Pisco Med Publishing

Original Research Article

On the Progress of Energy and Power Saving

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Abstract: With the progress and development of China's economy and society at present, energy and power engineering has gradually become an extremely important key factor in promoting the sustainable development of economy and society. However, we are also faced with a difficult problem, that is, the shortage of energy will pose a huge and serious threat to the future development of the earth and mankind. Therefore, efficient utilization of various new generation energy sources has gradually become the development trend of energy and power engineering in China in the future.

Keywords: Energy; Power Engineering; Energy Conservation

1. Introduction

The sustainable development and progress of China's modern economy and society mainly depend on modern science and information technology and modern energy. Under the current new situation, every country is facing the problem of global energy consumption shortage in different degrees, and the problem of energy consumption in China is even more serious at present. Under such an environmental background, in order to better realize the healthy and sustainable development of economy, society and national economy, it is necessary to speed up the development of modern energy and power engineering informatization and energy-saving and environmental protection technologies, so as to further improve the utilization efficiency of energy and reduce the environmental pollution to a certain extent.

2. The definition of energy and power engineering

2.1 Energy

After two international oil resource security crises, the word "energy" has been widely used. As we all know, energy refers to all kinds of resources that human beings can use and produce all kinds of useful energy or successful useful substances. It refers to all kinds of material resources that human beings can obtain useful energy directly or indirectly through the process of energy processing and transformation, and provide all kinds of material resources for the production and life of various countries and even all mankind. From the essential point of view, it is the important material basis of human economy, the basic condition and material resource demand of human economic activities. The development and progress of human society are inseparable from the utilization and development of high-quality energy and other related information technologies. The high-quality utilization of energy and the application of advanced information technologies can guarantee and promote the solution of energy and environmental security problems for the development of the whole society, which is also an important issue that all countries have common understanding and common concern under the current situ-

doi: 10.18282/pef.v9i2.1366

ation. How to develop and effectively use clean energy and the per capita level of consumable energy are important indicators for a country to measure its production technology and its lifestyle development level.

2. Power engineering

The construction of electric power engineering projects mainly involves the energy conversion, transmission, recovery and comprehensive utilization of renewable energy. Therefore, continuously improving the comprehensive utilization rate of renewable energy, reducing the consumption and environmental pollution of other unusable renewable energy which belongs to natural resources such as oil and coal, will play an important guiding role in promoting economic and social harmony and the healthy, harmonious and sustainable development of the national economy. As one of the frontier fields of science and technology and utilization in modern energy, information, materials and other fields, power engineering research has been paid more and more attention by people. In today's global economic development situation, where non-renewable energy is increasingly scarce and exhausted, and environmental pollution is becoming increasingly serious, continuous research on power engineering, deepening and improving energy utilization, and comprehensive utilization of energy in a country and even the whole world all play a vital and positive role in promoting economic development. The scientific development and utilization of power engineering is undoubtedly both a historic opportunity and a great challenge for a developed country. Influenced by the scale and development of socialist economy with Chinese characteristics and the development trend of information and electronic technology, new changes have taken place in the industrial structure. With the increasing demand for clean energy in human information society and power industry, energy-saving and environmental protection technologies related to power engineering have emerged as the times require, and become a hot research field and an important research and development direction in today's society. Great importance to the scientific research and application development of energy-saving, environmental protection technologies in the field of energy and power engineering should be attached to in order to better and effectively serve to solve the problem of environmental pollution in energy and improve the utilization rate of clean energy, thus contributing to the construction and development of sustainable new energy in socialism with Chinese characteristics.

3. Energy saving technology of energy and power engineering

The energy conservation and environmental protection technology of traditional energy and power engineering mainly belongs to the rational development and utilization of traditional energy. It is not only considered as an important part of modern energy and traditional power engineering technology, but also considered as the pioneer and leader of current energy-saving engineering technology, which has been widely studied and applied in many power engineering industries.

3.1 Air compressor preheating recovery technology

As a kind of equipment with high energy consumption, during the normal operation of the compressor equipment, 80% of the energy is input into the computer compressed air with a large amount of heat energy, and the remaining 20% converts the energy into the electric energy of the computer compressed air. After the remaining electric energy is converted into heat energy by air compressor, the remaining energy will be converted into waste heat of computer and discharged into compressed air, resulting in a large amount of clean energy waste. With the continuous development of waste heat recovery technology of air compressor in China, this clean energy has been reasonably utilized. The main working principle of air compressor waste heat recovery device is designed according to the energy saving and environmental protection technology of clean energy and aerodynamic engineering in China. It mainly uses the principle of mutual exchange of cold and heat of air compressors to collect a large amount of waste heat generated by heating air compressors used in aerodynamic engineering in normal operation, and heat it to hot water at 60 ℃. For example, in the production process of an enterprise's actual recovery equipment, because some electric energy recovery equipment needs to use a large number of air compressors at the same time, and the enterprise uses air compressor recovery equipment for production, when the recovery equipment consumes a large amount of surplus energy, part of the energy will be

converted into part of heat in the air and quickly spread into the air, resulting in a waste of a large amount of surplus electric energy. After preheating the air of the electric energy recovery equipment by the enterprise air compressor, the residual heat lost in the air is recovered, and then this part of heat is used in the traditional water heater. In this way, in the whole production and operation process of the enterprise, it is not necessary for the enterprise to heat a large amount of traditional water heaters when the recovery equipment consumes the residual electric energy. In this way, the efficiency and energy consumption of air compressors in enterprises are improved to the maximum extent, and the cost and power consumption of traditional household water heaters in enterprises are reduced, thus achieving the effect and purpose of energy saving.

