

Application and Measure Analysis of Energy Saving and Consumption Reduction in Thermal Energy and Power Engineering

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Abstract: *With the modernization of the current society, the demand for energy is increasing, but at the same time, the problem of energy shortage is more obvious. the construction and application of power engineering has alleviated the problem of energy shortage to a certain extent, and the efficient conversion of energy is generally dominated by thermal energy, so that the effect of thermal energy can be brought into full play. Nowadays, my country is paying more and more attention to energy conservation and consumption reduction. For thermal energy and power engineering, it is necessary to continue to strengthen research, reduce energy conversion power and improve conversion efficiency, so as to further promote energy conservation and consumption reduction, and also have positive effects on the power generation of power plants. effect. Based on this, an in-depth analysis of the application of energy saving and consumption reduction in thermal energy and power engineering is carried out in this paper.*

Keywords: Power Plant; Energy Saving And Consumption Reduction; Thermal Energy; Power Engineering.

1. INTRODUCTION

At present, my country's science and technology and economy are advancing by leaps and bounds, and environmental and energy problems are becoming increasingly prominent. At present, energy conservation and consumption reduction has become a worldwide research topic, with the purpose of protecting the environment and saving costs. Based on this situation, most of the power plants in my country have started the research work on energy-saving and consumption - reducing technologies, and have formulated reasonable solutions according to the actual situation of the current environment and energy problems. the goal is to greatly improve the modern production system of energy saving and consumption reduction, so as to better carry out energy saving and consumption reduction work.

2. THE CONCEPT OF THERMAL ENERGY AND POWER ENGINEERING

In modern society, through the development of thermal energy and power engineering, my country has realized the transformation of energy. Simply speaking, it is to convert thermal energy into power energy under the action of certain devices and conditions, and then convert it into electrical energy and thermal energy. the purpose is to Get a quantitative amount of energy. Not only that, in the process of electric energy production, in order to improve the work efficiency of electric energy conversion, it is very important to strictly follow the law of energy conservation, which can not only regulate the working methods, but also improve the work quality, so that the electric energy conversion work can be carried out smoothly. In addition, thermal energy and power engineering also play a vital role in the power generation of power plants. From the perspective of structural theory, during the operation of the steam turbine, the condenser in the steam turbine will condense and generate liquid. Then, hot water is added through the feed water heater and low- pressure water, and the high-pressure water pump is used to provide the corresponding energy supply to the boiler, which can achieve energy conversion while improving work efficiency [1]. On this basis, when the fuel is burned, the solid and liquid fuels will consume different energy during the combustion process due to the different ignition points, and will also generate a certain amount of NOX and SO2 gases, which have a corresponding impact on the atmosphere. destroy the ecological balance of society. In view of this situation, the power plant must deal with the pollutants generated by the combustion reaction, and formulate reasonable solutions according to the actual situation to ensure its own power production efficiency and quality, and let the relevant staff do the manual frequency regulation work., which can not only ensure the normal operation of the heating system, but also realize the smooth progress of the production work.

3. THE IMPORTANT ROLE OF THERMAL ENERGY AND POWER ENGINEERING IN CURRENT ENERGY CONSERVATION AND CONSUMPTION REDUCTION

With the rapid development of society today, the production and efficient utilization of various types of energy have become the focus of basic industrial layout planning. It is the current goal pursued by people, and energy saving, emission reduction, and consumption reduction are important links in the sustainable development of society and economy, so the power plant must take correct measures and various technologies, and master advanced scientific and technological means to help thermal energy. Realize conversion and conversion utilization, so as to greatly improve the comprehensive utilization rate of various resources and energy, and improve the operating efficiency of power plants. In addition, from a technical point of view, the use of thermal energy and power engineering can further tap the development potential of the energy industry, and provide comprehensive technical support for energy conservation and consumption reduction, and then start from the key links. To start with, the function of energy-saving technology can be brought into full play, and the energy consumption of the whole operation process can be better reduced.

4. REASONABLE APPLICATION AND MEASURE ANALYSIS BASED ON ENERGY SAVING AND CONSUMPTION REDUCTION IN THERMAL ENERGY AND POWER ENGINEERING

4.1 Choose a reasonable frequency modulation scheme

At this stage, a reasonable frequency modulation scheme is an important measure to reduce energy consumption in the production of electrical energy by thermal energy and power engineering science. the main reason is that the conversion between thermal energy and power engineering energy complement each other. A reasonable frequency regulation scheme can better realize the good cooperation between thermal energy and power engineering, and allow it to be effectively used in power plant installations and equipment, which can greatly reduce the loss and consumption of electric energy and protect the ecological environment of the society. In addition, the frequency conversion equipment is currently used in my country. the frequency modulation method of this equipment is relatively efficient, and the consumption of additional energy is relatively small, and the stability during operation is relatively high. It can scientifically apply thermal energy and power engineering to electric energy production., to achieve the expected effect.

4.2 Adopt the method of deployment selection and working condition change

The deployment selection method is used because it can effectively improve the economy and sustainability of the power generation process, and better enable thermal energy and power engineering to achieve good application in power plants. However, it should be noted that under this condition, the performance of the condensing device must be improved when using the deployment option, and auxiliary devices should be added to improve the utilization efficiency of the steam turbine, such as the installation of a low-pressure condensing device, etc., which can avoid the actual production process. There is a contradiction between the excessive workload and the small load of the steam turbine, so as to better realize the allocation selection and automatic adjustment of the workload of the working condition change system, reduce the energy consumption of the operation of the generator set, and then save energy for the power plant. Provide guarantee for smooth development [2].

4.3 Side effects of reducing moisture loss

In the work of heating enterprises, a large amount of humid gas is generated due to the generation of heat, and the evaporation of moisture will also take away a certain amount of heat, resulting in the society often experiencing excessive energy consumption due to excessive moisture loss., destroying the ecological balance. Based on this, if an enterprise wants to improve the utilization rate of thermal energy, it must carry out research work around the treatment of humid gas, and apply reheating and dehumidification equipment on the original basis to reduce energy consumption. Evaporate the humid gas in a short time, so as to better avoid the incidental effect of the long-term evaporation of the moisture on the heat energy, greatly improve the use efficiency of the heat energy, and prevent the energy waste from happening again.

4.4 Strengthen the recovery and utilization of waste water waste heat

In general, power plants waste most of the waste heat of waste water when they discharge sewage, and use capacity expansion to reduce pressure. This method not only avoids environmental pollution caused by sewage discharge, but also reduces the waste heat of discharged sewage. the secondary utilization achieves the production goal of energy saving and consumption reduction. In addition, according to research, the use of sewage heat recovery device improves the reuse of boiler sewage waste heat to a certain extent, and is also a reliable method for the utilization and recovery of waste heat in power plant waste water. Make good use of the heat in the thermal power system, and finally achieve the effect of energy saving and consumption reduction, and achieve the expected goal.

5. CONCLUSION

To sum up, with the acceleration of social development, my country's air pollution is very serious, which has affected the social and ecological balance. This problem must be solved in time. As an important pillar of my country's economic development, power plants need to make contributions to energy conservation and consumption reduction, apply thermal energy and power engineering, make full use of thermal energy, and then start from influencing factors to formulate reasonable solutions to make thermal energy and power the role and value of the project are maximized, providing strong energy support for the stable operation of the heating system.

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