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## Design and Fabrication of Food Strainer

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### Abstract

Malaysians and food are inseparable. Although food varieties are taken so seriously, yet food safety or hygienic are less concerned. According to Food Act 1983, besides hazards and frauds about foods, the preparation, handling, distribution and the quality plays vital role. Since pandemic has hit all the country in the whole world, almost everyone either in small scale or in large scale to gain income is doing the food business because of the retrenchment in almost all the industries. This contribution aims to report on the development, includes design and fabrication of a food strainer. The food strainer is innovated because of several problems that hawkers face during the food handling process. Their problems are it will take longer time to transfer foods that are boiled or blanched from the strainer to the packaging. The process is developing the product uses Tungsten Inert Gas (TIG) welding. This research includes the consideration of design assisted by design tool (AutoCAD). The material used in the development of food strainer are stainless steel (SS) to avoid corrosion. The food strainer can take up to 700g weight in total and foods that can be used are Yong Tau Fu, noodles, bean sprouts, leafy vegetables and so on. The method used are Pugh method in obtaining the best design with the most criteria. Results of the study shows that the hawkers reduced their time and increase customer satisfaction by handling the packaging fast.

*Key-word: - Food Strainer, TIG Welding*

### 1. Introduction

In this era of globalization and due to the pandemic, Malaysians involved in food business whether in large-scale or a small-scale business. The most common eateries that are found almost everywhere are hawker's stalls because it is inexpensive [5] that are preferred by fellow Malaysians which is known as street retailing [4]. As for the hawkers, that commonly sells noodles and similar, the food blanched in hot water before serving to customers. From the observation, the redesigning of the food strainer are done in fulfilling the objectives that are to reduce time taken by the hawkers in transferring the food from the strainer to the packaging either in plates or plastic bags for take away. The problems encountered by the hawkers are the time taken is long in packaging and also sometimes the food are spilled down from the existing strainer before going into the packages. The existing strainer are shown in Figure 1. The scope of the product are for small businesses that have process of blanching or boiling food.

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## 2. Methodology

The qualitative data will be used to collect data and information since it can be recorded and observed [2]. The research focuses on developing the food strainer for hawkers use. The material to develop the food strainer are stainless steel (SS). There are few process involved in getting the final product which are cutting, bending, assemble and finally the pieces are attached together using welding process, Tungsten Inert Gas (TIG). The handle part we innovated the presser which is used in transferring the food through the hole as in isometric view in Figure 2. Besides that, Pugh method [3] which is suitable in ranking the multi-dimensional options to rank design decisions is used in getting the most ideal strainer based on the characteristics listed. Questionnaire are given randomly to ten hawkers around Banting, Selangor and information are gathered that could help attain the research objectives.



**Figure 2** Isometric and orthographic view of food strainer.

## 3. Results and Discussion

Pugh method as in Table 1 shows three designs consideration. There are few important criteria such as material, hole, handle, safe and easy, weight withstand and cost to be taken into consideration before choosing the best option by ranking the scores. Design 1 got the higher score, thus the development of the selected design are done as in Table 1. Questionnaire survey are analysed and the results are shown in Figure 3 and 4. Figure 3 shows the results of respondents on answering the satisfaction using food strainer that are developed, 90% satisfied with the product. For Figure 4, 90% percent answered yes as in the food strainer used reduced time being taken in transferring food from the stove to the packaging.

