

On the New Mode of Garbage Disposal under the Background of New Era

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Abstract

With the process of urbanization and the change of residents' consumption structure, the production and accumulation of urban garbage are increasing year by year, the composition of garbage is becoming more and more complex, and the harmful components are also increasing, so it is necessary to carry out effective harmless, reduction and resource treatment of garbage. Residents lack the knowledge of garbage classification and cannot realize the importance and necessity of garbage classification, which is one of the important factors restricting garbage classification and recycling. Sorting garbage is to protect the environment, promote efficient recycling and reduce pollution.

Keywords

Garbage Classification, Resource Treatment, Multifunctional Garbage Disposal.

1. Research Status at Home and Abroad

1.1 Domestic Research Status

Zhiyong Xu, deputy director of the Institute of Biology and Environment of Peking University, stressed in this research report that the population of The Shenzhen area has increased from 300,000 to more than 20 million, and the daily output of domestic waste is 29,000 tons. The success of waste separation is an important step forward to build a beautiful urban and rural area in the new era, and enhance people's sense of happiness and success. Yi Peng Zhang of the Chinese Academy of Sciences stressed in his research report "Research on Smart Garbage Cans in China" that although there are smart mosaics in the domestic market, these vacuum cleaners are not completely smart, but still need manual help.

In addition, there are intelligent infrared dustbins on the market. It's cheaper than an electric button, but the product still needs manual help, which is inconvenient. Smart waste is mainly in push-button bins and other bins, and the new waste management model must take into account the convenience and innovation of human life.

1.2 Foreign Research Status

Eleanor Ostrom, the founder of the School for Public Elections, stressed that the ENVIRONMENT and Recycling Act requires companies to pay profits from wastewater treatment in order to encourage companies to adopt environmentally sound technologies. According to the system and plan, 50 percent of household waste can be sorted and recycled. Many Swedish supermarkets have machines that automatically recycle cans and bottles. Glass jars and bottles, and then the machine spits out receipts. The buyer receives the receipt and gets a small amount of money. Sweden's Customs clearance company, a company formed by three ngos, provides each household with four types of paper, garbage and other fibre bags, cleaning companies collect waste once a month, and others use specific waste disposal vehicles once a week. Recognizing the importance of waste sorting, American scientist KangMana has long believed that recycling can be achieved from both economic and

environmental aspects because its behavioral goals are closely related to their motivation interests, but without considering them, "people throw out narrow goals that they do not pursue." It is therefore all the more necessary to guide people towards meaningful and voluntary waste separation.

1.3 Local Research Status

Qingdao municipal garbage classification and treatment policy has been implemented for a long time, which is in a relatively leading level in the country, and has achieved certain results, accumulated some experience, but also some problems.

1.3.1 The Classification System has been Relatively Perfect, and the Promotion Effect in Qingdao is Good

Qingdao's charging system began to be implemented in 2006, and changed from policy-based consumption to operational consumption in 2014. Classification standards have been relatively perfect, the state has also issued relevant policies and guiding documents. After 12 years of exploration, Qingdao has formed a "4+2" garbage classification method: "4" refers to the classification standards of four types of garbage, including recyclable garbage, toxic and harmful garbage, bulky and decoration garbage, and restaurant kitchen garbage, and is equipped with the relevant treatment system. "2" refers to "wet and dry separation. "Dry" is mainly household living room waste, "wet" is mainly restaurant waste, unit canteen waste, household kitchen waste, farm products market waste, waste food grease.

1.3.2 It is Difficult to Implement the Charging System Comprehensively, So it is Urgent to Find Effective Charging Methods

In line with the principle of "whoever pollutes, cleans up", the government has imposed charges on residents, party and government agencies, factories, enterprises, merchants and roadside stalls, but the effect has not been satisfactory. In addition to residential areas to take water, gas, garbage bundled charge system, the effect is good, has reached to 96%, the other side there are a lot of garbage disposal in arrears, and the amount is huge, as a result of the garbage disposal fee charge belongs to the department of business, and not clear of the subject of litigation, so it is difficult to be effectively solved through legal channels. The current method of distributing the amount of charges is not perfect either. the back-end garbage treatment facilities are not perfect, easy to lead to garbage siege.

