

Design and Distribution Path Analysis of Intelligent IoT Waste Sorting

Equipment

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Abstract: In 2017, the General Office of the State Council forwarded the "Implementation Plan for Domestic Waste Classification System" issued by the National Development and Reform Commission and the Ministry of Housing and Urban-Rural Development. Among them, 46 cities before the end of 2020 will implement the mandatory classification of domestic garbage first, so this has led to the classification of domestic waste. motion. Garbage classification is not new. It has been more than 16 years old. In the current campaign, waste is classified and resourced, and high-tech is integrated into digital, intelligent and Internet of Things. Different manufacturers have developed different functions. Intelligent classification equipment. In addition, smart garbage sorting equipment has been put into operation in different urban areas, and certain effects have also been achieved. However, the functions of these devices are not fully suitable for the market demand to a certain extent. They work well when the residents are highly coordinated and classified correctly. However, if the existing functions are not enough under the large-scale promotion situation, if the users do not cooperate and classify In the absence of meticulous circumstances, how to solve the intelligent garbage sorting equipment, in view of this, this article from the perspective of the distributor, to explore the functional design and delivery path of the intelligent Internet of Things waste sorting equipment, in order to prevent the distribution of people not coordinated, classification is not detailed, etc. Special circumstances, thus ensuring the mandatory classification of domestic garbage.

Keywords: Intelligent; garbage classification; functional design; delivery path.

1. INTRODUCTION

Incorporating waste into the circular economy is a common practice all over the world, and intelligent classification is an inevitable trend in the future development. Yang Mingsen, chairman of the China Ecological Civilization Research and Promotion Association, believes that waste sorting can be divided into five stages. First, fashion, mobilizing the public to participate extensively, is relatively narrow "garbage classification starts from me." The second is administrative, that is, strong government intervention. This stage is very important, but it cannot be too long. The third is marketization, which is the normal state of garbage

classification, and it is only sustainable when it is market-oriented. And if it only stays in the marketization stage, it must go to a higher level, that is, the fourth stage of the cycle. Incorporating waste into the context of a circular economy is not just a matter of order, social, health, but part of a circular economy. The inevitable development direction of marketization and recycling is intelligent, that is, the fifth stage. These five stages are not completely separate, fashion will always run through, the market must be the main body, and administrative intervention will be more reflected in the formulation of rules, circulation and intelligence, you can enter at any time [1]. According to China's national conditions, the characteristics of garbage types and the quality of people, the concept of “constrained” and “reward” is proposed, and the urban domestic waste separation and recovery system based on design is proposed [2]. Therefore, solving the problem of garbage front-end processing can fundamentally solve the problem of garbage harmless treatment has important research significance.

2. THE ANALYSIS OF THE MAIN PROBLEMS FACED BY EXISTING INTELLIGENT GARBAGE SORTING EQUIPMENT

Intelligent IoT garbage classification is a new model based on the traditional garbage classification mode and the times, based on the Internet to break the advantages of time and space. The existing intelligent garbage sorting equipment is a new model of “smart recycling” for the front-end sorting and recycling of domestic garbage through the advanced technologies such as the Internet, big data, Internet of Things and artificial intelligence, and centralized transportation at the middle end and centralized processing at the end [3]. This is a big step forward in the era, but there are also many problems in the design and use process.

2.1 The common disadvantage of existing classification equipment is that it is impossible to reset the classification error

The current smart garbage sorting equipment is more like a storage bucket. Compared with the traditional trash can, innovations include intelligent weighing, real-time monitoring, identification, device positioning, point redemption, smart head dispensing and many other functions. Some of the devices developed by the developers have the above functions, and some of them need to be operated by means of mobile phones. Overall, the convenience is great. The functions of different types of smart garbage sorting devices are not very different. The operation can be opened by scanning mainly by scanning, and then the garbage is put into the task by the dispenser. However, at the time of this launch, it did not fully consider whether the servant is correctly placed according to the class. If the smart garbage sorting device has the opportunity to re-deliver again if the categorization is incorrect, there is no such thing for the current function. Once there is no room for returning errors or categorization errors, this increases the cost of secondary sorting, which is not much improved compared to traditional garbage.

2.2 The current reward mechanism is popular, and the incentive effect is weakened

The common reward methods can be redeemed for redemption points in exchange for daily necessities, or directly cash back. These implementation incentives can stimulate the

enthusiasm of household waste classification to a certain extent, but this means can only be used as an aid. Some residents in the community are more local residents, some are more foreign tenants, or single people are mostly living, so if it is a floating population or a single-occupied area, the implementation of the incentive mechanism is similar. First, they have no sense of belonging to the community. Second, the rushed work life every day leads them to have no time to care about what rewards to do for garbage sorting. If this is the case, it will be very easy for the garbage classification to be in place. Moreover, the garbage generated in the residents' life is mainly based on kitchen waste and other garbage. The kitchen waste mainly includes the food residue left over from daily cooking. The remaining wreckage of the takeaway is cold, while the big bones, lunch boxes, etc. belong to other garbage. These rubbish are non-recyclable wastes, and it is easy to cause insects and guinea pigs to be disposed of at will. For such residents, there is no incentive to categorize them because the current reward mechanism is not the most necessary for them. For a tenant, he may The reward is more practical, such as to increase the residence permit points. It is more feasible to increase the credit level for single residents.

