

Discussion on Ideas and Measures of Energy Conservation and Emission Reduction in Iron and Steel Industry

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Abstract: The iron and steel industry is the foundation of the national economy, but also the most fundamental embodiment of a country's industrialization level. At the beginning of the founding of the People's Republic of China, China began to carry out all-round industrialization, of which the development of iron and steel industry is the fundamental content. After years of development, China's steel industry has made great achievements. But under the new social problems, the steel industry is facing new problems. It is the contradiction between the development concept of green energy conservation and the backward steel manufacturing level that has become an important issue facing the steel industry at present. Through the analysis of the current situation of the iron and steel industry, this paper puts forward the relevant ideas and measures of energy conservation and emission reduction in the steel industry under the new social environment.

Keywords: Steel industry; Energy conservation and emission reduction; Green development

1. Preface

As the pillar industry of national economy, steel industry plays a very important role in national construction and economic development. But at the same time, the steel industry is also a high-consumption, high-pollution, high-risk area. Since the beginning of the 21st century, China's economic policies have been gradually stabilized and the domestic business environment has been further improved, which has stimulated the establishment and development of numerous private enterprises. The steel field has also become an important direction for the development of private enterprises, which plays an important role in promoting the domestic steel output and improving the market activity. However, the development of the steel industry, with the consequent shortage of resources and environmental degradation, has a great impact on the development of society. At present, the air and water pollution problems in some cities in central and western China are closely related to the local large industrial enterprises. To improve the situation in the future, the government has issued a series of policies to ensure the normal development of enterprises, and at the same time, maximize the realization of energy conservation and emission reduction, and protect the resources and social ecological environment. In addition, for some large enterprises close to urban areas, in order to ensure the development of urban health and science, enterprises have to be relocated and rebuilt to ensure the normal life of urban residents. Therefore, the iron and steel industry is facing more serious problems and challenges, and it needs to achieve the benign development of the iron and steel industry through its own measures such as energy conservation and emission reduction.

2. Development Status of Steel Industry

2.1. Excess steel Production Capacity and Unreasonable Industrial Structure

China's heavy industry was established during the planned economy and many modern steel enterprises were built during this period. These steel enterprises have played a prominent role in China's industrialization and become the foundation of important heavy industry. After China's reform and opening up, under the guidance of the new market economy policy, China's steel industry has been greatly affected. After a period of reform and development, large state-owned iron and steel enterprises gradually adapt to the model of market economy and achieve economic benefits through adjustment of internal management. However, the supply and demand ability controlled by the market environment makes the overall situation of the steel industry in an unstable environment. Especially in many private enterprises entering the steel industry, the steel industry from production to sales, there are great uncertainties. Judging from the current steel market, steel overcapacity and unreasonable industrial structure are particularly prominent, which also gradually reduces the profits of the steel industry. Some traditional small private enterprises have to withdraw from the steel market. The root cause of this phenomenon is the lack of scientific and systematic planning for the development and construction of Chinese iron and steel enterprises for a long time. Especially in the early stage of reform and opening up, faced with the demand of the market, a large number of private enterprises flooded in, resulting in the explosion of iron and steel enterprises and related industries. At the same time, the energy policy in the near stage has led to the rising cost caused by the restriction of raw materials, and the government's environmental policy has also made the steel enterprises have to upgrade and transform the emission problem.

2.2. Low Technical Level and Low Production Efficiency

Compared with western countries, China's metallurgical technology started late and its technological level is backward. After the founding of new China, China's steel enterprises began to take shape, forming a modern sense of steel enterprises. However, the development and change process of the iron and steel industry is still very rapid, especially in the end of the 20th century, electronic information technology is widely used in the heavy industry, heavy industry production is gradually developing to the intelligent and information field, iron and steel smelting and other fields also gradually get rid of the traditional labor-intensive production mode. However, China's iron and steel smelting field, after the reform and opening up, began to develop in the field of technology, the main focus on scientific and technological research and development and modern enterprise management. However, at present, the overall level and technology of iron and steel smelting in China is still relatively backward, especially for some small and medium-sized private enterprises, which are limited by foreign technology monopoly and still need a large amount of investment for the introduction of advanced technology. The backward technological level directly causes the production efficiency of the steel industry, which also leads to the problems of incomplete energy-saving and emission reduction measures and low economic benefits of enterprises, which makes the steel industry in China present a vicious circle. Under the adjustment of national policy, on the one hand, China vigorously develops science and technology to improve the production efficiency of steel field, on the other hand, some private enterprises are merged and reorganized, and effective production technology is provided for them, so that they can increase the measures and capabilities of energy conservation and environmental protection.