3.2 Frequency control technology

In China's industrial production, it can be often seen the use of various motor-driven equipment, such as pumps, fans and other motor-driven equipment. Although they are widely used in our industrial production, there is an obvious common point among these motor equipment, that is, the consumption of electric energy is very large, which also accounts for a large proportion in the production of power enterprises in China. After the generator energy saving and hybrid engineering variable frequency speed regulation technology are organically combined and applied to wind turbines, the hybrid engineering variable frequency speed regulation technology appears. By controlling and changing the quantity and frequency of the output power of the motor, the frequency conversion speed regulation technology can effectively adjust and control the power and electric energy output loss of the wind turbine, and the energy-saving effect is remarkable.

4. Energy saving technology analysis of energy and power engineering

4.1 The traditional energy saving

Coal gas resources are one of the most important renewable energy sources in the world and China at present. Its coal output is abundant and its energy is relatively high. It can be said to be an ideal resource for high energy utilization. However, in specific use, coal burning will produce a large amount of greenhouse gases, so to effectively ensure the effective comprehensive utilization of coal, it is necessary to strictly control its consumption and pollution. Based on this, it is necessary to carry out desulfurization transformation on newly mined coal resources. According to the current scientific research and analysis, one of the main reasons for the massive consumption and pollution of newly mined coal resources is that the newly mined coal resources contain a large number of radioactive chemical elements, that is, sulfur. In the process of using coal, sulfur and other chemical elements will soon be released from the atmosphere, causing air pollution. Therefore, in the comprehensive utilization of coal resources, it is necessary to collect and desulfurize the newly mined coal resources. On the one hand, desulfurization can effectively reduce the air consumption and pollution in the process of coal burning, on the other hand, desulfurization can further improve the quality and efficiency of comprehensive utilization of coal resources, which is of great significance for improving the utilization rate of newly mined coal resources and reducing the waste of energy. Moreover, in the process of concrete comprehensive utilization of coal resources, it is required that coal-related enterprises must establish a set of perfect collection and desulfurization treatment system specifically for coal gas resources, so as to realize effective gas emission and timely and safe collection, thus gradually realizing the important goal of energy conservation and emission reduction.

4.2 Energy conservation of petroleum resources

Petroleum resources have important economic utilization value in China's current social development, which is an important national strategic available energy and an important fossil energy that cannot be regenerated continuously in the world. Therefore, it is necessary for us to do a good job of sustainable and energy-saving utilization of petroleum resources. From the present situation analysis, people's demand for oil resources is increasing, but the total amount of oil resources is increasing and decreasing. This special situation can prompt us to actively make protective use of oil resources. Different from traditional coal resources, oil itself belongs to clean and renewable energy. In specific utilization, other corresponding energy sources to replace oil resources can be actively found, such as using ethanol

and methanol. Compared with the utilization of two alternative petroleum resources and their substitutes, these two alternatives are rich in a large amount of oil. Using waste straw as fuel for petroleum refining conforms to the strategy and concept of sustainable development in China. Of course, the sustainability and energy saving of oil resources lies not only in the country's need to actively develop oil resources substitutes, but also in the need to further deepen the protective research on the sustainable utilization of oil resources. In this way, the available component of petroleum resources can give full play to its own value, and the overall energy effect of petroleum will become more prominent.

4.3 The energy saving of new energy

In order to promote and ensure the sustained and healthy progress of the world economy and the sustainable development of economy and society, all countries have carried out active research on traditional energy development technology, aiming at developing and finding a series of new energy and products that can effectively replace traditional energy. From the research results and practice of new energy development in recent years, remarkable progress and achievements have been made. Among them, a large number of new energy sources such as solar energy, wind energy and tidal energy have played a prominent role in production practice.

As far as the reserves of new energy in Northwest China are concerned, the distribution of reserves is extremely uneven. As far as China is concerned, the reserves of solar wind energy in northwest China are relatively abundant, while the reserves of solar energy in northern China are relatively abundant. Like other tidal energies, its solar energy reserves in some areas along the southeast coast are relatively large. Because there are still some regional differences in the potential of new energy, in order to do a good job in the development and comprehensive utilization of new energy, we must actively integrate relevant regional resources for practice and carry out research on relevant theories and technologies, so as to make the development of new generation energy more smooth. Of course, in order to achieve the goal of clean and energy-saving in the actual development of a series of new energy sources, the governments of various countries and regions need to organize corresponding work related to new energy development according to the specific needs of new energy development, so that the utilization of manpower, material resources and financial resources can play a more prominent role, otherwise a series of serious waste of resources will occur.

5. Conclusion

To sum up, in order to effectively solve the problem of energy saving caused by excessive pressure of energy consumption and serious environmental pollution in China, it is especially necessary to vigorously develop energy-saving technologies of energy and power engineering, which is also the key to promote the sustainable development of China's social economy. Judging from the proportion structure of energy use in China at present, most of them are non-renewable resources. Therefore, it is necessary to put forward reasonable measures to improve the energy utilization rate, further study and effectively utilize energy-saving technologies of energy and power engineering, so as to promote the sustainable development of market economy in the future.

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