

Better Spoken English
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Lecture No. # 36
Student Presentations IV

Respected sir and friends, good morning to all. I am Hari Prasad, roll number CS10B010. Today, I am here to talk about Bluetooth.

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What is ?

- Proprietary open wireless technology standard for exchanging data
- Can transmit data in the range 2400-2483 Mhz
- Packet based protocol with master slave structure

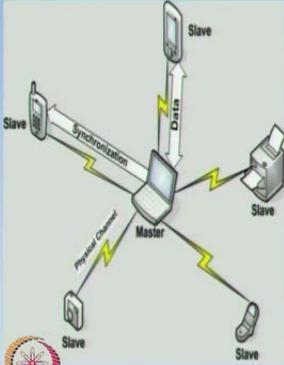


So let us start with - what is Bluetooth? It is proprietary open wireless technology standard for exchanging data; it uses radio transmissions in the range 2400 to 2483 mega hertz; it is a packet based protocol with master slave structure.

So what is master slave structure? While transmitting data the sender is the master and receiver is the slave. So in a master slave structure of Bluetooth, a master can have utmost seven slaves and all should have the master's clock.

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Master Slave Structure



- One master can communicate with at most 7 slaves in a piconet
- All share master's clock
- Packets may be 1, 3 or 5 slots long
- Mostly master transit will begin in odd slots
- and slave transit in even slots
- The devices can switch roles that is a slave can become a master



The master may transmit during odd cycles, while the receiver transmits during the even cycles. And as you all know that they can switch between; the master and slave can switch their roles while transmission.

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Advantages



- Low power consumption in transmission
- Secure way to connect and exchange information between devices



So what are the advantages of Bluetooth? It uses very less power during transmission; it is a very secure way to connect and exchange data over short distances. Like in the diagram, you can see, like many devices are using the same internet connection and all of them are connected through Bluetooth.

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Improvements

- Bluetooth dongle
- Newer versions, like bluetooth v4.0 faster, more secure and consumes less power

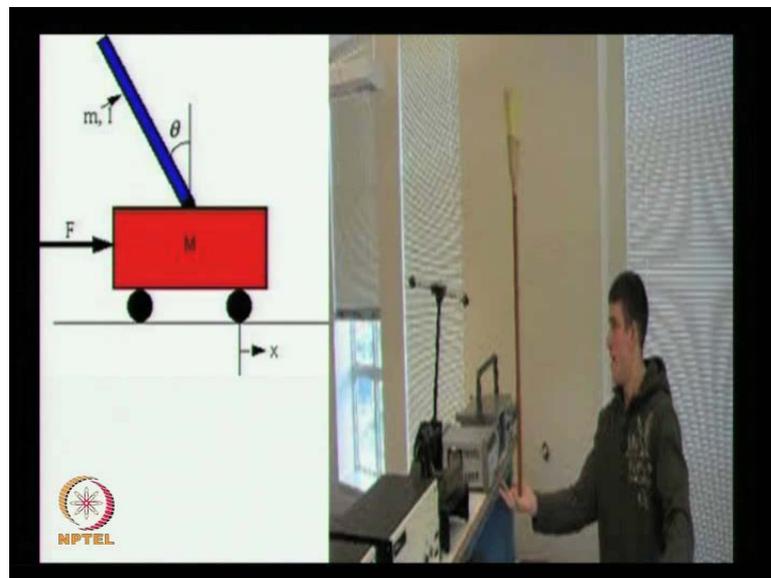




Now, moving over to some of the improvements. The Bluetooth dongle, like our desktops, do not have a Bluetooth adapter on its own. So this is... so we can use a Bluetooth dongle; what it does is... it is an external Bluetooth adapter; now there are newer versions like the Bluetooth version 4, which is much faster, more secure, and consumes very less power. Thank you.

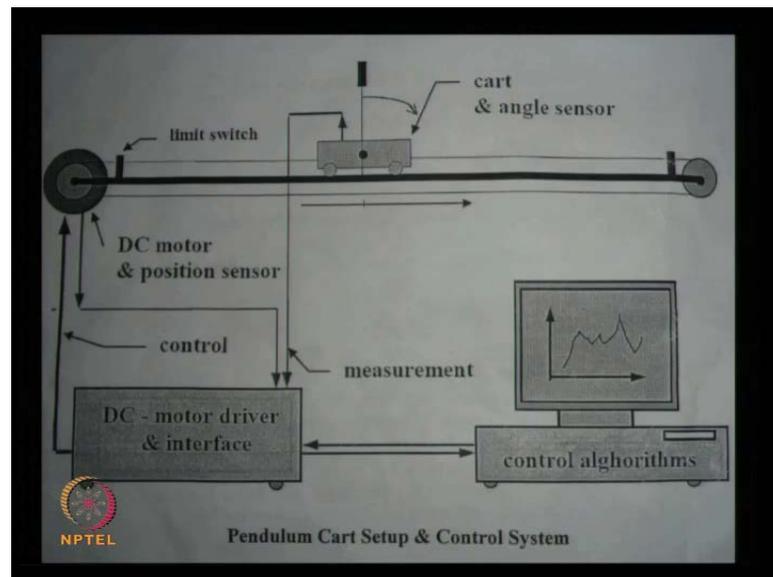
Respected sir and my dear friends, good morning. Today I will be speaking about this inverted pendulum.

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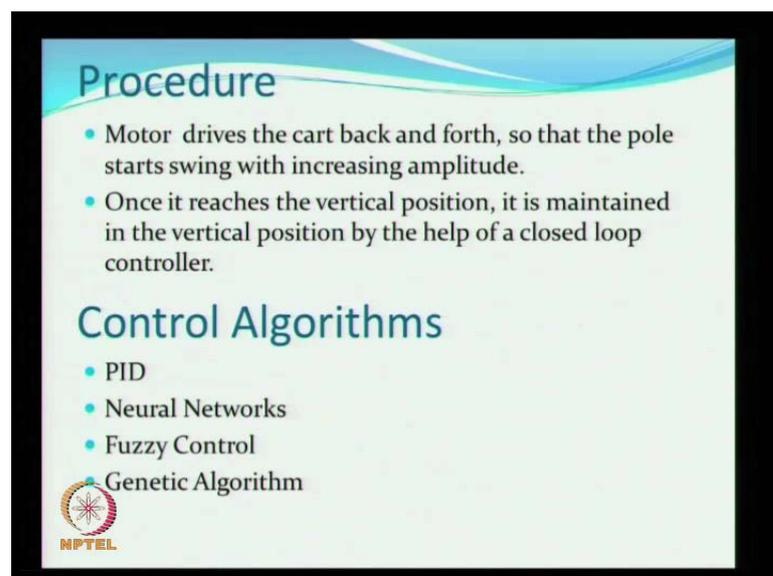
Inverted pendulum is the classic problem in Dynamics and Control Theory, used as a benchmark to test the various algorithms like PID, fuzzy networks, neural system; it is just like balancing a bowl in the palm.

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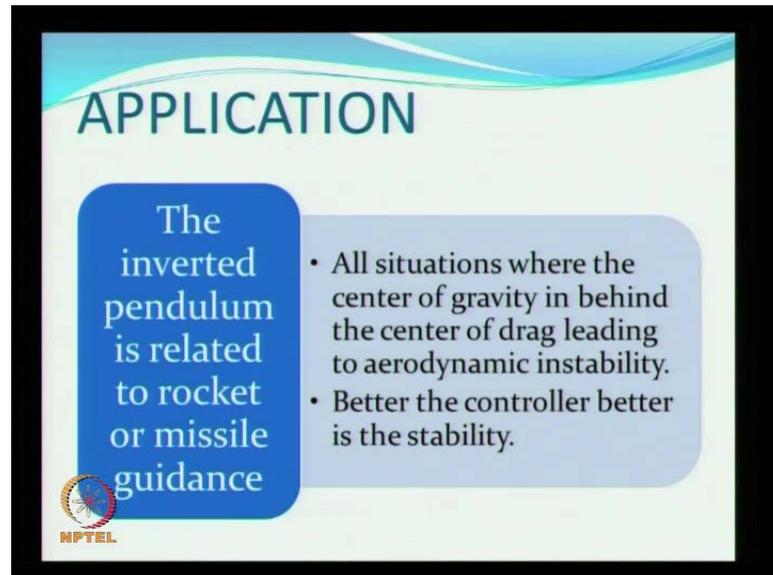


The set up is, we have a rail over which we have a cart with a pole, we have a DC motor, control system, and a data acquisition system. So what we do here is, we apply a series of a constrained forces on the cart, so that the poles start to swing with an increasing amplitude, and once the pole reaches the vertical position, then it is maintained there, using the control system. The vertical position is basically unstable, because the centre of gravity is behind the center of drag; this is called aerodynamic instability.

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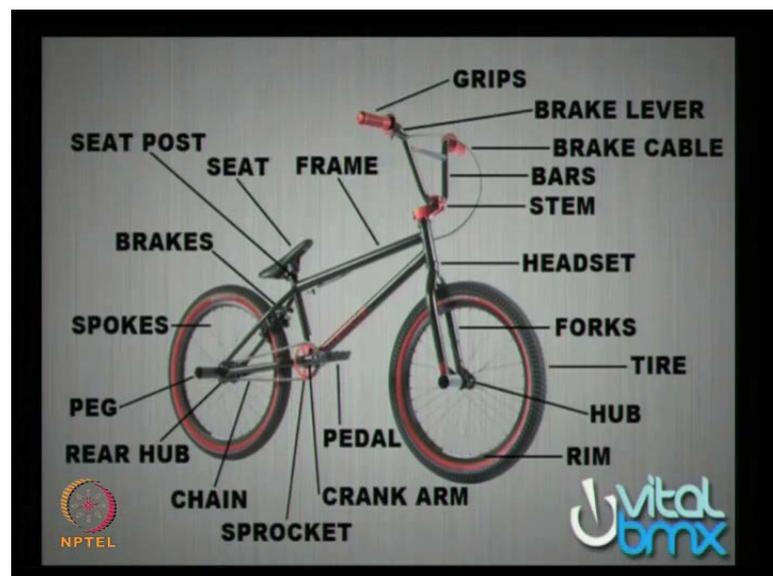
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This inverted pendulum can be related to rocket and missile guidance, as we improve the controller, better stability can be attained. Thank you very much.

