

JDF Technology Group Co., Ltd. Environmental Management Strategy

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Abstract

In recent years, environmental pollution is becoming more and more serious, although people's awareness of environmental protection is increasing day by day, more and more countries have adopted sustainable development environmental strategy, but how to effectively solve the problem of environmental pollution is still imminent. In terms of environmental management, JDF Technology Group Co., Ltd. adheres to the concept of "design for the environment" in production and operation, and adopts various measures to achieve the goal of "green production" according to the way of product life cycle control. This paper takes JDF as an example to analyze the company's environmental management strategy, so as to provide relevant enlightenment for the development of other enterprises in China's environmental management.

Keywords

Environmental Management; Environmental Control; Enlightenment.

1. Introduction

Environmental management is a new idea about how to understand and solve environmental problems, which is related to the production and operation activities of enterprises. For enterprises, environmental management mainly refers to the production and operation activities related to the environment carried out by enterprises, providing ecological products and services conducive to environmental protection, and promoting the transformation of the social and economic system to be environmentally friendly. The concept of environmental management was first put forward by Japanese scholars, who believed that the traditional enterprise environmental management only focused on the treatment of pollutants produced in the production process. With the increasingly severe global environmental situation, the contents and methods of enterprise environmental management have undergone great changes, and the traditional environmental management should be transformed into enterprise environmental management because it can not meet the needs of environmental protection. The enterprise environmental management mentioned here is a complete environmental management system including enterprise green development strategy, green marketing, clean production, low emission of pollutants and waste recycling and reuse. In terms of environmental countermeasures, enterprises should abandon the previous idea that environmental management is the negative impact of increasing costs, and establish a new business philosophy that seeks sustainable growth by living in harmony with the environment.

2. Literature Review

The author found that JDF's environmental management strategy is not particularly detailed through searching materials in CNKI and academic journals, and there are many other literatures on environmental management. Liu Jiahui (2023) proposes that China can innovate the values of the government, enterprises and individuals; Introducing third-party certification; Strengthen enterprise environmental cost management; Improve the three-way environmental management mechanism to further optimize the energy structure, carry out low-carbon economy and carry out environmental business practices.[1] Zhang Changjiang (2020) proposed that the sustainable development performance of enterprises is positively affected by green culture; Environmental management is positively correlated with sustainable development performance of enterprises; The interaction between green culture and environmental management has a positive impact on the sustainable development performance of enterprises. [2]Li Guoqing (2020) proposed that environmental management, which is unified with environmental governance and industrial development, has become a new driving force for enterprise development, and the development of low-carbon technologies and green products within enterprises has further promoted the industrialization and marketization of environmental protection. [3]Yin Wei (2018) proposed that in the process of enterprise operation, the construction of enterprise culture and environmental management value system plays an important role in the development of enterprises. Corporate culture is the concrete embodiment of enterprise environmental management, directly related to the enthusiasm of employees and the overall development of enterprises, and is also an important symbol of enterprise soft power. [4]Lu Chunyu (2016) proposed that integrating corporate culture into environmental management can strengthen the understanding and application of environmental management, and play a positive role in the system structure of environmental management accounting. To save resources and protect the environment as the goal, combined with the corporate culture, strengthen the corporate system management, and create a practical enterprise environment for environmental management. If the construction of environmental value system has corporate culture as the foundation, then the enterprise environmental management will bring rich long-term benefits to the enterprise.

3. JDF and its Environmental Control Methods

3.1. Introduction to JDF

JDF Technology Group Co., Ltd. is an Internet of Things company that provides smart port products and professional services for information interaction and human health. JDF's core businesses include port devices, Internet of Things innovation, and smart medicine. Port device products are widely used in mobile phones, tablets, laptops, monitors, TVs, vehicle, wearable devices and other fields; Iot innovation builds iot platform for new retail, transportation, finance, education, art, medical and other fields, and provides the overall solution of "hardware product + software platform + scenario application"; In the field of smart medical industry, JDF provides users with comprehensive health services through mobile health management platform and digital hospital.

On June 30, 2016, the Ministry of Industry and Information Technology issued the Industrial Green Development Plan (2016-2020) to comprehensively promote green manufacturing. In addition, the "Administrative Measures for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products" was officially implemented on July 1, 2016, marking China's entry into the RoHS 2.0 era. Manufacturing enterprises, especially high energy consumption enterprises are facing increasing pressure of energy conservation and emission reduction policies, it is particularly important to establish a sound green product life cycle

control system, from product research and development, design, green manufacturing, production, procurement, product recycling control in all aspects, to achieve green management goals. JDF, as the pioneer and leader of the domestic TFT-LCD industry, has been committed to the green management and control of the whole life cycle of products.

