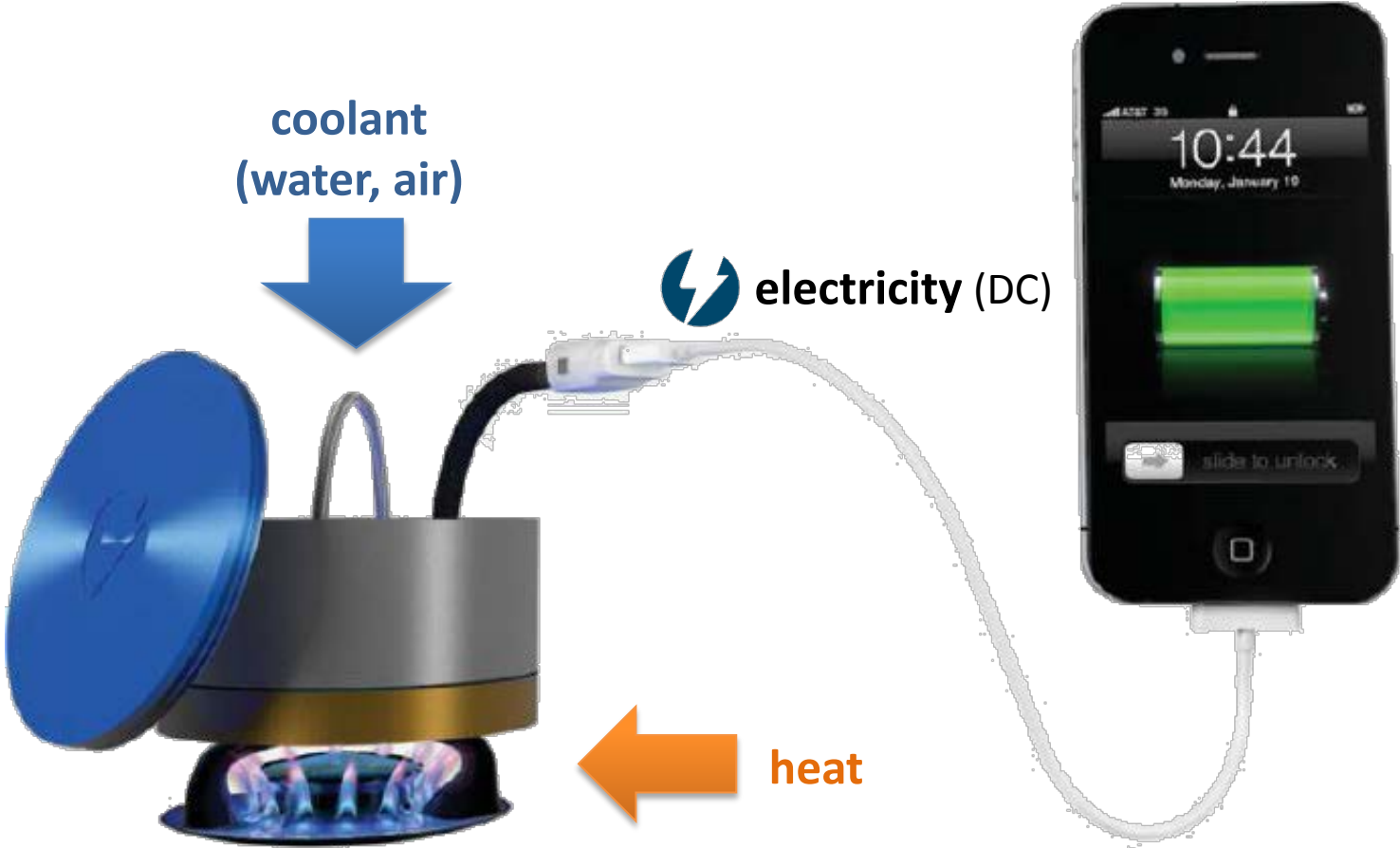


POWERSPOT 

Energy, allways | Energía, siempre

Powerspot. It works!