Good morning friends and respected sir. My name is V. Ranjith; my roll number is BT10B070. Today, I am going to talk about the topic - bicycle.

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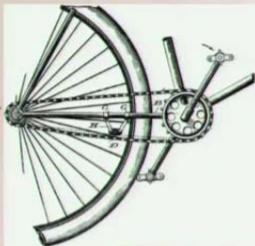


These are the parts of the bicycle; the main parts are frame, bars, brakes, tire, hub, rim, the pedal, chain, spokes, and from this, we can see the pedal and the crank arm clearly.

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How a bicycle works:

- ❖ It works with pedals, which are connected via a chain to the back wheel.
- ❖ The rotation of the pedals moves the chain across gears on the rear wheel, rotating it.
- ❖ The steering works by rotating the front wheel using the handle bars.
- ❖ The brakes work with cables, pulling two rubber plates against the wheel.



Coming to the working model. The bicycle works with pedals, which are connected by chain to the back wheel; the rotation of the pedals moves the chain to the rear wheel by rotating it. And we can control the cycle steering by rotating the handle, and we can stop the cycle by applying the brakes which are connected with cables to the rubber plate.

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- ❖ The speed of the cycle has been improved by inserting gear system to the rear wheel.
- ❖ It is highly affective in the variation of speed.



GEAR SYSTEM

- ❖ Suspension under the seat, prevent back pain.

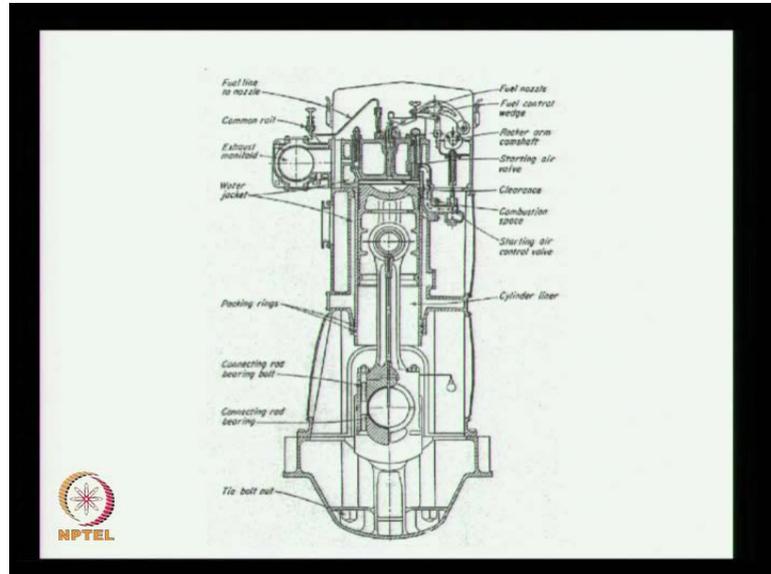
- ❖ circular plates are fixed, which lock onto the spokes of the wheel. This prevents the rim from being worn down.



Coming to the improvements - there are a lot of improvements made in the basic cycle. By inserting the gear system, we can manage the speed, and we can go ((quickly)) and ((disc brakes)) are inserted, so that they can... Thank you.

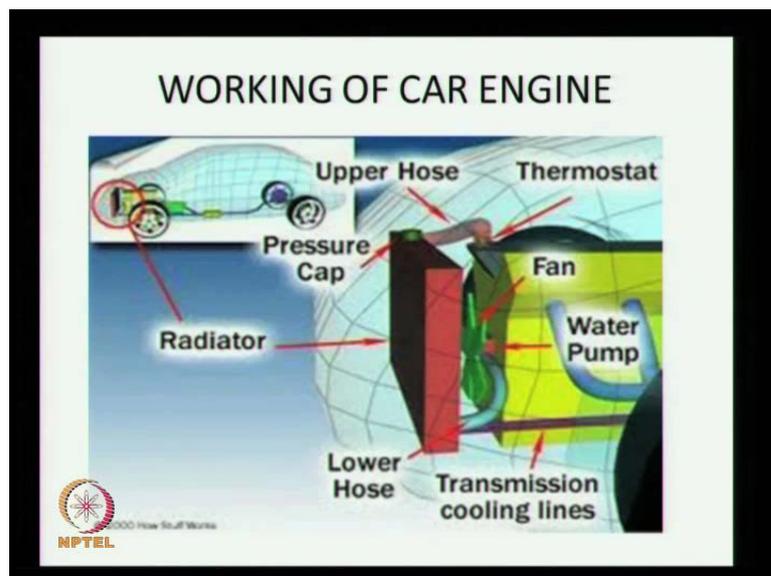
A very good morning. A very good morning to one and all. Respected sir, today I am going to say about the car - how it works.

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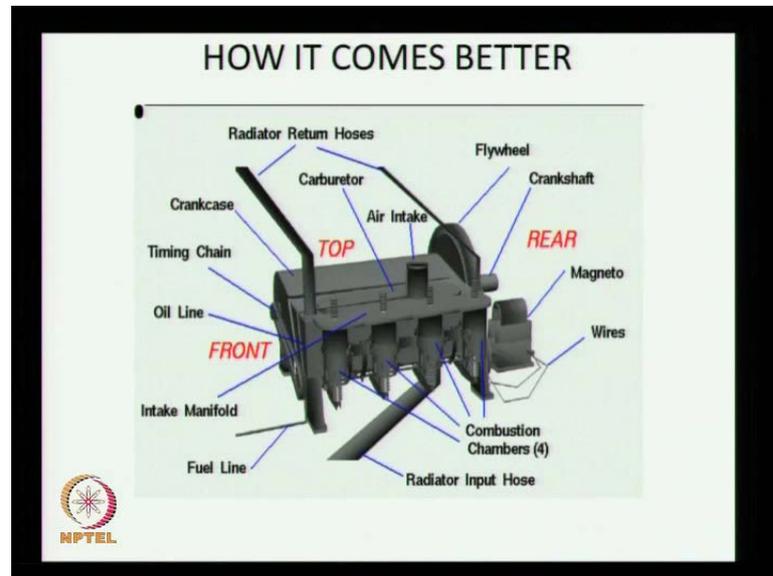
These are the parts of the car. Mainly most of the parts are very important in the car - connecting rod bearing is **is is** useful to the wheel **wheel**. And now-a-days, many of the people are using the cars, for many of the uses; it is it become like the daily use of the human beings; its very needed for everyone, most probably the who are working.

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And you can see in this diagram, how the car engine works. There is a radiator, and the water pump, and the fan, and then lower **hose**, and the transmission cool lines. If the engine is heated, the water pump gives water and it gets cooled.

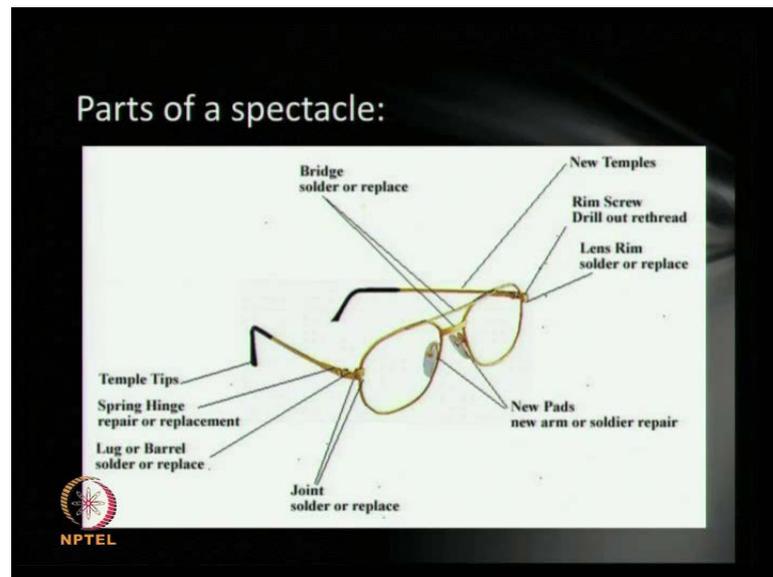
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And this is how we use is the new carburetor, how get used in the cars to get more mileage, and pick up of the car. Thank you.

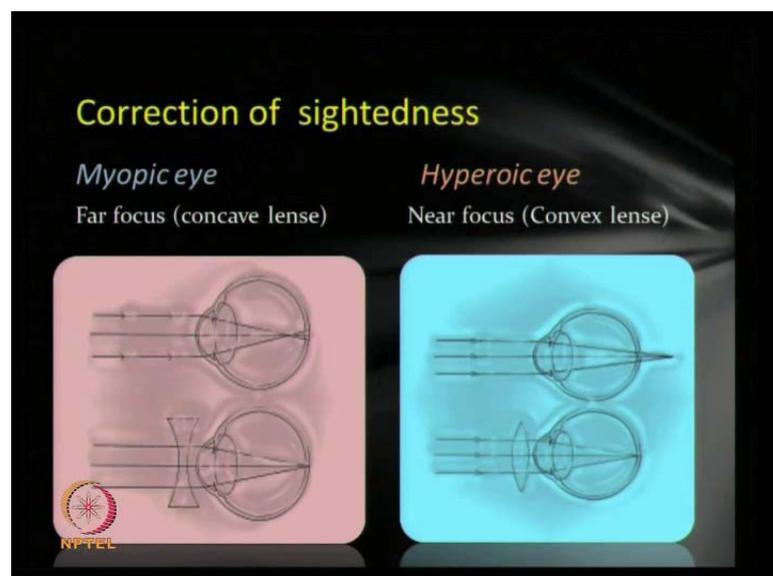
Hi everybody, good morning to all. My name is Jadhav ((Dattareya)) and my roll number is AE10B042. Today, I would like to explain the design and the working of a very simple engineering object, but very vital engineering object - spectacles. This slide shows some of the parts of the spectacle amongst which the lens is a very important part.

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First of all, we need to understand the working of a human eye to understand the working of a spectacle. Human eyeball consists of a lens made up of living cells, which focuses the light reflected from various objects to a screen called retina. Most commonly, there are two defects in which the focusing can happen: one, the focusing may be in front of the retina, which is called myopia, is also in common language **short sighted**, long sighted; also the second one is the focusing may be behind the retina, which is called short sightedness.

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We can correct these by using suitable lenses. As you can see from the slide, for a myopic eye, we can use a concave lens. As you all of you know, a concave lens diverges the light coming through it and makes the light the focus to fall on the retina. And in a **hyperopic** eye, we can use a convex lens, which makes it to fall on a retina by converging.

