



Daffodil *International* **University**

Internship Report On

“Akij Food Product”

Supervised by

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Submitted By

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Date of Submission

LETTER OF TRANSMITTAL

19th June 2019

Dr. Md. Bellal Hossain

Professor & Head

Department of Nutrition and Food Engineering

Faculty of Allied Health Sciences

Daffodil International University

Subject: Submission of internship report.

Beloved Sir,

I would like to take this opportunity to thank you for the advice and support you have given to this report. Without your help, it would be impossible to complete this report.

To prepare the report I collected what I believe to be most relevant information to make my report as scientific and reliable as possible. I have intensive my best effort to achieve the objective soft her eport and hope that my end eavor will serve the purpose. The practical knowledge and experience gathered during report preparation will immeasur ably help in my future professional life. I request you to excuse me for any mistake that may occur in the report despite of my best effort.

I would really appreciate if you enlighten me with your thoughts and views regarding the report. In addition, if you wish to enquire about an aspect of my report, I would gladly answer your queries.

Thank you again for your support and patience.

Momin

MD.Momin Prodhan

ID: 161-34-517

Letter of Authorization

19 June 2019

Dr. Md. Bellal Hossain
Professor & Head
Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Subject: An announcement regarding the validity of the Internship Report.

Dear Sir,

This is my truthful declaration that the “**Internship Report**” I have prepared is not a copy of any Internship Report previously made by any other students.

I also express my forthright confirmation in support to the fact that the said Internship report has neither been used before to fulfill my other course related nor it will be submitted to any other person in future.

Momin

MD. Momin Prodhan

ID: 161-34-517

Approval Certification

On the behalf of the university, this is to certify that **MD. Momin Prodhan**, bearing ID: **161-34-517**, Program B.Sc. in Nutrition & Food Engineering is a regular student, department of Nutrition & food Engineering, Faculty of Allied health Sciences, Daffodil International University. He has successfully completed his Internship program of Two Month in Akij Food and Beverage, Dhamrai, on.....

. Then he completed this report on June 19 2019 under my direction. We aware that **Md. Momin Prodhan** completed his internship report by observing our teacher. In addition, I ensure that his report is a worth of fulfilling the partial requirements of NFE program.



Dr. Md. Bellal Hossain
Professor & Head
Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University

Approval Certification

This is to certify that **MD. Momin Prodhan**, ID-161-34-517, Program B.Sc.in Nutrition & Food Engineering is a regular student department of Nutrition & food Engineering, Faculty Allied health Science Daffodil international University. He has successfully completed his Internship program of Two Month in Akij Food and Beverage, Damari and completed this report on June 19, 2019. We are aware that **MD. Momin Prodhan** had completed his Internship by observing our Administering and Employee.

MD. Shihab Uddin
Quality Controller
Akij Food and Beverage Ltd.

ACKNOWLEDGEMENT

All praises and gratitude to almighty, the most beneficent and the merciful who manages each and everything soundly and enables me to complete in this training.

I would like to thank and acknowledge rendered by **A.S.M Shihabul Huda**, Manager Quality Control. I would like to thanks my honorable teacher Prof. **Dr. Md. Bellal Hossain, Head of the Department of Nutrition and Food Engineering**, and **Mr. Amir Ahmed Assistant Professor Department of Nutrition and Food Engineering, Faculty of Allied Health Sciences**, who had given me the opportunity to attend this training program. This program will help me to build my bright future carrier. It is great pleasure to express my great full thanks to **Md.Helal Uddin, GM, and QMS**.

My feelings during this training was great and I enjoyed it very much. This could only be possible for generous contribution of all Akij Food & Beverage Industries people. My achievement during this training will definitely help me in my professional field. Thanks to all employee of Akij Food & Beverage Industries for their friendly co-operation and Helping me during my training period.

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1. Introduction

Akij Food & Beverage Ltd. (henceforth to be termed as AFBL), a renowned name in Food Processing and Marketing sector in Bangladesh, started its journey formally in 2006 with only 3 products. But within a span of 10 years, the company expanded its area of production in Food and Beverage sector by adding a good number of products which attract the consumers largely and win commercial goodwill. This has been made possible by the visionary concept of its founder late Sk. Akijuddin and its owner Mr. Sk. Shamimuddin.

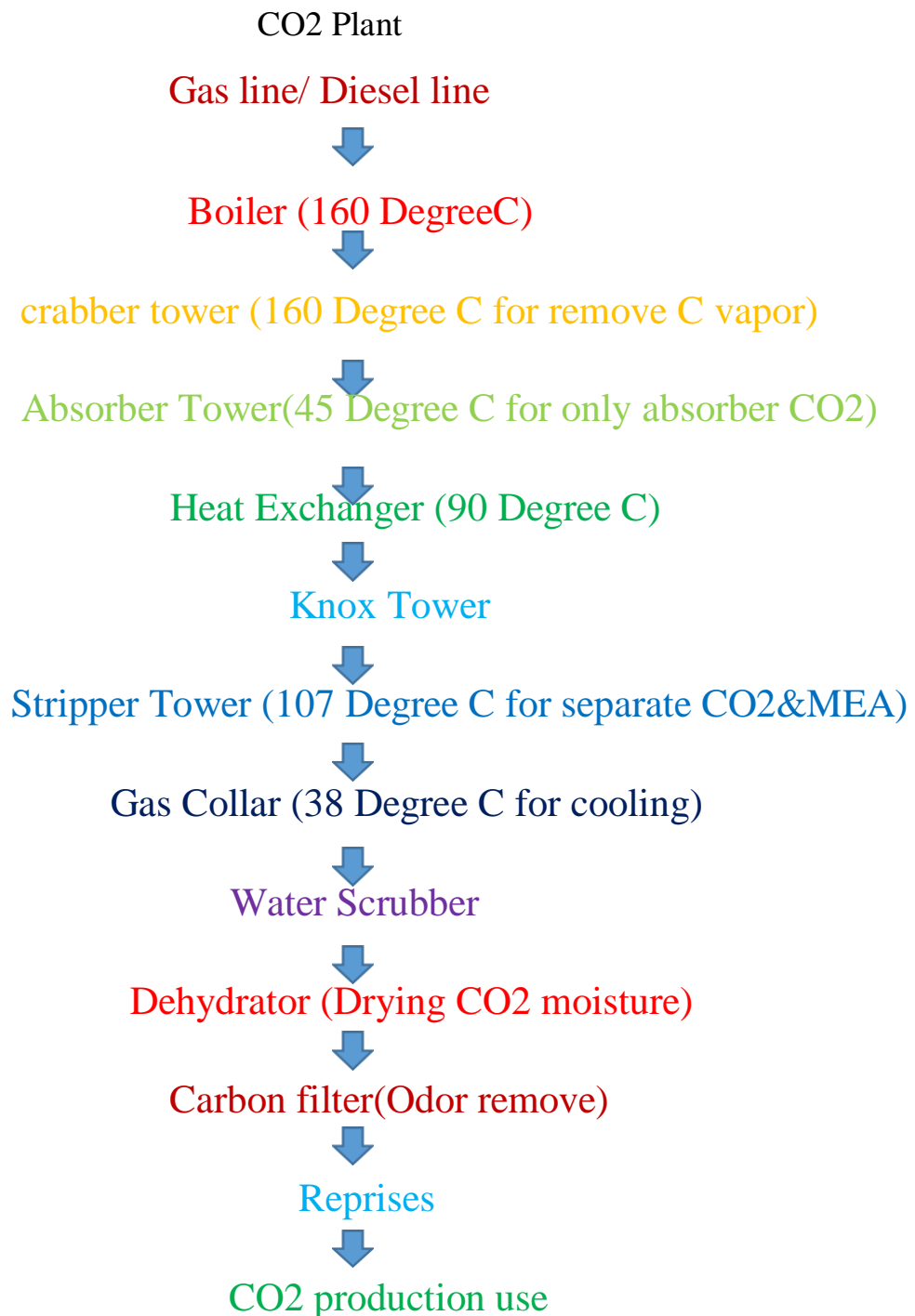
It has established the factories of high standard with most modern technology and has been producing wide range of varieties like carbonated soft drinks, energy drinks, juices, dairy products, snacks, chips, drinking water etc. The products of snacks and beverages by AFBL earns both national and international repute and find international market of South-East Asia, East Asia, Middle East and Africa. This is no doubt a phenomenal achievement by a Bangladesh Company.