Powerspot. The Seebeck Effect



In 1821 **Thomas Johann Seebeck** discovered the thermoelectric effect:

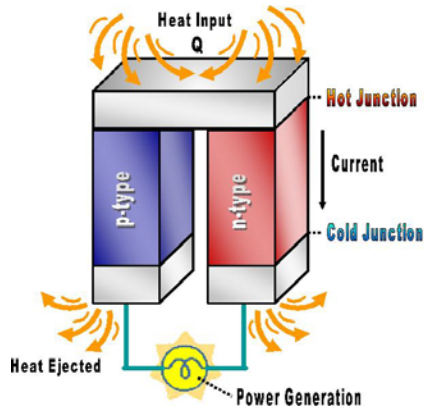
- ❑ Seebeck, in 1821, discovered that a compass needle would be deflected by a closed loop formed by two different metals joined in two places, with a temperature difference between the junctions.
- ❑ This was because the metals responded to the temperature difference in different ways, creating a current loop and a magnetic field.

Seebeck did not recognize there was an electric current involved, so he called the phenomenon the thermomagnetic effect.

Danish physicist Hans Christian Ørsted rectified the mistake and coined the term "**thermoelectricity**".

The **Seebeck effect** is the conversion of temperature differences directly into electricity.

Powerspot. Thermoelectric modules

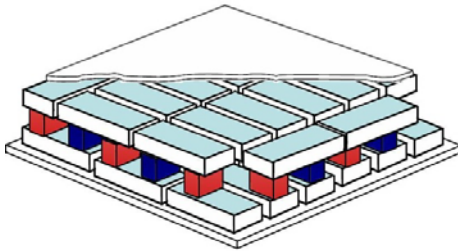


❑ A thermoelectric couple is a device consisting of two dissimilar semiconductors that contact each other at one or more points.

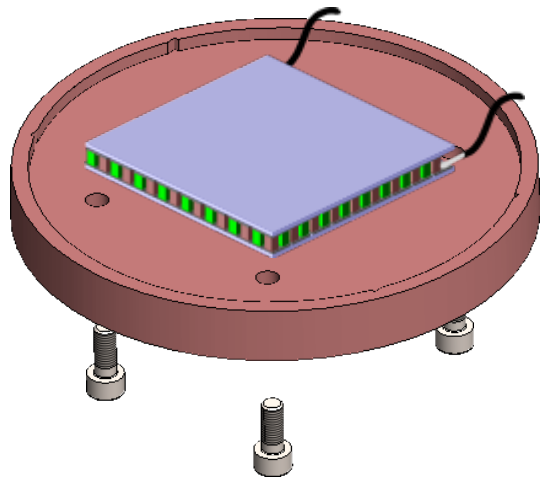
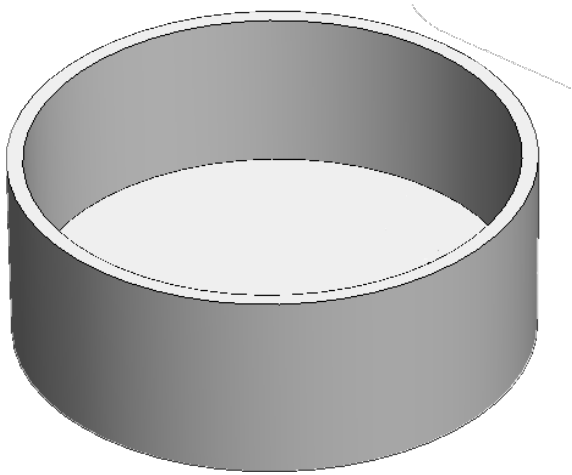
❑ Voltage is produced when the temperature of one of the contact points differs from the temperature of another, causing the electrons to move away from the hot end toward the cold end. When the electrons go from the hot side to the cold side this causes an electrical current.

❑ Multiple thermoelectric couples can be connected in series in order to compose a thermopile, also known as Thermoelectric module, or Thermoelectric generator (TEG).

❑ Modern thermoelectric generators often use highly doped semiconductors made from bismuth telluride (Bi_2Te_3).



Powerspot. Our generators.



- ❑ Powerspot generators use thermoelectric technology based on Seebeck effect to produce electricity.
- ❑ One or more thermoelectric modules are built into the base of our generators. They have no moving parts or batteries.
- ❑ A direct current is produced when the base of the generator is heated and the upper part is cooled.
- ❑ Any source of heat can be used to generate electricity.
- ❑ The more power will be generated when the temperature difference across both parts becomes larger, and the efficiency of converting heat energy into electricity will increase therefore.