2.3. The Extensive Production Mode has Serious Problems of Resource Waste and Pollution

Our country is in the middle and late stage of industrialization development. Compared with the western developed countries, there is still a big gap in management and technology level. First of all, the practitioners of the iron and steel industry in China have not correctly realized the serious harm brought by steel production to the social ecological environment, and blindly pursue economic benefits while ignoring ecological benefits. Lack of initiative to improve the management mode of

production, ecological environment protection psychology. At present, practitioners in the steel industry are still passively limited by the management and restrictions of relevant government departments, and still perfunctory in dealing with measures for energy conservation and emission reduction, lacking comprehensive strategic concepts. In particular, the technology of energy conservation and emission reduction in the manufacturing process of iron and steel enterprises has not been widely promoted and implemented. In the process of production, the utilization rate of iron ore and coal resources is not high, resulting in a large number of waste of resources. Especially some small and medium-sized private enterprises, in the production and smelting technology can not reach the due standards, not only cause waste of resources, at the same time, the quality of products unqualified will cause a variety of secondary problems. In the aspect of enterprise sewage, sewage is the main pollutant of steel industry. According to its source, the industrial wastewater of iron and steel enterprises can be divided into circulating cooling water system. Desalinated water, softened water and concentrated brine produced by pure water production facilities; The waste water produced in the process of production and operation of steel works. The direct discharge of wastewater from iron and steel enterprises has caused serious harm to rivers and soil, which not only leads to the persecution of ecological environment, but also causes certain economic losses.

3. Significance and Importance of Energy Conservation and Emission Reduction in the Steel Industry

3.1. Conducive to the Harmonious and Orderly Development of the Economy

As the foundation of national economy, steel industry plays an important role in national economic development. At the same time, the steel industry is also characterized by high consumption and high pollution. If the steel industry only pursues the maximization of economic benefits, it will cause great resource consumption and environmental pollution. Iron and steel smelting and other related industries, resources are not renewable, and the discharge of pollutants without treatment will also have a profound impact on the ecological environment. At present, there are many iron and steel enterprises in China, and the distribution is not even. Some large state-owned steel enterprises are in large and medium-sized cities. With the development and construction of cities, the scale of urban expansion is increasing day by day. These large iron and steel enterprises have become a major obstacle to urban development, causing great obstacles to urban planning and other infrastructure. At present, many large iron and steel enterprises in the city center have started to move to establish new production bases around the city or in other areas, which greatly alleviates the pressure of urban development. For the iron and steel industry, being far away from large cities, it is very convenient for its own resource supply and logistics and transportation, which can effectively improve economic benefits. Being far away from residential areas, it also has relatively low requirements for emission standards. At the same time, the establishment and development of steel enterprises in the vast rural areas is also conducive to promoting the economic development of rural areas, increasing residents' income and providing more jobs for non-urban residents.

3.2. Create a Healthy and Good Ecological Environment

At present, the ecological environment in China is not optimistic, especially in the cities in northern China. The air pollution is very serious, which has seriously threatened the health of the masses. There are many factors causing environmental pollution, and they are not caused in a short time. However, every ordinary people should realize the importance and urgency of protecting the ecological environment, and take practical actions to protect the environment on which human beings live. As a highly polluting industry, the steel industry should be able to recognize its own social responsibility. Through the continuous improvement of production technology, strengthen internal management, to achieve the effect of energy conservation and emission reduction of each enterprise, so that the enterprise can establish a scientific and efficient production mechanism. Under the reform of energy conservation and emission reduction measures in steel industry, it has great effect on the improvement

and promotion of ecological environment. Under the social environment of the new socialist era, creating a resource-saving and environment-friendly society has become the main idea of economic development at present, and the heavy industry enterprises such as iron and steel smelting should be able to effectively implement the scientific and healthy development of iron and steel metallurgy industry according to the important national strategic deployment.

3.3. Effective Measures to Achieve a Community with a Shared Future for Mankind

Since the industrial Revolution, iron and steel smelting has become an important part of industrial production. As early as the first industrial Revolution, western countries began to realize the industrialization of iron and steel smelting. In the process of industrial development in western countries, the destruction of ecological environment is also very common. In the late Qing Dynasty, China also initially carried out large-scale iron and steel smelting projects at the industrial level, which became the beginning of China's modern industrialization. After the founding of new China, China's backward industrial state forced China to vigorously develop industrial technology and increase the construction of industrial facilities. In this process, China will also encounter the same problems as the industrial development of western countries. Until now, China's steel smelting and other industries have the highest output in the world, but their production costs and economic benefits are lower than the world level. Among them, due to extensive technology and management, the phenomenon of environmental pollution and resource waste is also very prominent. However, the current world pattern and the early stage of the industrial Revolution have undergone great changes, and the world as a whole has become the consensus of mankind. The protection of the ecological environment is no longer a national problem, but a common topic of all mankind. As a developing country, China stands at a new height and proposes the concept of a community with a Shared future for mankind. As an important product of national economic exchanges and cooperation, the steel industry plays an important role in promoting exchanges between countries and realizing common development of mankind. At the same time, the formulation and implementation of industry standards for energy conservation and emission reduction in the steel industry is also the key content to achieve sustainable development.