AFBL started its production at 400 bpm in the carbonated soft drinks line and 300 bpm in the juice line. In a period of one and a half year, they have increased their capacity to the level by 1200 bpm. At present, this capacity is at the ground breaking rate of 5000 bpm. During this period, most of their brands earned the position of either no. 1 or nearing to it in their respective categories among the consumers.

The factory of AFBL has been established of Krishanpura, Dhamrai, Dhaka. It is located at about 50 km away from the capital. The built in area of the factory is over 100,000 square meters.

The machineries thus setup, have been imported from world famous brands like Krones, Tetra Pak, Alfalaval, Sipa, Husky in order to achieve the high quality products. The most of the Raw materials required for quality products are imported from abroad. It is because of the facts that the quality of the goods thus produced, is strictly controlled. The process of maintaining the quality of the finished products reminds the saying of the founder of Akij Group i.e. “Uncompromising quality even in adverse situation.”

2. CO2 Plant In Industries:



Industrial Applications:

Carbon dioxide gas is utilized in businesses to deliver synthetic compounds and as feedstock. ... It is likewise utilized in the metals business to improve the hardness of giving molds and a role as a binding specialist. Carbon dioxide is found in different fire quenchers and keeps oxygen from further energizing a fire.

2.1 Carbon di oxide making procedure:

In order to make the container or bottle stable, CO₂ is given into the bottle. so industry usually make the CO₂ in step by step on their own in the industry.

Basically two line is uses to supply gas or diesel through a gas line or diesel line. so the gas diesel mixture with O₂ at 160 degree Celsius in boiler. so by the reaction of gas and oxygen the final product CO₂ is product. This CO₂ contains C atoms. In order to remove the extra carbon. CO₂ flows into scrubber tower where the temperature maintain at 160 degree Celsius. so that C vapor gradually remove from CO₂. A ceramic channel held within the inner side of scrubber tower. After the step the CO₂ is absorbed by absorber tower which only absorber CO₂ at 45 degree Celsius. Then the absorbed CO₂ goes into the heat exchanger by a heat exchanger pump. Heat exchanger maintains at 90 degree. After that CO₂ flows into Knox tower. All the procedure in maintain at exact temperature though the CO₂ what is coming thought all the pump is not pure enough. If contains mono ethane.

Stripper tower removes the mono ethane from CO₂ at 170 degree Celsius. so the pure CO₂ is remained. Finally if needs to be cool. so CO₂ is flown into a gas cooler at 38 degree. CO₂ finally gas into water scrubber. After compressing the CO₂ passer into a dehydrator to dry CO₂ moisture and to activate alumina. As the CO₂ has order which would not be appreciated by consumer. so a carbon filters use to remove odder. A reprise finally store CO₂ as liquid form the liquid is used as gas in the consumer product.



3. Chips Plant In Industries:





Maize powder is used to make chips. There are four types of maize powder according to size of particle. There are:

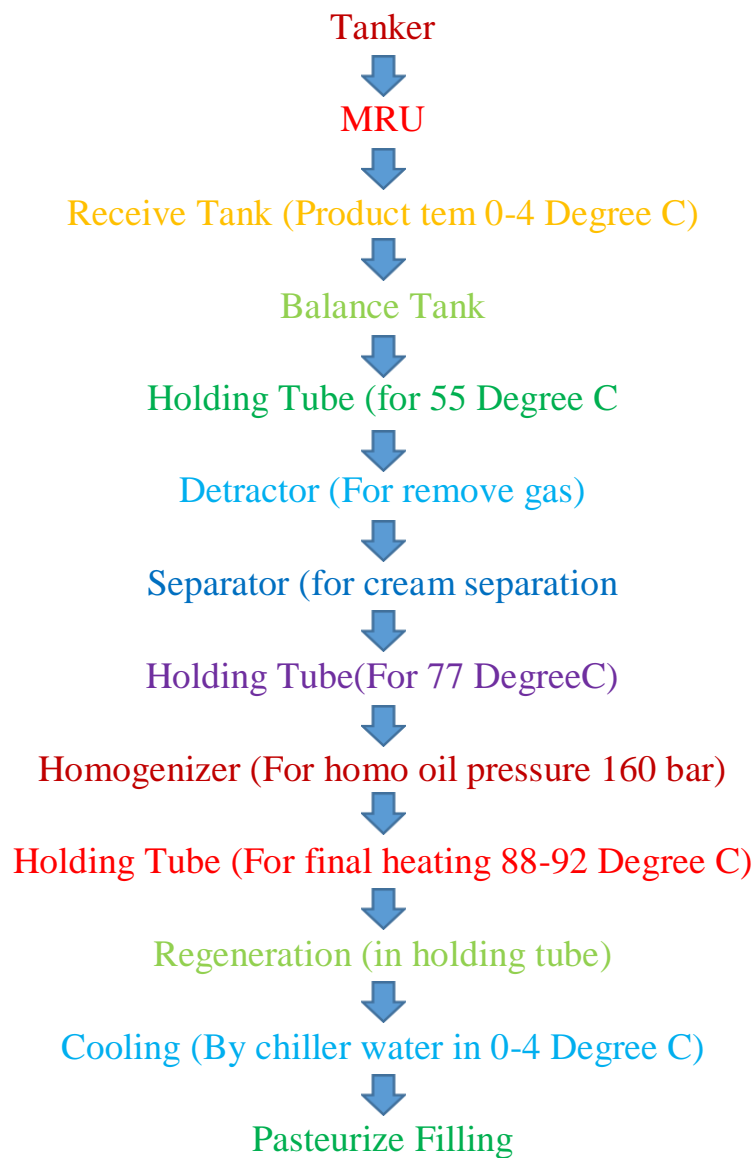
- 1080 Micron
- 850micron
- 650Micron
- 425Micron