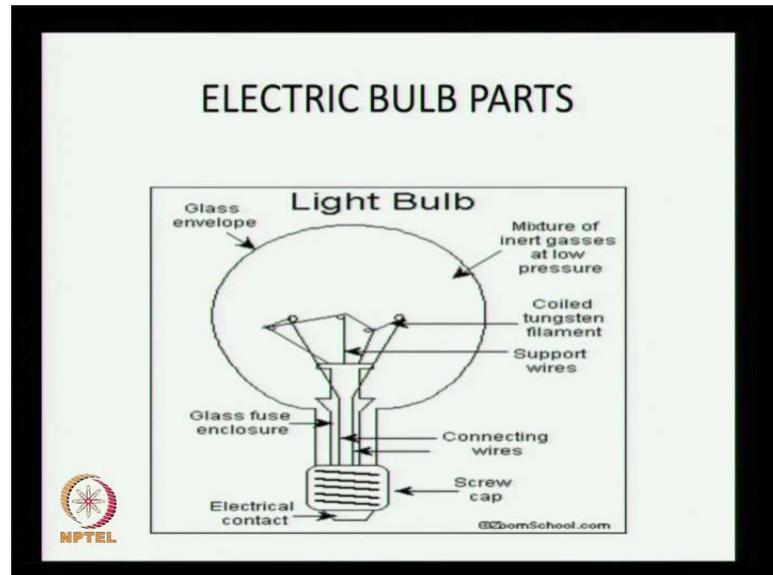
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And these are some of the efficient ways to... Thank you.

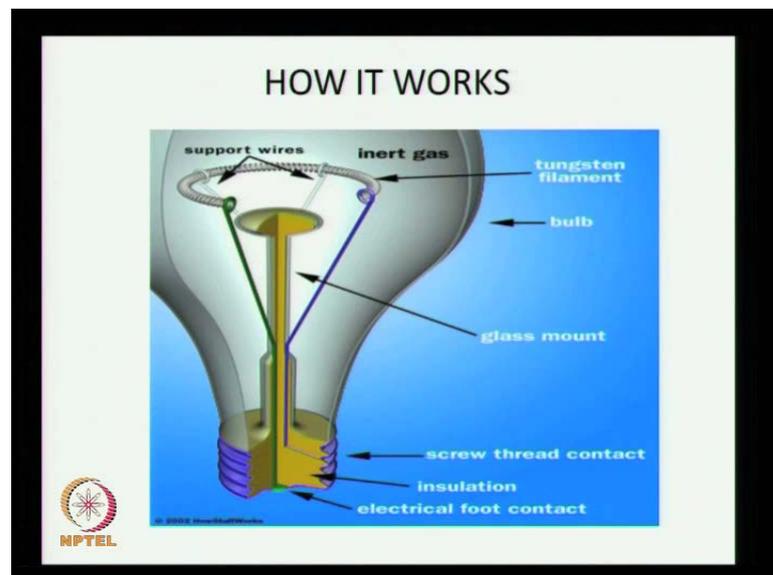
Good morning friends; good morning sir. My name Shak Jain; my roll number is BT10B065. Today, I am going to talk about electrical bulb. Electrical bulb plays a major role in our daily life; without electrical bulb we cannot do anything.

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So, now, we can see some important parts of electrical bulb. It has screw cap connecting wires, and glass fuse enclosure, glass envelope, tungsten filament - which is place plays major role - and mixture of inert gases at low pressure. So these are the important parts of the electrical bulb.

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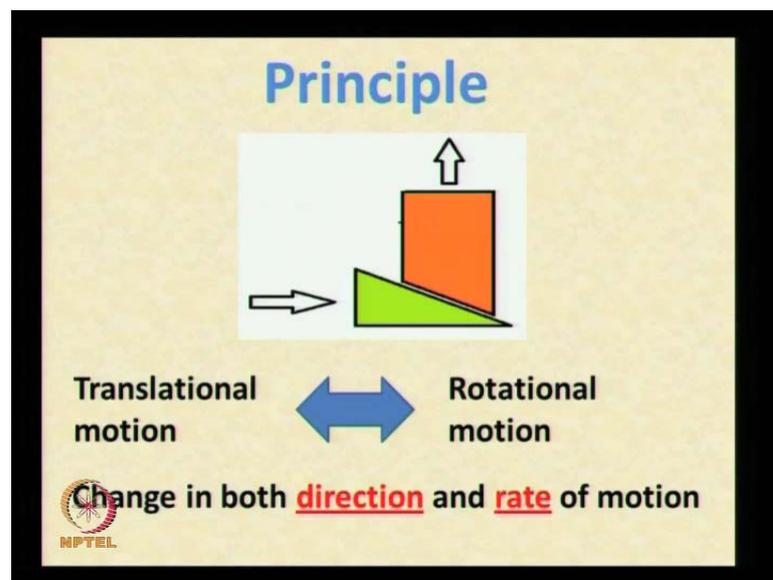


Now, we can see how it works. So electrical bulb works on the principle of ((effect)). So when we switch on, electricity passes through the tungsten filaments, which is very important to the electrical bulb. So after that, it produces some heat; then, with the help

of tungsten filaments electricity is produced. So by this... because of these some important parts the electrical bulb useful to us. Thank you.

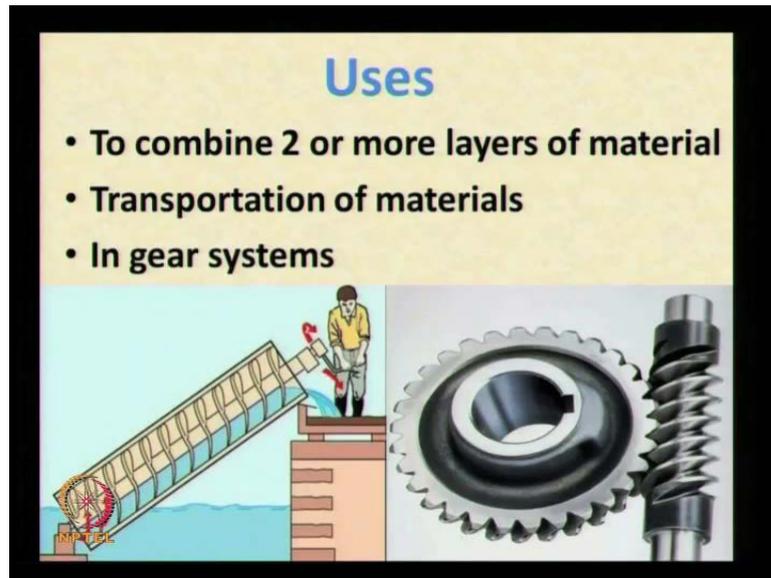
Good morning everybody. I am Irfan; my roll number is AE10B041. Today I am here to talk about a very basic engineering object - screw and its importance in our daily life. It is almost impossible to make a machine without a screw. A screw mainly has three parts: a screw head, a helical surface, and a cylindrical shaft.

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If the green block moves right, then the upper block goes up; this is the principle behind the screw. And screw transmits, changes translatory motion into rotational motion and vice versa. It also changes both the direction and rate of motion.

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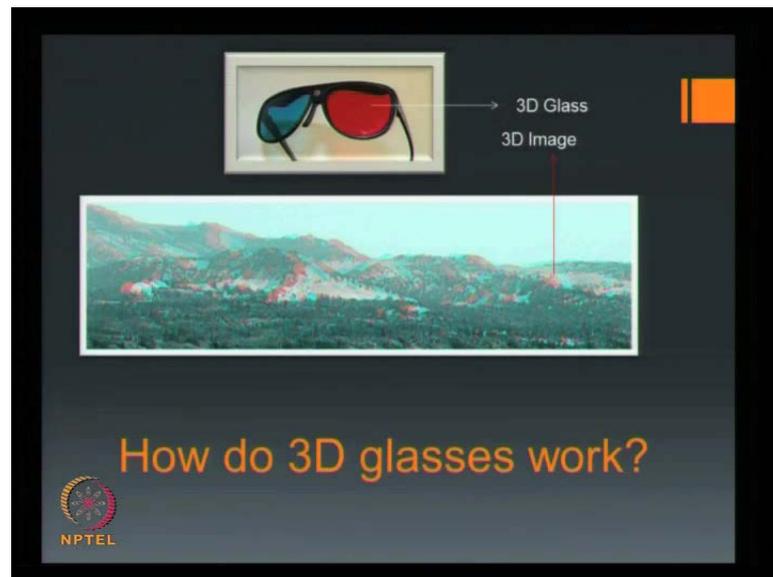
Usually we use screw to combine two or more layers of materials and it also uses to transport materials. Right there it is called Archimedes screw; it uses to lift water by rotating this screw and screws are inevitable in gear systems.

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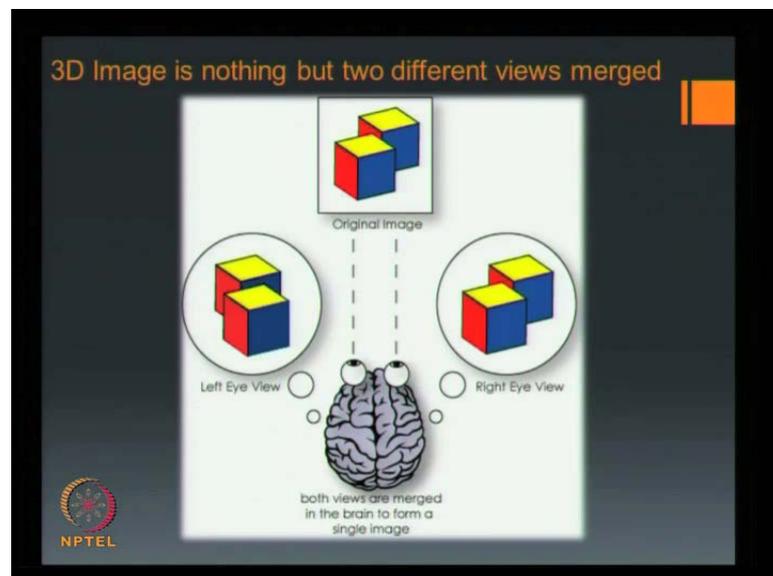
Almost all aircrafts and ships move using propellers, and the propeller is basically a screw. Da Vinci, one of the greatest artist and an engineer, had designed it a 100 years ago; right there is a model of helicopter blade that he designed. After all, screw has made our life much easier. Thanks for listening. Have a good day.

