**Тема:** «Безопасные источники энергии»

**Цель:** Повторить грамматический материал по теме «Энергетика России»

**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:** 90 минут

1. **Study the glossary.**
2. **Read the text.**
3. **Learn the rule.**
4. **Do the tasks.**

**Ecologically reasonable**

The condition of the normal and smooth functioning of any communication object is to ensure high quality of its electricity supply. Therefore, when designing and constructing the special attention is paid to the power supply elements such as a cellular network base stations (BS), base station controllers (BSC), etc. According to regulatory documents, BSC refers to the first, and BS to the second categories of technological power consumers on power supply reliability. This includes the absence of interruptions in electricity supply, the presence of two independent mutually reserving power supplies, as well as presence of two power supplies from the electrical networks of the power system. In practice, there are many situations when different subscriber groups are geographically distant from areas with established structure of the State power system. To date, over 65% of the territory of our country is a zone of decentralized power supply. More than 15 million people are residing in this zone. Of the 225 million kW of installed capacity of power plants in Russia - 17 million kilowatt is accounted to power plants working in the area of decentralized power supply. In the northern parts of our country there are more than 6,000 diesel power plants (DPP), which have a capacity of more than 3 million kW. About half of these DPPs do not work reliably due to interruptions in the supply of fuel and high prices on imported fuel. To the remote areas of the Far North and Far East, the fuel is delivered by rail or by road, and sometimes by helicopter, as well as by river and sea transport with limited navigation period. Such deliveries are unreliable and expensive. The considerable damage is caused to the ecology through inefficient burning of fossil fuels in boilers and diesel power plants (DPPs) of low technical level.

**Results and discussion**

The problem is formulated as follows. Develop technical proposals to improve the environmental and resource characteristics of autonomous power supply systems of base stations (APSS BS) of mobile communication based on renewable energy sources, while ensuring the required reliability and security of power supply. To solve this problem, the preliminary study of the following issues is required:

- the choice of renewable energy sources for the construction of APSS BS;

- development of proposals to improve the environmental and resource characteristics;

- analysis of the known technical solutions;

- development of technical recommendations to the designed installation.

And the task is a selection of the renewable energy sources: this selection is expedient to carry out in view of the particular geographic region. Analysis of the renewable energy resources of Russia leads to the following conclusions: - areas of effective application of wind turbines (WPP) are regions on the subjects of the Russian Federation: Arkhangelsk, Astrakhan, Volgograd, Kaliningrad, Kamchatka, Leningrad, Magadan, Murmansk, Novosibirsk, Rostov, Tyumen; krais: Krasnodar, Perm, Primorye, Khabarov, republics: Dagestan, Kalmykia, Khakassia, Sakha (Yakutia); autonomous regions: Nenets, Chukotka, YamaloNenets ; - the most promising regions in the use of solar batteries (SB): Kalmykia, Stavropol region, Rostov region, Krasnodar krai, Volgograd region, Astrakhan region and other regions in the south-west, Altai, Primorsky region, Chita region, Buryatia and other regions of the West, East Siberia, and the Far East;

Today, hybrid solar-wind turbines are the most popular, they are a combination of solar panels and wind generators, and often supplemented by a diesel generator. They successfully replace the gas turbines of small power, oil boilers and diesel generators, especially located in the area of decentralized energy. By 2020, the world market of such installations could reach 65 billion dollars. Their use will allow increasing the share of renewable sources in electricity production from 5% to 15% by 2035.

1. **Answer the following questions:**
2. What do “the first and second categories” mean?
3. Why the power distribution is so expensive in Russia?
4. What types of renewable energy are given?
5. What types of power supplies are employed nowadays?
6. **Find equivalents for the followings:**
7. Особое внимание обращено
8. Налаженная схема
9. Ощутимый урон
10. Следующие вопросы
11. Оборудован дизельным генератором
12. Технические решения
13. **Match the word with it’s definition:**

|  |  |
| --- | --- |
| 1. power plant | 1. A device that reserves energy for later consumption that is charged by a connected solar system. |
| 1. a cellular network base stations | 1. fuel formed by natural processes, such as anaerobic decomposition of buried dead organisms, containing organic molecules originating in ancient photosynthesis that release energy in combustion |
| 1. solar batteries | 1. is an industrial facility that generates electricity from primary energy. |
| 1. fossil fuels | 1. transmission and reception station in a fixed location |
| 1. wind turbines | 1. turns wind energy into electricity using the aerodynamic force from the rotor blades, which work like an airplane wing or helicopter rotor blade |

1. **Fill in the gaps with the glossary:**
2. While burning\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_lots of dirty emissions are appearing.
3. The main power plant is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or district, that is why power transmission is so expensive.
4. I don’t really think Siberia may afford a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_power supplies as a main source of electricity.
5. Power transmission and distribution takes lots of wires, metals, equipment and service, this is the main reason why electricity is so\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. Southern territories may afford installation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_because it can provide ecologically clean energy
7. Hospitals and AIDs need\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_power supplies, as the human lives may depend on stability of electrical energy.
8. If there are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in voltage or current frequency you better find some UPS (uninterruptable power supply) or a battery.