A

SUMMER INTERSHIP REPORT

ON

"EMAAR GLASS INDUSTRIES"

In the fulfillment of the requirement for the degree of Bachelor of Business administration(B.BA session 2017-20)

SUBMITTED BY-

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B.BA 5th Semester

SUBMITTED TO-.

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ACKNOWLEDGEMENT

I take this opportunity to thanks EMAAR Glass Ltd. Firozabad, Uttar Pradesh for giving me the opportunity to do industrial training here. It gives me immense pleasure to acknowledge all those who have given me data, time and energy to supply all the valuable facts and opinions that has helped me in gaining some technical knowledge in Glass industry during this industrial training.

I express my profound sense of gratitude to Dr.Ajay Sharma sir (H.O.D, B.BA, Aryan Institute), Mrs. Rushby Garg(Manager, Emaar glass pvt. lt.) and Vaibhav Garg(CEO, Emaar glass pvt. Lt.), who have rendered constant guidance, advice and help me when needed to complete this Industrial training successfully. I also express my gratitude to the company employees who have helped me during this time.

Self Declaration

I Niharika Chahar a student of Aryan Institute of Management, Agra, Uttar Pradesh(Rollno.- 1701205071008) states that i have completed my industrial training in EMAAR Glass Ltd., Firozabad.

I affirm that this industrial training report is the record of the authentic work carried out by me and no part of whole of this report has been submitted to anywhere for any purpose.

Niharika Chahar

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INTRODUCTION

Glass is an amorphous (non- crystalline) solid material which is often transparent and has widespread practical, technological and decorative usage in things like window panes, tableware etc. The most familiar ,and historically the oldest, types of glass are based on the chemical compound silica(silicon dioxide), the primary constituent of sand. Soda- lime glass, composed of approximately 75% silicon dioxide(SiO_2), sodium oxide(Na_2O) from sodium carbonate (Na_2Co_3), Calcium Oxide , also called lime(CaO), and several minor additives.

A very clear and durable quartz can be made from pure silica; the other compounds above are used to improve the temperature workability of the product.

Glass production involves two main methods - the float glass process that produces sheet glass, and glassblowing that produces glass and other containers.

Glass Container Production

Broadly, modern glass container factories are three-part operations: the batch house, the hot end, and the cold end. The batch house contain the raw materials; the hot end handles the manufacture proper- the forehearth, forming machines, and annealing ovens; and the cold end handles the product inspection and packaging equipment.

Batch processing system (Batch house)

Batch processing is one of the initial steps of the glass-making process. The batch house simply houses the raw material in large silos(fed by truck or railcar) and holds anywhere from 1-5 days of material. Some batch systems include material processing such as raw material screening/sieve, dying, or pre- heating(i.e., cullet). Whether automated or manual, the batch house measures, assembles, mixes, and delivers the glass raw material recipe(batch) via an array of chutes, conveyors and scales to the furnace. The batch enters the furnace at the 'dog house' or 'batch charger'. Different glass types,

colors, desired quality, raw material purity/availability, and furnace design will affect the batch recipe.

Hot End

The Hot End of the glassworks is where the molten glass is manufactured into glass products.

The batch enters the furnace, then passes to the forming process, internal treatment, and annealing.

The following table lists common viscosity fixpoints, applicable to large-scale glass production and experimental glass melting in the laboratory.

Furnace

$\log_{10}(\eta, Pa \cdot s)$	$\log_{10}(\eta, P)$	Description
1	2	Melting point (glass melt homogenization and fining)
3	4	Working point (pressing, blowing, gob forming)
4	5	Flow point
6.6	7.6	Littleton Softening point (glass deforms visibly under its own weight. Standard procedures ASTM C338, ISO 7884-3)
8–10	9–11	Dilatometric softening Point, T_d, depending on load[2]
10.5	11.5	Deformation point (Glass deforms under its own weight on the µm-scale within a few hours.)
11–12.3	12–13.3	Glass transition temperature, T_g
12	13	Annealing point (Stress is relieved within several minutes.)
13.5	14.5	Strain point (Stress is relieved within several hours.)

