# 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?

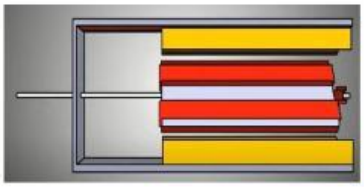
This is a _____ and _____ **mounted** on a **shaft** (eje). What it **is used** for? It **is used** to produce **electricity**. But how?
If we _____ a **magnet** around with-in (dentro de) a _____ **electricity is produced** in the **wire**. Oh, it is so simple! All we **need** to **have** is a **coil 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 **peep** 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. Hmmm, if I **spin** this **generator shaft** I can **light up** (iluminar) my entire **home**!
Hmmm, now **try** to **move** it. Ah! Ah! I can't _____ it. It **is** very _____ to **move**. Now **have** a look at these **giant generators**!

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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.



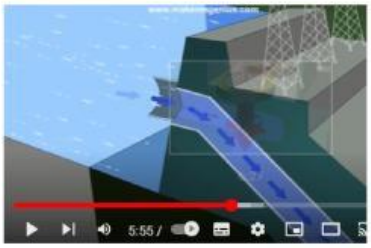
These big **fans are called** _____. Turbines? Yeah, _____.



**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.**

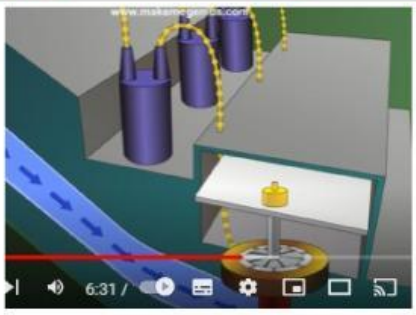





In some cases, lot of **water is dropped** on this. The **water makes** it **turn**. When the _____ **moves**, **shaft** of the **generator** also **moves**. Wow! So **water helps** in **running** the _____! You **got** it right! The **electricity is generated** with the help of the **water**. This kind 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** (tubería) 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**.

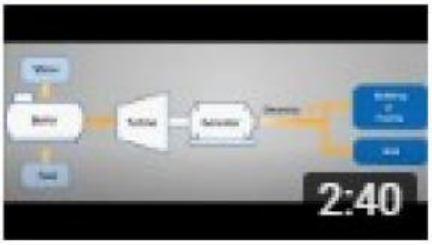
Then it **is sent** to our **homes** through **transmission lines**.

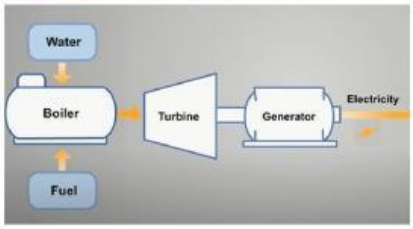
Wow! It is so **clear** to **me**.

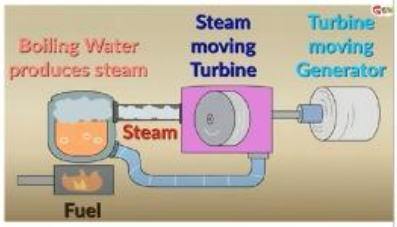
Water from the **dam moves** the _____, **turbine drives** the _____. And **generator produces** the _____. **Guys**, **have** a closer look. This **is** how **water helps** in producing **electricity**.

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## 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. Pfffffff! 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 **scientics** **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 ery easy... Watch few **videos** on **dams** and **electromagnetic** **induction**. Also **click** on this **link** to **play** the quiz on makemegenius.com.*

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