**DOSA MAKING MACHINE**

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**Key words:**  
AurdinoATMEGA2560, Stepper motor, Induction heating, Thermocouple, D C Motor (12V).

**Introduction**:
Dosa is a typical part of the Indian diet and fast preparing food and it is predominantly available in many hotels and restaurants of India. The high demand for the chefs and cooks to prepare this dish can now be managed by this automatic hassle-free machine which can prepare the dish with a simple touch of a button.

On conducting a brief survey on the idea about the project, we got an idea on the future steps and flow charts that should be followed to accomplish the project. We have learnt that such automatic food making machines are very expensive and are only used in star hotel and restaurants.

The Arduino is the main controller unit used to control the machine, which acts as the processing and command unit for the various components used such as motors and display units etc.

**Objectives**:
The main objective of this project is to prepare Dosa within the minimum duration. The aim of building this machine is to reduce the cost and increasing the quality and maintaining the authentic taste of the dish by making it fully automatic and labor free. This machine eliminates any human errors that happen in the traditional way of cooking and it also replaces the usage of Liquid Petroleum Gas (LPG) in preparing the dish, whose price is rapidly shooting. It is eco-friendly as it operates on electricity.

This machine can be setup in crowded places such as malls, shopping centers and food courts. Since the machine is automatic, it does not require much of monitoring and hard work, and it can prepare the dish freshly within less time at ease.

**Table 1: Components of the Project**

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<table>
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<tbody>
<tr>
<td>1.</td>
<td>Arduino ATMEGA2560</td>
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<td>2.</td>
<td>Bluetooth 5V</td>
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<td>3.</td>
<td>Switched Mode Power Supply 5V &amp; 12V</td>
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<td>4.</td>
<td>Electric Pan 2KV</td>
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<td>5.</td>
<td>Temperature Controller 230V, 0-300 degrees centigrade</td>
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<td>6.</td>
<td>Thermocouple J Type</td>
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Methodology:

The selection of motor is undertaken based on the torque required to perform the operation of desired weight of 5Kg. Heating coil i.e. Nichrome wire is of 2KV which is designed to raise the temperature in a very short time and to consume the accurate power required which is less than one units per hour. The contactor used is of 16 Amps which is more than the heating coil to sustain long duration. Switched Mode Power Supply is used of two different ratings i.e. of 5V and 12V for Arduino input. The fig 1 represents the overall block diagram of the project. The program is compiled and uploaded to ATMEGA 2560 board through Arduino software and operation is carried out for all individual components of the circuit.

![Diagram of the project]

Fig 1: Block Diagram of The Project

Here Coin acceptor is used as input of the machine and touch sensor to note the type of Dosa required, followed by thermocouple to control temperature and flow sensor and relay and linear actuators initiate to spread and remove the Dosa from of the tawa.

Result:

The figure 2 shows the final model of the project with various mechanical, electrical & electronic components integrated onto one frame. It can be seen that the various components mentioned in the previous chapters have been utilized. The rectangular unit is the batter storage and control unit which is used to store and pour the batter to prepare Dosa.
The linear actuator is placed on the right side of the model, which is used to spread the batter.

The touch sensor is placed on the extreme right side of the model, which is used to take inputs from the user. The input is received from the user. It can be seen from the figure that the batter falls on the pan after the desired temperature is reached. The linear actuator moves and spreads the batter on the tawa.

The fig 3 shows the final process where the Dosa is being prepared and removed from the tawa, after its being cooked during the delay of 100 sec.

The linear actuator starts moving in the opposite direction and thereby removes the Dosa from the tawa with the support of the blade attached to the backside of the linear actuator part.

**Conclusion:**

This machine can prepare Dosa on receiving the command from the user. The different types of Dosas are available for preparation which can make small, medium or big Dosa and can alter the crispiness of the Dosa by increasing or decreasing the oil spray on the Dosa and other such features.

**Scope For Future Work:**

The machine can be replaced with better and expensive components so that the machine could age well and would not get damaged due to mechanical or electrical stress. The machine can be upgraded by making use of IOT based application and controlling the machine from a far distance so that the Dosa is ready by the time of arrival of the user. Dispensers can be installed for sides for the Dosa such as chutney etc.