The batch is fed into the furnace at a slow, controlled rate by the batch processing system. The furnaces are natural-gas or fuel oil-fired, and operate at temperatures upto 1,575 degree Celsius (2867 degree Fahrenheit).

The temperature is limited only by the quality of the furnace's superstructure material and by the glass composition. Types of furnaces used in container glass making include end-port(end-fired), side-port, and oxy-fuel.

Typically, furnace size is classified by metric tons per day (MTPD) production capability.

Forming Process

There are currently two primary methods of making glass containers: the blow and blow method for narrow-

neck containers only, and the press and blow method used for jars and tapered narrow-neck containers.

In both methods, a stream of molten glass at its plastic temperature 1,050-1,200degree celsius (1,920-2,190degree Fahrenheit) is cut with a shearing blade to form a solid cylinder of glass, called a gob. The gob is of predetermined weight just sufficient to make a bottle.

Both processes start with the gob falling,by gravity, and guided, through troughs and chutes, and into the blank moulds, two halves of which are clamped shut and then sealed by the baffle from above.

In the blow and blow process, the glass is first blown through a valve in the baffle, forcing it down into the three-piece ring mould which is held in the neckring arm below in the blanks, to form the finish.

The term "finish" describes the details (such as cap sealing surface, screw threads, retaining rib for a tamper- proof cap, etc.) at the open end of the container. Then compressed air is blown through the glass, which results in a hollow and partly formed container. Compressed air is then blown again at the second stage to give final shape.

Containers are made in two major stages. The first stage moulds all the details("finish") around the opening, but the body of the container is initially made much smaller than its final size. These partly manufactured containers are called parisons, and quite quickly, they are blow-molded into final shape.

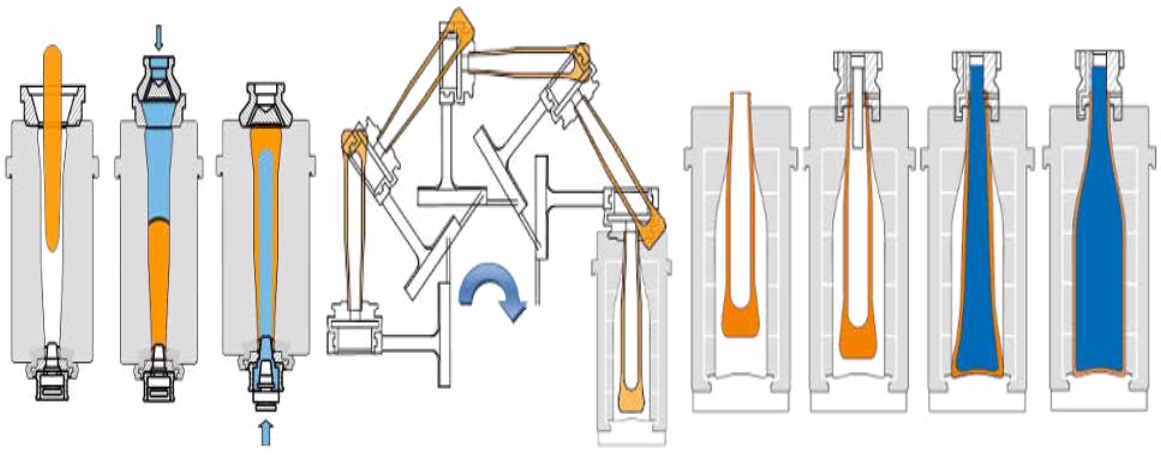
The "rings" are sealed from below by a short plunger. After the "settleblow" finishes, the plunger retracts slightly, to allow the skin that's formed to soften. "Counterbelow" air then comes up through the plunger, to create the parison. The baffle rises and the blanks open. The parison is inverted in an

arc to the "mould side" by the "neckring arm", which holds the parison by the "finish".

As the neckring arm reaches the end of its arc, two mould halves close around the parison. The neckring arm opens slightly to release its grip on the "finish", then reverts to the blank side.

Final blow, applied through the " blowhead" , blows the glass out, expanding into the mould, to make the final container shape.

