

SEGWAY (2 WHEEL BALANCING VEHICLE)

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Abstract - 2 wheel balancing vehicle (Segway) is a transportation device which is used worldwide. This is based on automobile engineering field. Segway is a non-polluting device which runs with the help of Battery and Motor.

Key Words: Emission free vehicle with better range in KM.

1. INTRODUCTION

Segway is the leader in personal, green transportation, developing products that transform the way you work, play and live. Our approach to congestion and environmental challenges is balanced with a strong understanding of the functional needs of our customers, enabling them to do more with less.

Today, we are focused on serving our customers by developing safe, unique products that are redefining personal transportation for consumers and businesses. Segway works with commercial and municipal organizations to realize the benefits of zero-emission personal transportation that increase productivity and utilize existing infrastructure. Segway is passionately committed to innovation and the future of mobility to move you – easily, efficiently, intelligently, simply.

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The result is electric transportation that doesn't look, feel or move like anything that has come before. And of all the conventional wisdom we've left in pieces behind us, none has been shattered more fully than the belief that we must choose between "more" and "less".

In 2001, Dean Kamen announced the arrival of the first self-balancing, zero emissions personal transportation vehicle: the Segway® Personal Transporter (PT). Founded on the vision to develop highly-efficient, zero-emission transportation solutions using dynamic stabilization technology, Segway's research and development was focused on creating devices that took up a minimal amount of space, were extremely maneuverable and could operate on pedestrian sidewalks and pathways.

In 2006, the second generation Segway was introduced. All the products feature breakthrough Lean Steer™ technology

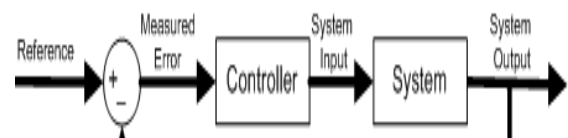
and a wireless Info Key™ controller that enhance the Segway experience by making the ride even more intuitive and adding new and useful functions.

Today, Segway continues to develop safe, unique transportation solutions that address urban congestion and pollution and leverage our in-house expertise. No matter the platform, our products allow you to experience more with less.

1.1 Components

- 1 Motor
- 2 Battery
- 3 Mechanical Structure
- 4 Wheels
- 5 Control Shaft
- 6 Handle
- 7 ESC DC motor Controller

1.2 Block Diagram



Above Figure shows, through battery source power is given to controller and it gives input to the system and output is carried out.

2. Working and Construction

Through 24-48 volt battery and 250-500 watt motor this device accelerates. User stands and balances in between of total length of Segway. Acceleration is done through controller. Angle for turning is set appropriately by User. Two 250W brushless dc hub motors are used. The absence of a commutator and carbon brushes (which are subjected to mechanical wear and tear due to friction) enables this type of motor to have a longer life.

A VRLA battery (valve-regulated lead-acid battery), more commonly known as a sealed battery (SLA) or maintenance free battery, is a type of lead-acid rechargeable battery.

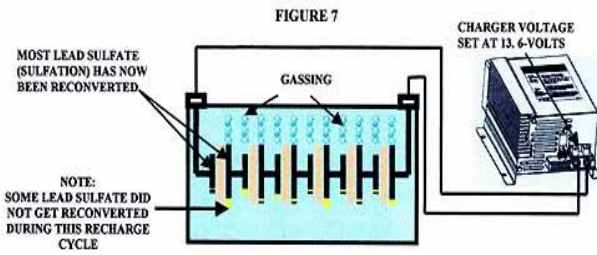


Figure1: Battery

The entire structure is made of wood and mild steel. After both the motors are individually connected to the wheels three rectangular sections are connected between them.



Figure-2: segway

Control shaft is a vertical axle or support which controls the handle for vehicle. Handle is used for steering the control shaft.



Figure-3 Control Shaft

Power controller is used to control the DC motor speed which are fitted at bottom.



Fig 2:DC motor power controller

3. APPLICATIONS

1. More than 1,000 security firms and law enforcement agencies use Segway's for patrolling around the world. Rather than patrolling an area on foot or in vehicles, patrol officers can ride around on a Segway and respond to emergency situations. Segway's are able to travel up to 12.5 miles per hour, and law enforcement agencies, such as the Washington Metro Police Department, have developed training programs to teach officers how to operate Segway's safely.
2. The advantages of using a Segway while patrolling is that it improves response times, reduces officer fatigue and lowers fuel and maintenance costs
3. Individuals can use Segway's as a form of personal transportation to go to work, run errands and visit friends. Segway's that are fully charged can travel up to 24 miles, and a standard outlet wall can charge the batteries. Individuals can ride Segway in all types of weather.
4. According to Segway.com, Segway are zero-emissions devices that are 11 times more efficient than a standard American vehicle.
5. Responsiveness
6. Mobility
7. Approachability
8. Visibility

4. FUTURE SCOPE

1. Segway's are human transportation devices that operate on two wheels and run on electric power.
2. Motors and computers in the base of the device keep the Segway upright, and as an individual leans forward, the device moves forward.
3. User can travel to nearby distance easily without any problem.
4. Segway is very useful for patrolling in an area.
5. Main Development is that it is emission free/green vehicle.

5. CONCLUSIONS

From this project, we successfully make out the model having its capacity that user can stand and it sustain its load. Also we identify the model beyond its limit capacity. As well as we also came to know about electrical & computer engineering field.

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