

System Study of Environmental Management of Chinese Iron and Steel Enterprises

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Abstract

Iron and steel enterprises are pollution and energy consumption intensive industries, therefore environmental management should be implemented in the whole industrial chain of iron and steel enterprises in order to alter the past methods of treating wasted pollutants second after production. This current thesis is aimed at stating status quo and existing problems in environmental management system in iron and steel enterprises from the perspectives of green procurement, green production, green marketing, green logistics and green recycling etc., and in the meantime proposing corresponding improvement strategies from perspectives of government, enterprises and the public so as to better environmental management and help enhance competitive advantages in iron and steel field.

Keywords

Iron and Steel Enterprises, Environmental Management, Cyclic Economy.

1. Concept of Environmental Management

Environmental management refers to that enterprises incorporate environmental strategies into the overall management strategies, enact corresponding environmental management systems and guidelines, carry out in the entire production management system and put concrete measures into practical activities so as to reduce environmental pollution and protect natural resources.

2. Status quo and Problems of Environmental Management in China's Iron and Steel Enterprises

2.1 Status quo of Environmental Management in Iron and Steel Enterprises

The environmental management system of iron and steel enterprises covers links like green procurement, green production, green marketing, green logistics and green recycling etc., and during respective links in this industrial chain: the selection of suppliers in green procurement, energy consumption in green production, product models in green marketing, energy conservation and emission reduction in green recycling, whose measures will help achieve economic gains and social benefits in the same go while protecting environment, and aid these enterprises in becoming those among the best in the same field (please refer to fig 2.1).

(1) Green Procurement

The procurement of iron and steel enterprises mainly covers the purchase of raw materials such as iron ores and coal, equipment, materials, as well as project. The green procurement of iron and steel enterprises focuses more on the conservation and recycling of resources than the traditional procurement methods. It takes environmental laws, regulations, and system certifications as measurement standards, urges iron and steel enterprises to protect the environment during pursuing their economic interests and meeting the optimal cost-effectiveness in order to satisfy the demands from market and consumers for product quality. Baosteel is a pioneer in the green procurement of China's iron and steel enterprises which selects suppliers with high priorities to ISO14000 Certification and ISO9000 Certification, formulates relevant plans and policies for green procurement

as well as green procurement items successively, and integrates green procurement ratios into the enterprises' management strategies^[1].

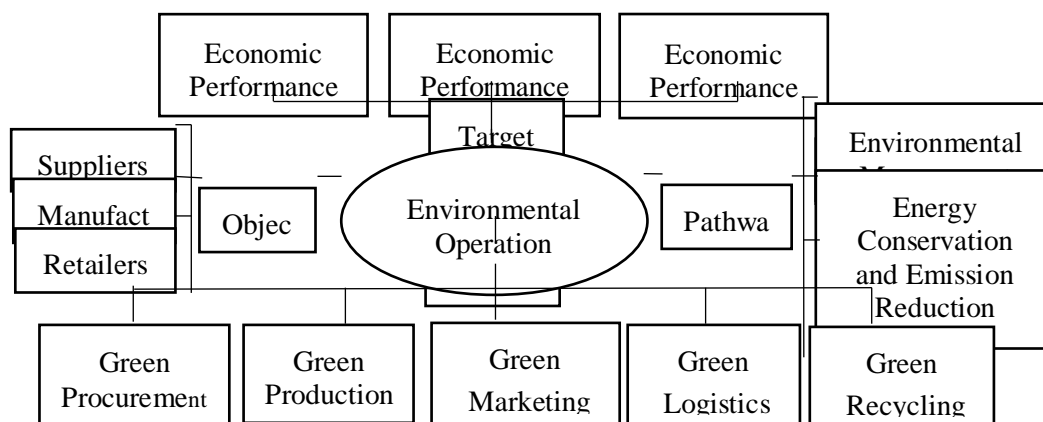


Fig 2.1 Components of Environmental Management System

(2) Green Production

Green production is the core link for iron and steel enterprises to implement an environmental management system. Due to the enhanced awareness of environmental protection, some large and medium-sized iron and steel enterprises have formulated their own implementation strategies for clean production, by using modern technologies, adjusting product mix, strengthening environmental awareness, promoting clean production technologies, eliminating backward production technologies and equipment and shutting down factories and mines which are low product quality and severe environmental pollution. Most iron and steel enterprises have passed the ISO14000 Certification, and 18 demonstration enterprises with clean production are represented by Jigang and Shougang successively. Some iron and steel enterprises have established energy-saving garden factories and iron and steel ecological parks and will apply clean production into practices so as to bring practical significance to enterprises in real essence^[2].

(3) Green Marketing

Most of China's iron and steel enterprises are mail followers of independent marketing models, and generally they will select well-known iron and steel magazines, official corporate websites, and propaganda activities in the industry to announce the latest status of their development to the general public, so that the public can reach a full understanding of production overview, R&D status, and their social contributions etc.^[3]. Some large iron and steel enterprises also put themselves vigorously into various promotional channels such as trade fairs and seminars in the iron and steel industry, while some small and medium-sized iron and steel enterprises choose to initiate marketing activities such as reducing prices, conducting small-batch production and visiting old customers regularly so as to maintain their old customer relationships as well as develop new ones.

(4) Green Logistics

The transportation methods of logistics in China's iron and steel enterprises mainly include: roads, waterways, and railways. According to some relevant statistics, there are currently more than 200,000 logistics enterprises in China's iron and steel enterprises running, as many as 300 iron and steel transportation centers in various forms, and more than 2,000 iron and steel storage warehouses^[4]. China's largest iron and steel trading market and storage base is located in the Baoshan District, Shanghai, and Baosteel implemented green logistics in each transportation process: renewable wood was used as a substitute for the originally-used log materials to prevent excessive logging; in terms

of water transportation, Baosteel gave priority to energy-saving ships, which reduced the logistics costs spent by the enterprises as well as the harm of fuel imposed on environment.