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Good morning to everyone. I am Alfred Ajay (()); my roll number is EE10B052. Today I have come here to explain how 3D glasses work.

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Our eyes plays a **part by** a small distance. So here, the right eye sees more of the blue side and the left eye sees more of the red side. The brain then merges both the views to give us the perspective of a 3D object.

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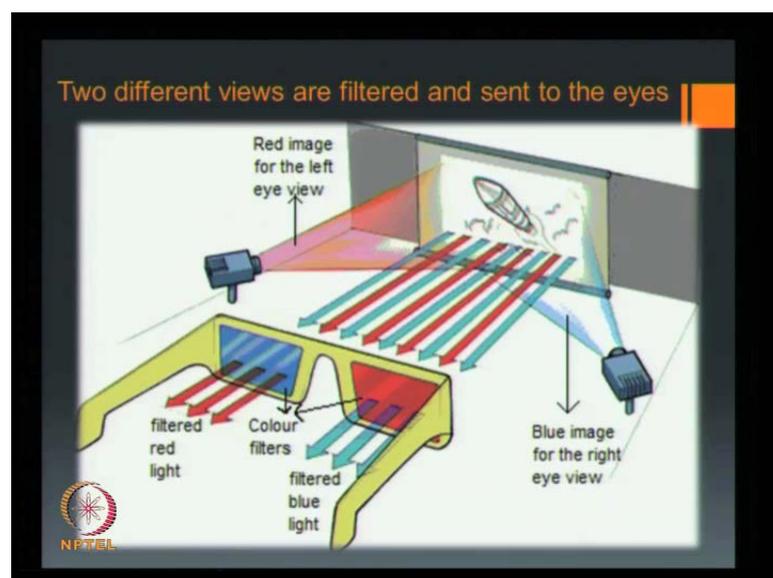
The process

1. 3D – Movies, 2 cameras placed closely
2. Images – different colours (red & blue)
3. 2 projectors in theatres
4. 3D glasses – colour filters
5. Different views
6. Brain merges views forming 3D image

Acknowledgement:
<http://www.howstuffworks.com>

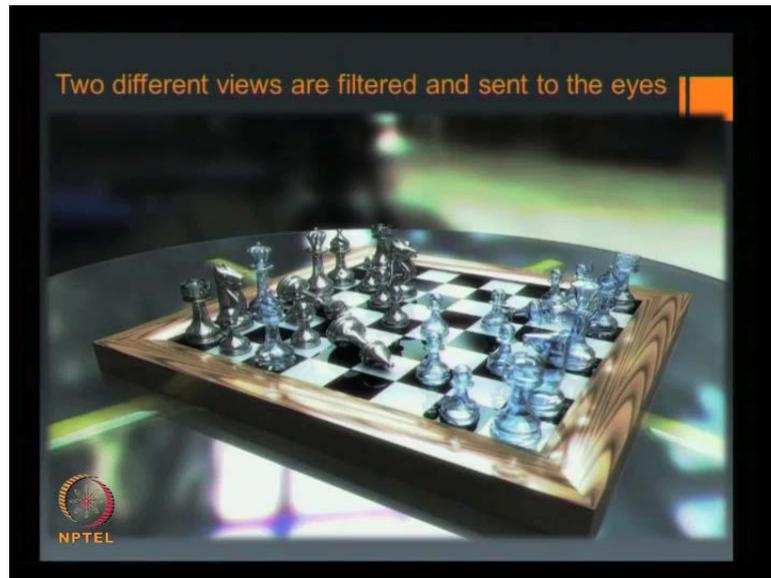


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The 3D movies are taken using red and blue cameras placed closely. And in theaters, the color filters in the 3D glasses allows only, say red light to enter the left eye, and the blue light to enter the right eye, which when merged by the brain to give us a 3D image, like this.

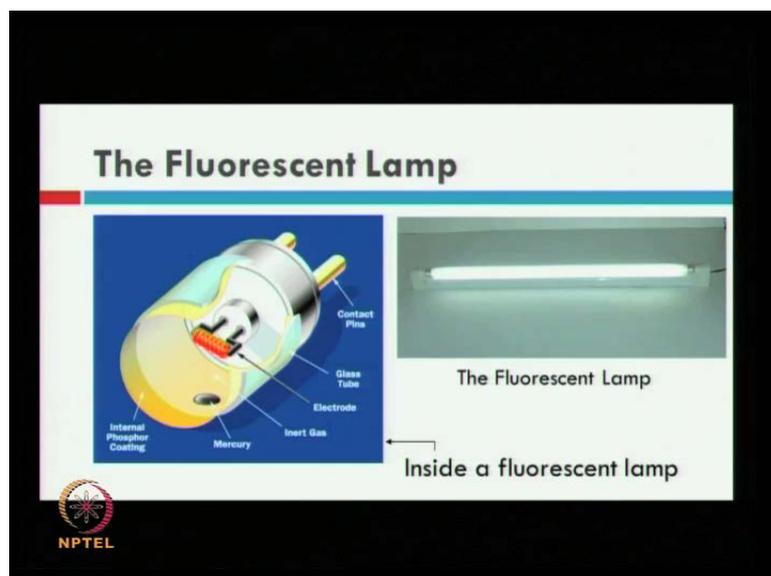
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Before leaving, I would like to acknowledge howstuffworks.com for providing me the content. Thank you.

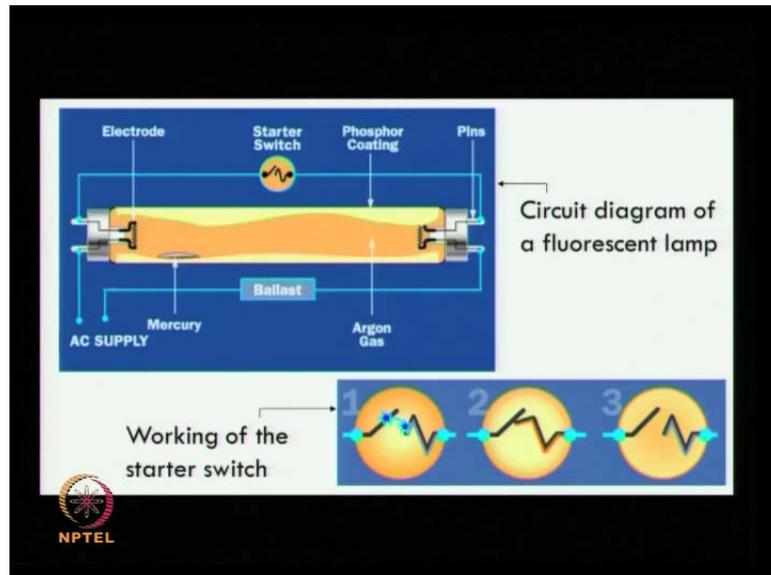
Good morning ladies and gentleman. My name is Nishanth and my roll number is EE10B068. I am here to explain the working of a fluorescent lamp.

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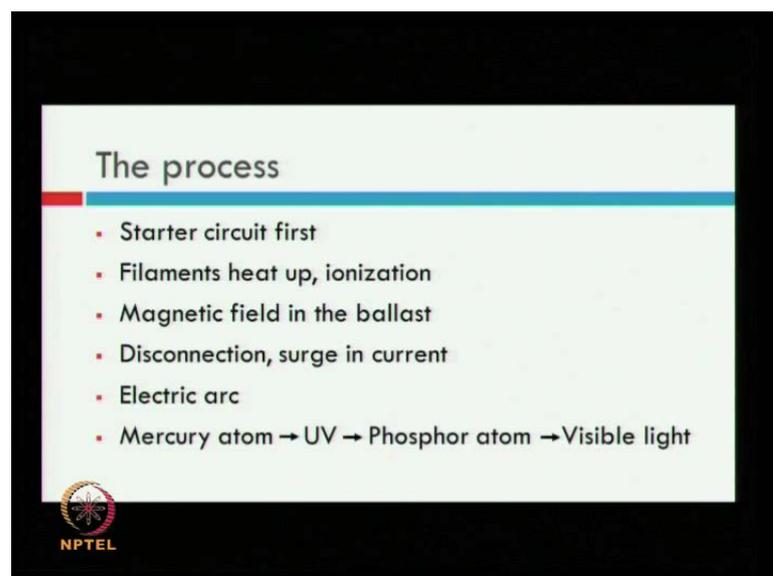
A fluorescent lamp consists mainly of a glass tube with internal phosphor coating, two electrodes, contact lens, argon and a drop of mercury.

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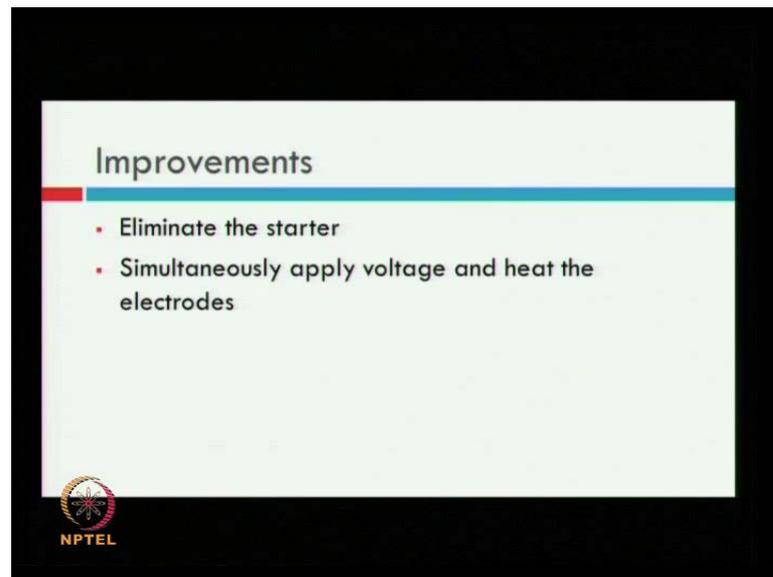


When turned on, current first flows through the starter circuit through a small arc, **heat** by a bimetallic strip. This current generates a magnetic field in the ballast and heats up the filaments, emitting electrons. After a while, this strip cools down and gets this connected. This forces the ballast to generate an electric arc through the now fully ionized gas. The electrons from the arc excite vaporized mercury atoms releasing ultraviolet photons; these photons excite phosphor atom emitting visible light.