3.2. JDF Environmental Management and Control Methods

3.2.1. Green Control of the Whole Life Cycle

JDF's green product environmental protection management and control is based on the whole life cycle of the product, from product selection and development to waste recycling, harmful substances reduction, energy saving and emission reduction, and resource utilization maximization, to achieve the goal of "green production".

Product development and raw material selection links: new product planning stage needs to consider the target customer's environmental requirements, if there are special requirements, product development in the early stage of the development plan clearly required and throughout the development stage. In the development plan, GP control personnel need to confirm the control requirements of raw materials and harmful substances of the product, process pollution control, environmental protection requirements of customers and international laws and regulations, so that the product is developed under the conditions of meeting environmental protection requirements, and always runs through the entire development stage. After the development, GP control personnel will confirm again. Ensure that the project is developed in accordance with the established environmental protection requirements. In terms of raw material selection, JDF has formulated a set of strict screening criteria for qualified suppliers. Only qualified suppliers that have passed the audit can enter JDF's qualified suppliers list, and all imported new parts must provide hazardous substances test reports. In the JDF (Bill of Material), all parts must pass the environmental protection characteristics audit before purchasing orders. This process is controlled by system, which avoids personnel negligence and loopholes caused by human control, and also improves work efficiency.

Product production: After the implementation of strict environmental control of raw materials, products into the actual production process, will contact a variety of auxiliary consumables, tools, equipment, etc. LCD panel manufacturing process is complex, part of the process uses high temperature and pressure and contains special gases, which will lead to a series of chemical reactions, all these processes and media have the possibility of polluting the product. Therefore, although the raw materials have been strictly checked, we still need to evaluate the harmful substances in the process to ensure that the product will not be polluted in the production process.

Product transportation: Our customers are located all over the world and are transported by land, water and air. In order to reduce the energy consumption of products in the transportation process, we arrange the most cost-effective transportation according to the geographical location of customers. In addition, the packaging design of the products has carried out a large number of reduction, reduction of materials, and increase the loading capacity per unit volume. All packaging materials use recyclable materials. At present, the optimization programs that have been implemented are mainly:

1) Economic stowage transportation. Through reasonable improvement of packaging, increase the quantity of product stowage, reduce the number of transportation. The 8.5 generation line factory in Beijing has improved its comprehensive loading by 19%, and optimized and covered 55% of the shipment models.

2) Optimize transportation routes and modes. For example, the factories rerouted the delivery route from Hong Kong to Shenzhen, and introduced railway transportation to replace part of

the land transportation, effectively shortening the transportation distance, reducing logistics costs and reducing the environmental load.

Product use: In addition to focusing on the reduction of harmful substances and the control of environmental protection characteristics in the production stage of the product, in order to reduce the energy loss of the product in the process of client use, we also investigate the energy consumption of the product when we conduct reliability experiments after the completion of product development. At present, there is an energy efficiency certification laboratory in Beijing 8.5 generation Line factory, which is used for the energy efficiency certification of the whole machine products, which is very important for the energy efficiency confirmation and internal control of the developed TV products.

Product recycling: JDF began to implement the "4R concept" of raw material use since 2007, namely, Recycle, Reduce, Renew and Responsibility. In recent years, more "4R" projects have been successfully implemented. In terms of Recycle, the CF factory condenses the diluent of organic exhaust wind and uses it for recycling of machine head cleaning; The waste liquid of the stripping liquid is recycled by the qualified unit for purification treatment and continues to be recycled in the production line. In terms of reduction, LED lighting renovation projects, refrigeration cooling water conversion transformation of air-conditioning systems, and CDA pressure reduction projects were implemented in Beijing, Hefei and other factories, resulting in a cumulative reduction of 41.28 million KWH of electricity consumption in each plant. In terms of regeneration (Renew), the waste liquid of etching liquid and diluent is recycled and purified by qualified manufacturers, then downgraded and used for other industrial purposes. In terms of Responsibility, special management is carried out on waste water, waste gas and solid waste to ensure the discharge of various indicators and the compliance treatment of hazardous waste.

In the process of environmental control according to the whole life cycle concept, in order to improve the enterprise's environmental control ability, JDF also launched two projects: JDF Green Product Management system (GPM) and green product laboratory construction.

3.2.2. Development of JDF Green Management Tools

With the increasing number of international environmental protection laws and regulations of electronic and electrical appliances, the requirements are gradually stricter, and how to manage the green and environmental protection characteristics of products more efficiently and comprehensively has become a problem in front of all electronic product manufacturers. As the green product management and control work needs to be completed by manufacturers and suppliers, it is necessary to establish a network platform directly docking with suppliers.

