and machining while doing this project work. We feel that the project work is a good solution to bridge the gates between the institution and the industries. We are proud that we have completed the work with the limited time successfully. The **“360 DEGREE ROTATING CAR”** system is working with satisfactory conditions. We can able to understand the difficulties in maintaining the

tolerances and also the quality. We have done to our ability and skill making maximum use of available facilities. Thus we conclude that we can allowed vehicle to guide vehicle in all direction. 360 degree of rotating car and also we can guide in parallel direction. In recent time the advancement is made in automobiles. So, we have modified in such away that it can save time and also easily work with many problem. This can give fast response and less space is required. The developed model is recommended for inclusion in the cars. A prototype for the proposed approach was developed by lifting plate and DC motor to car rotate 360 degree. This prototype was found to be able to be manoeuvred very easily in tight spaces, and after manufacture of 360 degree car rotation vehicle consumed very less space to turn from one direction to another direction and it consumes less time to turn. Thus we have developed a “**360 DEGREE ROTATING CAR**” which helps to achieve the parking of the vehicles easily using the parking machines or fittings. By using more techniques, they can be modified and developed according to the applications.

6. REFERENCES

1. JaishnuMoudgil, ShubhankarMengi and Mudit Chopra, 360 Degree Rotating Vehicle to Overcome the Problem of Parking Space, International Journal of Research in Mechanical Engineering and Technology, 5(2), 2015, 22-25.
2. Sudipkachhia, Design of 360 Degree Rotating Car, International Journal of Advance Research and Innovative Ideas In Education, 2(5), 2016, 15–16.
3. K. Lohith, K. Lohith, Dr. S. R. Shankapal, M. H. MonishGowda, Development of Four Wheel, Scholars Journal of Engineering and Technology, 12(1), 2013, 52-53.
4. Er. Amitesh Kumar, Dr.Dinesh.N.Kamble, Zero Turn Four Wheel Steering System, International

Journal of Scientific & Engineering Research, 5(12), 2014, 22-24.

5. Mr.Sharad P. Mali, Mr.SagarJadhav, Prof.D.U.Patil, Zero Turn Four Wheel Mechanism, International Engineering Research Journal, 2(2), 2016, 484-486.
6. Automotive Control Systems (for engines, driveline, vehicle)
7. Automotive Computer Controlled Systems
8. AUTOMOTIVE MECHANICS BY W C
9. Fundamentals of Vehicle Dynamics
10. Neville, A., Stanton, Marsden P.(2001), From fly-by-wire to Drive-by-wire: Safety implications of automation in Vehicles , Automotive engineering, Vol.109, No.9, Pp.102-106.