INNOVATION IN PAPAD

BY Agastya Patel

THE AIM

Indian markets are overflooded with Papad businesses, but foreign markets are open with little to no competition. Commonly known that the best Papad are hand made creating an exquisite taste we all know we enjoy, however it does not have promising hygiene during its production. A series of new machines are to be created by a trusted engineering firm to make a new line of Papad machines that provide the authentic taste of its hand made alternatives. With high scopes of success, we decided to make it using renewable material causing no environmental consequences.

WHAT IS PAPAD

Papadums are very thin, very crispy snacks. They are their own category of foods, in English probably best described as wafers, or crackers. Papadums are often made from milled legumes, such as lentils or chickpeas. But, depending on the region in India they're from, they can also be made from potatoes, or rice and tapioca flours. Plain versions exist, but they often contain spices – most commonly cumin and chili – and salt.

TARGETING A NEW CUSTOMER BASE

Making a change in the world does start at the ground level but to be able to understand how business works can help sustainable economic growth. Papad does act as daily food for people in middle east, but others have not tasted its excellence. Being manufactured in India at an organized level only by a few firms it does not have huge firms exporting it. The unhygienic levels of production automatically dials all exports out of the question.

START

The whole project had to be divided into 4 parts. Having no order these were 4 separate units of focus to make the project reality with a smooth process with a perfect product:

1. Manufacturing/Production
2. Hygiene and Safety measures
3. Ingredients and recipe
4. Packaging

PRODUCTION

The biggest challenge using hand made production is the time to make a product and the unhygienic nature of the finished good. This can be corrected by machines, but the quality of food is then comprised. A new line of machines was created maximizing efficiency ordered in a way that the product could be produced in high quantities without wastage. To start the production, process a rough draft of the project had to be made. A map that ordered the machines and how the product would go through them. This helped us know what machines to be ordered from the engineering firms. Once the draft was perfected the manufacturing process was initiated as a test run to see its working.

INSTALLMENT OF ADDITIONAL MACHINE

To make the product eco friendly the packaging machine had to be changed to a renewable source of covering. This was an added initiative which led to making the product carbon neutral.

The cost of the machines was higher, but it was compensated by the subsidies provided by the government .

