

TESTO 4 – TURNING SUNLIGHT INTO ELECTRICITY

Attenzione: l'allieva ha risposto usando il colore azzurro.

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EXERCISE 1

Scan the text. Find:

- a) the two words which "photovoltaic" is made up of
- b) the percentage of radiant energy that a cell converts
- c) the material used in photovoltaic cells
- d) the name of a unit of a large number of cells
- e) the data you need to calculate the output of a cell

"Photo" and "volt"

Between 6% and 15%

Silicon

Module

The size (surface area) and the intensity of sunlight

EXERCISE

Answer after reading.

1. What is the text about ?

The text is about the turning of sunlight into electricity, in particular it's about the photovoltaic system and the working of a cell.

2. Who do you think it was written for ?

I think it was written for students.

3. What was the writer's intention ?

The intention was to inform the reader.

EXERCISE 3

You are the teacher now. You are preparing a reading comprehension for your students. Write 8 questions whose answers can be found in the text, using different WH- words. Use also HOW and WHY. Put the answers in brackets.

- Where does the word photovoltaic come from ?
It comes from "photo" (light) and "voltaic" (volt used to measure electric potential)
- What are the most important parts of a PV system?
The most important parts of a PV system are:
the cells
the modules
the arrays.
- What happens when the light shines on the cells?
When sunlight shines on the cell, the light creates an electrical field across the layers, causing electricity to flow.
- How many volts does a PV cell produce about?

- It produces about 0.5-0.6 volt.
- What are the arrays?
The arrays are several modules connected together
- What is silicon?
Silicon is a raw material and it is the second most abundant material on Earth mass.
- Can the photovoltaic system generate electricity on cloudy days? Why?
Yes, the photovoltaic system can generate electricity on cloudy days because the reflections of sunlight can also produce electricity!

EXERCISE 4

Find in the text the procedure for *turning sunlight into electricity*, then rewrite it using FIRST, NEXT, THEN, FINALLY.

At FIRST the light shines on the cell, NEXT it creates an electrical field across the layers, THEN the electricity can flow. FINALLY we can say that the greater is the intensity of the light provided, the greater the flow of electricity is.

EXERCISE 5

Ora dal testo *Turning sunlight into electricity* devi trarre due testi autonomi più brevi. Nel primo, al quale metterai il titolo THE PV CELL, inserirai solo le informazioni relative alla cella fotovoltaica e al suo funzionamento. Nel secondo, dal titolo THE PHOTOVOLTAIC SYSTEM, sistemerai solo le informazioni generali relative al fotovoltaico e all'importanza di questa tecnologia. Ti accorgerai che utilizzando le funzioni della videoscrittura (copia e incolla, cancella ecc.) questa operazione sarà molto veloce. Non devi modificare il testo. Puoi solo usare qualche congiunzione o connettivo per il collegamento: in questo caso evidenzia in **grassetto** le parole che hai inserito.

THE PV CELL

The cell consists of one or two layers of a semi-conducting material. When light shines on the cell, it creates an electrical field across the layers, causing electricity to flow. The greater the intensity of the light, the greater the flow of electricity is.

Currently, commercial PV cells convert only between 6% and 15% of the radiant energy into electricity.

The most common semi-conductor material used in photovoltaic cells is silicon, an element commonly found in sand. As a raw material, silicon is the second most abundant material on earth mass.

Regardless of size, a typical silicon PV cell produces about 0.5–0.6 volts DC (Direct Current). The current (and power) output of a PV cell depends on its efficiency and size (surface area), and is proportional to the intensity of sunlight striking the surface of the cell.

THE PHOTOVOLTAIC SYSTEM

"Photovoltaic" comes from the two words: "photo", from the Greek root word, meaning light, and "voltaic", from "volt", which is the unit used to measure electric potential. Photovoltaic systems use cells to convert solar radiation into electricity.

The most important parts of a PV system are the cells which form the basic building blocks of the unit, collecting the sun's light, the modules which bring together large numbers of cells into a unit (and in some situations, the inverters used to convert the electricity generated into a form suitable for everyday use). Several modules connected together are called arrays.

(...) **Great possibilities** are inherent in this technology, thanks to important advances achieved by scientific research in the last few years, mainly in the field of new materials which are able to achieve the photovoltaic conversion. A photovoltaic system does not need bright sunlight in order to operate. It can also generate electricity on cloudy days. Due to the reflection of sunlight, slightly cloudy days can even result in higher energy yields than days with a completely cloudless sky.