

INDIGENOUS INNOVATION

SHIV MOHAN REDDY
RECYCLED PLASTIC INDUSTRY

Submitted by :- Divya Sajit

Guided by:- Amaltas Khan

Recycled plastic industry (small-scale industry)

This particular industry works on a very small scale where on 10 workers are involved in producing a part of the final product that is the broom stick handle.

Owner of the industry

SHIV MOHAN REDDY



Process

1. Getting plastic containers and other waste plastic material from guntur.
2. Grading the plastic/ separating the plastic according to their colour.
3. Removal of the silver metal seal on the mouth of the container using a grinder.
4. Putting these used plastic containers in a machine to form smaller chips.
5. Washing these plastic chips with detergent.
6. Spread the chips on the floor and dry them in the sun.
7. Further put them in another machine to add dye to the plastic chips.
8. These chips are then further put in a machine which converts these chips into small granules.
9. These granules are then put in different machine to obtain the required product pieces.
10. Removal of the excess plastic using blade.
11. Give them for assemble.

Getting plastic containers and other waste plastic material from guntur.



Grading the plastic/ separating the plastic according to their colour.



Removal of the silver metal seal on the mouth of the container using a grinder.



Putting these used plastic containers in a machine to form smaller chips.



Washing these plastic chips with detergent.



Spread the chips on the floor and dry them in the sun.



Further put them in another machine to add dye to the plastic chips.



These chips are then further put in a machine which converts these chips into small granules.



These granules are then put in different machine to obtain the required product pieces.



Removal of the excess plastic using blade.



Final products



Observation

- No hand and feet protection
- Use of bare hands to take the chips off the big container to the small container.
- Harmful fumes produces by the melting if the plastic but no use of mask.
- No lighting facility provided in the industry.
- No seating arrangement. Work all day standing.

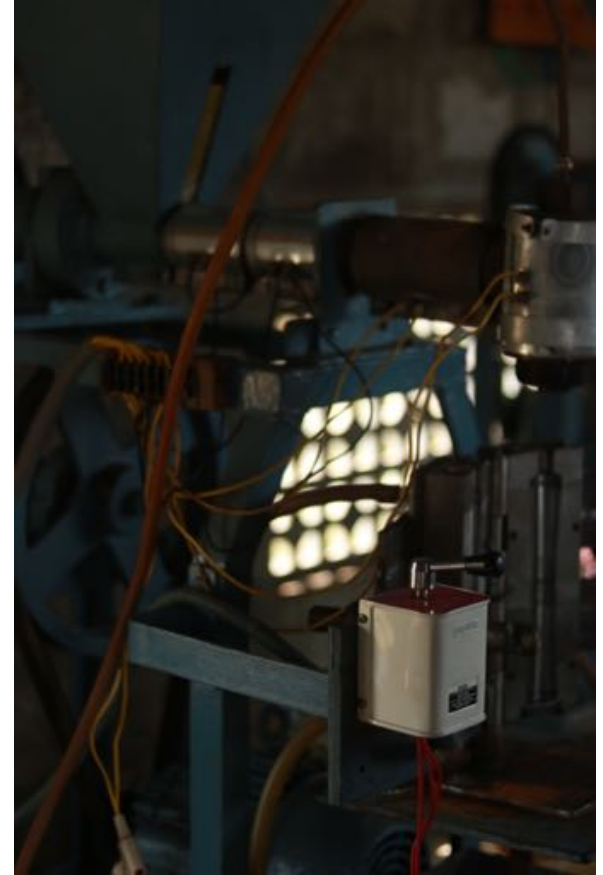
No hand and feet protection



Use of bare hands to take the chips off the big container to the small container.



No lighting facility provided in the industry.



**Harmful fumes produces by the melting
if the plastic but no use of mask.**



No seating arrangement. Work all day standing.



Outsourcing

- Waste plastic from Guntur.
- Broom from Guntur.
- Assembly done outside at a nearby house.
- Various small parts of the machine outsourced on daily bases.

6 days of working from 9am to 6pm.
Sunday off

- 10 quintal of plastic chips and dying - 2 times a week.
- Dyed chips converted into small particles everyday as per need.
- Produce 1000 set of 500 pieces of broom stick handle a day.
- Thin flat wires of plastic made 2 times in a week.

Already used jugaad

Making of plastic wires



Picking up material



Basket used as strainer



Seating arrangements



Display of products



Storage for small items



Limitations identified during TRIP analysis

- TIME- working duration in a day 9 hours from 9am to 6pm.
- RESOURCES- used plastic items.
- INVESTMENT- manual machinery, land.
- PEOPLE- 10 worker in total.

Person1. removing the stickers from the waste plastic cans and containers.

Person2. deals with machines to convert these big plastic containers into small chips

Person3. washing these chips in huge open washing machine structure with detergent

Person4. rinsing those chips in clean water and piling them up on the ground

Person5. spreading the chips in the area which is lit by sun for fast drying.

Person6. another person dealing with machine, who puts these chips in another machine to give it colour.

The same person takes care of the process of these chips into forming tiny plastic pieces.

Person7. another person working with blow molding machines.

Person8. cutting off the excess material from the achieved form

Person9. an extra person (a small kid) to help them out with extra work.

Person10. this person gets all the raw materials and other items like dye and machinery stuff to the workers.

6. Opportunities for problem solving

- Heat while making the mold. No hand protection.
- No mask to cover the face from harmful fumes.
- While arranging and rolling the tape on the wheel the friction produces heat causing burning sensation in fingers and the speed in which the tape is rolled causes cuts on the palm.
- Spreading the chips on the ground with legs.

The area I have been working on?



Problems faced?

- Burning sensation on finger causes by friction of the flat wire on hand.
- Deep cuts caused due to the speed of wires being roled.



Solution

- Something to protect their hands from direct friction of wires
- A protection to guard their hands from cuts.

Prototype-1



Problems faced in prototype-1

- The sponge was too thick and soft to hold and work.
- Difficulty in pulling the flat wires to make it tight.

Prototypr-2



Problems faced with prototype-2

- Much better feel in working with the second prototype but too much material.

Prototype-3



The prototype that was finally accepted by the user
Selling price- Rs.15