



GOOD HEALTH AND WELL BEING

STRATEGIES OF SAFE FOOD PREPARATION AND FOOD HYGIENE.

Presented by

Team Name: Mind Crusaders

Department: Electrical and Electronics Engineering

College: Thiagarajar College of Engineering



S.No	Name of the Team Member	Reg.No	Roles and Responsibilities
1.	ISHA NEETHIJ	19E031	Design developer; Developing ideas about the conceptual design
2.	SRIMATHI S	19E105	Ideas referral; developing scientific concepts about the project



OVERVIEW



- Introduction
- Societal Need/Need Assessment
- Motivation/Purpose of the work and To whom
- Existing/Current status
 - Patents
 - Publications (Reputed Journals/Conferences)
 - Voice of customer
 - Existing market products
- Problem Formulation
- Objectives
- Scope and Constraints
- Identification of Community Partner and Stakeholders



INTRODUCTION



Going through the pandemic phase, we all had a biggest fear on the concept of consuming hygienic food. So we thought a technology that involves human contactless cooking, will be considered much more safe and hygienic. Therefore, we focused on Automation cooking processes.

- Taste of food prepared by different individuals differ, but it is overcome in case of machine, we can create same quality of food every time.
- We can reduce errors and wastage of food in case of machine
- Machine reduces cooking time and less supervision
- Industries use automation process for food production in a large scale.

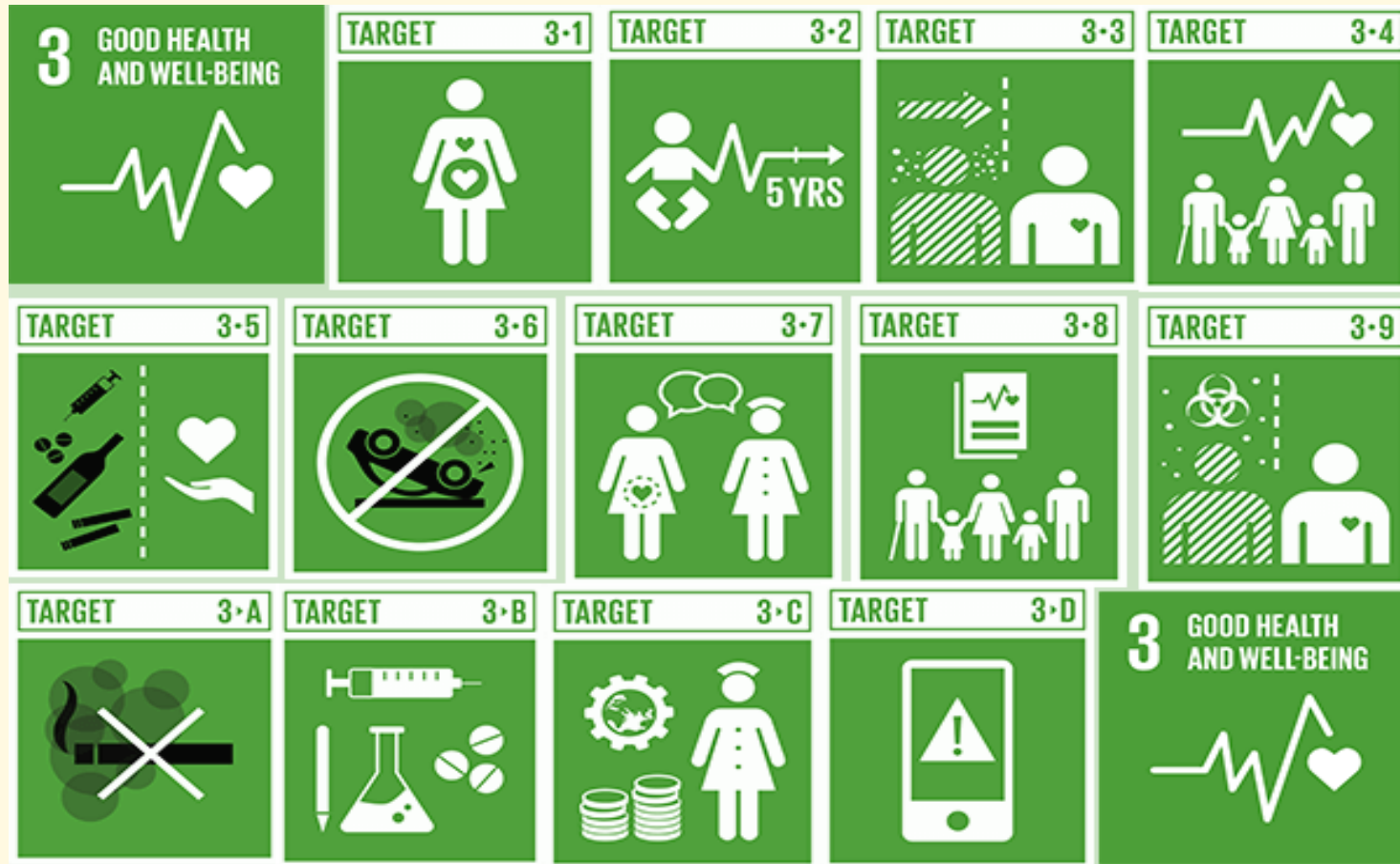
Our project focusses on overall hygiene on food production and consumption, mainly ensuring no human contact and virus free food.



