**Тема:**  «Виды электростанций»

**Цель:** Повторить грамматический материал , продолжить изучать лексическую тему «электричество, электростанции».

**Задачи:** Отработать навык работы (в т.ч. перевода) с профессиональной лексикой по теме «электричество», повторить тематический материал, актуализировать имеющиеся знания.

**Специальность:** 13.02.09 Монтаж эксплуатации линий электропередачи, 13.02.11 Техническая эксплуатация и обслуживание электрического и электромеханического оборудования (по отраслям)

**Время выполнения:** 180 минут

1. **Learn your glossary**
2. **Read the text**
3. **Do the tasks below**

**Electricity origin issues**

A power station, also referred to as a power plant and sometimes generating station or generating plant, is an industrial facility for the [generation](https://en.wikipedia.org/wiki/Electricity_generation) of [electric power](https://en.wikipedia.org/wiki/Electric_power). Power stations are generally connected to an [electrical grid](https://en.wikipedia.org/wiki/Electrical_grid).

*Many power stations contain one or more*[*generators*](https://en.wikipedia.org/wiki/Electric_generator)*, a rotating machine that converts mechanical power into*[*three-phase electric power*](https://en.wikipedia.org/wiki/Three-phase_electric_power)*. The relative motion between a*[*magnetic field*](https://en.wikipedia.org/wiki/Magnetic_field)*and a*[*conductor*](https://en.wikipedia.org/wiki/Electrical_conductor)*creates an*[*electric current*](https://en.wikipedia.org/wiki/Electric_current)*.*

The energy source harnessed to turn the generator varies widely. Most power stations in the world burn [fossil fuels](https://en.wikipedia.org/wiki/Fossil_fuel) such as [coal](https://en.wikipedia.org/wiki/Coal), [oil](https://en.wikipedia.org/wiki/Petroleum), and [natural gas](https://en.wikipedia.org/wiki/Natural_gas) to generate electricity*. Cleaner energy sources include*[*nuclear power*](https://en.wikipedia.org/wiki/Nuclear_power)*, and an increasing use of*[*renewables*](https://en.wikipedia.org/wiki/Renewable_energy)*such as*[*solar*](https://en.wikipedia.org/wiki/Solar_power)*,*[*wind*](https://en.wikipedia.org/wiki/Wind_power)*,*[*wave*](https://en.wikipedia.org/wiki/Wave_power)*,*[*geothermal*](https://en.wikipedia.org/wiki/Geothermal_power)*, and*[*hydroelectric*](https://en.wikipedia.org/wiki/Hydroelectricity).

**Classification:**

**By heat source**

* [Fossil-fuel power stations](https://en.wikipedia.org/wiki/Fossil-fuel_power_station) may also use a steam turbine generator or in the case of [natural gas](https://en.wikipedia.org/wiki/Natural_gas)-fired plants may use a [combustion turbine](https://en.wikipedia.org/wiki/Gas_turbine).
* [Nuclear power plants](https://en.wikipedia.org/wiki/Nuclear_power_plant) use the heat generated in a [nuclear reactor](https://en.wikipedia.org/wiki/Nuclear_reactor)'s core (by the [fission](https://en.wikipedia.org/wiki/Nuclear_fission) process) to create steam which then operates a steam turbine and generator. About 20 percent of electric generation in the USA is produced by nuclear power plants.
* [Biomass-fuelled power plants](https://en.wikipedia.org/wiki/Biomass#Biomass_conversion_process_to_useful_energy) may be fuelled by [waste from sugar cane](https://en.wikipedia.org/wiki/Bagasse), [municipal solid waste](https://en.wikipedia.org/wiki/Incineration), landfill [methane](https://en.wikipedia.org/wiki/Methane), or other forms of [biomass](https://en.wikipedia.org/wiki/Biomass).
* In integrated [steel mills](https://en.wikipedia.org/wiki/Steel_mill), [blast furnace exhaust gas](https://en.wikipedia.org/wiki/Blast_furnace_gas) is a low-cost, although low-energy-density, fuel.
* [Solar thermal](https://en.wikipedia.org/wiki/Solar_power) electric plants use sunlight to boil water and produce steam which turns the generator.

#### By prime mover

[Steam turbine](https://en.wikipedia.org/wiki/Steam_turbine) plants use the dynamic pressure generated by expanding steam to turn the blades of a turbine.

* [Gas turbine](https://en.wikipedia.org/wiki/Gas_turbine) plants use the dynamic pressure from flowing gases (air and combustion products) to directly operate the turbine.
* [Combined cycle](https://en.wikipedia.org/wiki/Combined_cycle) plants have both a gas turbine fired by natural gas, and a steam boiler and steam turbine which use the hot exhaust gas from the gas turbine to produce electricity.
* [Microturbines](https://en.wikipedia.org/wiki/Gas_turbine#Microturbines), [Stirling engine](https://en.wikipedia.org/wiki/Stirling_engine" \o "Stirling engine) and internal combustion reciprocating engines are low-cost solutions for using opportunity fuels, such as [landfill gas](https://en.wikipedia.org/wiki/Landfill_gas), digester gas from water treatment plants and waste gas from oil production.

1. **Translate the lines given in italics.**
2. **Find English equivalents from the text for the followings:**
3. Экологичные источники электроэнергии
4. Газопоршневая электростанция
5. Сталелитейные заводы
6. Запускает генератор
7. Лопасти турбины
8. Бюджетное решение
9. **Answer the following questions:** 
   1. Give all the names of power stations
   2. What are the power stations made for?
   3. What power stations are widespread?
   4. What are the most ecological types power stations?
   5. What kinds of fossil fuels can you name?
10. **Match the word with its definition:**

|  |  |
| --- | --- |
| 1. Power station | 1. is the use of nuclear reactions that release nuclear energy to generate heat, which most frequently is then used in steam turbines to produce electricity |
| 1. Nuclear power | 1. is an interconnected network for delivering electricity from producers to consumers |
| 1. Electrical grid | 1. is a fuel formed by natural processes, such as anaerobic decomposition of buried dead organisms, containing energy originating in ancient photosynthesis |
| 1. Fossil fuel | 1. a factory where electricity is produced |
| 1. Turbine | 1. is a rotary mechanical device that extracts energy from a fluid flow and converts it into useful work |

1. **Fill in the gaps using your glossary:** nuclear reactor, fossil fuels, nuclear power, power plant, power generators.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_seems to be the most clean type of power source nowadays.
3. Burning the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_makes too much emissions and dirt.
4. Building a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_means taking into the consideration ground conditions and water sources.
5. What has happened in Chernobyl 30 years ago? – The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ has exploded and tons of radiative contaminants got into the environment
6. I think that every country has an opportunity of creating ecologically friendly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_