JDF has built a communication system with suppliers, that is, Green Product Management System (GPM), which is an efficient bridge between enterprises and suppliers and plays a good platform role. In this platform, suppliers can declare to enterprises, including raw material composition, hazardous substance content, recycling rate, recycling ratio, conflict minerals, material consumption, energy consumption and greenhouse gas emissions and other aspects of environmental protection information.

The benefits the system brings to enterprises are reflected in four aspects:

- 1) Cost reduction: developers save the time of report collection and information transmission, and reduce the development labor cost; The system contains a large number of databases, reducing the cost of manual collection; GP data is complete and transparent, reducing customer complaints; The test report can be repeatedly referenced, reducing the testing cost of manufacturers.
- 2) Risk reduction: in line with EU due diligence principles, reduce the risk of harmful substances exceeding the standard; Improve the environmental protection control system to reduce the company's risks; Systematic management of XRF test data, real-time monitoring of suppliers'

incoming material performance, reduce the risk of raw materials exceeding the environmental standard; JDF related environmental control information can be transmitted to suppliers in time to reduce the risk of parts exceeding the standard.

3) Efficiency improvement: suppliers directly declare GP, saving the time for developers to pass information back and forth; The system automatically sends the report update requirements to improve the work efficiency of GP staff; SQE XRF data systematic analysis and management, reduce the error rate and improve staff work efficiency; Accelerate the process of part certification and avoid delay due to GP audit.

4) Enhance competitiveness: enhance corporate image; Improve the efficiency of internal GP control, improve the corresponding speed of customers, and improve customer satisfaction; Promote the staff of relevant internal departments to consider GP factors in the development and production process.

The development and smooth introduction of GPM system is an important task for JDF to establish an eco-design demonstration enterprise. The completion of the project not only greatly improves the internal management efficiency of the enterprise, but also establishes a good image for the enterprise in the industry.

3.2.3. Construction of GP Laboratory

GP(Green Product) laboratory is a laboratory focusing on the use of chemical testing methods to detect the composition and content of harmful substances in products. The establishment of the GP Laboratory is of great significance to JDF in the following aspects:

1) Quality and technical control and guarantee: At present, the detection of hazardous substances in warehouse products mainly relies on XRF, the equipment error is relatively large and the range of hazardous substances tested is small. When there is uncertain data, it can only be confirmed through traceability report or commissioning a third-party test. GP laboratory can provide accurate chemical analysis reports for JDF products and suppliers' materials and components.

2) Improvement of internal control ability: To provide a platform for analysis, research and development for the improvement of JDF's green environmental protection level is an important embodiment of JDF's green environmental protection control level and sustainable development responsibility.

3) Enhance the corporate image: After the completion of the GP Lab, JDF became the first domestic panel manufacturer to establish a GP lab, which will greatly enhance the environmental image of the enterprise.

The laboratory is managed and constructed in accordance with ISO17025 standard. After CNAS certification, the report issued by the laboratory has certain credibility, and can undertake product testing of other subsidiaries of the group, which is of great help to reduce the risk of harmful substances control of JDF.

JDF's self-developed GPM (Green Product Management System) and GP Lab bring together the strength of all departments of the company, which reflects JDF's support for green environmental protection. In addition, in 2017, JDF was honored to enter the first batch of "Eco-design Demonstration Enterprises", which is not only the recognition of the company's energy saving and environmental protection work and the whole life cycle management mode of green products by the Ministry of Industry and Information Technology, but also the driving force for the company's continuous progress in the future.

Under the current situation of the people's concern about environmental protection, strict control of the environmental protection characteristics of products in the enterprise is not only the demand of customers and the market, but also the obligation of every enterprise. According to the white paper "Made in China 2025" issued by The State Council, we will actively build a green manufacturing system, support enterprises to develop green products, promote

ecological design, significantly improve the level of energy conservation, environmental protection and low-carbon products, and guide green production and green consumption. This is not only the goal of the country, but also the goal of JDF. In the future, JDF will actively respond to the call of the country, adhere to the green development route, and contribute to the green earth.

4. Effect and Enlightenment of Environmental Management

As environmental problems become more and more prominent and people's awareness of environmental protection increases, all sectors of society have increasingly strong demands for enterprises to assume environmental responsibility. How to protect the environment while pursuing economic interests has become an unavoidable problem for enterprises. Environmental management is the basis and guarantee of the national strategy of circular economy, low-carbon economy and sustainable development under the new normal of economy.