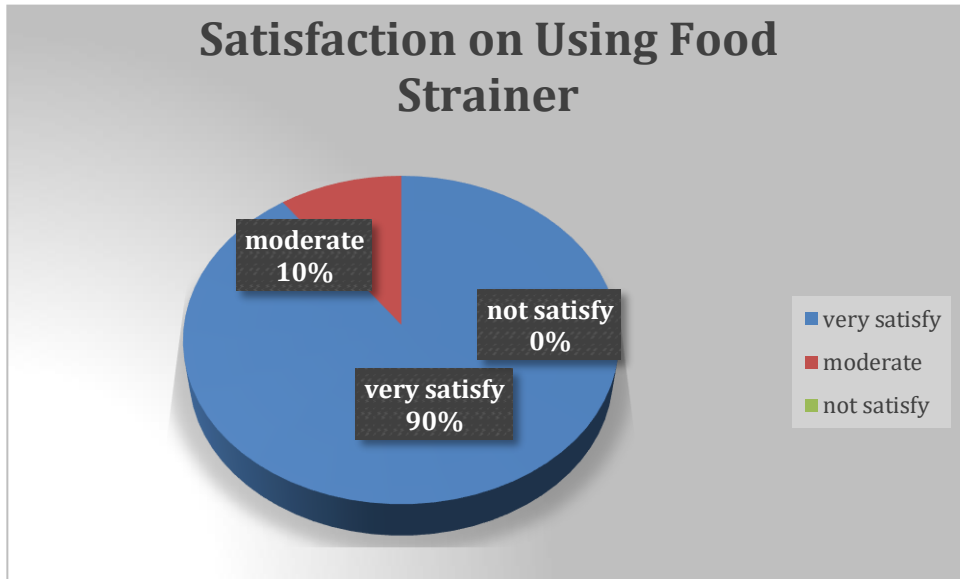


Figure 3 Satisfaction in using food strainer.

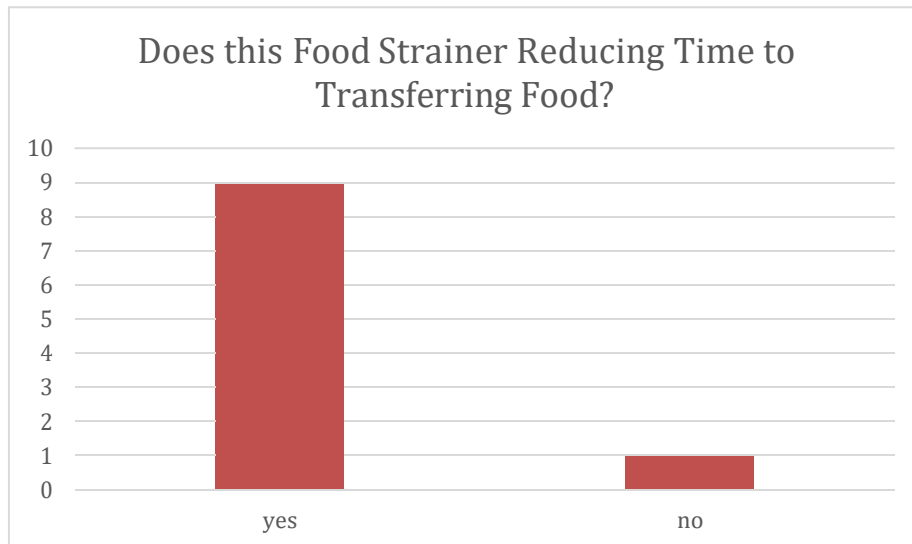





Figure 4 Time reduction in using the food strainer.

Table 1: PUGH Method

CRITERIA	DESIGN 1	DESIGN 2	DESIGN 3
DESIGNS			
Material	Stainless Steel 5	Zink/Aluminium 1	Plastic 1
Hole	Small and close hole 4	Medium and close hole 3	Large and tenuous 2
Handle	Long, vertical 4	Short, horizontal 2	Short, vertical 2
Safe and Easy	Yes 5	No 2	No 2
Weight withstand	700g 5	600g 5	150g 5
Cost	Affordable	Affordable	Affordable
Score	23	13	12
Rank	1	3	2

#### 4. Conclusion

Although the final product are developed from the customer’s needs, there are limitations and problems faced. The limitations are the possible weight that can be supported by the food strainer is 700g and the types of foods that are advisable to be used are Yong Tau Fu, noodles, bean sprouts and so on. Pugh method as in Table 1 shows three designs consideration. There are few important criteria such as material, hole, handle, safe

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