2. Second Design Ideas

2.1 Solve Current Problems in the Light of the Current Social Environment

Our team focuses on current waste management issues in China, addressing the major issues facing the country, including generating large amounts of waste each year, storing large amounts of waste, and disposing, sorting and rationalizing waste. according to the data of Chinese urban environmental sanitation association, China produced about 1 billion tonnes of waste a year, including about 400 million tons of garbage, about 500 million tons of building materials, China is the largest country in the world, with the speeding up of China's urbanization process and the improvement of people's living standard, city life garbage continues to grow by about 5%. In 2019, China's domestic waste production reached 179 million tons, and an analysis of the domestic waste treatment industry shows that in the past, the country handled more domestic waste than it disposed of. Despite the annual reduction in waste volume, there were still 17 million tons of untreated waste in 2019, and China has accumulated more than 500 million tons of waste in the past decade. From the perspective of environmental protection, There are two main types of domestic waste treatment in China: sanitary landfill and incineration. According to the domestic waste treatment industry data in 2019, our domestic waste treatment capacity was 1,960,700 metric tons, while our domestic waste treatment capacity was 690,700 metric tons. As of 31 December 2008, sanitary landfills in the country were estimated at 1.967 million tons, of which 118.043 million tons were sanitary landfills. Accounted for 60%; That is 35%; In 2019, 18 Provinces and cities in China had a domestic waste treatment deficit of 200,000 tons. According to Chinese statistics, the total output value of China's Guangdong,

Heilongjiang, Jilin and Gansu provinces was 3.279 billion tons, among which the total output value of Guangdong, Heilongjiang, Jilin and Gansu provinces was 3.279 billion tons and 3.279 billion tons respectively. As at 31 March 2000, the total tonnage of seaborne cargo was 2,265.24 million tonnes, representing 2.6% of the total tonnage of seaborne cargo. Total tonnage 1,90.03 million tons. As of December 31, 2008, the company's total production was 1,574,500 tons. This means that the waste disposal rates of the four provinces are 15.38% and 45.59%, 39.15% and 57.71% respectively. Dispose of it in an environmentally sound manner. With the development of global waste treatment technology, the level of urban waste treatment in China has been improving. However, the overall level of municipal waste treatment technology in China is still low, and it lacks the experience and ability of comprehensive development and engineering of new technology and new technology. Based on this, at present, more than 80% of the municipal solid waste in China is simply buried.

In view of the above situation, aiming at the current situation of China, our team put forward the idea of "wisdom" trash can research as a life assistant in the new era. Zhiwei Garbage bin project realizes automatic garbage classification and concentration, which makes "waste utilization" possible, thus greatly improving the efficiency of centralized waste treatment, facilitating the follow-up garbage classification, solving the problems of garbage storage in modern society, and realizing the optimal disposal and recycling of garbage.

2.2 Accurate Classification and Independent Design

In view of the existing problems in environmental sanitation and waste classification, this project aims to study the smart dustbin. By consulting and researching large amounts of data, our "Smart way" bin will bring us a wonderful experience as a helper of the new era. Combined with the analysis of the market situation, the paper puts forward a design scheme of multi-functional intelligent dustbin a container with multiple functions in one, and finally realizes the goal of "multi-use". Dustbin design: first of all, the overall structure of the overall layout of the dustbin, and then rough planning to achieve each function of the method; Finally, the design and implementation of the single-chip microcomputer function, the multi-functional trash can, the waste was accurately classified, and developed a series of garbage disposal box treatment program.

2.2.1 Multi-Functional System

Zhiwei's bins use a smart system with LED screens and are connected to web technology. LED displays can be used to sort waste and disseminate scientific knowledge. At the same time, chi Wei Garbage station has a small language assistant to provide and assist people to better separate garbage. Zhiwei waste treatment station can cooperate with advertisers to post advertisements on display screens to attract commercial investment and reduce financing pressure.

2.2.2 Solar Energy Sources

Dustbin intelligent use of solar energy implementation process: installed at the top of the dustbin solar collector; Connect the energy to the bin and store it in the sun. Set the backup power at the same time. In cloudy and other weather, power is provided by backup power sources.

2.2.3 Disinfection

Safety and health are of particular importance due to the transmission of the Novel Coronavirus. The virus spreads in the dustbin Ultraviolet lights have been installed to enable the dustbin to function as a disinfectant.

The process for implementing this feature: The dumpster is equipped with a UV system. Users can choose disinfection time according to their needs. To save resources, the UV system automatically shuts off half an hour after the switch is turned on.

2.2.4 Automatically Open the Lid

When the infrared sensor is installed in the bin entrance, the infrared sensor will detect, when the user is close to the bin, they will enter the sensor area; The signal is then sent to the control server and the recycle bin is opened.

2.2.5 Intelligent Recognition and Classification

Its main task is to collect image data, identify target types, and accurately process the sensor data transmitted by subordinate machines, in order to realize the comprehensive data acquisition of multiple sensors. Garbage classification to a certain volume can be automatically packed.

2.2.6 Post Service

Due to uncertain time and space factors in the future, maintenance personnel must deal with them. For example, the bins are full but cannot be handled by themselves, or in other emergencies, Smart bins have independent equipment to detect whether the bins are full and check their own problems. Each bin has its own number, and service personnel can observe whether there is any danger to maintain safety. Under the control of zhiwei APP, problems will be solved in time.