Flour water and cellulose powder needs to mix with maize powder. In order to pest 3 heater Extruder is used on a condition. Two straw have been used. One is clock another is antilock. There clock maintain at 90-91 degree Celsius for 2-5 mint to reserve hopper and to cool down the catted pest. Then the mixed raw material goes into mixer where oil and specific amount of water present. Then Air is use and before the using of air water and sezening is used through piper. The oil has to mix with 50% Spice and remain 50% spice has the mix by hand. Then the spice mixed chips comes out from the system. However the chips contains 7-8% water. Which need to be removed by a dryer. Where 3 layer remains drying process continuous for 35 minute. Then the final chips goes into a packaging room. Though a conveyer the packaged chips goes into a reserve hopper. A single chips package has 22g chips. N₂ gas is used in the packet to reserve the chips.

4. Milk Processing Plant In industries:

Milk

Milk Processing Flowchart



| Test parameter | Specification |
|-------------------|---------------|
| Alcohol | -ve |
| Fat%(minimum) | 3.6 |
| CLR | 27 |
| SNF(minimum) | 8.0 |
| Treatable Acidity | 0.15 |
| pH | 6.6-6.8 |
| Extra fat | -ve |

A vast amount of milk comes from the farmhouse in order to process the milk and to supply consumable quality milk. Milk processing involves some major steps which has been implementing in the industry.

The steps are given in a description bellow:

Milk processing machine involves some section and tank. This section have their own functionality. Receive tank at first receive the raw milk which has a temperature at 0-4 degree Celsius. Then a holding tube hold the milk a specific time at 55 degree Celsius. After that a detractor is used to remove gas from the milk. As the milk contains huge amount of cream which indeed harmful for human health so it needs to be minimize. Minimization of cream at a certain percentage has been separated from milk. Then again the milk goes directly into a holding tube. The temperature maintains have at 77 degree Celsius. After that a homogenizer creates pressure of 160 bar due to create same size particle (homo) in milk. A final heating then done at 88-92 degree Celsius for 20 sec so that all the microorganism destroy occur within the milk. Regeneration process conducts in holding tube. Finally the milk cool down at cooling section by chilling water at 0-4 degree Celsius. Then the final process milk is filled into sterilized package.



4.1 UHT Milk Flowchart

UHT Milk (137-141 Degree C for 0.4 sec)



Buffer tank



Balance Tank



Pre-heating (75-78 Degree C)



Homogenizer (80-85 Degree C & 200 bar pressure)



Holding Tube (137-140 Degree C for 4 sec)

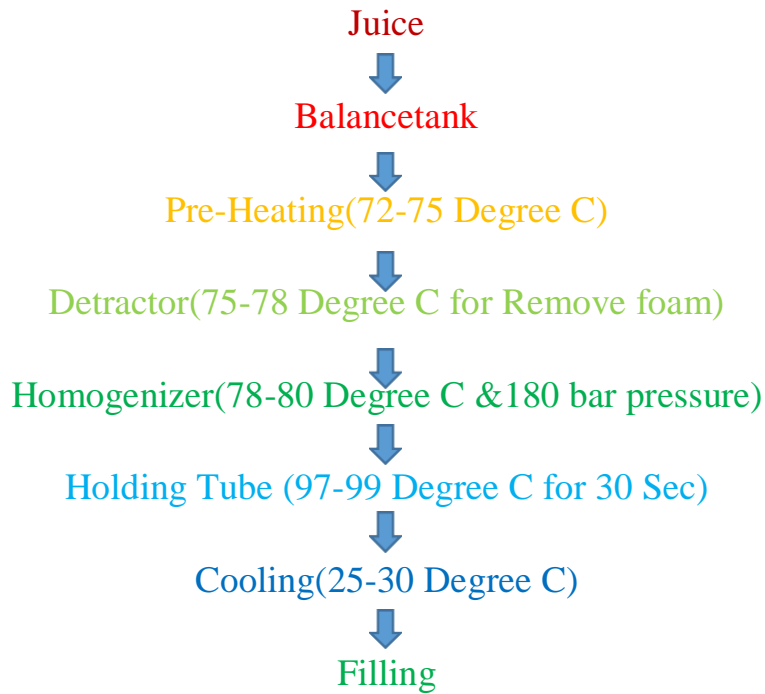


Cooling (20-22 Degree C)



Filling

4.2 Juice Flow chart



UHT Milk Machine



Juice Milk Machine

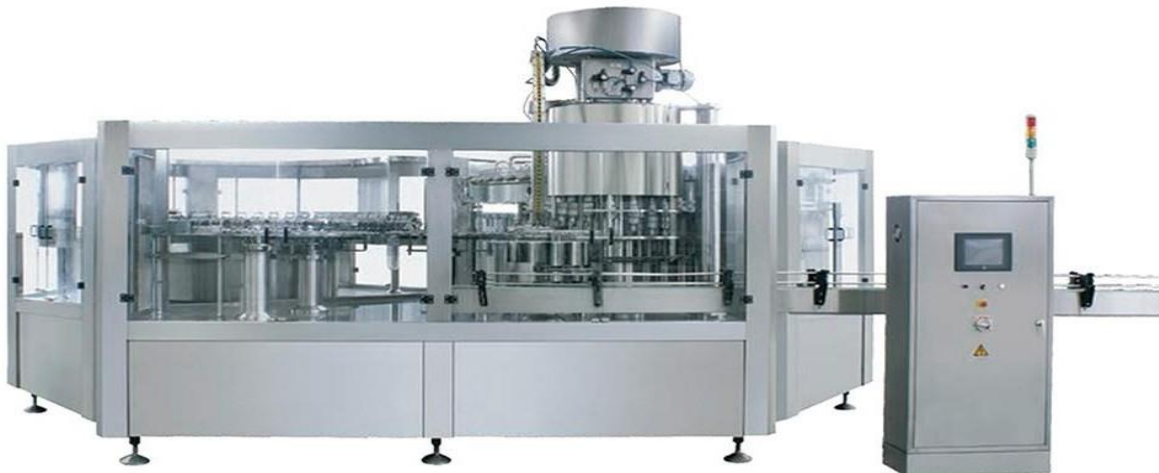
5. Aseptic Plant In Industries:

What is aseptic technique?