In the press and blow process, the parison is formed by a long metal plunger which rises up and presses the glass out, in order to fill the rings and blank

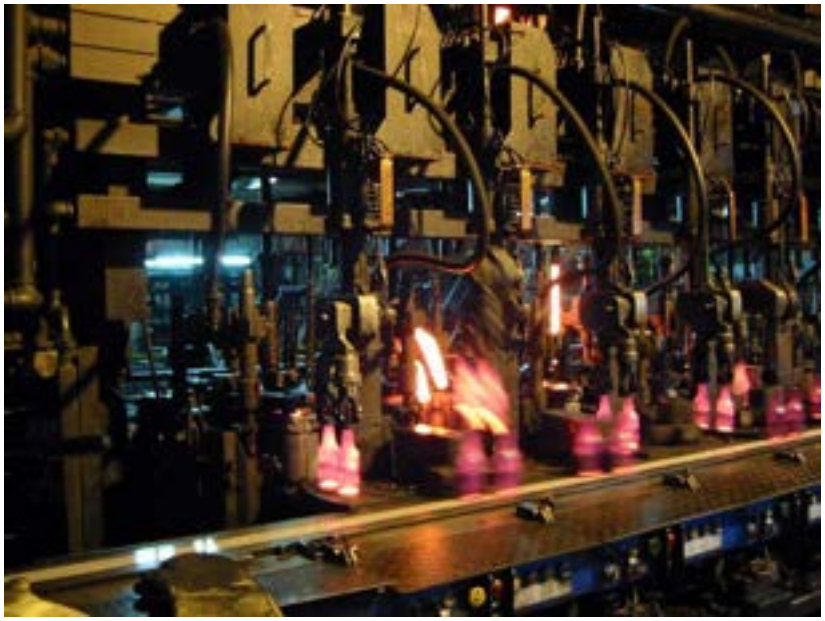


moulds. The process then continues as before, with the parison being transferred to the final-shape mould, and the glass being mould out into the mould.

The container is then picked up from the mould by the "take-out" mechanism, and held over the "deadplate" , where air-cooling helps cool down the still-soft glass.

Finally, the bottles are swept onto a conveyor by the " push out paddles" that have air pockets to keep the bottles standing after landing on the "deadplate" ; they are now ready for annealing.

Forming Machines



The forming machines hold and move the parts that form the container. The machine consist of basic 19 mechanisms in operation to form a bottle and generally powered by compressed air (high pressure - 3.2 bar and low pressure - 2.8 bar), the mechanisms are electronically timed to coordinate all movements of the mechanisms. The most widely used forming machine arrangement is the individual section machine (or IS machine).

This machine has a bank of 5-20 identical sections, each of which contains one complete set of mechanisms to make containers. The sections are in a row, and the gobs feed into each section via a moving chute, called the gob distributor. Sections make either one, two, three or four containers simultaneously (referred to as single, double, triple and quad gob).

In the case of multiple gobs, the shear cut the gobs simultaneously, and they fall into the blank moulds in parallel.

Forming machines are largely powered by compressed air and a typical glass works will have several large compressors (totalling 30k - 60k cfm) to provide the needed compressed air. Furnaces, compressors, and forming machine generate quantities of waste heat which is generally cooled by water. Hot glass which is not used in the forming

machine is diverted and this diverted glass (called cullet) is generally cooled by water, and sometimes even processed and crushed in a water bath arrangement. Often cooling requirements are shared over banks of cooling towers arranged to allow for backup during maintenance.

Internal Treatment

After the forming process, some containers particularly those intended for alcoholic spirits undergo a treatment to improve the chemical resistance of the inside, called internal treatment or dealkalization.

This is usually accomplished through the injection of a sulphur- or- fluorine- containing gas mixture into bottles at high temperatures. The gas is typically

delivered to the container either in the air used in the forming process (that is, during the final blow of the container), or through a nozzle directing a stream of the gas into the mouth of the bottle after forming.

The treatment renders the container more resistant to alkali extraction, which can cause increases in product pH, and in some cases container degradation.

Annealing

As glass cools, it shrinks and solidifies. Uneven cooling causes weak glass due to stress. Even cooling is achieved by annealing.

