



Research Article

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The study of Japanese corporate environmental management behavior based on the perspective of product life cycle

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ABSTRACT

As early as twentieth Century 90's, the concept of environmental management was first proposed in Japan, and a large number of Japanese companies gradually made the idea as an important part of business strategy, Such as Nippon Steel, Hitachi, Ricoh, Panasonic appliances etc. In this paper, we will take above mentioned enterprises as the research object. Then we analyzes and sums up the Japanese enterprises' environment management experience based on the product life cycle theory to provide guidance and reference for China's enterprise environmental management.

Keywords: environmental management; Japanese corporate; the product life cycle theory

INTRODUCTION

The air pollution, water pollution and other pollution problems become more and more prominent in China. Especially the recent frequently haze weather, has caused the government departments' and social public's attention. Manufacturing enterprises as the main source of pollution, they more need to be the first to do the environmental management work. Japan who put forward the concept of environmental management has its own special environmental management organization. In Japan the public, government and the third party agencies supervise and promote the environmental management of domestic enterprises under the national environmental management idea guidance. For many years' practice, Japanese enterprises have accumulated a wealth of experience and have made great achievements in environmental management work. They are respectively according to their own characteristics to carry out environmental management work in different forms. In this paper, we will analyze and sum up the Japanese enterprises' environment management experience based on the product life cycle theory to provide guidance and reference for China's enterprise environmental management.

1. Product Life Cycle

Product life cycle (PLC) refers to the whole process of a kind of new products from entering the market to out of the market. In this paper we summarize Japanese business environment work from seven stages, including these stages: product design, raw material procurement, production, logistics and transport, product sales, product recovery.

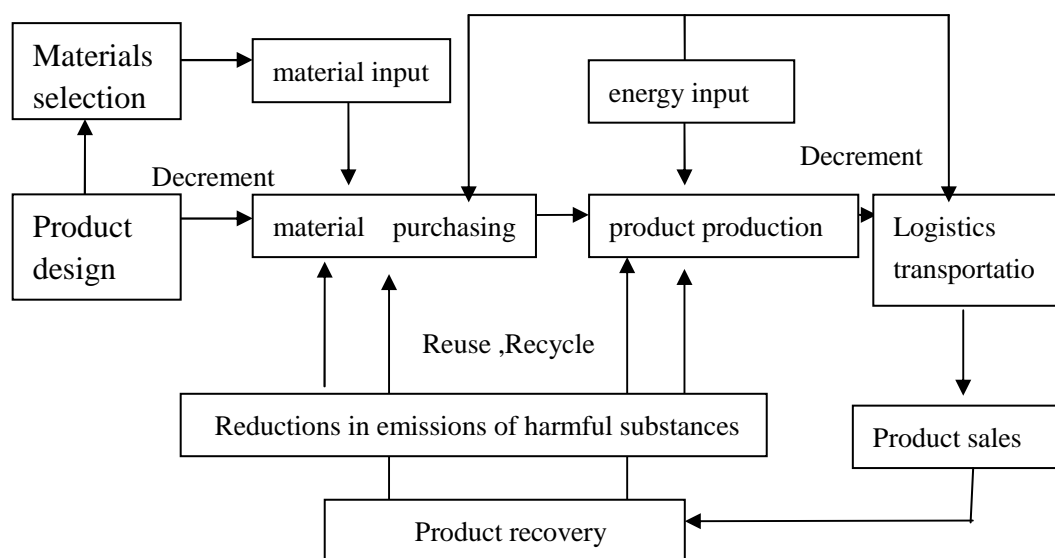


Figure1. Environmental management logic structure based on the product life cycle

2. Product Design

Green design is carried out under the environment management idea, it refers to ensure the products' advanced technology, good environment coordination and reasonable economic, etc. in the product design progress. The core of green design is "3R", namely Reduce, Recycle and Reuse. Its meaning not only reduces material and energy consumption, reduce emissions of harmful substances but also make the products and parts can be easily classified recycling or Reuse and recycling, etc.

companies introduce the concept of environment in product design phase, such as the research and development of high combustion efficiency and low pollution type automobile and the heating equipment to make full use of heat energy [1]. The core concept in this stage is to eliminate environmental problems may exist in later several stages as far as possible. As early as 1998, Toyota has designed "resource recycling sex first assessment system" for every new car. This system make a performance examine for the phase of the parts design and prototype production. Toyota also builds up a set of recycling system of scrapped automobiles; make the scrap car recycling efficiency reached 87%. In addition, many enterprises are also a number of ways to promote green product design.

3. Raw Material Purchasing

Green procurement Green purchasing behavior mainly include the choice of supplier, the supplier's operations, introverted logistics, etc. [2]. Japanese government formulates rules and regulations and legislation to promote green procurement. Under the guidance of the law, the Japanese enterprises choose upstream suppliers with its ISO14000 certification, compile environment report or implementation plan for the environmental activities. Many enterprises also a database of product information to ensure that can accurately know the product details. Panasonic establish a huge "chemical substance content data" and "GP-Web system" database [3] and Epson company in 2003 formulated the "green procurement standards" of materials. 2500 suppliers worldwide, with the assistance of Epson have registered now about 130000 classes contain about 500 chemicals in the production material information. In addition, many enterprises in Japan act PRTR management toi reduce the environmental risk [4].

