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## Designing a “KUIH LOYANG” Machine

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### Abstract

“Kuih Loyang” or also known as the Cake Pan, Cake Roses, Flowers Cakes is a kind of rocking Malay traditional cakes made from rice flour and fried in cooking oil is usually made to be eaten during Eid. Form cake pan resembles roses, has a sweet taste and golden. The name of this ‘kuih loyang’ may also be taken in conjunction with the mould made of a metal baking sheet. Problems encountered to prepare this cake is in the process of frying. Frying process is manual and time-consuming to prepare this cake. Also the risk of hot oil fryer during frying. The main objective of this project is to build a system in which the product of this system can save time, cost, and energy. “Kuih Loyang” Machine is a machine that is based on a number of mould cake propelled spinning and air shuttle. This machine is semi-automatic and only requires an operator to control it. It uses the electrical and electronic circuits comprising components such as relays, electro-pneumatic, electrical power supply and others. In addition, it has the characteristics of a good safety. The target market of this machine is to use in Small and Medium Industries (SMIs).

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*Key-word:* - “Kuih Loyang” Machine, SMI, Electric Power

### 1. Introduction

Nowadays, Small and Medium Industries (SMIs) are gaining huge demand in our country. Therefore, more machines have to produced with the latest technology in accordance with the market trends. “Kuih Loyang Machine” is a machine which is based on the “kuih loyang” mould that can move on a rotating basis. Operating this machine is semi-automatic and requires only one person to operate it. This machine can produce more quantity of “kuih loyang” compared with manual methods. The basic construction of this machine is an electronic circuit that consists of components such as gears, electro-pneumatic and electrical power supply.

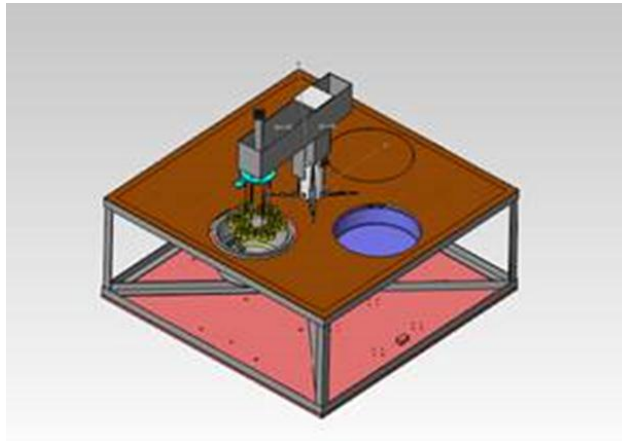
Some of the common problems faced by SMIs are time-consuming and prone to hot oil during the frying process which is done manually. The objective of producing this machine is to save time, to increase quantity of production, and to reduce manpower. “Kuih Loyang” Machine is suitable for small and medium industries in assisting the growing demand and current needs. This machine also has a high level of consumer safety to ensure the quality and quantity of the product.

Traditional methods will expose the operator to danger during the frying process. Probability exposed to hot oil is also high. For the large quantity production by using the manual method, it will require a lot of manpower. Thus, the cost to produce the “kuih loyang” will be higher. In terms of quality, manual methods are not capable of producing beautiful and neat product.

**2. Methodology**

Ideas generated through methodology are in the form of solutions and need to be combined to produce a conceptual design. A concept design is produced by combining sub-ideas with existing equipment. One of the concept which is used to build up the frame in the product is mobility. Additional tools are designed and are available and can replaced easily without requiring high expertise. Product design is done by designing, sketching and drawing technical parts using AutoCAD software. The drawing of the product is shown in Figure 1.

Then the selection of materials should be made in accordance with the design in taking account of each component as well as the corresponding costs to be balanced and reasonable. The drawing also shows that this product is a machine which has four moulds that operates simultaneously in the process of frying. The time taken to complete the frying is 10 seconds.



**Figure 1** Design of “Kuih Loyang” Machine

**3. Data Analysis And Discussion**

“Kuih loyang” production traditionally uses special moulds and has a range of sizes. The first step is to heat the mould so that the mould temperature be hot. Then the mould is immersed into the flour has been mixed. After the flour has been attached, immerse the mould into hot oil. To get the perfect “kuih loyang”, the flour mould and the flour viscosity must be accurate so that the cake is easily removed when fried. Using traditional techniques, we can only use one mould in each process. Therefore, when the mould used is limited, production also becomes less and the time taken to produce the quantity and quality will also be affected.

**3.1 Method of Frying Manually**

Below are the time and the number of “kuih loyang” taken when an operator uses a manual method. The operator uses only one mould and the result is shown in Table 1.

**Table 1** Method frying “kuih loyang” manually

No.	Time (s)	Oil Temperature (°C)	Number of “Kuih Loyang”
1	15	160	1
2	30	160	2
3	45	160	3
4	60	160	4

The finding is by using manually, it took 1 minute to have 4 “kuih loyang”. The temperature of the oil used for frying is 160 degrees Celsius.

### 3.2 Methods Using “Kuih Loyang” Machine (KLM)

**Table 2** below shows the time and the number of “kuih loyang” taken for 1 minute.

**Table 2** Method using KLM

No.	Time (s)	Oil Temperature (°C)	Number of “Kuih Loyang”
1	10	160	4
2	20	160	8
3	30	160	12
4	40	160	16
5	50	160	18
6	60	160	24

The finding is by using “Kuih Loyang” Machine it took one minute to have 24 “kuih loyang”. By using this machine it accelerates the process of frying and improve the quality and productivity of their “kuih loyang”. It can also prevent the operator from being exposed to hot cooking oil.

### 4. Conclusion

With the invention of “Kuih Loyang” Machine (KLM), the machine is simple and can be moved to an appropriate place. The operation to operate the machine is easy to understand by the operator. Additional tools are designed so that the tools are easy to buy, change and maintain. It does not need a detailed maintenance process. Modern features are implemented and it is user-friendly machine. The machine does not require a high skill worker to operate it. Moreover, it does not require a lot of worker to make the process. It is economical and use less manpower. It also save time and increase the quality of the “kuih loyang”.

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