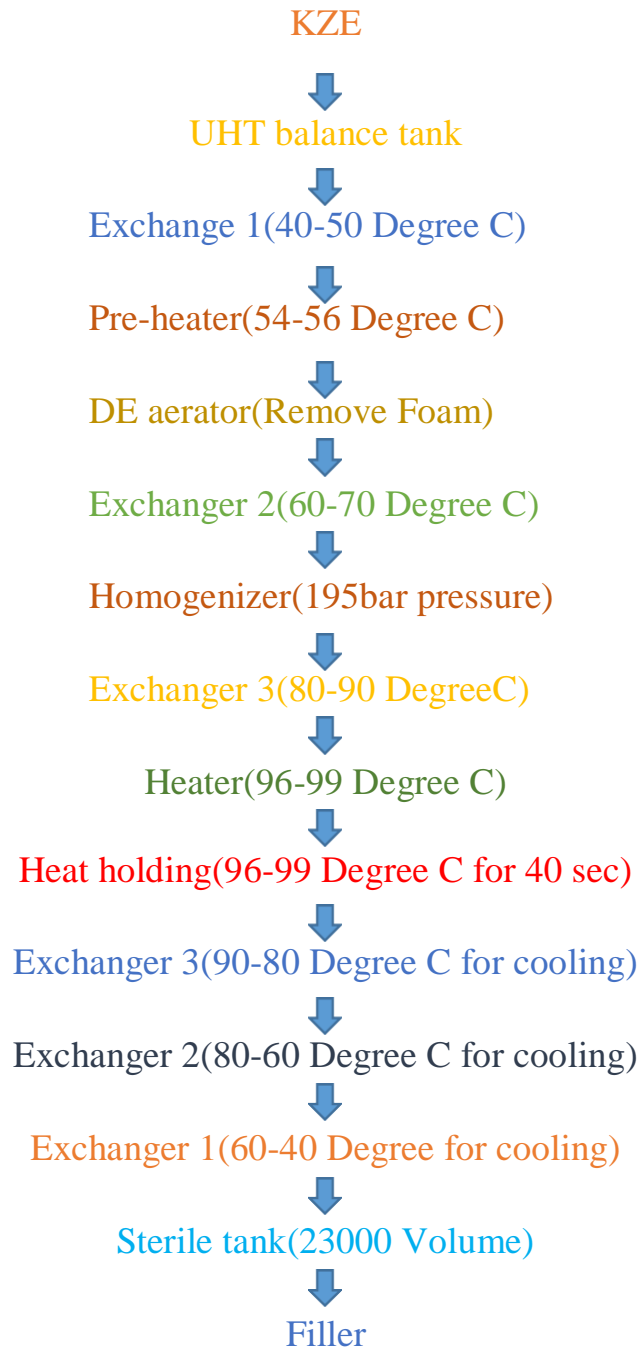
Bacteria are everywhere, and some are good for us while others are harmful. Bacteria, viruses, and other microorganisms that cause disease are called pathogens. To protect patients from harmful bacteria and other pathogens during medical procedures, healthcare providers use aseptic technique.

Aseptic processing:

The aseptic procedure includes setting a sanitized item into a cleaned bundle that is then fixed under sterile conditions. It started in 1914 with the advancement of sterile channels for use in the wine business. Nonetheless, due to temperamental apparatus, it remained monetarily ineffective until 1948 when William McKinley Martin built up the Martin framework, which later got known as the Dole Aseptic Canning System. This framework included the sanitization of fluid nourishments by quickly warming them in rounded warmth exchangers, trailed by holding and cooling steps. The jars and tops were cleaned with superheated steam, and the sanitized compartments were loaded up with the clean fluid nourishment. The tops were then fixed in a climate of superheated steam. By the 1980s hydrogen peroxide was being utilized all through Europe and the United States for the disinfection of polyethylene surfaces.



5.1 Aseptic Flowchart



5.2 Aseptic Procedure:

A process of making product without any preservation chemical or treatment. 3 cip tank is needed for the process.

7Steps: 1. Normal Water

2. Hot Water

3. Caustic soda

4. Hot water

5. Nitric acid

6. Hot water

7. Normal water

Caustic soda uses = 45-90%

Nitric acid = 70%

Aseptic uses 3 CIP tanks. Hot Water 85 Degree C. Caustic Soda 80 Degree C, Nitric Acid 39 Degree C. The quantity of each tank 1000LTR.

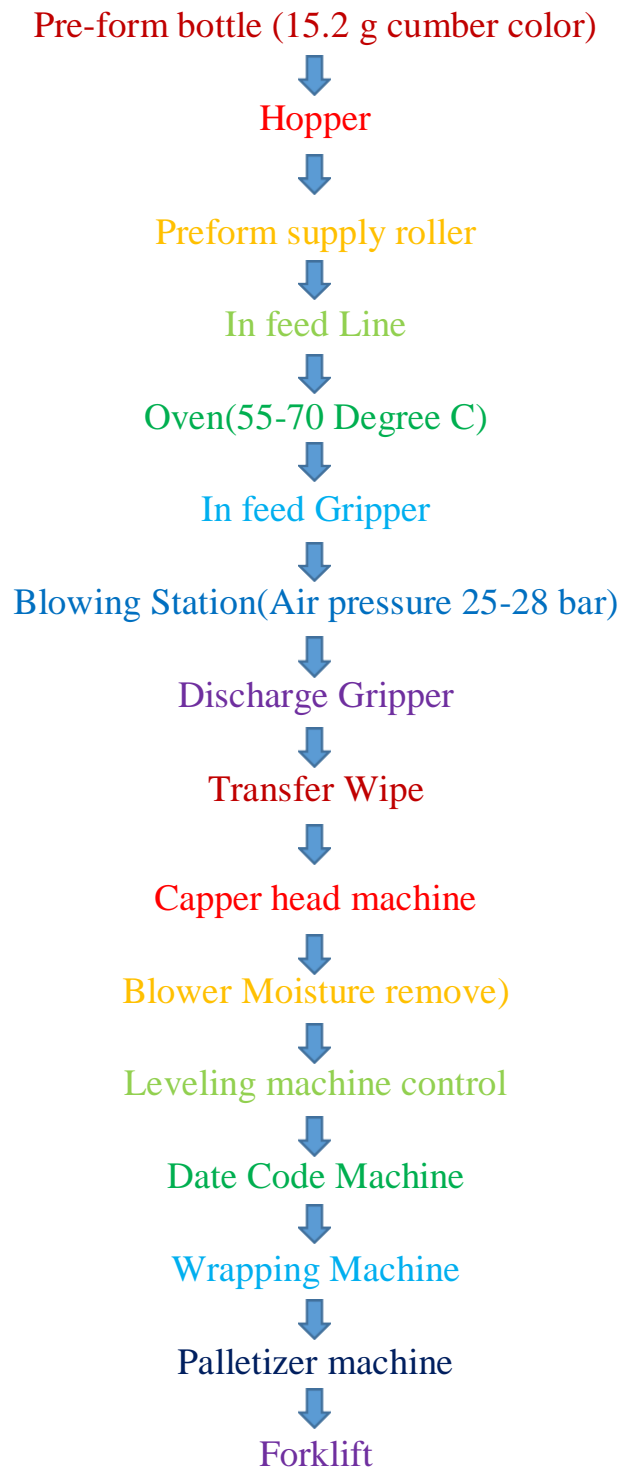
Actually Steps are used Flavor Changes. Frutika and Affi Same Product so we are uses 5 steps. And Different Product making we are uses 7 steps.