SUSTAINABLE GOALS



HEALTH TARGETS





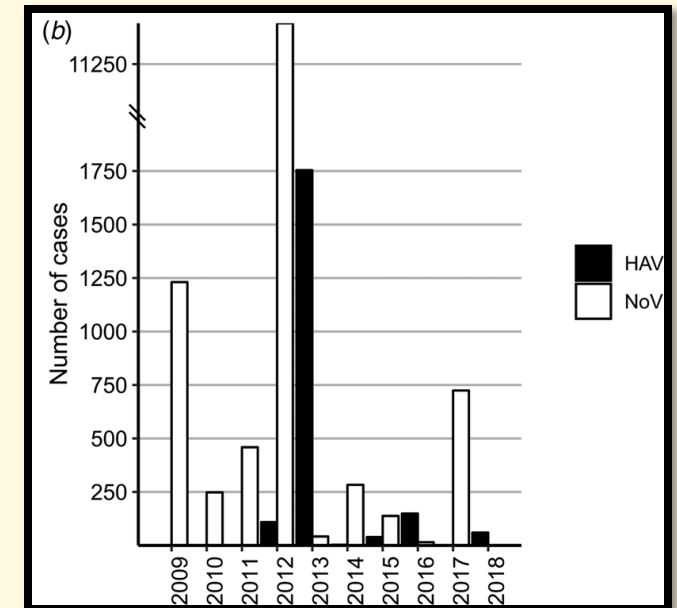
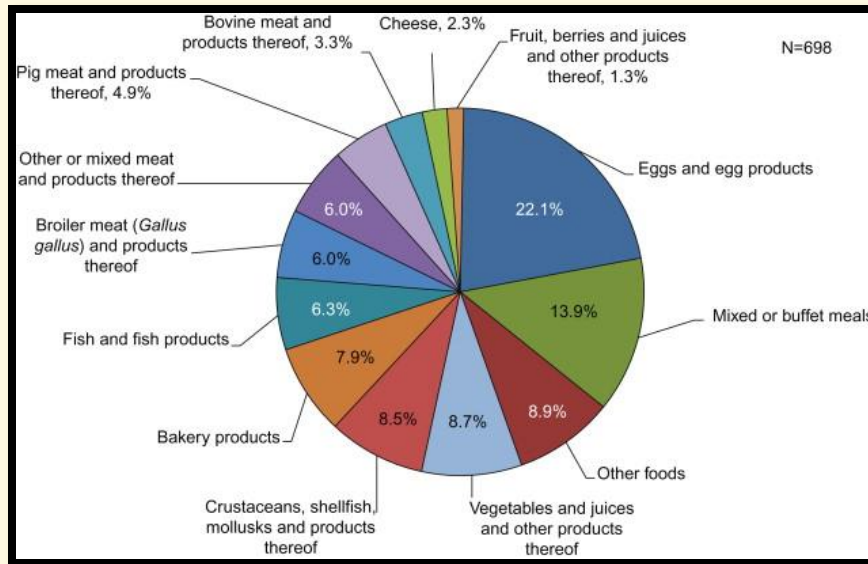
APPLICATIONS/SOCIETAL NEED