An annealing oven (known in the industry as the lehr) heats the container to about 580 degree Celsius, then cools it, depending on the glass thickness, over a 20 - 60 minute period.

Cold End

The role of the cold end of glass container production is to complete the final tasks in the manufacturing process: spray on a polyethylene coating for abrasion resistance and increased lubricity, inspect the containers for defects, label the containers, and package the containers for shipment.

Coatings

Glass containers typically receives two surface coatings, one at the hot end, just before annealing and one at the cold end just after annealing.

At the hot end a very thin layer of tin oxide is applied either using a safe organic compound or inorganic stannic chloride. Tin based systems are not the only ones used, although the most popular.

Titanium tetrachloride or organo titanates can also be used. In all cases the coating renders the surface of the glass more adhesive to the cold end coating. At the cold end a layer of typically, polyethylene wax, is applied via a water based emulsion. This makes the glass slippery, protecting it from scratching and stopping containers from sticking together when they are moved on a conveyor.

The resultant invisible combined coating gives a virtually unscratchable surface to the glass. Due to reduction of in-service surface damage, the coatings often are described as strengtheners, however a more

correct definition might be strength- retaining coatings.

Inspection Equipment

Glass containers are 100% inspected; automatic machines, or sometimes persons, inspect every container for a variety of faults. Typical faults includes small cracks in the glass called checks and foreign inclusions called stones which are pieces of the refractory brick lining of the melting furnace that break off and fall into the pool of molten glass, or more commonly oversized silica granules(sand) that have failed to melt and which subsequently are included in the final product.

These are especially important to select out due to the fact that they can impart a destructive element to the final glass product. For example, since these

materials can withstand large amounts of thermal energy, they can cause the glass product to sustain thermal shock resulting in explosive destruction when heated.

Other defects include bubbles in the glass called blisters and excessively thin walls. Another defect common in glass manufacturing is referred to as a tear. In the press and blow forming, if the plunger and mould are out of alignment, or heated to an incorrect temperature, the glass will stick to either item and become torn.

In addition to rejecting faculty containers, inspection equipment gathers statistical information and realys it to the forming machine operators in the hot end. Computer systems collect fault information and trace it to the mould that produced the container. This is done by reading the mould number on the container, which is encoded (as a numeral, or a binary code if dots) on the container by the mould that made it. Operators carry out a range of checks manually in

samples of containers, usually visual and dimensional checks.

Secondary Processing

Sometimes container factories will offer services such as labelling. Several labelling technologies are available. Unique to glass is the applied *ceramic labelling process* (ACL). This is screen printing of the decoration onto the container with a vitreous enamel paint, which is then baked on. An example of this is the original *Coca-Cola* bottle.

Packaging

Glass containers are packaged with various ways. Popular in Europe are bulk pallets with between 1000 and 4000 containers each. This carried out by automatic machines which arrange and stack containers separated by layer sheets. Other possibilities include boxes and even hand sewn sacks. Once packed, the new "stock units" are labelled, warehouse, and ultimately shipped.

Marketing

Glass container manufacture in the developed worls is a mature market business. World demand for flat glass was approximately 52 million tonnes in 2009. The United States, Europe and China account for 75% of demand, with China's having consumption having increased from 20% in the early 1990s to 50%. Glass container manufacture is also a geographical business; the product is heavy and

large in volume, and the major raw materials are generally readily available.

Therefore production facilities need to be located close to their markets. A typical glass furnace holds hundreds of tonnes of molten glass, and so it is simply not practical to shut it down every night, or in fact in any period short of a month.

Factories therefore run 24 hours a day 7 days a week. This means that there is little opportunity to either increase or decrease production rates by more than a few percent. New furnaces and forming machines cost tens of millions of dollars and required atleast 18 months of planning. Given this fact, and the fact that there are usually more products than machine lines, products are sold from stock. The marketing/production challenge is therefore to predict demand both in the short 4 to 12 week term and over the 24 to 48 month long term. Factories are generally sized to service the requirements of a city; in developed countries there is usually a factory per 1-2 million people. A typical factory will produce 1-

3 million containers a day. Despite its positioning as a mature market product, glass does enjoy a high level of consumer acceptance and is perceived as a "premium" quality packaging format.