At first KZE. Then through the pipe comes Production line. Then the product comes UHT Balance tank AT 30-50 Degree C Tem. Then Exchanger 1 at 40-50 Degree C Tem. it is heated. Then Preheated 54-56 Degree C Tem. Heated. Then Desecrator. Desecrator Remove Foam the product. The exchanger 2 at 60-70 Degree C tem. Heated. Then Homonizer Pressure 195 bar so that the ingredients are mixed together. Then exchanger 3 at 80-90 Degree C Tem. Heated. Then heater 96-97 Degree C Tem. So that germs do not grow. Production full Capacity 12000 per hour. Then heat holding 96-99 Degree C at 40 sec. Then product again comes from Exchange 3 at 90-80 Degree c tem. For cooling. Then exchange 2 at 80-60 Degree C for cooling. Then Exchange 1 at 60-40 Degree C tem. For cooling. Finally Product comes from cooler at 25 Degree C at 25 Degree c Tem. Then Sterile tank volume 23000. Then filler tank. Then water 121 Degree C tem. Heated. And water 30-35 Degree C tem. Cooling for bottle washing. Doosan Forte and Kristal chemical using for bottle washing. Chemical using 15 ml. then bottle filling. Then leveling and Packing . Juice Filling 50 bulb. Filler and capper heat capacity 1800 per hour.

6. CSD3 Plant In industries:

CSD3

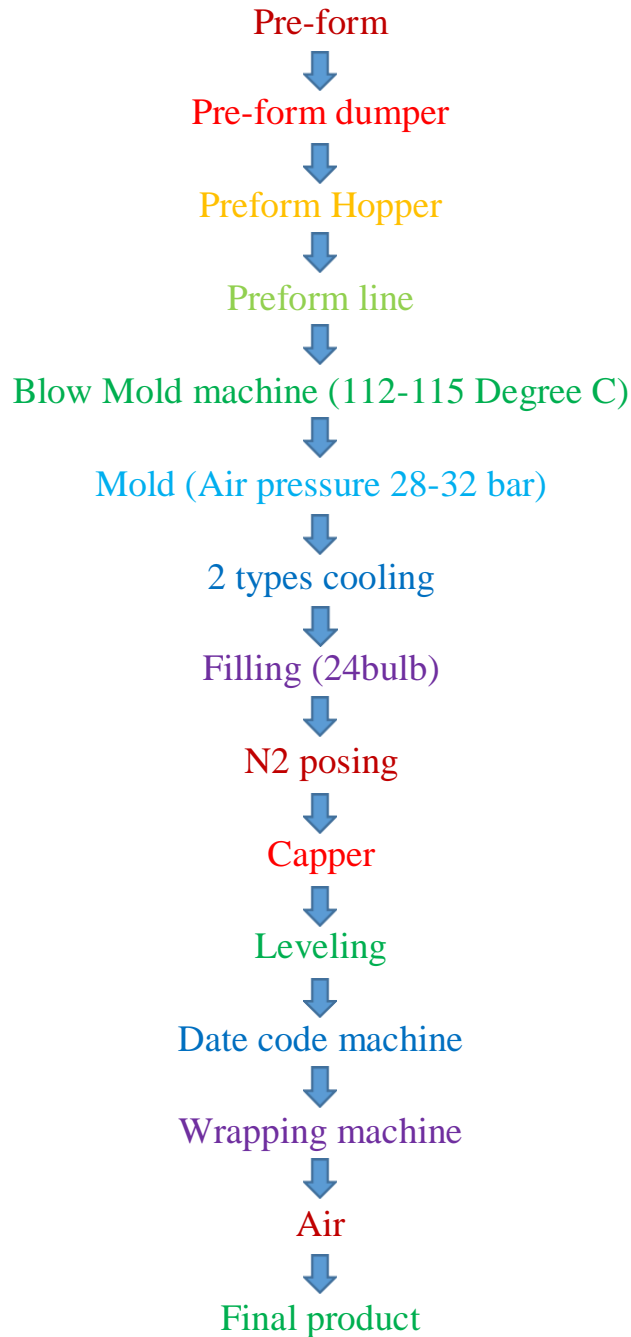
CSD3 Flowchart



7. DW Line 2 Plant In Industries:

Drinking water, otherwise called consumable water, will be water that is protected to drink or to use for nourishment arrangement. ... Americans, all things considered, drink one liter of water for each day and 95% beverage under three liters for every day. For the individuals who work in a hot atmosphere, up to 16 liters daily might be required.

DW Flowchart



Pre-form containing weight 48 g goes into pre-form dumper after that pre-form then pre-form line by vertical conveyer. A blow mold machine heats the pre-form at (112-115 Degree C). A lamp is used in the case. A mold gives shape of bottle by using 28-32 bar pressure. Then these shaped box the cool down by knock cooling (8-12 Degree C) and pre-form cooling (12-16 Degree C). These bottles are then filled N2 dosing is done in bottle. Finally capper stocking and leveling is done outside the bottle. A date code machine prints date on the outside wall of bottle. Wrapping machine wrapping 24 bottle in a box. Then the final water bottles get ready for use.



8. Microbiological Test:

Microbiological test are done to detect various bacteria .At first we uses autoclave for bacteria remove. Auto clave Tem.-121 Degree C

pressure-15 PSI (Parts per square inch)

time-15 min (Bacteria remove)

Bacteria produce- Toxin, enzyme, some medicine.

Auto clave set point Temperature-45 Degree C.