- Automation cooking systems are use in large and small scale industries to enhance safety, hygiene, technology and in addition it is used to consume human cooking time.
- Social issue -
 1. Increasing foodborne illness
 2. High average cost of food per month
 3. High wastage of food
 - 4.High labour cost in restaurants and food manufacturing companies.
- Our mission – Enhancing the control of food borne viruses & to make our project an energy efficient one.
- Our vision – To design an automated food system ensuring no human contact in cooking processes.

Sustainable Development Goals (SDG):

1. Good health and well being – Implementing Automation food system in daily life ensures no viruses in food (without involving human hands) and minimises the chances of food borne illness and that contributes a step towards maintaining a good health.

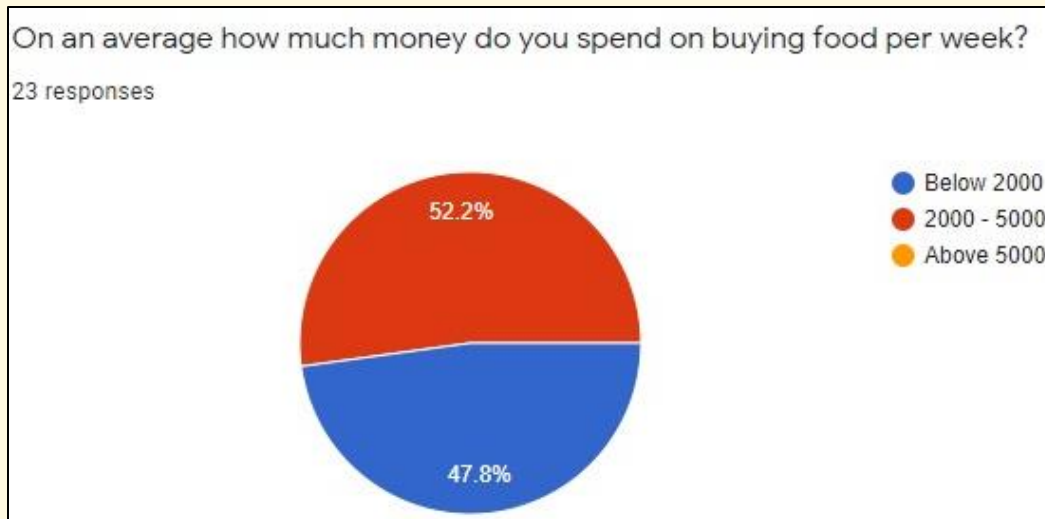


HAV- Hepatitis A virus
NoV- Norovirus

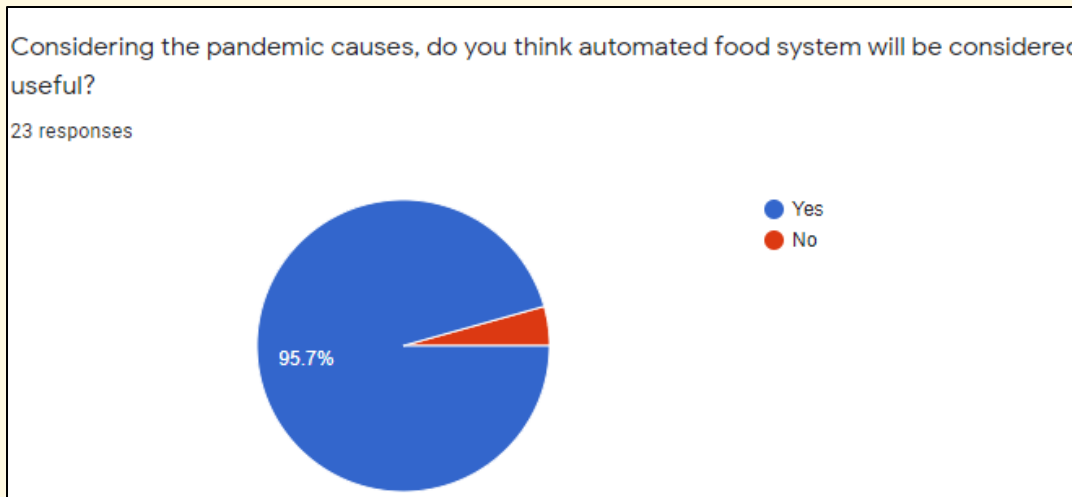


NEED ASSESSMENT:

- Need – To control foodborne illness & average cost of food per month
- Current Practices
 1. Hands-in cooking that does not maintain proper hygiene;
 2. Consumption of foods irrespective of the percentage it is cooked - are much prone to danger.
 3. Regular cooking practises with human mistakes and errors.



- Cooking and covid-19 difficulties we face every day motivates us to work ahead in this project.
- Our main goal is to consume good food (virus – free food) and introduce safer techniques (preventing hands-in processes) in energy efficient manner to enhance safe food production.