3. Technical Analysis

3.1 Technical Composition

Wisdom is committed to solving intelligent waste classification and other problems, waste recycling. Thousands of ordinary garbage and information are stored in smart container identification systems. Garbage and garbage input information, the single-layer machine receives the information and controls the transmission of the language module. Voice recognition module returns MCU information output. After obtaining the information, the single-chip motor is controlled by the engine drive module. The sensor is based on automatic infrared module, designed by Germany LHI778 probe, with high sensitivity, high reliability and ultra-low pressure operation mode, needle circuit is used in various automatic measuring instruments, especially suitable for dry battery automatic control products. The infrared sensor module measures small angles, short measurement paths, and allows identification of itself in a short time. LD3320 module is used for voice execution. LD3320 speech recognition module is a language recognition and language control circuit, based on independent language recognition technology that does not require user preparation. Keyword lists can be dynamically changed and recognized; Just transfer the selected keywords to the chip as A string, with built-in high-precision A/D and D/A channels, no need to connect the external chip display, just connect the microphone to the output of the chip; It can play audio files and offers a built-in 550MW amplifier with high accuracy and speech recognition. the detector part through the eddy current sensor. When the current approaches the circuit breaker, the body generates current and eddy currents. The eddy current response approaches the circuit breaker, changes the parameters of the internal switch, determines the proximity of the conducting object, and then turns the control switch on or off, classifying metals and nonmetals. The software is mainly developed in C language, including induction mode, metal detection and intelligent detection system. The system automatically sorts waste according to its quality. All peripherals and motor drives are controlled by STM32. After exiting the overflow mode, related personnel will use the GSM communication function to handle the overflow mode in a timely manner. When employees opened Shi wei's technology App, the App found the GPS location, where they found the bins, which were packed to the brim and sent for cleaning.

3.2 Technical Points

3.2.1 Integration Plan

Our team will set up the official account for this project by scanning the QR code and using the smart bin every time when it is integrated. It can also be broken down into trivia of waste sorting. On Environment Day each year, you can change the appropriate degree of discount points. This discount applies to all major shopping centers and restaurants.

3.2.2 Public goods and recycling opportunities

The collected boxes and bottles will be converted into a proper amount and provided to poor areas free of charge. Waste recovery method: waste can be directly recycled after classification. For

example, glass, plastic waste, metal, paper, newspaper, wood, waste, waste oil and so on accelerate the decomposition of organic and inorganic matter in waste, making waste valuable.

3.2.3 Fun

Zhiwei's combination of trash cans and games has raised interest in separate garbage sorting. There is an LED screen in front of each of Zhiwei's trash cans. The low level of knowledge and interesting answers not only increase people's leisure and entertainment, but also contribute to the popularity of garbage sorting.

3.2.4 Maintain public order

The smart processor is equipped with an SOS system. There is a button in the box. If someone is in danger at night or in other special circumstances, push the button in time. Report the location to the police and report a high alarm so people can help the victim.

4. Feasibility Analysis

4.1 Technical Feasibility

Function comparison of competitors: In recent years, enterprises related to waste treatment have not become the leaders in this industry. At the same time, many of the related platforms are not functioning properly and do not provide adequate safeguards. Therefore, the project has broad market prospects and application prospects. Technical risk and usability: The platform has a large customer market and needs to be evaluated for visits to ensure its normal usage. Versatility: The market for waste management research was 11.5 billion b/d in 2013, according to data. In just 5 years, the market scale has increased 10.16 times, and the market prospect is broad. Added value: This is a critical time to actively protect the environment. Waste management systems contribute to the implementation and promotion of national policies. application scope: improve network information system, constantly optimize waste treatment facilities, to ensure its subsequent development and application.

4.2 Economic Feasibility

Work cost: Research, analysis, design, development, testing, operation and maintenance require corresponding human resources. Cost of software and equipment. The production and introduction of products need to purchase hardware such as database and development tools, third-party software, number of servers, routers, networks, etc. Market development and advertising expenses. Advertising management is necessary for after-sale advertising marketing. Maintenance and upgrade costs. It is necessary to continuously improve the quality of products from 1.0 waste treatment to 3.0 now, to reduce the human and financial costs, and to continue modernization as a necessary condition.

4.3 Feasibility of Innovation

Wise Bins will establish voluntary associations with people and others who care about the environment. After recycling plastic bottles and cartons and selling them, the money will be donated to students in remote villages to help them build libraries and playgrounds. When using the integrated system, when the garbage is discarded, the TWO-DIMENSIONAL code will be displayed on the dustbin. Residents can use the official account "Zhiwei Little Assistant" to get points and exchange for various exquisite small gifts. The system automatically identifies the garbage and deals with it accordingly. Organically separate kitchen waste such as cabbage and residue. Combine garbage classification knowledge into a small game and interesting answers to increase interest in garbage self-classification.

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