Impact on the Environment

Glass containers are wholly recyclable and the glass industries in many countries have a policy, sometimes required by the government regulations, of maintaining a high price on cullet to ensure high return rates. Return rate of 95% are not uncommon in the Nordic countries. Return rates of less than 50% are usual in other countries. Ofcourse glass containers can also be reused, and in developing countries this is common, however the environmental impact of washing containers as against remelting them is uncertain. Factors to

consider here are the chemicals and fresh water used in the washing, and the fact that a single use container can be made much lighter, using less than half the glass of a multiuse container.

Also, a significant factor in the developed world's consideration of reuse are producer concerns over the risk and consequential product liability of using a component of unknown and unqualified safety.

Objectives of the study

1. To learn about how the raw materials used in glass manufacturing processes are stored and handled.
2. To learn about various manufacturing processes involved in making glass bottles from raw materials.
3. To observe and work in the industry as guided by the mentor.
4. Ti learn about how the quality of glass bottle is maintained.
5. To gaun practical knowledge in the field of glass industry.

6. To know about the working of the glass industry through interaction with company employees.
7. To know the company transportation, logistics and distribution.

METHODOLOGY

Data collection:

As this research was exploratory in nature, the report has been written based on both the primary as well as the secondary form of information. The details of these sources are highlighted below:

Primary Sources: Primary data were the collected data directly from the officials. Also I am having an internship in that organization for 60 days of period of time in the commercial department. This department controls all the information about the supply and demand of the company . My working experience I also a source of my primary data in this report.

Secondary Sources: The secondary data were, company's yearly business review report, marketing report, annual budget, in-house training material,

company manual, internal meeting minute, text book and information from internet etc.

Research design and Philosophy

The research is designed in such a way that the reader of this can easily get an idea of the entire message of the report very easily. Here the data that are used to complete the research are collected from the both primary and secondary source. There only qualitative data is used to climb the stair of the decision because of the nature of the subject itself. The research philosophy followed here is pragmatism philosophy. Pragmatism is a rejection of the idea that the function of thought is to describe, represent, or mirror reality. Instead, pragmatists develop their philosophy around the idea that the function of thought is as an instrument or tool for prediction, action, and problem solving. Pragmatists contend that most philosophical topics. Such as the nature of knowledge, language, concepts, meaning, belief, and science, are all best viewed in terms of their practical uses and successes rather than in terms of representative accuracy.

Limitations

It is important to stress several limitations of the research method used for this research:

- Since the research is limited in time and resources, it was impossible to perform an in depth research into all the aspects for all activities of all the consumer goods business companies. Rather, I had to be contended with focusing on the activities of the EMAAR GLASS INDUSTRY Pvt Ltd.
- Lack of sufficient sources prevented verification of information.
- Some aspects of the report may be considered confidential by the organization.
- Due to lack of experience, there may have been faults in the report though maximum labors have been given to avoid any kind of slip-up.

COMPANY OVERVIEW

Incorporated in 2010, EMAAR glass industries is running well under the expert guidance of professionals. The company is headquartered in Firozabad(Uttar Pradesh, India) and it caters to retail & bulk product demands of the clientsbin the gloabal market place

INRODUCTION OF EMAAR

EMAAR glass industries is a renowned name, involved in trading a variety of glass products in the global marketplace. The company holds accreditation to operate as a manufacturer, exporter, and supplier of products like FMCG glass bottles, perfume glass bottles,

glass tumblers, nail polish glass bottles, liquor glass bottles, and and wine bottle caps. They have their own infrastructure facility wherein they work diligently to bring forth a premium range of products. After expanding our offerings, they have been rendering consultancy services like glass bottle designing consultancy and glass product packaging consultancy.

Promise of excellence

At EMAAR glass industries, we keep quality at the centre of our operations. Thus we lay special emphasis on the provide details and ensure that the offered products adhere to the stated Industry standards. We have an in house of individuals having skills and resource necessary to satisfy the emerging demands of the clients.

Choose EMAAR glass industry because:

We keep our clients up to date through regular product catalogs.

We accept payments through different modes that are secure and easy to use.