4.1. Effects of Environmental Management

Environmental management should be reflected in all aspects of production and sales. JDF attaches great importance to the control and prevention of pollutants throughout the process of implementing environmental management, and reduces or even avoids the negative harm to the environment as much as possible in all aspects of products or services from production and sales to circulation. The first is to carry out green design, the enterprise in the product production and development stage must take into account the product's entire life cycle load on the environment, so as to meet the needs of the market and consumers, but also save resources and protect the environment. For example, automobile enterprises use new energy such as electric energy as fuel to replace previously commonly used gasoline and other energy fuels, and actively develop low-pollution vehicles with high engine combustion efficiency. The second is green procurement, enterprises in the purchase of the required raw materials and parts, or the service required by the contract, priority procurement of products that meet the national green standards. There is environmental marketing, environmental marketing is green marketing, enterprises in the social survey, product pricing, promotional activities and other marketing activities in the process, to maintain the ecological balance, pay attention to environmental protection of the "environmental management concept" as a guide, to promote the development of enterprises and social interests in line. In the sales process, as far as possible to simplify the packaging of gifts, such as the Mid-Autumn Festival moon cake should not do too much packaging, the daily packaging box can also be recycled and reused.

4.2. The Enlightenment of Environmental Management

4.2.1. Enlightenment on Economic Performance

In the context of environmental management, enterprises need more accurate cost accounting and more scientific and effective environmental cost management concepts. Economic benefit is the economic performance of input and output. Generally, for enterprises, business behavior is the creation of value, and the economic value of business behavior is generally expressed in terms of price, cost and profit. Therefore, in order to save resources for a certain production activity or try to increase output relative to the uniform input volume, the output rate of the product can be improved and the input volume of resources can be reduced, which can reduce the unit cost of the product and bring higher value. If enterprises can regard environmental resources as wealth and ability, and invest in them, they can slow down the deterioration of the environment and reduce the environmental cost, so that the environmental benefit is greater than the environmental cost, and will obtain obvious economic benefits.

4.2.2. Enlightenments from Social Performance

As the stakeholders of enterprises, customers are the social responsibilities that enterprises should undertake. Enterprises have the responsibility to provide customers with cost-effective and meaningful products or services, so as to obtain the customer value they pursue. In order to create customer value, it is necessary to meet their needs.

4.2.3. Implications of Environmental Performance

Enterprises can carry out environmental management, research and develop green technology and green products, so as to meet the needs of consumers for green consumption, which will help enterprises to expand market share and increase market share, and even help enterprises to obtain more support from the government, society and other relevant parties, forming a win-win situation. Taking the initiative to carry out environmental management is the beginning of enterprises' awakening environmental awareness and assuming environmental responsibility. Active and independent environmental management can reduce production costs and pollution costs, improve product productivity, promote technological and product innovation, bring new customer value, enhance the market competitiveness of enterprises, and help enterprises improve their sustainable development performance from three aspects: economic performance, social performance and environmental performance.

The positive measures of enterprise environmental management will improve the future competitiveness of enterprises, and the improvement of competitiveness will further enhance the value of enterprises, and then form a virtuous circle.

5. Summary

Enterprises should vigorously publicize the importance of environmental management through various channels in each process of their daily activities, encourage all departments within the enterprise to establish a positive concept of environmental protection, and ensure that relevant personnel within the enterprise have a correct understanding of environmental management information and environmental management system. Cultivate the quality and awareness of environmental responsibility of all employees, and more actively and effectively promote the operation and application of environmental management inside and outside the enterprise, so as to establish a solid foundation for the application of environmental management in the enterprise. Whether it is the internal management of the enterprise or the relevant personnel of the environmental management work need to update the latest laws, regulations and rules and regulations, and enterprises should carry out industry-university-research on environmental management. In addition, the management of enterprises should establish a certain environmental management system within the enterprise. The enterprise itself should cultivate the due environmental awareness and actively start the audit and supervision of the application process of the internal environmental management. According to its own specific conditions, the regulatory bodies and audit institutions that play a supervisory and restrictive role in environmental management should be established to review regularly and periodically and correct the existing problems in a timely manner, so as to play an effective supervision over the environmental accounting of the enterprise. To ensure that enterprises can have a strong awareness and consciousness of environmental protection. In addition, the public and public opinion can also be brought into full play outside the enterprise, and vigorously criticize and condemn the enterprises that have played a serious impact on environmental pollution but have done nothing. Through the establishment of relevant environmental protection supervision and management system, enterprises can be examined from multiple perspectives on environmental management and environmental protection related work.

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