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# UNIT 5 PHOTOVOLTAIC ENERGY – Part 2

**Read this text from the website of an American solar energy company.**

## Solar energy

Solar power is energy from the sun that is converted into thermal or electrical energy. Solar energy is the cleanest and most abundant renewable energy source available, and the U.S. has some of the richest solar resources in the world. Modern technology can harness this energy for a variety of uses, including generating electricity, providing light or a comfortable interior environment, and heating water for domestic, commercial, or industrial use.

There are several ways to harness solar energy: photovoltaics (also called solar electric), solar heating & cooling, concentrating solar power (CSP), and passive solar.

The first three are *active* solar systems, which use mechanical or electrical devices that convert the sun's heat or light to another form of usable energy. *Passive* solar buildings are designed and oriented to collect, store, and distribute the heat energy from sunlight to maintain the comfort of the occupants without the use of moving parts or electronics.

Solar energy is a flexible energy technology: solar power plants can be built as distributed generation (located at or near the point of use) or as a central-station, utility-scale solar power plant (similar to traditional power plants). Some utility-scale solar plants can store the energy they produce for use after the sun sets.

http://www.seia.org/about/solar-energy

**Now, check the meanings of the most important words in your dictionary.**
to convert sg into sg
to harness
to generate electricity
domestic
commercial
industrial
device

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to orient a building
to store heat
to distribute
(public) utility company

**Match the technologies with their descriptions using the text above. Write the abbreviations in the boxes.** *(A hallgatónak csak a rövidítést kell beírnia a kihagyott helyre.)*

**SHC: solar heating & cooling**
**CSP : concentrating solar power**
**PV : photovoltaics**
**PST : passive solar techniques**

1. ... technologies collect the thermal energy from the sun and use this heat to provide hot water, space heating, cooling, and pool heating for residential, commercial, and industrial applications. solar heating & cooling (SHC)
2. … is a technology that converts light into electricity with the help of certain materials that can absorb photons and release electrons. photovoltaics (PV)
3. … include choosing special building materials that can collect, store and distribute the heat of the sun in the winter, and reject it in the summer. It also means orienting buildings so that they can use the heat and light of the sun in the most efficient way. (PST)
4. … plants use mirrors and lenses to concentrate the energy of the sunlight and convert it into heat to create steam. This steam drives turbines or engines that create electricity. concentrating solar power (CSP)

**Using the information in the previous task, write a '+' in the boxeds that are true for that type fo solar technology, and write a '-' if it is not true.**

| | **active solar systems** | **passive solar systems** | **electricity** | **heat** |
|---|---|---|---|---|
| **photovoltaics** | + | - | + | - |
| **solar heating and cooling** | + | - | - | + |
| **concentrating solar power** | + | - | + | - |
| **passive solar techniques** | - | + | - | + |

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**Match the words with their meanings. If necessary, look them up in your dictionary.**

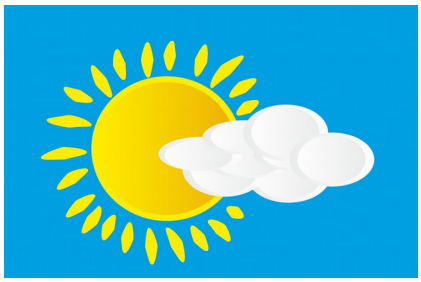
| | |
|---|---|
| PV | photovoltaic |
| DC | direct current |
| AC | alternating current |
| grid | network of lines that distribute electricity from power stations to people |

**Watch the following video about how PV panels work.**
https://www.youtube.com/watch?v=f8_NdUb8sjc

**Watch the video again, and decide whether the statements are true or false.**

| | |
|---|---|
| PV panels don't work on cloudy days. | false |
| The PV panels create direct current. | true |
| An inverter converts the AC into DC. | false |
| We use alternating current in our homes. | true |
| Your everyday appliances are connected to the mains consumer unit. | true |
| At night, your home gets electricity from the grid. | true |
| Any solar power that you don't use is lost. | false |

**Number the pictures to put them into the correct order.**


sun (1)


PV panel (2)

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generation meter (4)

mains consumer unit (5)


inverter (3)


appliance (6)

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**Forum topic:**

What is a feed-in tariff? It was mentioned at the end of the video.