EXISTING PRODUCT



PATENT NUMBER/FILE	INVENTOR	APPLICATIONS
US20040173103A1 (2 July,2019) https://patents.google.com/patent/US20040173103A1/en	Amit Kumar, Amit Prakash, Priyanka Datta, Rajesh Kumar, Anant Gopal Sharma	<ul style="list-style-type: none">• Quick food preparations• Automated cleanup• Less supervision of labors• Automatic accessing of ingredient storages• Preparation of Instant foods• Beverages preparations <p>Disadvantages: High energy consumption; System heats up on long time working.</p>



LITERATURE REVIEW



S.NO	1
Title	Good manufacturing practices for the 21 st century for food processing
Name of the System	Common food safety problems and applicable controls
Volume/ Issue/Year	/ / 9 th August 2004
Algorithm/Method	Foreign body detection system and post-package pasteurization method
Merits and demerits	Merits: Eliminates niches; prevents post-processing contamination Demerits: Long process; Inefficient



S.NO	2
Author	Daniel Pedro Auler, Rafael Teixeira, Vinicius Antonio Machado Nardi
Title	Food safety in global supply chains
Name of the Journal/ Conference	Journal of food science
Volume/ Issue/Year	Volume 85/ issue 4 / 6 th April 2020
Algorithm/Method	6 T's Framework
Merits and demerits	Merits: Maintains safety in overall chain Demerits: Time consuming and Inefficient

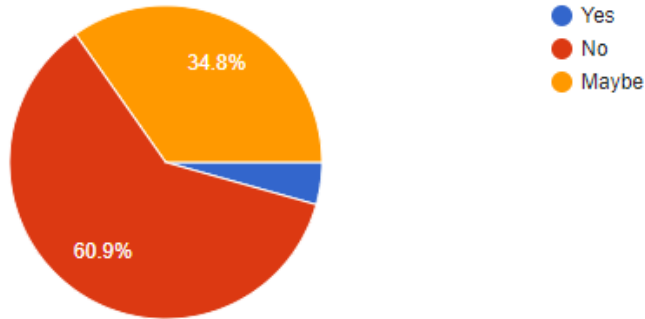


VOICE OF CUSTOMER



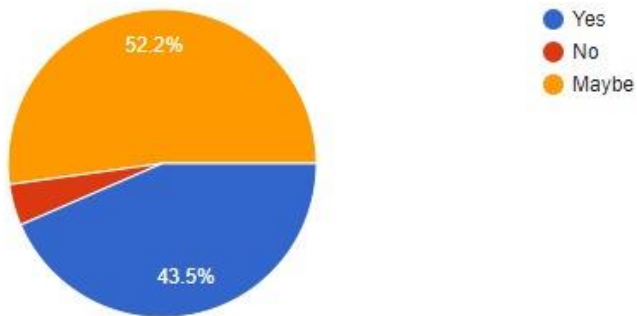
Do you think, automated food system spreads virus into food?