4. Measures to Save Energy and Reduce Emissions in the Steel Industry

4.1. Improve the Overall Technical Level of the Steel Industry

As an industry with high energy consumption and high emission, the iron and steel industry bears great responsibility in the work of national energy conservation and emission reduction. In order to further reduce the new water consumption per ton of steel in iron and steel enterprises and improve the reuse of water in iron and steel enterprises, it is necessary to actively promote the technology and equipment with little or no water, strengthen the rational cascade water use and strengthen the comprehensive treatment and reuse of industrial sewage. With the increasing requirements of the state for energy conservation and emission reduction, the new edition of water Pollutant Discharge Standards for iron and Steel Industry to be implemented will also put forward stricter requirements for industrial sewage discharge of existing and newly built enterprises (zero discharge of total exhaust outlet for sintering, iron making and steel making units). As a kind of unconventional water resource, the industrial sewage of steel works has been paid more and more attention by the major steel enterprises. Reuse water from industrial sewage is a common treatment method for industrial sewage in iron and steel enterprises. At present, it is mainly used to collect and treat industrial sewage to make water for production. Industrial wastewater by conventional water treatment process, such as coagulation, sedimentation, oil removal, filter, etc.) into the water after processing, the original industrial wastewater of suspended solids, impurities are removed has been effectively, but did not reduce the salt content, so the salt in the water on the net is far higher than industrial circulating water and turbid circulating water, at the same time also contains a small amount of emulsified oil in water and soluble oil etc. Domestic iron and steel enterprises are implementing energy saving and emission

reduction of industrial water use through various technological innovation and technological transformation, and have obtained good results. In order to continuously improve the level of water saving and pollution reduction, it is necessary to constantly research and develop new technologies and equipment. The oil-bearing industrial wastewater is introduced into the deep desalination treatment system reasonably to improve the utilization rate of the existing industrial wastewater to the greatest extent and promote the resource recovery of the industrial wastewater comprehensively.

4.2. Formulate Preferential Policies for Energy Conservation and Environmental Protection in the Industry

At the national administrative level, appropriate policy support should be given to energy conservation and emission reduction measures in the steel industry. The development of China's iron and steel industry is not stable, especially some small and medium-sized private iron and steel enterprises, in the face of excess capacity in the market environment, it is difficult to survive, if the implementation of energy-saving and emission reduction technology transformation, may affect the normal operation of enterprises. Therefore, in order to reduce the burden of iron and steel enterprises, appropriate preferential policies should be given on measures of energy conservation and emission reduction for steel and other related industries, such as providing certain technical and talent support for enterprises and reducing taxes and fees caused by energy conservation and emission reduction measures. On the one hand, it can effectively encourage business owners to actively implement measures of energy conservation and emission reduction; on the other hand, it can also improve the overall efficiency of the steel industry, so that the steel industry can proceed smoothly.

4.3. Deepen the Adjustment of Industrial Structure

Accelerating the structural adjustment of the iron and steel industry is an important content of thoroughly implementing the scientific outlook on Development and realizing rational and steady economic development. Under the policy of promoting enterprise energy conservation and emission reduction, the industrial structure adjustment of iron and steel industry can effectively improve the core competitiveness, eliminate enterprises with backward productivity and increase the overall efficiency of the industry. At the same time, it is necessary to strengthen the cultivation of energy conservation and environmental protection concepts for the management personnel of iron and steel enterprises, clarify the responsibilities of enterprises themselves, and enable relevant personnel of iron and steel enterprises to consciously invest in the transformation of energy conservation and environmental protection and the development of innovative ideas, so as to drive the reform in other fields.

5. Conclusion

Under the current social environment, energy conservation and emission reduction measures in the iron and steel industry are urgently needed, which need to be supported by administrative management and market regulation to realize the thorough reform of the steel industry. In addition, with the help of the reform ideas of energy conservation and emission reduction, the industrial structure of the iron and steel industry can be adjusted, the industrial structure of the iron and steel industry and related fields can be optimized, the production technology can be improved, and the modern enterprise management mode can be strengthened, so as to finally establish an efficient and scientific modern iron and steel industry.

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