家用垃圾处理器的设计

摘　　要

随着国家的飞速发展，垃圾处理成为了一个日益严重的问题，而在众多的生活垃圾中，厨余垃圾占到总量的一半以上。厨余垃圾成分复杂，包括蔬菜、果皮、油、骨头等，如果直接倒入下水道经常发生下水道堵塞的状况，倒入垃圾桶不及时处理还会造成严重的异味，极易腐烂、滋生细菌，危害人体的健康。所以人们应该提高环保意识，厨余垃圾的处理方式也应该得到重视和发展。

目前垃圾处理的方式比较传统，垃圾填埋还是作为处理垃圾的主力方式，但是能够垃圾处理的土地越来越少，开发一种新的垃圾处理方式迫在眉睫，随着改革开放，西方国家的企业进入中国，家用垃圾处理器也出现在人们的视野之中。由于中国饮食丰富，厨余垃圾的成分也比西方国家复杂，所以家用垃圾处理器刚进入中国有些“水土不服”，所以研制一款适合中国国情的家用垃圾处理器就成为家电界的方向。

本文就根据厨余垃圾的特点研制了一款家用垃圾处理器。该处理器由四部分组成：入料口、研磨腔、出料口、电机。通过粉碎、研磨将垃圾迅速粉碎成 4-6mm 的颗粒，流到污水处理厂进行处理，实现了厨余垃圾的回收再利用。首先，使用 SolidWorks 软件对各零部件进行设计建模，装配到一起。随后对刀盘进行强度计算，确保实验数据的正确性。而后又对电机进行 PLC 控制设计，使电机运行更加稳定。随后对除研磨腔外的零件进行完善，完成了本次设计。

此次设计的家用垃圾处理器更符合我们国家的国情，从建筑结构到垃圾成分都符合。相比于国外的机器，在成本上更少，价格上更加便宜。但是家用垃圾处理器作为当今社会的一个新生事物，还有很长的一段路要走，需要居民环保意识的提高和政府的大力支持，其前景非常广阔。

关键词：垃圾处理器；厨余垃圾；环保意识；

Design of household waste disposer

ABSTRACT

With the rapid development of the country, waste disposal has become an increasingly serious problem, and kitchen waste accounts for more than half of the total domestic waste. The composition of kitchen waste is complex, including vegetables, peels, oil, bones, etc. If it is directly poured into the sewer, the sewer is often blocked, and if it is dumped into the trash bin, it will cause serious odors if it is not processed in time. It is very easy to rot, breed bacteria, and harm Human health. Therefore, people should raise awareness of environmental protection, and the treatment of food waste should also be valued and developed.

At present, the waste disposal method is more traditional, and landfill is still the main method for waste disposal, but there is less and less land available for waste disposal. The development of a new waste disposal method is imminent. With the reform and opening up, enterprises in Western countries have entered In China, household waste disposers also appear in people's eyes. Since China has a rich diet and the composition of kitchen waste is also more complicated than that in Western countries, the household waste disposer has just entered China and is somewhat unacceptable. Therefore, the development of a household waste disposer suitable for China's national conditions has become the direction of the household appliance industry.

This article has developed a household waste processor based on the characteristics of kitchen waste. The processor consists of four parts: the material inlet, the grinding cavity, the material outlet, and the motor. Through crushing and grinding, the garbage is quickly crushed into 4-6mm particles, and then flowed to the sewage treatment plant for treatment, which realizes the recovery and reuse of kitchen waste. First, use SolidWorks software to design and model each component and assemble them together. Then the strength of the cutter head is calculated to ensure the accuracy of the experimental data. Then the PLC control design of the motor is made to make the motor run more stable. Subsequently, the parts except the grinding cavity were perfected to complete the design.

The household waste disposer designed this time is more in line with the national conditions of our country, from building structure to waste composition. Compared with foreign machines, it is less in cost and cheaper in price.

Key Words：Garbage Disposal；Kitchen Waste；Environmental Awareness

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