2.3 Administrative intervention is not obvious

Intelligent waste sorting equipment needs to be fully deployed and operated, requiring administrative intervention. In the residential area, if the garbage classification method is to be implemented, many cases must rely on the autonomy and quality of the residents. Many residents are accustomed to choose to throw garbage at night because they don't like garbage to spend the night at home. Throwing at night will give you a psychological hint, you can do whatever you want, because no one will notice. Even on the premise of mandatory classification, residents are completely reluctant to take the initiative to classify, and wait until the evening when they choose someone to throw at the roadside. If this is the case, the smart garbage sorting device will be ineffective, and it will not be able to fully play its due role, so that resources are wasted. Therefore, it is quite necessary to join administrative intervention in this case. Some unscrupulous residents from the floor where they lived directly downstairs to the trash can, do not care whether the garbage is thrown into the trash can. Is it useful to install the probe at this time? These situations are not counted in life, and they have not been dealt with in this case. What methods are used to restrict them are not mentioned. For the residential area, if there is no supporting facilities and punishment measures to force the classification of domestic garbage, the classification will only be in the form.

3. THE INTELLIGENT GARBAGE CLASSIFICATION EQUIPMENT FUNCTION IMPROVEMENT AND DELIVERY PATH ANALYSIS

3.1 Pre-preparation work for smart garbage sorting

For each cell or unit office area, what kind of smart garbage sorting equipment should be placed and how much should be placed, it should be determined according to the actual situation of the residential area or unit office area. First of all, the residents should smoothly deliver the garbage. The premise needs to be bound to the relevant intelligent garbage

classification APP software, and the basic information such as the name, address and delivery time of the households is registered, so that the analysis and arrangement of the big data platform can be summarized, and the households' habits are summarized. It is also convenient for subsequent classification management. Of course, the information of the household is required to be kept confidential by the running platform. If the information is not bound or the information is not enough, it will affect the delivery. If the smart opening cannot be opened, the delivery will fail. This is the first step to correct the classification.

3.2 Mprovement of the function of intelligent garbage sorting equipment

For intelligent garbage sorting equipment for recyclable functions, it can be correctly classified correctly. Each smart device shell will have a pattern to describe which type of garbage is in the barrel, and the reward mechanism credit or cash back is implemented. Most of the residents can do it. When it comes to kitchen waste and other garbage, it may not be able to do it. One of the biggest places for kitchen waste is that it can be composted, but if there is other garbage mixed in it, it will be greatly reduced if it is not completely separated. Therefore, how to separate the non-compostable garbage in the kitchen waste, such as large bones and packaging bags, is particularly important. If residents are not willing to take action, it will affect the classification effect. Existing devices can be delivered as long as they are scanned, and there is no solution to the garbage that is classified incorrectly. Therefore, in order to solve this problem, the function of the existing intelligent garbage sorting device can be started, and the "x-ray machine" window is configured on the existing function, and scanning is used to check whether the correct classification is completely performed. The specific design is as follows:

First open the QR code bound by the resident's household and align it with the scan code window of the recycler. Go to the launch interface and select the "food waste scan mode". The recycler will spit out the "X-ray machine" window, and then put the corresponding kitchen waste into the scan. If the prompt "Classification is correct", spit out the kitchen waste, and automatically open the delivery door. If the electronic screen displays "XX classification error" and voice prompt, the distributor needs to be rearranged, and then follow the procedure until the correct intelligent window is classified. Open smoothly. If the scammer does not have the classification to be easy to appear multiple times, it may happen to leave without re-classifying according to the program, leaving the garbage in the scanning window. If this is the case, the device combines intelligent monitoring to deliver the actor. The situation is communicated to the sever through the APP and the delivery is not completed. It needs to be continued. It is told that many improper operations will affect the daily life. This requires administrative intervention, such as raising the property fee to pay the delivery fee. If there is a strong and uncooperative situation, it may face water and power failure.

The distribution route of smart garbage sorting equipment should be tailored to local conditions. To design a delivery path is to distribute smart garbage sorting devices with different functions in different regions. The garbage generated in the unit area may have kitchen waste (mainly lunch box waste), plastic bottles, cans, office waste paper, hazardous garbage, other garbage, etc. According to the actual situation, the intelligent recycling machine is set up, and the

kitchen waste, plastic, Waste paper, hazardous garbage, other garbage, and other cabinets. At the same time, the camera is equipped with a high-definition camera. Each intelligent recycling machine has a corresponding unit. The delivery unit and the employee must hold the reserved QR code to open the delivery door. If it is not delivered according to the regulations, for example, directly to the outside of the recycling machine, the distributors will be directly found through the monitoring and monitoring when entering the floor, and then the delivery unit will be tracked, and the unit will be fined or the environmental pollution tax will be imposed, and then the unit will investigate the employees. Personal misconduct. According to the living population and residents' intensive situation, through the big data analysis, a certain amount of kitchen waste and other garbage function equipment will be provided to meet the daily dose. For the recyclable function, the information provided by the background big data operation is combined with the living habits of the residents. If the community is keen on Taobao, there will be more waste paper. In this function, the waste paper bucket should be too large to cope with the daily delivery. the amount. If the community is mostly a floating population, in order to properly guide the residents to launch and improve the residents' enthusiasm and participation, the reward given to them is to increase the residence permit points more than anything else, and the points are linked to the children's education.

4. CONCLUSION

Internet, Internet of Things, intelligence and other high-tech technologies are all in one. Intelligent waste sorting equipment emerges in response to the needs of the times. It is an inevitable trend. It has gradually been integrated into the life of residents. Whether it can go smoothly and long-term is closely related to the quality of residents. Affect the quality of life and health of residents. As with the taxpayer's obligation to pay taxes according to law, it is also the duty of each of us to take care of the environment and do the garbage classification work. Everyone must participate.

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