(5) Green Recycling

Iron and steel enterprises produce a large number of recyclable resources during the production process, and these reusable resources incorporate like thermal energy, “three wastes”(waste gas, waste water and industrial residues) and scrap steel, but iron and steel enterprises can take advantage of the shift from only providing green products to energy efficient use as well as from disorderly produced waste to effective use of waste. For example, Ansteel has developed more than 40 environmental protection projects to conserve energy and reduce emission, to improve coking and wastewater treatment technologies, to establish industrial wastewater treatment plants with the aim of recycling wastewater generated during the production process with more than half energy utilization ratio so as to reach the harmless and energy-based treatment of waste^[5].

2.2 Problems Exist in Environmental Management of Iron and Steel Enterprises

(1) The Imperfections in Green Procurement System

The development of green procurement in China's iron and steel enterprises comes relatively late with imperfect rules and regulations for green procurement, so there is no uniform standardization available for reference. So few people favor green products, leading to the longstanding unhealthy procurement habits of procurement personnel in enterprises, and besides their lack of understanding of environmental management, the real implementation of green procurement is ideologically hindered. For the products per se, fewer green products mean higher prices and in view of less choices and less information about green products, procurement costs in enterprises will be increased in the end.

(2) Low Level of Implementation of Green Production

In the implementation of green production, only some large and medium-sized iron and steel enterprises are able to take advantage of advanced production technologies, transform high-energy-consuming equipment, and truly apply green production into production practices of enterprises, and in the meantime achieve some achievements, but for some small and medium-sized iron and steel enterprises with limited production technology, limited economic capacity, backward technological equipment, and delayed information channels, it is difficult for them to apply advanced science and technologies to the production practices of enterprises, resulting in low efficiency of secondary use of resources, higher energy consumption in production and even the different overall level of development of iron and steel enterprises.

(3) Non-systematic Green Marketing

In addition to green products, the implementation of green marketing should also involve production, supply, and sales in the industrial chain. Green marketing requires enterprises to implement green operations in product production, packaging materials, and product sales. Most iron and steel enterprises only attach importance to the green issues of raw materials and products, not even on the complete industrial chain in a specific way, resulting in the non-systematic green marketing^[6].

(4) The Prohibitively High Cost of Green Logistics

Iron and steel enterprises rely on road transportation for their logistics, but due to the unreasonable design of transportation routes, logistics information resources cannot be shared, resulting in the occurrence of phenomenon of “one-way full shipping and one-way empty return in road transportation”, which causes lower transportation efficiency and increased costs. In terms of transportation and circulation, the overall logistics information sharing platform has not been established, which has caused the failure of the coordinated development of real time and precise development as well as resource sharing in terms of transportation, capital costs, and information^[7]. In terms of storage and handling, some warehousing methods are incorrect enough, which cannot meet the diversified market demands, resulting in low utilization ratio of warehousing resources and making the loose links of environmental management system of iron and steel enterprises.

(5) The Modest Respect towards Green Recycling

Green recycling is located in the last link of environmental management system and is often overlooked by enterprises. If the recycling process is not done well, the previous series of links will all fall short. The utilization rate of resources recycling in the iron and steel industry is relatively low. Wastes such as waste slag, scrap steel, and thermal energy generated in the production process are not reused, and hence resources are wasted while get the environment polluted.

3. Upgrading Strategies for Environmental Management of China's Iron and Steel Enterprises

(1) From the Perspective of Government: Improve the Environmental Management System and Strengthen Supervision

The relevant government departments should formulate environmental management standards, further strengthen investment criteria based on the existing environmental management system, use the law as an auxiliary weapon, and implement rules regarding rewards and punishments. For the iron and steel enterprises with better environmental governance, the government and relevant environmental agencies should offer policy support and economic assistance, while for those with serious environmental pollution, economic sanctions or operations halt and other related measures should be taken. The establishment of a sound environmental management system will help iron and steel enterprises to better improve their assessment standards and supervise iron and steel enterprises for better performing their own environmental obligations in accordance with assessment mechanisms, which should be their best way to achieve long-term development.

(2) From the Perspective of Enterprises: Reduce the Production of "Three Wastes" and Shoulder Responsibilities

Iron and steel enterprises should follow relevant environmental management system, control pollution on environment from the source of industrial chain in the process of product development and production, strengthen the effective productivity of iron and steel enterprises, reduce the "three wastes" generated during product production process, improve the comprehensive utilization rate of solid waste, waste gas, and waste water, and in the end create a complete closed supply chain system to maximize the environmental value of enterprises. In the process of implementing environmental management, enterprises should increase scientific research input, research and develop new technologies, produce new products, and promote them vigorously in the field, so that the overall environmental management level of the industry will remain the same, which will bring good ecological benefits to the iron and steel enterprises.

(3) From the Perspective of the Public: Increase Publicity and Strengthen Social Awareness

In addition to strengthening the concept of environmental management within iron and steel enterprises, they also should strengthen publicity of environmental management without. For the employees within enterprises, their environmental awareness should be enhanced, and their personal performances should be taken into consideration of the formulating of relevant policies and measures regarding environmental performance of enterprises, so as to achieve the win-win result of overall development goals of enterprises and staffs. For the general public, they need to start from their own to avoid destruction of environment in their daily life, strengthen their awareness of environmental protection, and protect natural resources and ecological environment.

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