100 Degree C grow bacteria-Bacillus

Fungal-25 Degree C

Only for aseptic bacteria-35 Degree C

| Test | Temp.(Degree C) | Time (Hrs.) |
|----------|-----------------|-------------|
| TBC | 35 | 48 |
| Y/M | 25 | 72/120 |
| Coliform | 35 | 24 |

Microbiological test report CSD Unit:

| Specification | | Methods of test REF. To |
|---------------------------|----------|-------------------------|
| Simple Syrup(TBC) | | |
| Simple Syrup(Y/M) | | |
| Final Syrup(TBC) | | |
| Final Syrup(Y/M) | | |
| Final Product (TBC) | Max-50ml | App.pf BDS 860:2001 |
| Finish Product (Y/M) | Max-02ml | App.pf BDS 860:2001 |
| Finish Product (coliform) | Nil/ml | App.pf BDS 860:2001 |

Treated Water & Drinking water Unit:

| Specification | | Methods of Test Ref. To |
|----------------------------------|---------------|-------------------------|
| Drinking Water (TBC) | 1000/ml | App. K of BDS 1414:2000 |
| Drinking Water (Coliform) | Absent /100ml | App. K of BDS 1414:2000 |
| Drinking Water (Pseudomonas SPP) | Absent /100ml | |

Microbiological test report of Environmental Monitoring:

| Specification | | Methods of Test Ref. To |
|---------------|-----------------------------|-------------------------|
| Air Sample | Grade A <3/m ³ | WHO |
| Air Sample | Grade B =10m ³ | WHO |
| Air Sample | Grade C =100m ³ | WHO |
| Air Sample | Grade D =200/m ³ | WHO |

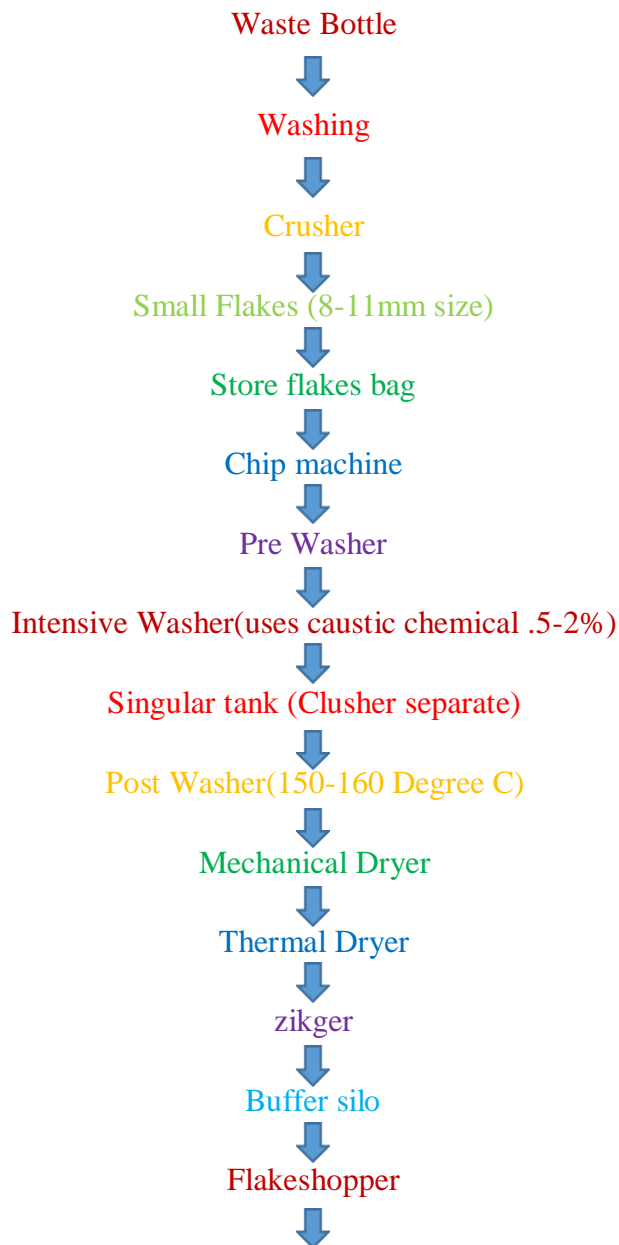
Microbiological Test Report of Ghee & Butter:

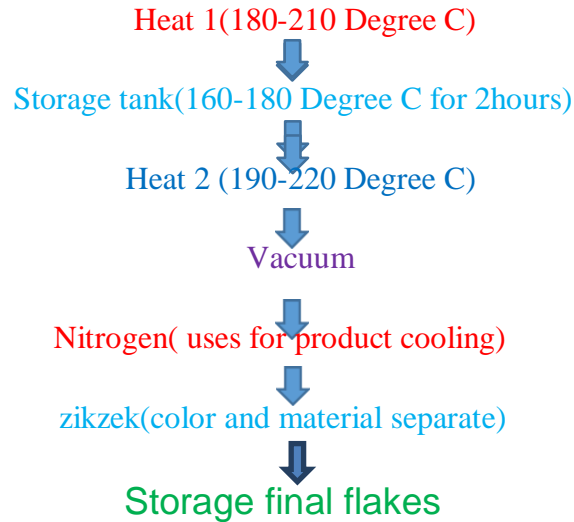
| Specification | | Remarks |
|------------------------------------|---------------------|----------------------------|
| Butter Total Bacterial Count | <50,000/ gm. | Food & Drug Administration |
| Butter Total Yeast & Mold Count | <20/gm. | Food & Drug Administration |
| Butter Total Coliform Count | <10/gm. | Food & Drug Administration |
| Ghee Total Bacterial Count | Not more than 500gm | Bureau of Indian Standards |
| Ghee Total Yeast & Mold Count | Absent in 1 gm. | Bureau of Indian Standards |
| Ghee Total Coliform Count | Absent in 0.1 gm | Bureau of Indian Standards |

9. Recycling Plant In Industries:

A Bangladeshi worker spreads out reused plastic shards to dry by a stream in Dhaka. As indicated by contemplates led lately, the Dhaka City Corporation gathers more than 50,000 tons of plastic waste every year. The normal assortment rate is around 137 tons per day. The plastic reusing industry of the Bangladesh capital is assuming a significant job in sparing the city from being submerged in an ocean of plastic.

Recycling Flowchart





Recycling is a process a stating something new from the end of the something. So Recycling process is done at industry.

Four Machine is used to do Recycling.

