

Concept Development & Fabrication of Anti Gravity Car

¹Vaibhav Shriwas, ²Gupteshwar Kashyap, ³Praveen Dewangan, ⁴Snehl Verghese

¹⁻³ Department of Mechanical Engineering, MMCT, Raipur

⁴ Asst. Prof., Department of Mechanical Engineering, MMCT, Raipur

Abstract- Anti-gravity is the idea of creating a place or project that is free from force of gravity. It does not refer to the lack of weight under gravity experienced in free fall or orbit, or to balance the force of gravity with some other force, such as electromagnetism or aerodynamic lift. Anti gravity is a recurring concept in science fiction, particularly in the context of space craft propulsion. An early example is the gravity blocking substance “Cavorite” in H. G. Well’s the first man in the moon. In Newton law of universal gravitation, gravity was an external force transmitted by unknown means. In the 20th century, Newton model was replaced by general relativity where gravity is not a force but the result of the geometry of space-time. Under general relativity, anti-gravity is impossible except under contrived circumstance quantum physicists have postulated the existence of gravitons, a set of massless elementary particles that transmit the force, and possibility of creating or destroying there is an unclear. “Anti-gravity” is often used colloquially to refer to devices that look as if they reverse gravity even though they operate through other means, such as lifters, which fly in the air by using electromagnetic fields.

Keywords- gravity, wall, rc, vacuum, work.

1. Introduction

Gravity is the most powerful force in the universe & attracts the objects. Gravity Holds us to earth’s surface and keeps earth in the orbit around the sun. Antigravity is an idea of creating a place or object that is free from force of gravity. It does not refer to lack of weight under gravity experienced in free fall or orbit or to balancing the force of gravity with some other force, such as electromagnetism or aerodynamic lift. This works (antigravity RC car) by generating an effective vacuum for antigravity inside the car.

1.1 Anti Gravity rc Car (Wall Climber)

What an amazing antigravity RC car that simply goes against the law of Physics. It’s a wall climber. While playing the Anti-Gravity RC car, you won’t face those common obstacles that you face with other RC cars, such as those annoying doors and corners or having no space to

drive it around. As you can simply make it climb vertically, so you have plenty of space on the walls. The Anti-Gravity RC car is equipped with the kind of advanced technology, which there is an internal motor to create an air pocket with a downward force. When the car reaches 45 degree angle, the internal fans kick in, drawing air under the car and creating a suction like effect that allows it to grip to the walls.

1.2 Introduction to Vacuum Technology

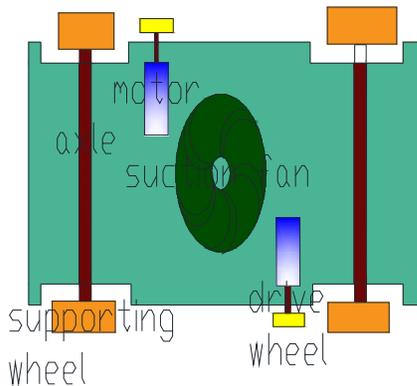
Many surface scientists work with their samples in a vacuum system. The reasons for these are several fold: first, many samples react with the gases in ordinary room air which means they must be kept in a clean environment; second, the experimental probes used to measure sample properties may depend on electron or other beams that simply could not exist outside a vacuum.

2. Theory

The theory behind is simple, which it makes use of another law of Physics to challenge the other. I guess I’m still little fresh with some Physics. It should be making use of Bernoulli’s principle to challenge the Newton’s Law of Gravity. While the car is on the wall, the faster flowing air under the RC car simply exerts less pressure on the top surface of the car, which in a result creating a suction effect that sticks the car to the wall. It’s definitely great if this technology could be applied to those high-street autos. But I think, it’s kind of hard to create the suction effect that is strong enough to overcome the massive body of those high-street autos.

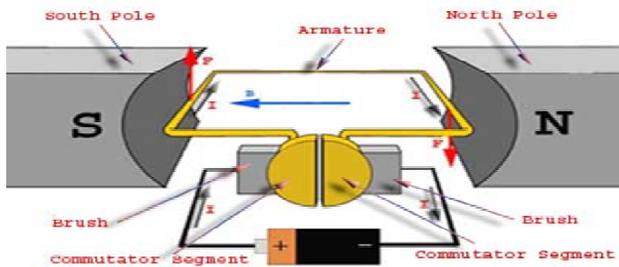
Component Used

- Motor
- Suction fan
- Axle
- Wheels
- Battery



3. Construction

The very basic construction of dc motor contains a current carrying armature which is connected to the supply end through commutator segments and brushes and within the north south poles of a permanent or an electro-magnet as shown in the diagram.