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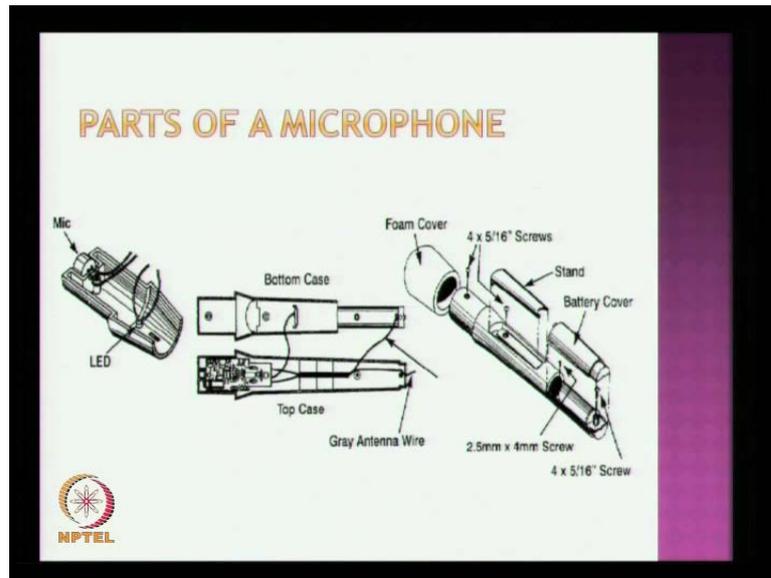


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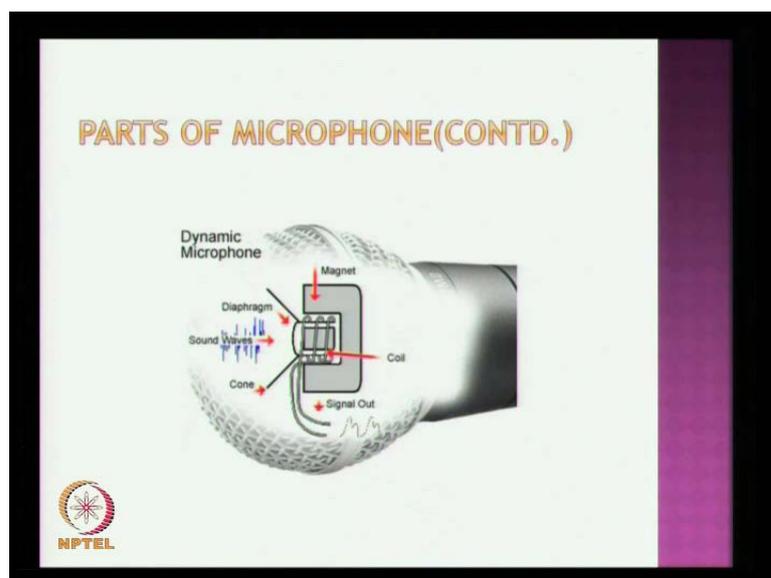
Respected sir and my dear friends, a very good morning. I am S.V Aditya; my roll number is ME09B061. Today I would like talk about microphone - an engineering object.

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A microphone, colloquially called as mike, is an acoustic to electric transducer or sensor, which converts sound signals into electric signal. Microphones are applied, have applications everywhere, varying from movies to even our class. Figure shows the exploded view of a cordless, cordless mike, which is usually used. As you can see the main parts: the mike LED indicator, antenna, foam, cover, etcetera.

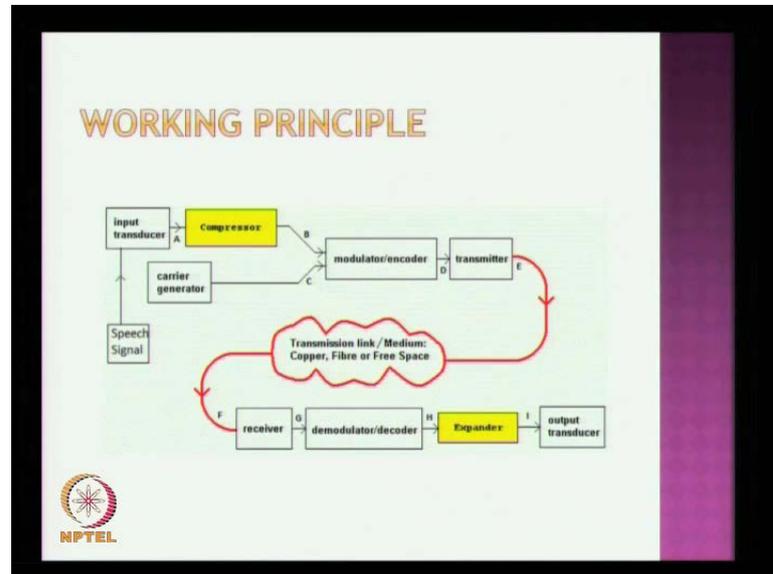
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This figure shows close up of this sensor. As you can see, as the sound waves heat the diaphragm, the corresponding acoustic signal is converted to electric signal using the

principle of electromagnetic induction; these signal, these electromagnetic induction, takes place mainly because of the vibrations caused in the diaphragm.

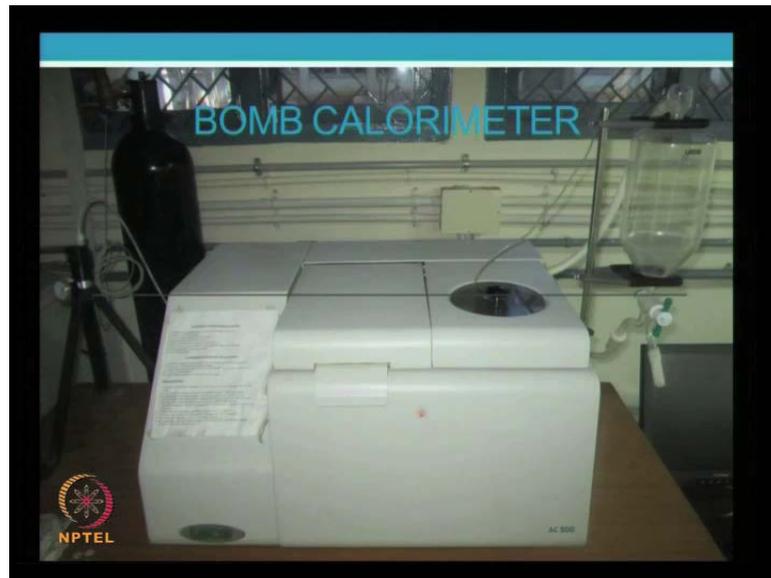
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Now, this is the flow process of a completely separated base system, where receiver and transmitter are completely different. Speech signal is given to input transducer, which is compressed along with the carrier wave, and sent to the modulator, and then transmitted with the help of an antenna, which is received by the receiver and demodulated, sent to the output transducer, mainly speaker. Had they there been no microphones invented, then we would never have heard Martin Luther King or Mahatma Gandhi. Thank you.

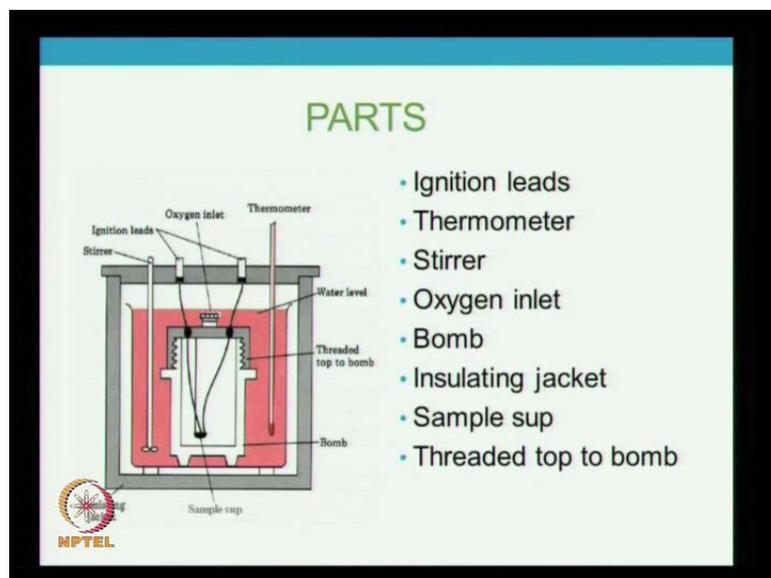
Good morning. I am Karthick; my roll number is ME09B115. Today, I am going to explain the working process and the uses of bomb calorimeter.

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This is how a typical bomb calorimeter looks like. This instrument is used to determine the calorific value of the fuels like petrol, kerosene, coal, etcetera. By knowing the calorific value, we can determine the energy liberated when the fuel is burnt.

