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MEC332 : MECHANICAL ENGINEERING DESIGN

PROJECT :

SEMI-AUTO ICE CREAM MAKER

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ABSTRACT

Ice cream is a frozen dairy product made by freezing the ice cream mix with agitation which compose of a mixture of food ingredients like milk products, sweetening materials, stabilizers, colours, flavours, and egg products (Deosarkar,S. et al, 2016). For your information, market for Ice Cream Industry is expected to grow at a CAGR of roughly 5.5% over the next five years, will reach 79900 million US\$ in 2023, from 57900 million US\$ in 2017, according to a new (Global) study. Our product is designed to fulfill our customer needs and problems with the current ice cream maker in the market nowadays. Based on the research findings, the size of roller ice cream maker available in the market is big because most of the ice cream maker product are targeted for high volume production and usually used in the restaurant or ice-cream parlours. Also, high volume of production means it needs a bigger size of the cylinder where it used a lot of ice and it took quite some time to freeze the surface of the cylinder because of larger surface area. Thus, the aim of this study is to build a mini-size and semi-auto roller ice cream maker that is suitable for home or kitchen appliances. It has pedal to manually rotates the cylinder or the user can turn on the motor to automatically rotate the cylinder, which is why the machine is called semi-auto. Semi-auto ice cream maker is designed with the ideas to fulfill the needs of ice-cream lovers. From the research on benchmark products available in the market, the largest problem found was that the entire process of making ice cream took long time to produce and difficulty to clean the equipment. The objective for this product is, to create a mini-size and semi-auto ice cream maker prototype that is suitable for home appliances. The product design specifications for this prototype are focusing on the performance to make ice cream with acceptable time of production and using components that are easy to clean and service. Using the concepts from engineering design process, the prototype has gone through detail research, analysis and testing to ensure its performance and quality reach the customer's standard. In conclusion, the main idea of designing this product is that it can become one of the useful kitchen or home appliances. Thus, to ensure on that, the product must be in appropriate size and user-friendly to the customer. With this product, the customer can have less preparation time to make ice cream. Also, it can be used with or without electricity. For the future recommendation, we can change the freezing agent that more effective such as dry pad or using peltier system.

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