We provide round-the-clock assistance.

We undertake and process bespoke product development, packaging and labeling needs with care.

We operate with a network of local distributors in India and abroad.

Nature of Business
Wholesale Trader

Company CEO
Vaibhav Garg

Total Number of Employees
11 to 25 People

Year of Establishment
2018

Legal Status of Firm
Partnership

Annual Turnover
Rs. 50 Lakh - 1 Crore

Banker
AXIS BANK

GST No.
09AAHFE3259N1ZX

Payment Mode
Cash, Cheque, DD, Credit Card, Online, Bank Transfer

Shipment Mode
By Road

Products

Product Range

Cream Container

Material : Glass
Surface : Polished
Feature : Leak Proof

Milkshake Glass Bottle

Material : Glass
Color : Transparent
Feature : Leak Proof

Glass Jar

Type : Honey Jars, Spice Jars
Material : Glass
Shape : Round

Promotional Glassware

Material : Glass
Style : Anitque
Feature : High Quality

Liquor Glass Bottle

Designer : Designer
Glass : Glass
Liquor : Liquor
Transparent : Transparent
Unique Designs : Unique Designs


Coffee Shop
Passport

FMCG glass

Fast-moving consumer goods are products that sell quickly at relatively low cost. These goods are also called consumer packaged goods.

EMAAR glass Industry uses FMCG glass because its good for storing food for a long time, as many food items are stored in glass materials. FMCG glass is eco-friendly and is, as said above, fast moving consumer goods.

FMCGs have a short shelf life because of high consumer demand(eg. Soft drinks and confections) or because they are perishable (eg. meat, dairy products, and baked goods). These goods are purchased frequently, are consumed rapidly, are priced low, and are sold in large quantities. They

also have a high turnover when they're on the shelf at the store.

Understanding Fast-moving Consumer Goods

Consumers goods are products purchased for consumption by the average consumer. They are divided into three different categories: durable, non durable goods, and services. Durable goods have a shelf life of three years or more while non durable goods have a shelf life of less than one year. Fast-moving consumer goods are the largest segment of consumer goods. They fall into the nondurable category, as they are consumed immediately and have a short shelf life.

Nearly everyone in the world uses fast-moving consumer goods (FMCG) every day. They are the small scale consumer purchases we make at the produce stand, grocery store, supermarket, and warehouse outlet.

Examples include milk, gum, fruit and vegetables, toilet paper, soda, beer, and over-the-counter drugs like aspirin.

FMCGs account for more than half of all consumer spending, but they tend to be low- involvement purchases. Consumers are more likely to show off a durable auch as a new car or beautifully designed smartphone than a new energy drink they picked up for $2.50 at the convenience store.

Types of Fast-moving consumer goods

As mentioned above, fast-moving consumer goods are nondurable goods, or goods that have a short lifespan, and are consumed at a rapid or fast pace.

FMCGs can be divided into several different categories including,

- **Processed food:** Cheese products, cereals, and boxed pasta.
- **Prepared meals:** Ready-to-eat meals.
- **Beverages:** Bottled water, energy drinks, and juices.
- **Baked goods:** Cookies, croissants, and bagels.
- **Fresh, frozen foods, and dry goods:** Fruits, vegetables, frozen peas and carrots, and raisins and nuts.
- **Medicines:** Aspirin, pain relievers, and other medication that can be purchased without a prescription.
- **Cleaning products:** Baking soda, over cleaner, and window and glass cleaner.
- **Cosmetics and toiletries:** Hair care products, concealers, toothpaste and soap.
- **Office supplies:** Pens, lencils, and markers.

The Fast-moving Consumer Goods Industry

Because fast-moving consumer goods have such a high turnover rate, the market is not only very large, it is also

very competitive. Sone of the world's largest companies compete for matket share in this industry including, Dole, Coca-Cola, Unilever, Procter and Gamble, Nestlé, Kellogg's and General Mills.

Companies like these need to focus their efforts in marketing fast-moving consumer goods to entice nad attract consumers to buy their products.

