

Case Study

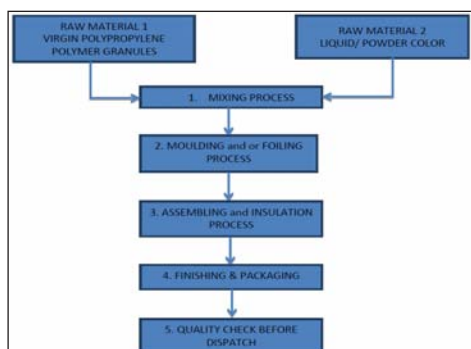
Rejected but not Wasted

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CELLO is one of the leading brands with 37% market share in plastic industry of India. Cello started with a small factory in 1986 with seven machines and a workforce of sixty with the manufacturing of casseroles, which was a very new concept at that time for Indian customers. Today, it soared to six plants in different parts of the country viz., Daman, Baddi, Kolkata, Pune, Chennai and Haridwar, with human capital of 10000 employees, over 300 engineers and plastic technologists. The diverse product portfolio includes Kitchen wares, Thermowares, Furniture, Home Appliances and Writing Instruments.

Under the dynamic leadership of its CEO, Mr. Harinder Kumar Garg, 47, Cello established its Haridwar Plant in the year 2004 with 19 injection moulding machines. With a huge experience of more than 22 years, Mr. Garg has written the success story of Haridwar plant. In these 10 years, it has grown by leaps and bounds and by 2015 it has four plants in Haridwar with the experienced personnel of Quality Control and skilled labor force. Haridwar plant manufactures three range of product namely Insulated Thermowares, Melamine and Home Appliances.

The case is about production process of Insulated Thermoware unit of the plant. An overview of Insulated Thermoware Manufacturing Process is given below.



1. The process begins with MIXING of *virgin Polypropylene polymer granules* with the liquid or powder *color*. The process is carried out in a rotating drum at constant speed until all polymer granules are colored. The polymers granules are transparent that gives the flexibility to produce different colors as desired for a particular product.
2. MOULDING process is carried out on injection moulding machine (OMEGA FERROMATIK MILCACRON). The machine rated capacity is 190-230 pieces per hour. But it is run at a capacity of 180-220 pieces per hour to avoid the problems of shrinkage, short piece, burnt marks, watermark, bubbles, etc. The rejected articles due to any of the mentioned problems are however recycled in the process thus not wasted. To monitor the quality of the moulds quality checks are performed in each hour.



Figure: An overview of manufacturing process of Insulated Thermoware.

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3. **FOILING:** It is a process in which the foil sticker (a Plastic film) is permanently fixed on the outer body of the finished mould. The foil is first charged using a hand electric charger and then manually placed inside the injection moulding machine. As soon as the mould comes out of the machine the foil is permanently fixed.



4. **ASSEMBLING and INSULATION PROCESS:** In general an insulated thermoware has 4 to 5 different parts. Each part is produced separately on a moulding machine. For example, an insulated casserole has a bottom part, a ring, main body, and inner steel plate. These different parts are first assembled. It is a manual process. The assembled parts are insulated using Iso Polyol that turns into foam on application of heat and pressure.



5. **FINISHING & PACKAGING:** The finished articles are then cleaned before packing. The articles are first packed in plastic bags and then put inside a corrugated board box.
6. **QUALITY CONTROL CHECK :** Before dispatch, 5% of the total packed articles are checked by the quality team for defects, misfiling and mismatch.

ASPECTS OF PRODUCTION AND DISTRIBUTION

1. Machine Maintenance

The injection moulding machine runs actively for 24hrs. The maintenance involves cleaning and timely greasing. However, there is no preventive maintenance schedule to be followed.

2. Rejection Rate

Rejection rate in Thermoware unit of the plant was about 10%, which was much higher than the ideal rejection rate of 1% to 2%. The various causes of rejection found were, variation in color of the articles, shrinkage, short piece, burnt marks, watermark, air bubbles and flow marks etc. However, the major causes of rejection were color variation of the article. There were two main steps in the production line where color variation in the article occurs. It was either wrong proportion of color or uneven mixing of color during coloring of virgin granules or during heating (Up or Down) of colored polymer granules for molding. The Rejection rate also increases for new product and change in color of the product in a molding machine.

3. Automation

Though mixing of colors with polymer granules and molding of articles in the plant was automated yet a great scope of automation rest within the plant ranging from cutting of injection point of the article after molding, foiling, assembling and packaging. Packaging of the article was done manually. Packaging department of the plant run for day shift only. Flow of material within the plant was done through conveyer belts which minimizes the manpower requirement and enhances the effectiveness in the plant.

4. Manpower in the Plant

Efficient utilization of manpower and automation of major processes in the production line has tremendously brought down the man power requirement in the plant to 1.5 man per machine which is much lesser than the average man power requirement in plastic industries which ranges from 2 to 3 man per machine.

5. Quality Consciousness and Environmental Concerns

The work environment of the plant is employee friendly. There was no fumes and foul odor of the plastic in the environment. The reason for that was the use of food grade and virgin plastic polymer granules. The machine noise levels were bearable but can be further reduced.

6. Distribution Channel

There were 4 major distribution channel opted by cello to made its product available to customers.

- I. Traditional Channel (Stockiest and Vendors)
- II. Direct Supply to Organized Retailers

III. Tie- Ups with E-commerce sites such as Snapdeal, Amazon, Flipkart etc.

IV. Cello website (For Bulk Purchases)

Questions

1. Critically analyze the case.
2. According to you what measures can be taken to minimize the rejection rate of various parts produced.
3. Should they opt for full automation of the plant? Justify your answer.
4. Comment on the distribution channel practiced by Cello.