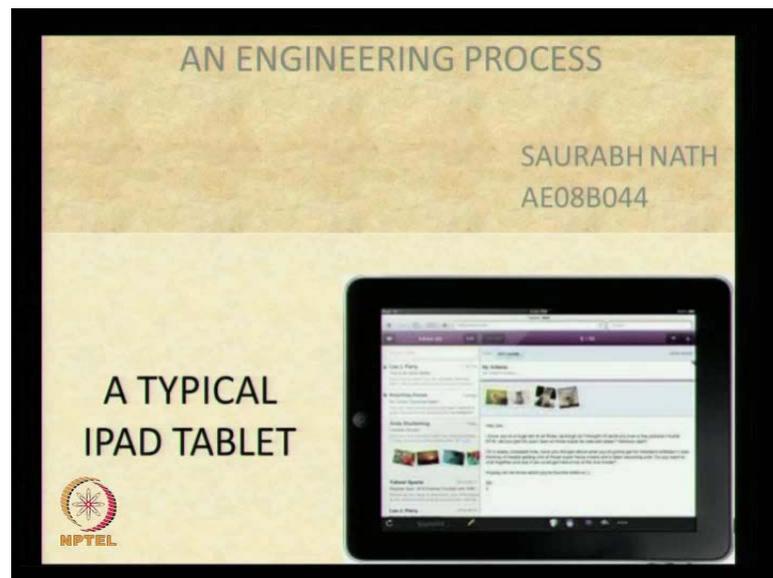
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The main parts are - ignition leads, thermometer, stirrer, bomb, and sample sup. The bomb is a container, which is made of thermally conductive material, and can sustain high pressures. The fuel, a certain amount of fuel, is placed in the sample sup, and it is placed in the bomb. The bomb is tightly sealed, and oxygen is sent through the bomb,

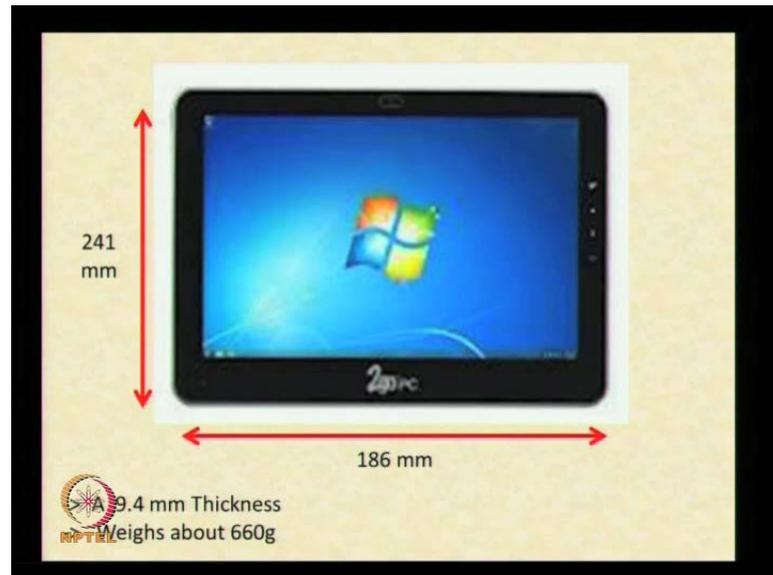
into the bomb, through the oxygen inlet. With the help of ignition leads, the fuel in the sample sup is burnt and the heat liberated. It transferred through the walls of the bomb to the water. With the help of the stirrer, the temperature, **the** temperature is determined using the thermometer. With the help of the stirrer, uniformity of the temperature is maintained. With the help of the predefined program and a software, the calorific value of the fuel is determined. Thank you.

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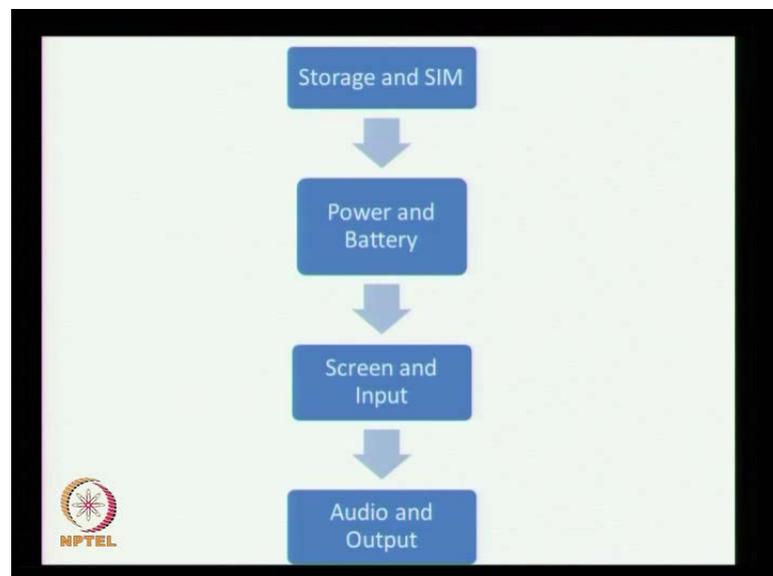
Hi, I wish you all a very good morning. My name is Saurabh Nath and my roll number is AE08B044. Let us talk about the structuring and modeling of a typical iPad.

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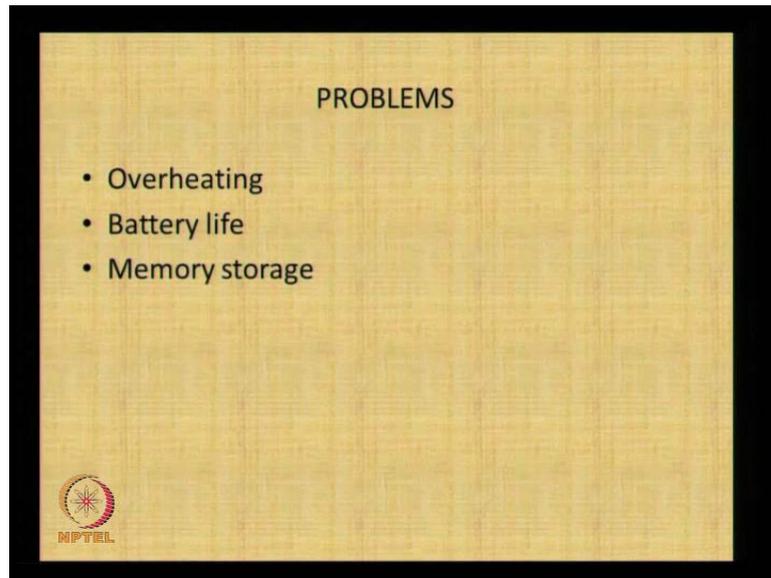
A third generation iPad is generally about 241 millimeter in length, 186 millimeter in breadth, with a thickness of around 9.4 millimeters; it weighs about 660 grams.

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How is an iPad assembled? All the data is stored in an internal flash memory with no expandable storage. A typical iPad is designed to be charged with a 2 ampere current and 10 watts **with prompt** 10 volt power adapter. A touch screen of an iPad is 1024 into 768 pixel of liquid crystal display with scratchproof glass; it has two internal speakers, which reproduce both right and left channel audio.

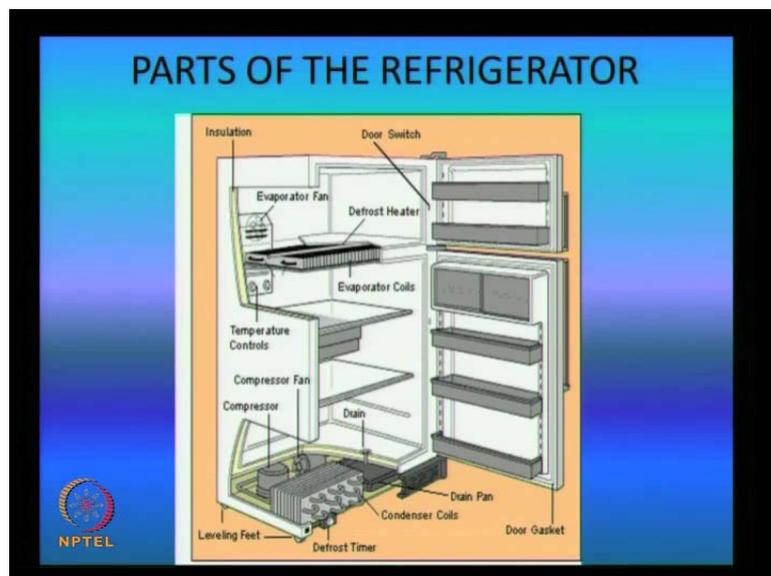
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Some of the problems relating to the iPad are - overheating, short battery life, and memory shortage. And more RandD investments are being made, so that we can overcome them. Thank you.

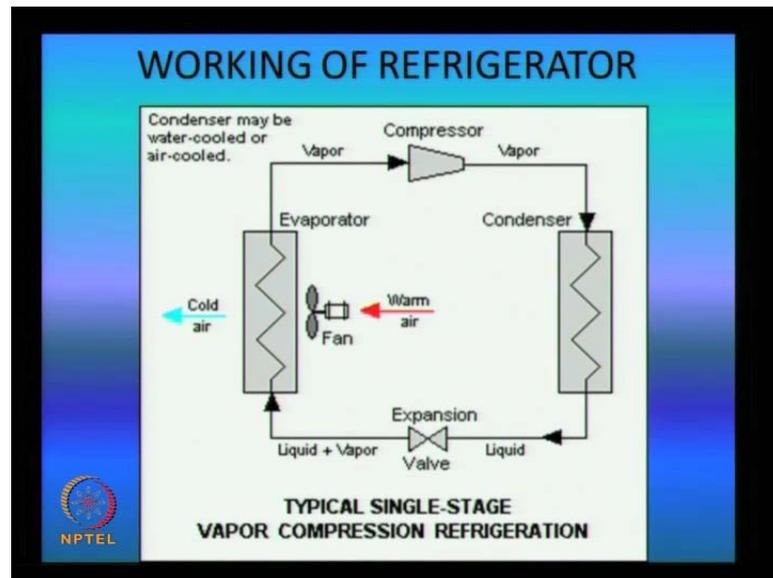
Good morning one and all. My name is Praveen Kumar and my roll number is NA10B055. I am here to say about an engineering object - on refrigerator. Refrigerator - it is used for storing foodstuffs and all; it decreases the bacteria and preserves food for longer period of time.

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And you can see the parts of the refrigerator. In the parts of the refrigerator, the main parts are – evaporator, compressor, condenser, and expansion, and it is thermally insulated; it is thermally insulated compartment, and heat pump, which transfers heat from inner body to the outer environment and cools down refrigerator inside.

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And working of the refrigerator - in compressor, the temperature and pressure will be increased, and the fluid goes to the condenser, and makes the temperature decrease, and keeps the pressure constant, and if it goes to the expansion the temperature will be constant and pressure increases. Finally, the fluid goes to the evaporator, and the warm air goes to the evaporator and sends the fluid into the cold air.

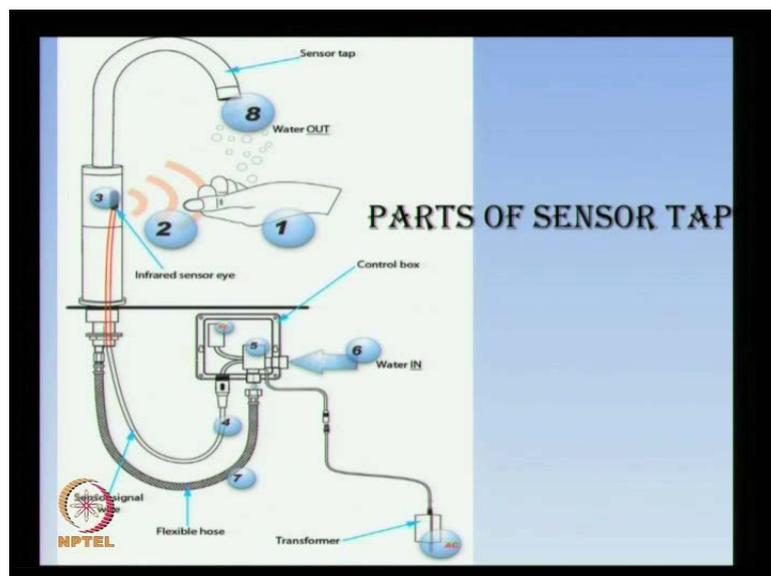
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And, finally, we are using the gas Freon as R12, it harms the ozone layer. For betterment we are using R134 it is also called as 112 tetrafluoroethane. Thanks.

