TYPES AND KINDS OF POWER STATIONS

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Depending on the energy source, there are the following types of power stations:

1. Thermal power plants (TPP), which use natural fuel;
2. Hydraulic power stations and hydroelectric power stations, which accumulate energy. They use the falling water energy;
3. Nuclear power plants (NPP), which use the nuclear decay energy;
4. Diesel power stations (DPS);
5. Solar power plants (SPP);
6. Wind power plants (WPP);
7. Geothermal power plants (GPP);
8. Tidal power stations (TPP).

Today, energy is classified as traditional and non-traditional energy. Traditional energy mainly consists of electric power engineering and heat power engineering.

The most convenient type of energy is electricity. The conversion of primary energy is produced in power stations.

Russia generates a huge amount of energy. It is mostly produced by three main kinds of stations: nuclear, heat and electric power stations.

About 70% of the world energy is produced in thermal power stations. TPP are usually built on fuel extraction areas or energy consumption areas. Hydraulic power stations are built on the flowing mountain rivers, so the biggest hydraulic power stations are built on Siberian rivers Yenisey and Angara.

Nuclear power plants are situated in areas with consumption of much energy and lack of energy (i.e. western part of Russia)

The main type of stations in Russia is thermal power plants. They produce about 67% of Russian energy. Their accommodation is determined by fuel and consumer factors. The most powerful of them are located on areas with a huge amount of fuel. Stations which use caloric and transportable fuel are consumer-oriented.

Nuclear power plants differ from the TPPs in that the boiler is replaced by a nuclear reactor. The natural nuclear fuel of NPP is uranium. For biological protection from radiation they use concrete layer several meters thick.

When we combust one kilogram of coal, we can get 8 kilowatt/hour of energy and at the expense of 1 kilogram of nuclear fuel we get 23 million kilowatt/hour of energy.

The energy of water is used in hydroelectric units. There are 3 types of these units:

1. Hydraulic power stations;
2. Tidal power stations, which use the energy of tides and low tides;
3. Hydroaccumulative stations, which accumulate and use the energy of reservoirs and lakes.

To sum up, the main resources of energy are solid fuels, oil, gas, water, the energy of the uranium core's decay and decay of other radioactive substations.

All main types of power have a negative effect on nature and environment. Thermal power stations pollute the air, slags of stations, which are coal-fired, occupy a huge territory. HPP plain river reservoirs lead to waterlogging. Nuclear power plants are also very dangerous (i.e. the Chernobyl NPP)

The future conception is using unconventional energy resources: the energy of the wind, tides, sun and the internal energy of the Earth.

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OPERATING CONDITIONS FOR CURRENT TRANSFORMERS IN TRANSITION MODES AND THEIR INFLUENCE ON RELAY PROTECTION

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Current transformers play an important role in the power system, because they allow controlling the parameters of the transmitted electricity, and install relay protection and automation devices in power transmission lines.

As in any other device, current transformers have losses. Because of this, not all of the primary current is transformed into a secondary circuit. These losses cause the current error. In addition, the current flowing in the secondary circuit is somewhat shifted to the phase relative to the primary current, which causes the angular error of the current transformer.

Basically, the losses depend on the state of the magnetic circuit of the transformer. While the iron core is not saturated, a directly proportional relationship exists between the primary and secondary currents. If an increase in the primary current, the degree of iron saturation of the magnetic circuit increases and the characteristic be-