There are:

1. China Crusher
2. Preformcrusher
3. Wash
4. B2B

Then the bottles are offered in the conveyor. Then washing. And removing bottle leveling then crusher machine. Bottles are made into small flakes by the crusher machine. Small flakes size 8-11 mm. Then flakes store. Every flakes bag weight 600 kg. Then the flakes are poured into the chip machine. Then it comes in pre-washer through pipe. Then intensive washer. Intensive washer present caustic chemical (.5-2%). Then washing. Then singular tank. Singular tank Separate closer. Then again post washer. Because the bottle may have a caustic on it. Then mechanical dryer. The flakes comes thermal dryer through the pipe. Then zikzer .the gikger separate the dirt through the air. Then color separate and material separate through the pipe. Then the flakes stored the big bag. Then flakes come hopper. Then Heat 1 at 180-210 Degree c tem. Then storage tank at 160-180 Degree C for 2 hours because germ death and moisture remove heat 2 tem. 190-220 Degree c. Then vacuum .N gas production for cooling .Then zingers separate color and material. Then final flakes product.



10. Windsor & Printing Plant In Industries:

For milk firm,
680mm X 85 micron size made by Windsor
machine then ready for printing (melting at 180 Degree C)



Reaction(Re wending)



3 Layer Join



LD(96 Hrs.)



Final Cut



Finished Product

We have to choose desired size for milk film 680mm X 8m micron size is made by wind sore machine. Then ready for Printing. Firstly we have to use replete resin to make film by hopper then it goes to curing for 24 hrs. Mixing resin color here goes in 3steps.

1. Inner
2. Middle
3. Outer

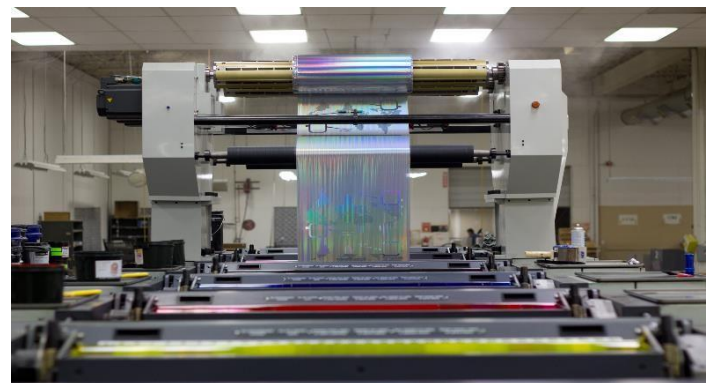
Then it goes for melting then it's blown by air then chilling it by chiller then rolling it. It goes to softer corona then adding lamination film X(34mm) then ready to print. After print it has to need inspection (color as black, red, yellow, and orange) then Ld. (3 layer lamination).

1st layer 12 micron, 2nd layer 12 micron, 3rd layer 12 micron MPET.

Then adding (ink+ gum) 4 micron. Then 3 layer +lamination join then adding LDP then curing 24 hrs. Then cutting the film then adding color as black, red, orange, yellow ten goes to reaction. Re wending Then 3 layer join then LD in (96 hrs.). Then final cut & we got the finished product.



Windsor



Printing

11.Sugar Processing Plant In Industries:

The harvested cane stalks and beets are loaded mechanically into trucks or railroad cars and taken to mills for processing into raw sugar. Once there, they are cleaned, washed, milled to extract juice, filtered, and purified. The result is a clear, sugar-filled juice.

Sugar Processing

Sugar Processing Flowchart



11.1 Sugar processing Method:

Raw sugar is bought from market and these sugar is poured into dumping hopper. Sugar starts to dissolve with water in dissolver at 41 Degree C. The value of brix then shows 61 Degree C. Dissolved sugar flows into pasteurizer tank. Heat exchanger heat the sugar at 82-85 Degree C. Then an activated carbon dosing tank helps to convert the color of sugar from reddish to white and it helps to protect the sugar from bacteria. Then Diamox powder. After the syrup flows into reaction tank where reaction between carbon and syrup is happened. A filter fresh then filter the reacted product. Remaining dirt is removed by Ama back filter. Then again a heat exchanger cool down the sugar at 19-21 Degree C. Then the final sugar is stored at reserve tank where capacity is 30500.

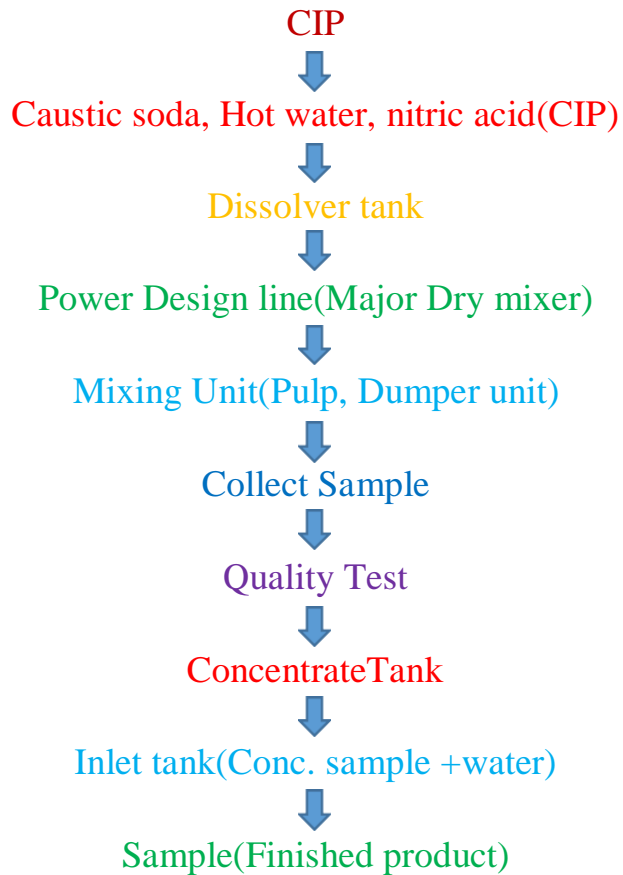


12. Juice Mixing Plant In Industries:

Contingent upon the method, the juice is either warmed by steam so the water in juice vanishes, or 'ultra-filtrated', and afterward focused utilizing a turnaround assimilation procedure. Juice condensed is conceived! Next, water is added back to the concentrate and mixed to create top notch juice.

Juice Mixing

Juice Mixing Flowchart



12.1 Procedure:

At first we do 5 step CIP in juice mixing unit. 1. STEP 1: PRE-RINSE (Used for removal of all solids in line. 2. STEP 2: CAUSTIC WASH – (140° – 185° F) Prevent overfilling with foam. 3. STEP 3: INTERMEDIATE RINSE its ensuring proper cleaning in line 4. STEP 4: FINAL RINSE the final rinse water may be recovered and reused as the pre-rinse solution for the next cleaning cycle. 5. STEP 5. SANITIZING RINSE May be required to help kill microorganisms before starting the next production run. For many years, various hypochlorite solutions (potassium, sodium or calcium), also known as “hypo,” have been used as sanitizers in many CIP cycles. Then, we got sugar syrup from Sugar processing unit the crystal clear product goes to dissolver tank then goes to Powder design line (PDL) It is major Dry Mixer. Then goes to Mixing Unit (Pulp + Dumper unit) then we collect the sample then we send the sample for quality test after quality test it goes to concentrate tank then goes to inlet mixer where merging conc. Sample & water then we got finished product.