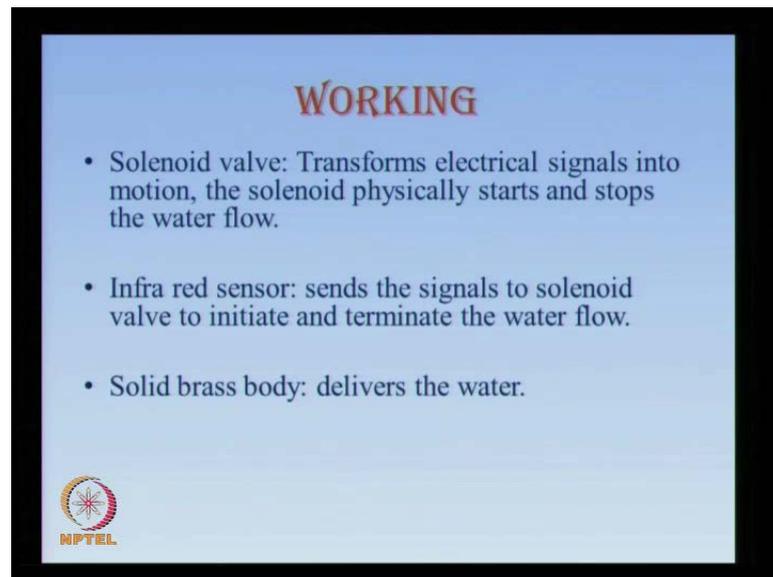
Good morning to everyone. My name is Manoj; my roll number is CE10B020. Today, I am going to describe, discuss in brief about automatic sensor water tap.

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The major parts of sensor tap are infrared sensor, solenoid valve, solid brass body control box, and the power source.

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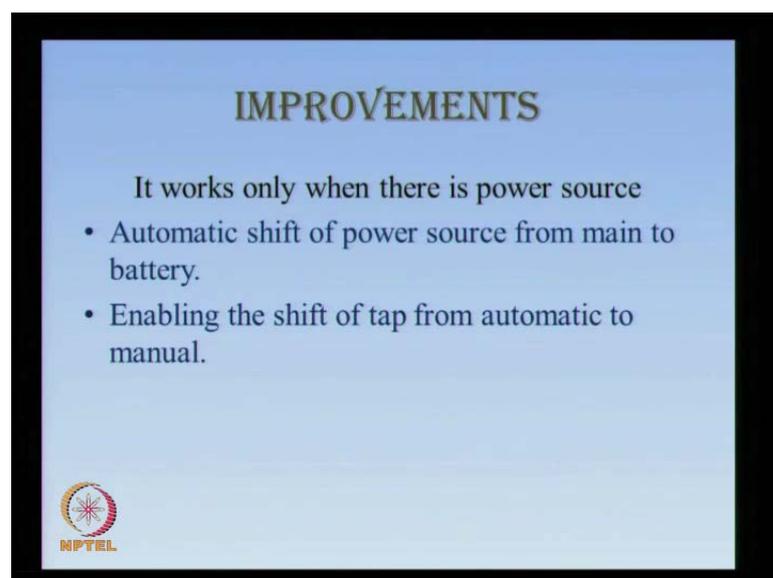
WORKING

- Solenoid valve: Transforms electrical signals into motion, the solenoid physically starts and stops the water flow.
- Infra red sensor: sends the signals to solenoid valve to initiate and terminate the water flow.
- Solid brass body: delivers the water.

 NPTEL

Coming to its working - solenoid valve transforms the electric signals into motion; it closes when the object is removed and opens when the object is placed. The infrared sensor, it takes the object and sends the signals to solenoid valve to open and close, when the object is placed and removed respectively. The water gets delivered through the solid brass body.

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IMPROVEMENTS

It works only when there is power source

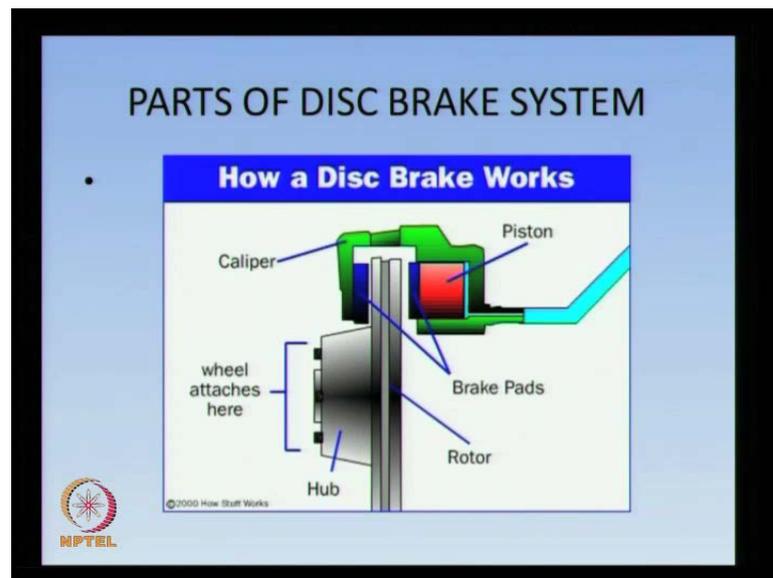
- Automatic shift of power source from main to battery.
- Enabling the shift of tap from automatic to manual.

 NPTEL

And regarding the improvements - since it works only when there is a power source, the automatic shift of the power source from the main to battery and the combination of automatic and manual would work effectively. Thank you.

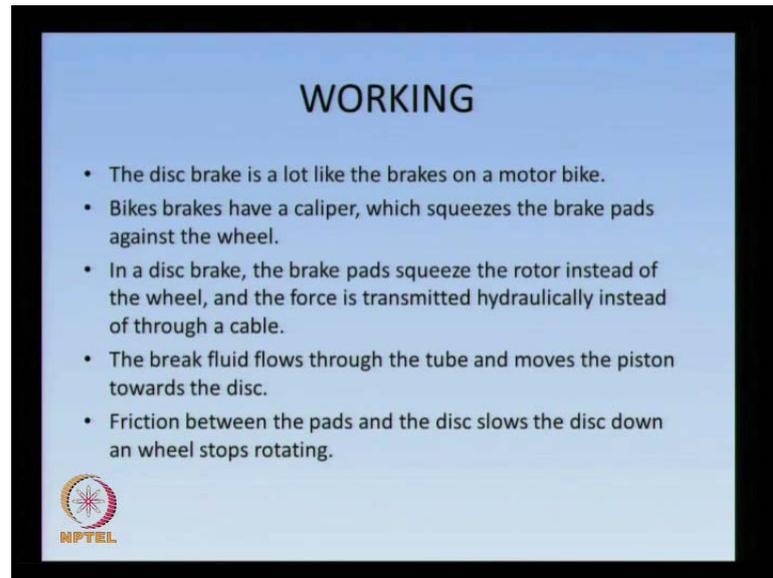
Hi friends, good morning everyone. My name is (()); my roll number is CE10B019. Today, I am going to discuss about the disc brake technology.

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These are the parts of the disc brake - the two green shafts are known as calipers, and the red piston is between the calipers, and the two blue colored brake pads are on the other side of the disc, the wheels are attached to the disc through the hub, And the disc is provided with a rotor with it.

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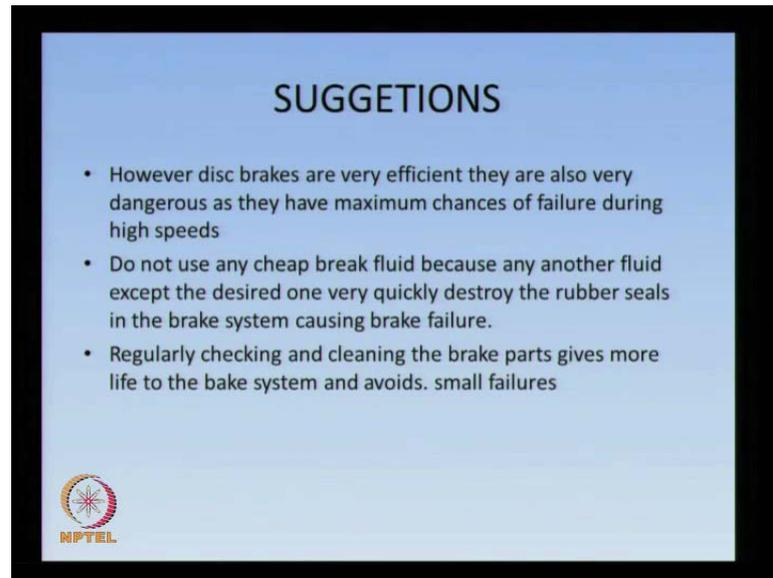
WORKING

- The disc brake is a lot like the brakes on a motor bike.
- Bikes brakes have a caliper, which squeezes the brake pads against the wheel.
- In a disc brake, the brake pads squeeze the rotor instead of the wheel, and the force is transmitted hydraulically instead of through a cable.
- The break fluid flows through the tube and moves the piston towards the disc.
- Friction between the pads and the disc slows the disc down an wheel stops rotating.



Working - the disc brake is a lot like the brakes on a motor bike. Bike's brakes have a caliper, which squeezes the brake pads against the wheel. In a disc brake, the brake pads squeeze the rotor instead of the wheel as the force is transmitted hydraulically into the cable, the brake fluid flows through the tube and moves the piston towards the disc. In this way, the brake fluid moves into the pipe towards the piston, and the piston is pushed forward on to the disc. The friction between the two brake pads allows the disc to slow down and eventually the wheels also slow down.