23 responses



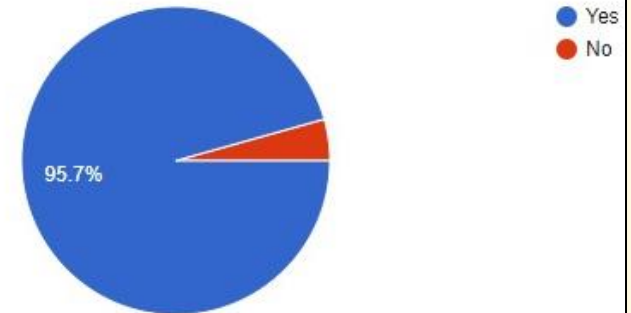
Would this be a commercial use in food system?

23 responses



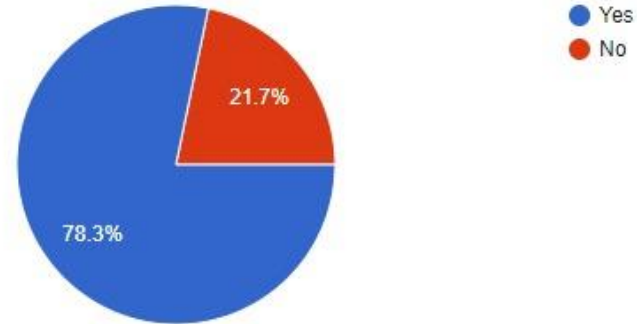
Is it considered to be hygienic?

23 responses



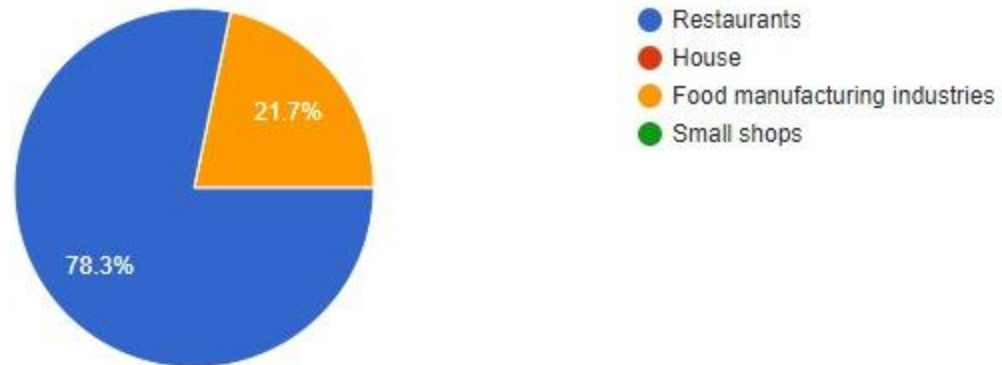
Is this project cost efficient?