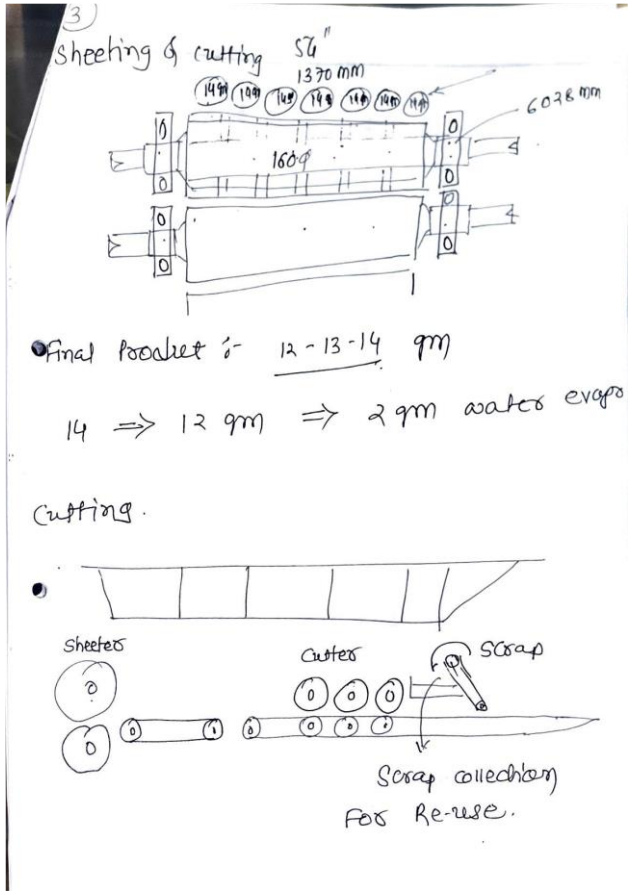
HYGIENE

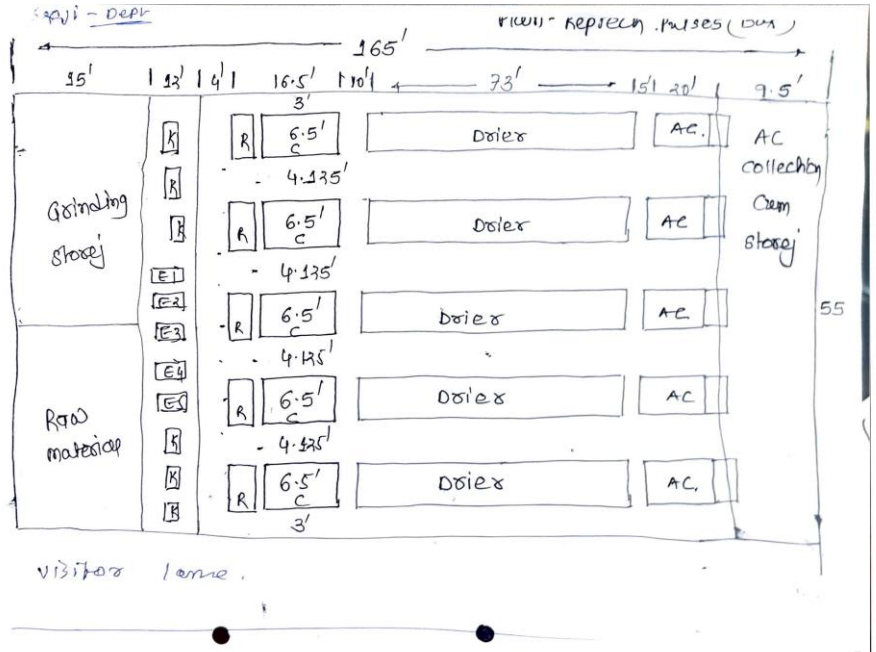
The plant was set up in such a way that there was no labor required for production. This eliminated the pre-existing problem of the unhygienic method of making papad by filtering all pathogens and particles. The weather conditions in India are dusty and humid so the plant had to include a drier and a cooler to control temperatures by our selves. This adverse change of temperature causes the elimination of any bacteria that might be present. To pack the product requires some use of labor as machine packaging costs way more than labor packaging.

SAFETY MEASURES

Taking actions on my personal emphasis to the company the ancillary supplies of lpg gas were kept 100m away from the main building, away from any labor. A warehouse had been created to fit the gas supply attached with an automated monitoring system to avoid any casualties. The packaging has to be done in adverse temperatures to maintain the crisp of the papad. This makes the work harder for the labor so air-conditioned uniforms were created to make working more comfortable.

MANUFACTURING ROUGH DRAFT





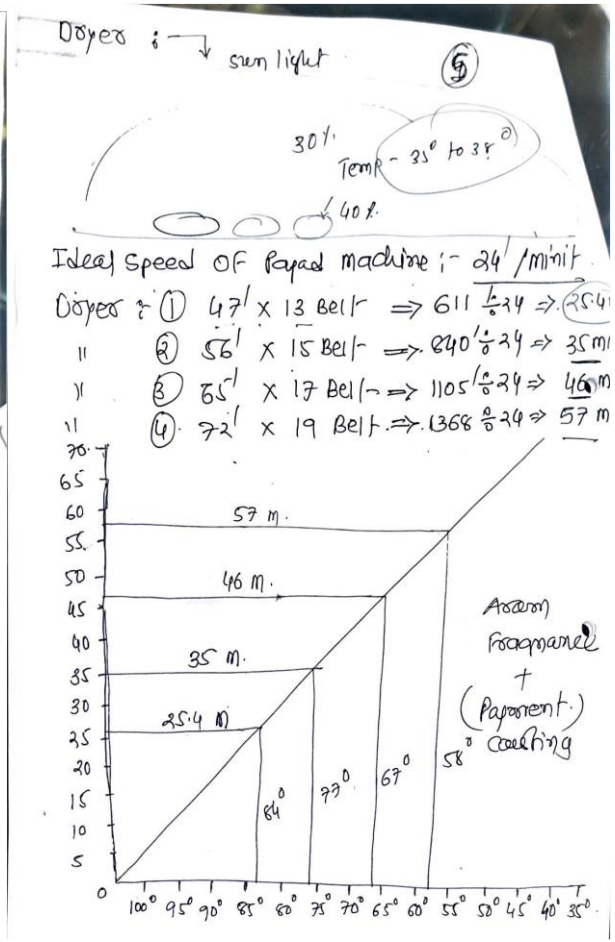


PHOTO AT SITE

BEST QUALITY RAW MATERIAL

Investing in good quality raw materials is essential for producing safe, nutritious and desirable food products, which is fundamental for the success and sustainability of any food business.