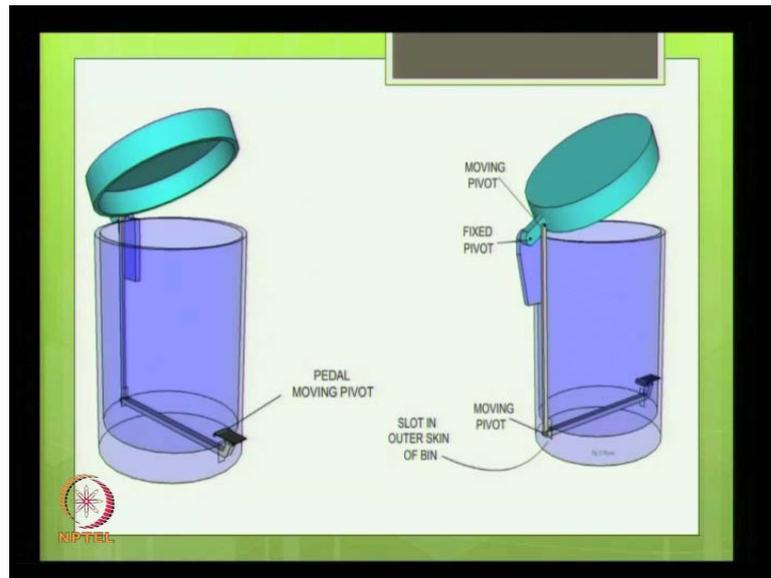
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However, the disc brake are very efficient; they are also dangerous as they have maximum chances of failure during the high speeds; so never do not use any cheap brake fluid, **because of any failure cause any because of any failure**. regular checking and maintaining the brake pads gives more life to brake systems and increases the efficiency. Thank you.

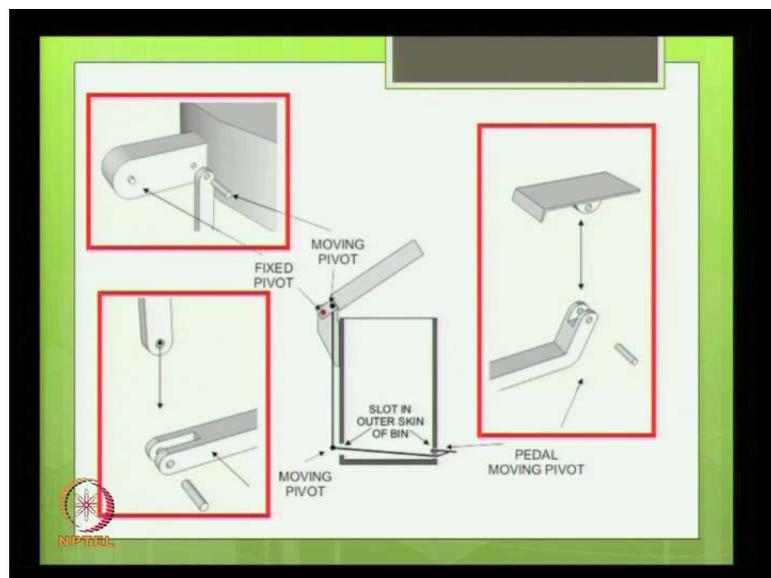
Respected sir, my dear friends, a very good morning to one and all. My name is Rajeev; my roll number is ME09B034. Today, I am going to present the pedal mechanism used in pedal dustbin.

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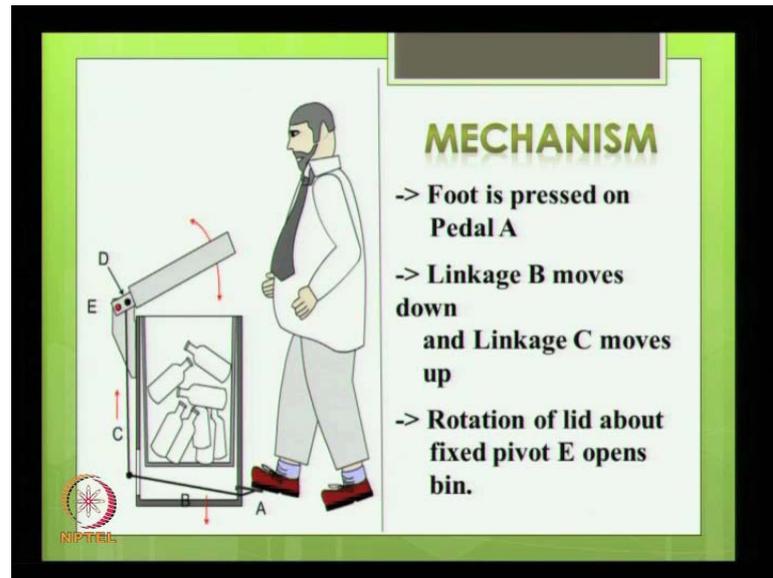
This is the 3D label of a pedal dustbin. Please have a look at major parts of the mechanism.

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A pedal mechanism consists of several linkages and pivots either moving or fixed pivots linked together to allow a specific portion. in this diagram the major pivots are represented.

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Coming to the mechanism, when the foot is pressed on pedal A, the linkage B orients upwards, which causes the linkage C to move up. The linkage C is connected to pivot D on the lid, the fixed pivot E. The lid, thus moves, thus rotates about the pivot E. Thank you.

Respected sir and my dear friends, good morning to one and all. My name is Stefen Kishore and my roll number is NA08B037. Today, I am going to present about water purifier; it has the parts mentioned in the figure; it has the covering lid, disinfectant, water to be filtered, **water** activated carbon, filtered water and the **pie** rod.

Coming to the process description, it is the five-stage process. Stage one - its washable filter dome, it remove suspended impurities. Stage two - active disinfectant; it eliminates bacteria and viruses. Coming to the stage three - **bacteriostatic** activated carbon; it removes excess iodine, chlorine, organics, color, odor and **faultage**. Stage four - it is lower filter dome; it filters the purified water to give clear water. Stage five - it is special magnet; a magnet in the tap at the last stage dispenses energized water. Cost of the purifier is very expensive; is around Rs. 5,000 to Rs. 20,000.

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- Cost of this purifier is very expensive around Rs.5000 - Rs.20000
- Very recently discovered that banana peel can be used as good purifier. Purifiers made by banana peel is less expensive and can be used 11 times without losing its metal-binding properties.



Coming to the improvements - it is very recently discovered that banana peel can be used as good purifier. Purifiers made by banana peel is less expensive and can be used 11 times without losing its metal binding properties. Thank you.

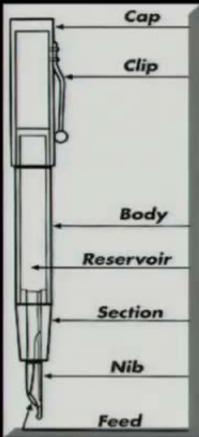
Good morning, friends. My name is Kumar; my roll number is BT10B024. Today, I would like to speak a few words about fountain pen.

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Fountain Pen

- Louis Waterman patented the first practical Fountain Pen in 1884
- The mechanism of Fountain Pen broke down in 3 categories :

- 1)Reservoir
- 2)Feed
- 3)Nib

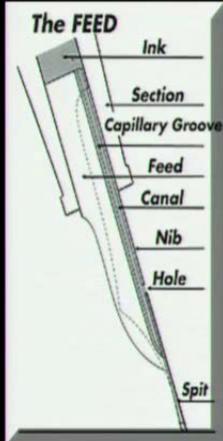


Louis Waterman patented the first practical fountain pen in 1884. The mechanism of fountain pen may be broken into three categories: first one - reservoir; second is feed;

and third is nib. Reservoir is mainly used to hold the ink; ink flows from reservoir to feed and finally, reaches nib.

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- Reservoir is used to hold the ink.
- Ink flows from reservoir to feed and finally reaches nib.
- In feed ink flows into capillary groove then to canal and finally reaches spit.



The diagram, titled "The FEED", illustrates the internal structure of a fountain pen nib. It shows a cross-section of the nib with the following components labeled from top to bottom: Ink (the liquid being drawn), Section (the upper part of the nib), Capillary Groove (the narrow channel where ink is drawn up), Feed (the part that channels ink from the capillary groove), Canal (the channel that carries ink from the feed to the nib), Nib (the tip of the pen), Hole (a small opening between the nib and the spit), and Spit (the point where ink is delivered).



In feed, ink flows into capillary groove, and then to canal, and finally reaches spit. And this whole principle works on the capillary action; the pressure difference between ink and the make the ink to flow in the pen without any breakage.

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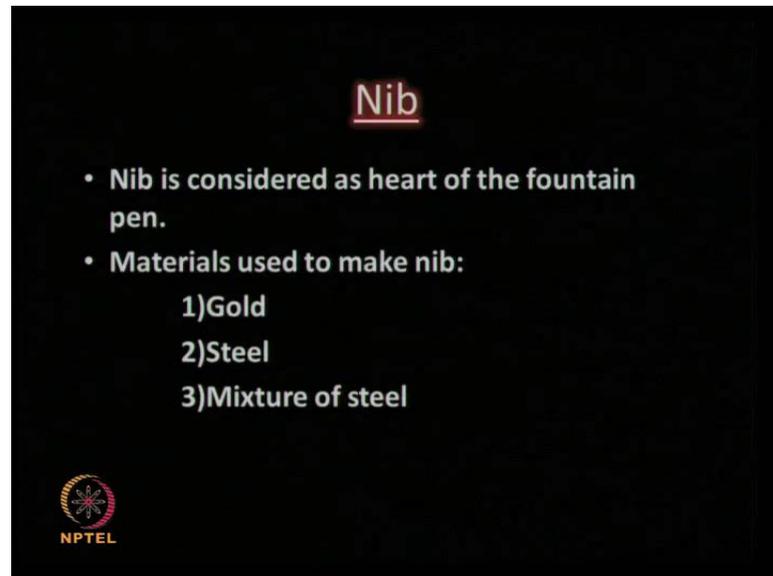
Principle

- Capillary action
- Pressure difference between ink and the atmosphere
- This pressure difference is maintained by a small hole present in between nib and spit.



This pressure difference is maintained by the small hole present between the nib and spit. A nib - nib is called heart of the pen, because it is the only part of the pen which in contact with the paper.

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The materials used to make the nib are gold, steel, mixture of steel, etcetera. Thank you.