

How Electricity is made.

The importance of electricity.



Oh no! There **is** no _____! I **was** just about to **finish** my game. I **have to restart** it now. Uh! It **seems** like there **is** some **problem** in the **electricity** _____. Don't **worry**! It'll **be back** in a **moment**. Wow! It's **back**. We **can't do** anything without **electricity** these **days**. Yeah, but do you **know** where your **electricity** _____ from? I **think** it **comes** from that _____! Right? You are very right!

How does a generator work? How does it produce electricity? Electromagnetic induction.



Electricity comes to this **TV** from this **switch** (interruptor). But what about the _____ of all the **electricity** that **comes** to everyone's **home**. Let me **ask** my **friends**: Do you **know** where **electricity** _____ from? Do you **want to know** about the **sources** of it and how it **is** _____? Ok, ok. **Take** a look here. What **is** this?

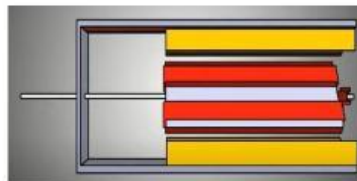
This is a _____ and _____ **mounted** on a **shaft** (eje). What it **is used** for? It **is used** to produce **electricity**. But how?

If we _____ a **magnet** around with-in (dentro de) a _____ **electricity is produced** in the **wire**. Oh, it is so simple! All we **need to have** is a **coil of wire** and a **magnet to make** electricity. And just **spin** the **magnet** with-in the **coil**. This process **is known** as **electromagnetic** _____.

Can I **spin** this **magnet**? Oh yes! But let me first **attach** (unir) a small **electric** _____ with the **wires**. Now you **can spin** the **magnet** with the help of the **handle** (mango). Wow, the _____ **is** on! So **guys** now you **know** the basics of _____ **electricity**! Now something to **remember**! The **machine having** a **magnet** and **coil of wire**, in this way, **is known** as _____. So we **need** a _____ like this to **produce** **electricity**? Yes, in most of the cases a **generator is required**.

Wow! Now I **can produce** electricity for my entire **home** with this **generator**. But see, this is too small! This **can light up** (iluminar) only a **small bulb**. You **need** a _____ generator for **getting** more **electricity**. Let me **show** you!

'Big' generators. Let's change the scale! Giant generators



Oh, It does not **look** like the earlier **generator**!

Let's **peek** inside! (Miremos dentro)

Oh yes, it also **has** a **big** _____ **linked** with a **shaft** (eje) and _____ all around it.

Remember, every _____ **has** this kind of **arrangement** (montaje) inside it. Hmm, if I **spin** this **generator shaft** I can **light up** (iluminar) my entire **home**!

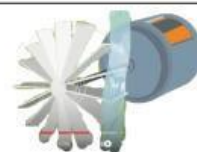
Hmm, now **try to move** it. Ah! Ah! I can't _____ it. It **is** very _____ to **move**. Now **have** a look at these **giant generators**!

Oh, wow! That's so huge. Yeah, these **big generators** are used to _____ electricity for a whole city. But how do they **spin** the **magnet** inside these **big generators**? I **can't** even **move** the **smaller** one! To **move** the **magnet** inside the **big generator** a **big** _____ **is attached** to this **shaft**. A **big fan**? Yeah, look here.



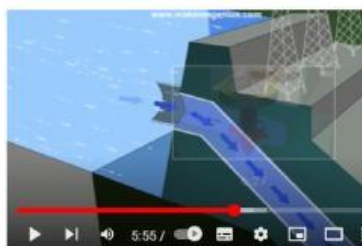
These **big** **fans** **are** **called** _____

 Turbines? Yeah,



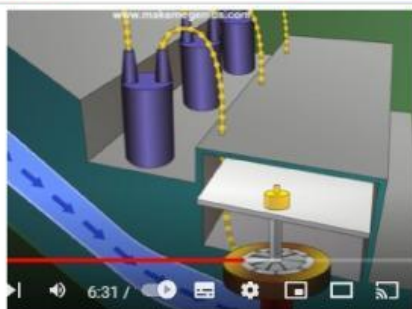
Friends! Hope you **remember** **generator**, the **machine** to **make** electricity! Now **remember** _____ that **is** the second most important _____. A _____ **helps** the **generator** to **work** so that it **can** **produce** electricity. But how **does** this _____, I mean **turbine**, help in **turning** the **generator**? **Look** here!

Conventional Power Plants: Hydroelectric Power Plants.



In some cases, lot of **water** **is dropped** on this. The **water** **makes** it **turn**. When the _____ **moves**, **shaft** of the **generator** also **moves**. Wow! So **water** **helps** in **running** the _____. You **got** it right! The **electricity** **is generated** with the help of the **water**. This kind of **electricity** **is known** as _____. The word **hydro** **means** related to **water**. But to _____ a **big** **generator**, we **may need** a lot of **water**. Where all this **water** will **come** from? For that, we **need** to go to a _____. **Dam**? What **is** a **dam**? Let's **go** and **see**!