PRE CLEANING OF THE RAW MATERIAL USING STATE OF THE ART TECHNOLOGY

RAW MATERIAL CLEANING - SORTEX PLANT

COLOUR SORTEX UNIT

RAW MATERIAL GRINDING

- Post pre-cleaning, Urad Dal is being grinded through an automatic plant having capacity of 1 Ton per hour.
- Grinded Urad lot is being packed after screening in intermediate pack of 50kg bag.

PAPAD MAKING PROCESS OVERVIEW

- Mixing the Dough
- Extruding the Dough
- Sheeting
- Cutting
- Drying
- Cooling
- Quality Control
- Packaging
- Storage

DOUGH MAKING SECTION

- Dough is being prepared by semi automatic machine kept in high quality hygiene environment & sheets are extruded for further process.
- All the contact parts are made from rust free material (S.S. 304)
- Stage wise Quality check is being done right from moisture of the dough which should be around 24.

DOUGH BLENDER

DOUGH EXTRUDER

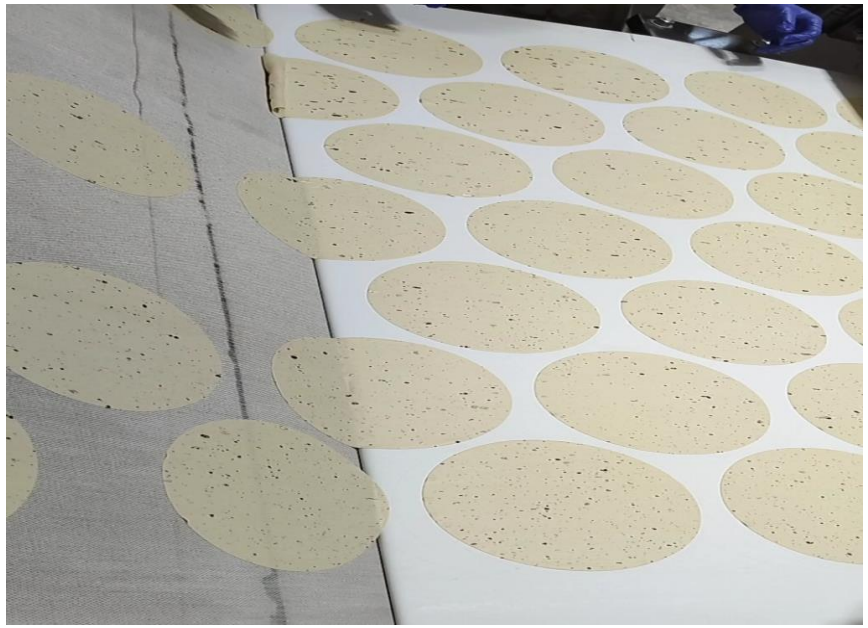
SHEETING, CUTTING, DRYING, COOLING PROCESS

- Uniform thickness is maintained
- The sheets are cut into round shapes, using rotary cutting mechanism
- The size of the papad can be customized by changing the cutter size.
- The cut papad are then transferred to drying unit through belt conveyors where it's travel time is kept between 25 – 35 minute.
- Temperature of drying chamber is kept at around 75 – 80 deg.C
- Residual part of the dough is being re-processed so zero wastage is achieved.
- The dried papad are inspected for uniformity, size and any defects
- The dried papad are passed through cooling unit where temperature is kept at around 25 – 30 deg.C. The moisture in the final product should be below 12.

DRYING UNIT

COOLING UNIT

UNTOUCHED PACKING BY DELTA ROBOT



The papads are packed using automatic packaging machines. Packaging is done to protect the papads from moisture and contamination , ensuring a longer shelf life.
The packed papads are stored in a cool, dry place until they are ready for distribution.

In line with the untouched dough making, extruding, sheeting, cutting & drying process, Robotic packing is the best option available to avoid contamination & improve Food Safety. So whole papad making process is being done in a best hygienic environment through automated line which gives product consistency & productivity of 300 kg/hr.

PACKAGING

The perfect alternative to papad are chips that most people know of. This gives an image of how papad is sold in huge bulk quantities. Being a snack high amounts of packaging is used to sell papad. This leads to high amounts of pollution if the material is not taken care of. So, the product was made renewable avoiding harm to the environment.

Recyclable material cannot maintain the quality of the papad for long durations. Having to sent to the export markets it requires papad to be in shape for longer times. Research and analysis showed the degradation after 1 month which had to be extended to 3 or more.

We changed the ingredients in such a manner that there was no use of excess chemicals with little to no change in taste. The degradation extended to just short of 3 months which was good enough to sell.

CHALLENGES AND HOW WE OVERCAME THEM

THANK YOU