4. Product Production

Japanese companies pay more attention to environmental management work stage of production, including management, technical equipment, production design etc.. According to the concept of pollution prevention and waste minimization, later appeared the concept of cleaner production, which refers to the environmental protection strategy for comprehensive prevention continued in production process and product as a new kind of creative thought. Cleaner production in essence, is the production process and product adopt overall preventive environmental strategy, reduce or eliminate they might harm to human and environment, at the same time fully satisfy human needs, to maximize social and economic benefits of a production model. At present, many Japanese enterprises to actively advocated the establishment of "green factory". The so-called "green factory" is a responsible for the manufacturing system for environmental engineering, it involves all of the steps in the process of

manufacturing, every factors and the impact on the environment and closely linked to the utilization of resources. Such as oil companies in Japan design smoke desulfurization device to reduce sulfide, nitric acid gas emissions [5]. The Japanese iron and steel enterprises using waste plastic recycling technology to develop new industries in the field of environmental protection, has made marked progress [6]. Epson Technology (Shenzhen) Co., Ltd. Take the energy-saving ideas into production and office; 1 year can save about 4.65 million KWH. Ren original production makes the idea of "zero emissions" as the vision of enterprise development. It not only reduce emissions, improve waste recycling rate, but also puts forward the idea of mutual inhibition of waste generated mutual cooperation between enterprises.

5. Logistics Transportation

Under the guidance of reducing the pollution to the environment and resource consumption, Green logistics refers to planning and implementation of transportation, storage, loading and unloading handling, circulation processing, distribution, packaging and other logistics activities with advanced logistics technology. Companies such as Nippon steel corporation and Panasonic for logistics experience is worth our learning. Nippon steel's efficient logistics measures include: expanding the maritime transport, large scale, improve the vehicle's fuel vapor ship fee, etc. In addition Nippon steel uses energy-saving tire, portable car hardware and introduces the ecological drive software. Nippon steel is currently working with the domain experts to research and develop the measures promoting the improvement of environmental logistics. Panasonic has adopted a series of measures to cut CO2 emissions, such as changing transport mode, adopting environment friendly truck, improving the efficiency of transport, etc. Now Panasonic is taking green transportation as a research subject in order to implement green logistics' globalization

6. Marketing

Green marketing refers to the enterprises should build marketing concept, marketing mode and marketing strategy with the guiding ideology of environmental protection and the values in green culture. Japan's "great glory company" in the sales process tries to simplify the gift packaging. It adopts simple wrapping paper for holiday gift packaging and with fresh food, straight to send goods. Panasonic design a Panasonic environmental symbol and a marketing activity of N ecological greening to show the products' advantages in environmental protection and energy saving. Nippon steel group and non-profit organizations make the environment coexistence residential concept further embodiment and built some apartments for sale. Furthermore Nippon steel group take the lead in the national ten steel "local afforestation" and underwater afforestation construction projects, these measures help Nippon steel group set a good corporate image in the country.

7. Product Recovery

In Japan, the government actively guides enterprise to turn the traditional "raw materials - industrial production - use - waste" to "resources - products - consumption - renewable resources" mode. The latter mode can produce no or only very little waste in the whole economic system and the process of production and consumption. First of all, the Japanese government has enacted regulations on the behavior constraints, such as < the waste disposal act >, < the act of recycling building materials >, < the automobile recycling law >, < the effective utilization of resources promotion act >, etc. Second, the Japanese government helps enterprises to establish a recirculation system through subsidies, low-interest loans, tax and other measures. In Japan, different types of waste have different recycling route and recycling system. For automobile recycling, Japan generally takes the mode of "consumers - distributors-producers". Such as Toyota motor manufacturing company has the automobile specialized processing center. Each point of sales is responsible for collecting and then the company's automobile processing center do a series of decomposition processing. For the home appliance recycling, Japan adopts the PRO mode, namely "consumers - producer responsibility organization - producers". Such as Japan set up the Green Cycle (Green circle) company with the help of the largest home appliance makers SONY, Mitsubishi electric, Hitachi, Sanyo, Sharp, Fujitsu, etc. The company undertakes unity recycling and processing for waste household appliances. Japan also attaches great importance to the role of folk environmental protection organizations, social intermediary. After years' efforts, Japan has formed the "government-led, corporate governance, civil participation, rooted at the grass-roots level, civil participation" resource environmental protection network.

8. Environmental Accounting

The environment accountant's development in Japan cannot leave the government's strong support. The environment ministry has formulated a series of standards, guidelines, system about the enterprise' environment accountant in order to make sure companies can have a standard to carry out environmental accounting practice [7]. In process of promoting the enterprise environment accounting, the environment ministry also strengthens the international cooperation and information exchange through organizing "seminar on setting up environmental accounting system". Furthermore the government provides enterprises with "environmental accounting help system" software to help enterprises conduct environmental management work. The financial ecological philosophy of "Priority to provide financial services to environmentally friendly companies" also promotes the Japanese enterprises to actively

conduct environmental management work. Many companies set up a special environmental management institutions for environmental accounting. Ricoh group, for example, deduce whether the environmental protection measures have the economic rationality according to the proportion of economic effect and environmental protection cost. And Panasonic implement environmental management according to the relationship between environmental cost, economic effect and environmental load (cut).

CONCLUSION

Our country enterprise' environment management work is still in its infancy, and its management level is far lagging behind the Japanese companies. According to the incomplete statistics, our country produces a dollar of GDP unit energy consumption is 11.5 times that of Japan and ten thousand Yuan GDP water consumption is 24 times in Japan. From Japan's experience, we recognize that enterprise environment management has many benefits, such as improving enterprise adaptability to the environment changes, prompting companies found in the changing environment and develop new business areas, avoiding the environmental risk, etc. More importantly is that environmental management won the objective profits for the enterprise.

In this paper, through the perspective of life cycle for the Japanese enterprise environment, we summarizes the management behavior and hopes it can offer strong guidance and reference for the implementation of environmental management in our country.

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