4. Methodology

Three volt dc motor which is used in a vacuum pump provides 3200 rpm due to required amount of vacuum create between lower surface of car and wall which is nearly 0.4 N. This negative pressure (vacuum pressure) is fully able to sticks 0.008 kg of vehicle on the wall. For driving purpose we use 3 volt and 0.72 amp motor which provide 0.027 Nm of torque on each driving wheel. For the required driving speed we use 6 reducing gears which are connected parallel and series wise from motor to the driving wheel. For direction control we also use these driving wheels which are fitted on both side of the vehicle by controlling their speed we get turn. For control all these instrument like vacuum pump, driving motor we use the

remote control system and these remote control system get their energy from 3 pair of batter.

5. Calculation

Torque of drive motor shaft

(1) When only driving wheel running

- No of teeth 1 $z_1=21$,
- No of teeth 2 $z_2=8$,
- No of teeth 3 $z_3=21$,
- No of teeth 4 $z_4=8$
- No of teeth 5 $z_5=21$,
- No of teeth 6 $z_6=8$,
- Voltage of driving motor $V=2$ volt
- Armature current in driving motor $I=0.43$ amp
- Speed of wheel $N_1 = 750$ rpm

$$\begin{aligned} \text{Load on a motor } P &= V \times I \\ &= 2 \times 0.43 \\ &= 0.86 \text{ WATT} \end{aligned}$$

now, gear ratio

- $N_1 = z_2 \div z_1 = N_1 \div N_2$, $8 \div 28 = 750 \div N_2$,
- $N_2 = N_3 = 2625 \text{ RPM}$
- $I_2 = z_4 \div z_3 = N_3 \div N_4$
- $8 \div 28 = 2625 \div N_4$
- $N_4 = N_5 = 9187.5 \text{ RPM}$
- $I_3 = z_6 \div z_5 = N_5 \div N_6$
- $8 \div 28 = 9187.5 \div N_6$
- $N_6 = 32156 \text{ RPM}$

Thus, Torque on driving motor shaft

$$\begin{aligned} T_d &= (p \times 60) / 2\pi N_6 \\ &= (0.86 \times 60) / 2\pi \times 32156 \\ &= 2.55 \times 10^{-4} \text{ Nm} \end{aligned}$$

(2) When both driving wheel and vacuum pump running

- Voltage of driving motor $V=3$ volt
- Armature current in driving motor $I=0.72$ amp
- Speed of wheel $N_1 = 750$ rpm
- Speed of the driving motor $N_6 = 32156$ rpm
- Load on a motor $P = V \times I$
- $= 3 \times 0.72$
- $= 2.16 \text{ Watt}$

Thus, Torque on driving motor shaft

$$\begin{aligned} T_d &= (p \times 60) / 2\pi N_6 \\ &= (2.16 \times 60) / 2\pi \times 32156 \\ &= 6.4145 \times 10^{-4} \text{ Nm} \end{aligned}$$

2. Torque on vacuum pump motor shaft

(1) When only vacuum pump running

Since,
Speed of pump armature=32000 rpm
Voltage drop in armature conductor =3 volt
Load current = 0.67 amp

So,
Output power
 $P = V \times I$
 $P = 3 \times 0.67$
 $P = 2.01 \text{ Watt}$

Torque developed in pump armature
 $T = (P \times 60) / (2 \times \pi \times N)$
 $T = (2.01 \times 60) / (2 \times \pi \times 32000)$
 $T = 59.9 \text{ Nmm.}$

(2) when pump and wheel running

Speed of pump (N) = 32000RPM
Voltage drop within armature conductor (V) = 2
volt

Load current (I) = 0.45amp
Power developed (P) = $V \times I$
 $= 2 \times 0.45$
 $= 0.9 \text{ watt}$

Torque transmitted
 $(T) = (60 \times P) / 2 \times \pi \times N$
 $= (60 \times 0.9) / 2 \pi \times 32000$
 $= 2.685 \times 10^{-4} \text{ Nm}$

6. Applications

1. Used in spy works.
2. Used for window cleaning.
3. Used for painting the multistoried building.

7. Limitations

1. It is difficult to maintain regular vacuum.
2. Don't used in super plane and rough surface.

8. Conclusion

As our study and analysis this vehicle is fully able to stick on the wall and run.

References

- [1] <http://en.wikipedia.org/wiki/Anti-gravity>
- [2] <http://search.globososo.com/web?hl=in&q=histry+of+anty+gravity>
- [3] <http://www.thegreenhead.com/2008/12/anti-gravity-rc-wall-racing-car.php>
- [4] <http://china-toy-factory.com/rc-toy/mini-rc-wall-climbing-beetle-866-2.html>
- [5] http://en.wikipedia.org/wiki/Vacuum_technology
- [6] http://en.wikipedia.org/wiki/Electric_motor