

A REVIEW ON PROCESSES INVOLVED IN THE PRODUCTION OF HAMPER AND GREEN GLASS BOTTLES: A REFLECTION ON BALLARPUR GLASS COMPANY NIGERIA LIMITED KUDENDA INDUSTRIAL AREA KADUNA

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Abstract

The review on the production of hampers (brown) and green glass bottles are in attempt to create and awareness of the processes involved in a typical industry in Nigeria. This article will attempt to give an insight as to what it takes to produce hamper (brown) and green bottles from the raw materials processing to the production stage. All of these will be based on the writer personal experiences as a pioneering staff about three decades ago. The writer is optimistic that this information will broaden the knowledge of students and researchers in the field of science and technology education. In conclusion, the paper hopes that the information gathered from this write up could be of benefit to students and teachers of science and technology education. The paper went further to recommend that, both students and teachers of science and technology education should continue to update their knowledge and competences of the happenings in the industries for effectiveness.

The Ballarpur Glass Company Nigeria Limited now Sunglass Nigeria Limited, is situated at the outskirts of Kudenda Industrial Layout in Chikun Local Government Area of Kaduna State, Nigeria. The company started production in the mid way of 1983. The company was owned by Indians as they constituted majority of the experts in the production line. The sole major production then was the production of hamper (brown) and green glass bottles. The administration of the company include; general manager, personal manager, commercial manager, chief accountant, chief glass technologist, chief engineer, production engineers, instrument engineers, supervisors, senior technicians among others. Each of these personnel performs specific functions for the attainment of the company goals.

The general manager for instance, is the chief executive of the company. He/she oversees the general output of the company. The personnel manager as the name implies overseas the general well being of the personnel working in the company. The commercial manger as the name implies over sees the sales of the company products. The chief accountant is responsible for the safe keep of monies and utilization. The chief

glass technology is to ensure that the glass produced is of good quality. The chief engineer oversees the engineering aspects of the well being of equipment, machines and tools. The production engineers oversee the actual production of the glass product. On the other hand, the instrument engineers are concerned with the efficiency of all the instruments employed in the production of the glass product.

This paper major concern will focus on the brief description of what takes place at each stage of the production line and the activities involved there in. Of course there are many stages involved in the manufacturing of the hamper and green bottles mentioned above. The process ranges from the processing of the raw materials to the final production of the product. The raw materials included amongst others: sand, sodium carbonate, lime stone, potash, marble and cullet (broken bottles). Some of these raw materials have to be washed before being utilized such as sand and cullet. The raw materials are often being processed and conveyed to the batch house then later to the blast furnace where they are melted and subsequently conveyed to the production line.

The Manufacturing Processes

The manufacturing processes are methods employed in making a product. This often include: human resources, materials, equipment and machines. Thus the production of hamper (brown) and green glass bottles you first of all, have to process the raw materials required for the production of the said product. Generally, the raw materials required for the production of hamper or green glass bottles are a follows:

- Sand
- Sodium carbonate (soda ash)
- Limestone (calcium carbonate)
- Potash (depend on the colour of the bottle)
- Marble stone (reagent)
- Aluminum nitrate
- Celilium
- Sirium
- Culletes (broken bottles)

The above aforementioned raw materials are the major ones. The list is not exhausted. These raw materials are stored in a special stores meant for them.

The Washing Machine

Some of the raw materials like sand and cullets are widely washed I order to remove unwanted impurities. The sand and cullets are washed one after another. This is so in order to remove impurities. The materials are fed into the machine by a pay loader. The machine is operated automatically. The cullet on the other hand after washing it is then crush and ready to be conveyed to the silos feeders when the need arises.

Silos

This is where the raw materials are stored for used when the need arises. The raw materials are fed one after another using the pay loader then to the silos feeders. Underneath are elevated bucket like which conveyed the raw materials each to its own silos. This is a continuous process until the proportion needed is reached. Later, these raw materials are conveyed through a conveyor belt to a mixer. The mixers mix all the quantities raw materials one after another in a given proportion. First of all sand, follow by sodium carbonate, calcium carbonate, and cullets in that order. This process is being carried out in the batch house (control panel room). The batch is referred to the raw materials mentioned above.

The Batch House

This is the room in which the control systems are being monitored and parameters indicating efficiency. Here there is an operator. The conveying of the raw material to the silos, then to the mixer is being controlled by an operator in the control room (batch house). The operator regulates the ratio of each raw materials needed to be conveyed to the mixer, through manipulating control bottoms.

The Skip Hoist

The skip hoist is the bucket which conveys the raw materials to the “charge” bucket. After mixing the raw materials they are now conveyed through conveyor belt to the skip hoist (bucket) which later conveys it to the batch “charge” bucket. This process is automated and is being manipulated by an operator. The skip hoist conveyed the raw materials through rails. The batch now becomes charged. It is here that the charge (batch) is stored and later goes into the furnace for melting and later becomes molten and goes to the production section.

The Blast Furnace

This is the place where the charge (batch) and other impurities are melted and refined for use. The furnace is built horizontally with fabricated bricks. It has a control room where the control systems are being manipulated by an operator. The furnace temperature is regulated here. Before the charge is melted the furnace has to be pre-heated to about 1500⁰c by means of burners. The burners used fuel and hot air blown through blow fans. The hot air aids combustion. These burners are of two sets, that is three (3) at the left hand side and three (3) at the right hand side of the furnace. These burners are used at time intervals. That is to say after a moment one set is in used while the other set is at rest. This is so in order to minimize over loading.

When the charge reaches the furnace it become melted and become molten. That is not all in the furnace, there are bubblers situated beneath the furnace which harmonized the melting of the charge and flow of the molten through the throat of the furnace to the feeders, then to the production machines. The feeders are the extension of the furnace throat. The exhaust gases from the furnace passes through the regenerator down to the chimney. At the throat there is an indicator which indicates the glass level

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(molten). When there is less glass flow it will be shown and vice-versa. Then from the throat the glass flown to the feeders which finally led to the production machines.

Conclusion

The writer hopes that his piece of information would be of benefit to students and teachers of science and technology education. This write up have gone a long way to show how can we manufactured our own brown and green bottles for local consumption.

Recommendation

The writer recommends amongst others that: students and teachers of science and technology education should avail themselves of the current development in manufacturing industries. The curriculum contents of science and technology education should be reviewed from time to time in order to meet up with the challenges of the moment and in the near future.