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The Main Problems of Energy

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In our time, the three largest pollutants of atmospheric air and the environment in general include energy.

The energy problem is one of the most important problems that humanity needs to solve today. Due to the achievements of science and technology, such as instant communication, rapid transport, space exploration, which require huge energy costs, increased the growth of energy production and consumption, which subsequently put forward a new problem of environmental pollution, which is a serious danger to all mankind. Enterprises that generate energy, as well as various energy consumers, one of their results is a negative impact on the environment. The negative impact on the biosphere is manifested at all stages of energy production, for example: in the extraction and transportation of resources, in the production of enterprises, transmission and consumption of energy [1].

For example, when mining coal, the landscape changes, this is due to the formation of mines, quarries, dumps; when transporting coal – as a result of losses, dispersion of solid particles into the soil and into the atmosphere. When burning organic fuel, the following hazardous substances are formed: oxides of carbon, sulfur, nitrogen; soot, lead compounds, hydrocarbons, and other substances in the solid, liquid, and gaseous states. As a result of the transmission of electricity, powerful electromagnetic fields are formed near the power lines. The operation of power plants is inevitably associated with the loss of thermal energy.

Enterprises of the heat and power industry occupy one of the leading places in terms of emissions of harmful substances into the atmosphere. And this is not a joke, almost 30% of the total number of emissions of enterprises in all industries! As a result of such a process as air pollution of thermal power plants with sulfur dioxide, acidification of the soil by acid rain occurs. The accumulation of a large amount of carbon monoxide (carbon dioxide) in the atmosphere leads to a gradual increase in the average air temperature on the planet and its average annual indicators, such a phenomenon is called the greenhouse effect. Due to the poor ecology of the CHPP, aerosol chemically harmful particles, as well as organic dust, accumulate in the lower layers of the atmosphere. "Photochemical fog" is the name given to this phenomenon. If the necessary measures are not taken, this will lead to the destruction of the Earth's ozone layer.

Due to the rapid development of industry, the main amount of all gas emissions is concentrated in the Northern Hemisphere of the Earth. Most of the combustion products of all types of organic fuels are emitted on an area of only 3% of the planet's surface, namely in Europe, Japan and North America. Of all the gaseous substances, carbon dioxide and carbon monoxide are emitted in the largest quantities, which are formed during the combustion of natural fuels. Some of the most toxic compounds released into the atmosphere are sulfur dioxide and nitrogen oxides [2].

During the construction and operation of oil trunk pipelines, the main polluting components are oil and its vapors, waste water and combustion products. In the course of oil production by enterprises, the main pollutants are hydrocarbons, carbon monoxide and solids. The most effective solution to the problem of processing associated gas is its use in small-sized gas-generating power plants, which will meet the needs of enterprises in electricity and reduce GHG

emissions. To ensure the improvement of the environmental situation in oil production and refining, it is necessary to repair and replace outdated equipment of oil-producing enterprises, inside pipelines, using pipes with an increased anti-corrosion coating. Now the pollution of the atmosphere has serious consequences for humanity. This creates a threat to human health and the normal functioning of ecosystems. It is necessary to search for the weakest links in the ecosystem, to find the data of indicators corresponding to the most powerful factors, as well as the sources of their impact. All these measures are part of the environmental monitoring system - a unified system of methods and means of continuous monitoring of the state of the environment and a system for predicting the results of anthropogenic impact on it [3].

Here are some ways to solve the problems of modern energy. In the near future, thermal energy will remain dominant in the energy balance of the world and some countries. However, there is a high probability of increasing the share of coal mining and other less clean fuels in energy production. Let's look at some ways and methods of using them to significantly reduce the negative impact on the environment. These methods are based mainly on the improvement of fuel preparation technologies and the disposal of harmful waste. These include the following:

1. Use and improvement of cleaning devices.
2. Improving the insulation properties of buildings (in order to preserve heat).
3. Improving the efficiency of energy use [4].

Conclusion

The current level of knowledge of scientists, as well as the technologies available and currently under development, give grounds for encouraging forecasts, for example: humanity in the future is not threatened with a deadlock either in the complete exhaustion of energy resources, or in terms of

environmental problems generated by energy. After all, there are real opportunities for switching to alternative energy sources. In this case, the position of modern methods of energy production can be considered as a kind of transition to a new level. The main question is how long this transition period will take and what opportunities exist to reduce it.

References:

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