That's why packaging is a very important factor in the production process. The logistics and distribution systems often requires secondary and tertiary packaging to maximize efficiency. The unit pack or primary package is critical for product protection and shelf life, and also provides information and sales incentives to consumers.

FMCGs are sold in large quantities, so they are considered a reliable source of revenue. This high volume of sales also offsets the low profit margins on individual sales as well.

MISSION AND VISION OF EMAAR

VISION

To be a world class manufacturer of good quality glass at affordable prices with focus on state-of-the-art facilities to maintain sustained long term growth, and to create value for all stake holders. Our vision serves as the framework and guides every aspect of our business by describing what we need to accomplish in order to continue achieving sustainable, quality growth.

MISSION

To improve competitiveness through innovations, cost control & to enhance the market share in domestic as well as international markets.

To produce efficiently and economically in an Eco-friendly manner with due regard to safety, conservation and quality.

To continue to diversify and grow, addressing new markets. To attract and attain customers through high quality, on time, competitively priced glass productsl and the most satisfying ownership experience, Develop and maintain a supplier / customer relationship based on open communication, mutual trust and respect.

OBJECTIVES OF EMAAR

1. Our aim is to provide our customers with superior service and products, which stems from our dedication to quality assurance.

2. We understand the importance of quality relationships with customers and suppliers. We believe in long-term win associations and are committed to the growth of the glass producing industry.

3. To build mutual trust with consumers, governmental authorities and business partners.

4. To ensure continuous improvement of environmental performance.

5. Conservation of natural resources and minimization of waste.

6. To establish the benchmark for good business practice.

7. Employing new technologies and processing.

8. Measuring the cost and benefits to business of its activities.

9. Monitor progress.

10. Audit results.

11. We continue to maintain our commitment to follow and respect all applicable local laws in each of its markets.

12. We believe that, as a general rule, legislation is the most effective safeguard of responsible conduct, although in certain areas, additional guidance standards are met throughout the organization.

13. Our objective is to manufacture and market the company's product in such a way as to create value that can be sustained over the long term for shareholders, employees, consumers, and business partners.

14. We recognizes that its consumers have a sincere and legitimate interest in the behavior, beliefs, and actions of the company behind brands in which they place their trust and that without its consumers the company would not exist. So the needs and wants of consumers should be considered.

15. We are conscious of the fact that the success of the corporation is a reflection of the professionalism, conduct and the responsible attitude of its management and employees. Therefore recruitment of the right people and ongoing training and development are crucial.

Recommendations

My recommendations regarding the improvement of this Industry are as follows:

- The use of proper safety equipments must be encouraged in cullet processing plant. There is one place in cullet processing plant where fine dust of glass flows/ is suspended in air. So, my suggestion is to cover the whole cullet processing plant inside closed walls.
- The ambient air temperature in 160 TPD plant is much less than 255 TPD and 105 TPD plant. Something must be done to reduce the heat loss from the furnaces.
- A research and development lab must be setup, which will work for the development and improvement of processes in all the departments.

- Company must derive a part of its energy and electricity needs from renewable resources.

Conclusion

I conclude that while going through the entire industrial training, the cooperation is found to be very well organized and developed in every walk of its production, administration, and management aspects.

During this industrial training I have gained a lot of practical knowledge in the field of glass bottle manufacturing.

I extend my heartiest thanks to Emaar glass industries for making my Industrial training a memorable period in my life. Interaction with company employees has also helped me in learning about various processes and machines used in the industry.

At last I want to say Thankyou.

Learning and observations:

- ★I have learned a alot about how a glass industry works.
- ★Through interaction with company employees, I came to know about new things and what is the future in/of glass Industry.
- ★I have learned new ways to treat the fellow members which is a very important thing in any industry.

- ★Everyone here in the company is bery cooperative nad this helped me a lot during this Industrial training.
- ★Safety is promoted, followed and maintained in every department of the company, this helps in preventing any Industrial accident/disaster.
- ★There is a team spirit in every department of the company.
- ★There is cooperation among the departments which is a key factor in the growth of any industry.
- ★Food quality is good.
- ★The company has a friendly environment for students doing Industrial training here.
- ★The quality if raw material used for making glass is maintained and also the qualities of glass bottles formed is checked.