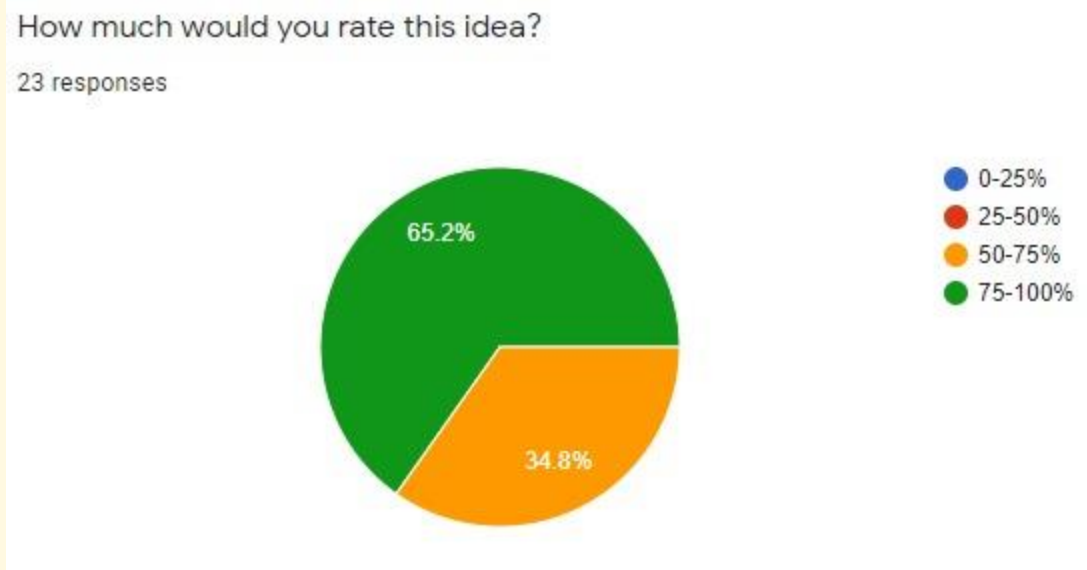
23 responses



Where do you think it will be highly applicable?

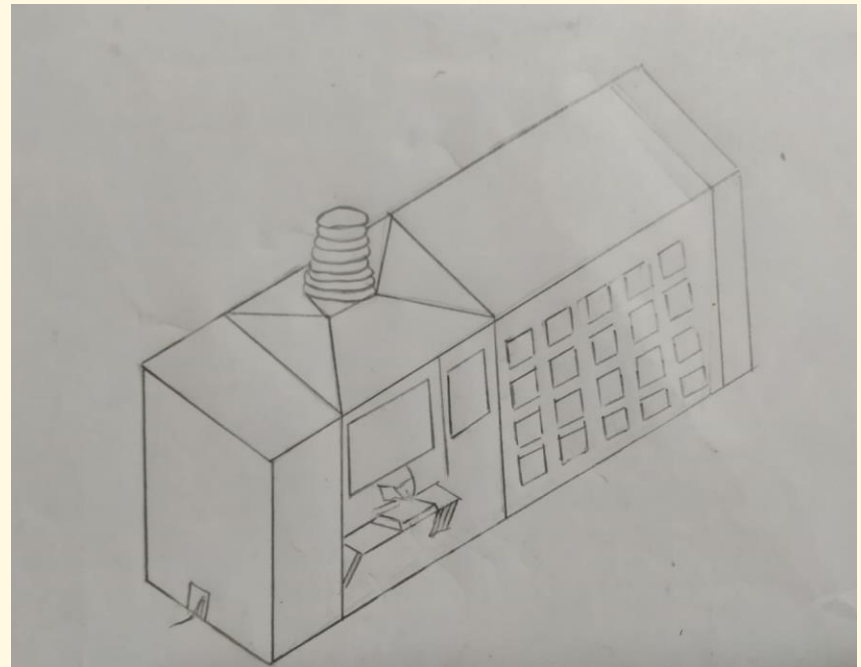
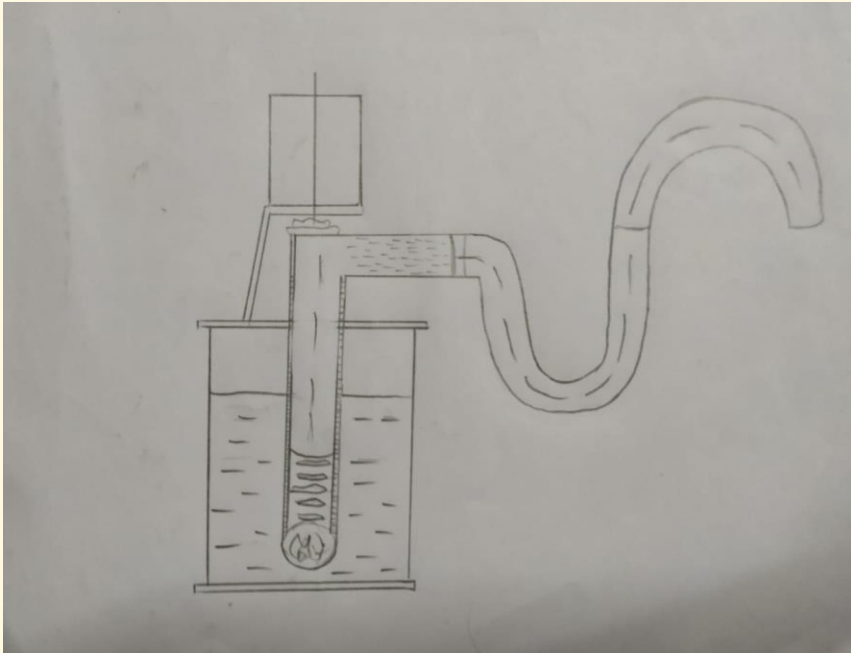
23 responses





