How is electricity produced?

Today, we mostly use a turbo generator. As the name suggests, it is a combination of a turbine and a generator. Together, they convert fluid movements - water, wind, pressurized gases like steam - into electricity.

But let's first go back to the turbo generator. The generator produces electrical energy from kinetic energy, which means from movements. When magnets, placed between coils of copper wire, rotate, the alternation of their poles induces an electric current. That's why it's called alternating current. The magnets are rotating and constitute the ROTOR. The coil, on the other hand, is stationary. So, it is called the STATOR.

But what makes the generator rotate? It is, of course, the turbine. It is an engine that will rotate the generator. Its shape changes depending on whether it operates with water, air, or pressurized gases like steam. The Pelton turbine and the Kaplan turbine convert the movement of water into rotation. Other turbines, like those used in nuclear and thermal power plants, convert the pressure of steam or the pressure of a gas. They function somewhat like airplane engines.

You probably know about wind turbines, which use the movement of air. And finally, here is the Francis turbine. It also operates with water but has the particularity of being reversible! It can be used as a pump to raise water in dams. The oldest turbines are actually the blades of windmills and the waterwheel of water mills!

However, there is a way to produce electricity without a turbine or a generator. Can you figure out what it is?

Solar panels, of course! They harness the power of sunlight!