Wow! There **is** a lot of **water** here! **Seems** like **water** **is being stopped** here! Yes, it is a kind of a **barrier** to **stop** river **water**. Lot of **water** **is** _____ here. But why? Well **Jimmy**, this stored **water** **is used** for **water supplies** or for _____ **electricity**. Oh! That **is** why **there are** a lot of _____ and _____ nearby! This **is called** _____ **plant**. **Water** from higher level **flows** into a **pipe** (tuberia) that **carries** it down to a **turbine**. As **water moves** down, it **gains** a lot of **pressure**. This flowing **water** **drives** the **turbine** that **is** _____ to the **generator**.



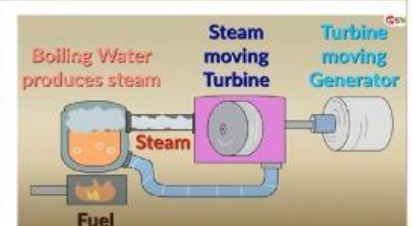
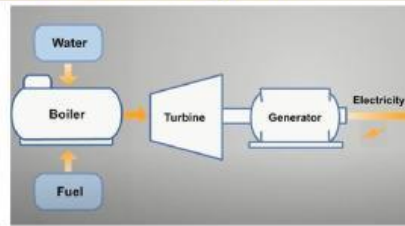
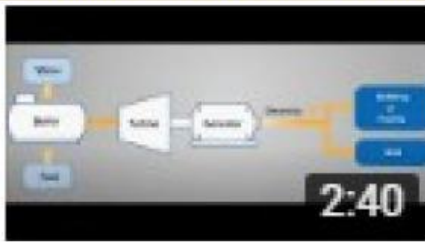
And inside the **generator**, **there is** a large _____ in the **coil** of **copper wire**. When this _____ **rotates** inside the **coil of wire** **electricity is produced**.

Then it **is sent** to our **homes** through **transmission lines**.

Wow! It is so **clear** to me.

Water from the **dam** **moves** the _____, **turbine** **drives** the _____. And **generator** **produces** the _____. Guys, **have** a closer look. This **is** how **water** **helps** in producing **electricity**.

Conventional Power Plants: Thermal plants and Uranium plants.



Umh! The visit to the dam was interesting but tell me: Is there any other way to _____ the turbine? Yeah! **There are** many ways. In many cases it **is moved** by _____. Steam? But how **can** steam move anything? Look at this! Can you _____ it? It **is** very simple! I have to _____ some air into it. Pffffff! See, it **is spinning**.

It **is** the same with _____. We **need** some air or gas to **blow** it. But you **said steam**. Yeah! **Steam is** a gaseous form of water. Oh yeah! **Steam is** a gas. It is just like...air hmmm Let me **try** to **make** this _____ **spin**.

Oh! It **did** not even move an inch (pulgada). It is very heavy, We **need** a lot of _____. We **need** lot of **air** to move it. But from where will we **get** that much of air?

In most of the electricity generating _____ water **is put** in **big tanks** (tanques, depósitos). Then it **is** _____ to **produce steam** and the _____ **is moved** with the pressure of the steam like my pinwheel (molinillo). Yep! Now let's **see** how the whole system works.

Water **is** _____ until it **produces steam** and the steam **moves** the turbine that **spins** shaft **connected** to a magnet inside the _____ but **can** you **name** the fuel **used** for **heating** the water to **produce steam**? We **can use** electricity to **heat** water like we **use** it for a 'guiso' at home. You **are** right but **using** electricity to **produce electricity can be** very costly. Think of!.

We **can use** _____ (carbón). Yeah! We **can use** _____. We **can** also **use** **natural gases**, **biomass** or **uranium**, etc... **Are** those _____?

So we **can use** coal and natural gas as fuel to _____ the water to **produce steam** to _____ the turbine. And as we **use** the heat to **produce electricity** this **is also called** _____ energy. And this **is done** in _____ plans. Correct! but the plants where we **use uranium** as fuel to **produce electricity are known** as _____ power plants.

Non conventional Power Plants: Wind mill and Photovoltaic cells or panels.



I **am** worried! Why? Well If **burning** all _____ will **get over** (vencidos). Then there would **be** no electricity in this world. Even scientists **are worried**. They **are finding** new ways to _____ electricity. Like? Some of the electricity **is being produced** with the help of _____ and even _____. Wow! That **is** great. Can you **tell** me more about this? This **is called** a **wind mill**. The blades (aspas) of windmill **act** as a _____. The blades **move** due to the _____. Oh! So we don't **need** fuel! We will **generate** the _____.

Now **tell** me about the ways to **get** _____ from the _____. Yeah! There it is.

See, **sunlight falls** on special panels called **photovoltaic cells**. These cells **produce** _____. Wow! We **can get electricity** for infinite period from them and _____ as they will always **be** there.

So guys. Some homework for you ... It is very easy... Watch few videos on dams and electromagnetic induction. Also **click** on this **link** to **play** the **quiz** on makemegenius.com.