INFERENCE: The results of this survey supports us the need for ongoing collaboration between food handlers and public health professionals to ensure that maintaining food hygiene and food safety are not widely available in restaurants and food production companies and that research brings us an understanding on the most effective ways to develop and promote customer's well-being.

Product Name: Automatic Cooking Machine





PRODUCT DESCRIPTION:

1. Servo motor – move bowls
2. Relay – operates various switches
3. Induction cooker – providing heat to cooking pot
4. Spice dispenser – required spices into pot
5. Stirrer
6. HMI – to communicate with machine

Body material – Aluminium or stainless steel

Cost – 5000 for domestic use & around 10-40 lakhs for large scale industries

Life span – 3 to 4 years of proper maintenance

INFERENCE:

Automatic cooking machine can prevent the transferring of virus from the infected handler to the food and improves the quality and safety of food. Agencies who used the machine considered it was safe and wholesome. Despite its limited use in the past, use of this machine is increasing as consumers are beginning to appreciate the benefits of automatic and hygienic food.



PROBLEM FORMULATION



In order to produce and consume virus free - hygienic food, we need automated cooking processes that are safe, efficient, without hands-in and accurate. In addition, the procedures should not be harmful for the labors handling the processes.



SCOPE/CONSTRAINTS



SCOPE:

- As spreading of viruses increases day by day, so it is must to reduce the infection and consumption of it. So the major scope of our project is virus free food.
- Virus spread through food enormously, and hence there is need to limit the chances of foodborne viral infections.
- Automated machines enhances and promotes technologies in safe food production.



CONSTRAINTS:

- **Less versatility** – can perform only a certain task limits to the flexibility and variety of tasks that an employee could do.
- **More pollution** – different types of machines operate using motor which may require gases or chemicals in order to operate.
- **Large initial investment** – automated machines can be one of the most costly operating costs for a company.
- **Increase in unemployment** – by increasing the amount of automation, there are less employees required causing high unemployment rates.
- **Unpredictable costs** – there can be several unpredictable costs that may exceed the actual cost saved by the automation itself



OBJECTIVES



Based on the problems formulated, the objectives are

- To enhance safe food production
- To introduce and promote safer technologies into food system
- To make automated food system applicable on both small and large scale with lesser energy consumption
- To reduce production time on food products



IDENTIFICATION OF COMMUNITY PARTNER AND STAKEHOLDERS



Description of the user	Includes the public, or at least representatives of the public.
Key stakeholder	Government
Other stakeholders in the design	Consumer associations, restaurants, industry groups, food manufacturers.
People involved in the maintenance of the project	Team members.
Role of primary contact	Decision Maker, Evaluator and Helping us in implementation of project
Primary contact for this project (Name, Location)	shwetha Rajapalayam 9150330443



STAKEHOLDER'S REQUIREMENTS



1. Physical requirements - The automated system must be lesser in size and simple to handle.
2. Performance requirements – It should be reliable, good speed of response, decent execution time ,harmless for the handler.
3. Functional requirements– It should not retain any kind of viruses.
4. Economical requirement - The automated system must be energy efficient and it must comfort the cost and handling.
5. Environmental Requirements – It should be eco-friendly. It should not release any kind of energy.



6. Regulatory requirements – It should be regularly monitored by food safety department.
7. Technical requirements – Must be flexible to operate. Automated food system using aurdino.



THANK YOU