13. Effluent Treatment Plant In Industries:

Effluent Treatment Plant or ETP is one kind of waste water treatment technique which is especially intended to cleanse mechanical waste water for its reuse and its point is to discharge safe water to condition from the unsafe impact brought about by the profluent.

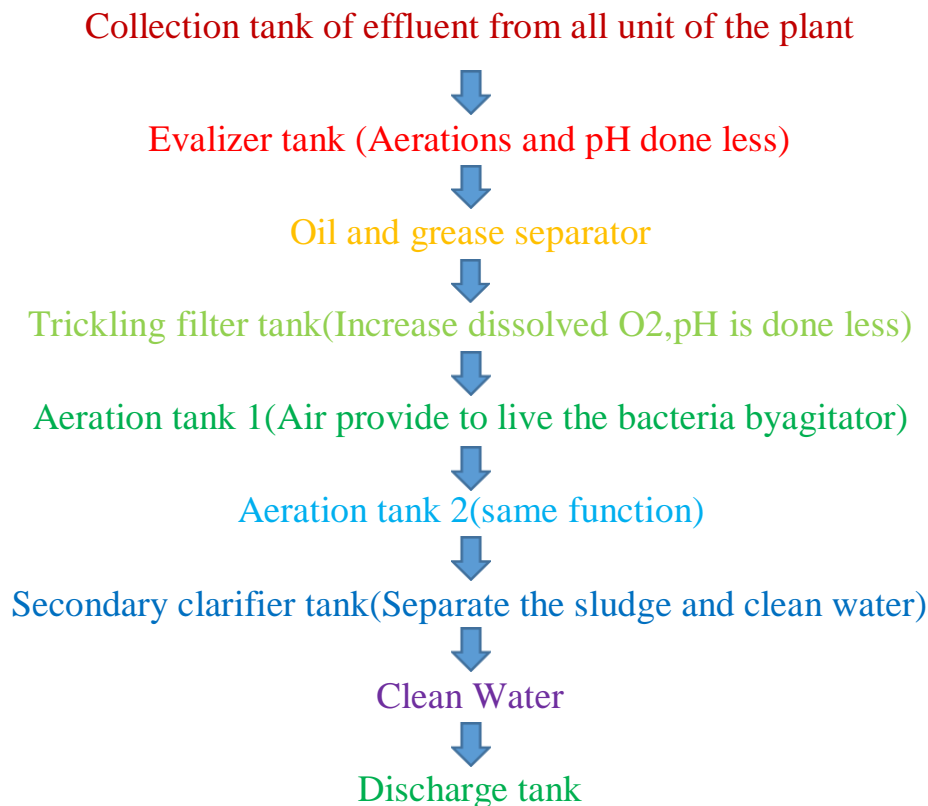
Mechanical effluents contain different materials, contingent upon the business. A few effluents contain oils and oil, and some contain poisonous materials (e.g., cyanide). Effluents from nourishment and refreshment production lines contain degradable natural contaminations. Since modern waste water contains an assorted variety of polluting influences and along these lines explicit treatment innovation called ETP is required.

The ETP Plant works at various levels and involves various physical, chemical, biological and membrane processes to treat waste water from different industrial sector.

Benefits of ETP:

1. To clean industry effluent and recycle it for further use
2. To reduce the usage of fresh water in industries
3. To preserve natural environment against pollution
4. To meet the standards for emission of pollutants set by the Government & avoid heavy penalty
5. To reduce expenditure on water acquisition.

ETP Flowchart



13.1 Procedure:

Effluent treatment plant is the most cost effective treatment plant. Industrial use this plant in order to collect and minimize toxicity the final waste non consumable water. Then they use the water for another purpose.

At first collection tank store all the removed non consumable water from different section within the industry. After that an equalizer tank. Implements Aeration and minimize the pH level of water. An Oil and grease separator separates oil and grease from water. A Trickling filter tank increases dissolved oxygen and minimize the pH level. Two aeration tank or more then two is used to provide air to leave the bacteria by agitator .A secondary clarifier tank separates the sludge and clear water. Finally the clean water store into discharge tank.



13.2 Lab Test

Do test purpose:

1. Manganus sulfate solution.
2. Alkaline iodide solution
3. Sulfuric acid.
4. 0.05N sodium thiosulfate VS
5. Starch Solution.

COD test purpose:

1. 0.025N potassium dichromate solution
2. Ferrous ammonium sulfate solution
3. Sulfuric acid 50% with silver
4. Ferroinindicator.

Parameters:

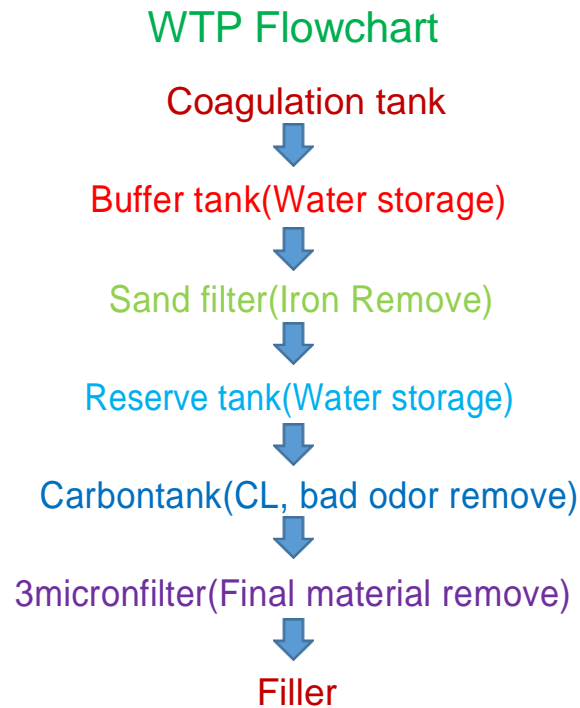
Water color (clear)
Dissolved oxygen (4.5-8.0)mg/l
pH(6.0-9.0)
IDS<2100(mg/l)
TSS<150(mg/l)
Oil and grease<10(mg/l)
COD<200(mg/l)
BOD<150(mg/l)

14. Water Treatment Plant In Industries:

Water treatment is any procedure that improves the nature of water to make it progressively adequate for a particular end-use. The end use might be drinking, modern water supply, water system, waterway stream upkeep, water amusement or numerous different uses, including being securely come back to the earth.

Why is water treatment important?

Untreated, the concoction mixes and pathogens in wastewater can hurt the wellbeing of creatures, plants and winged animals that live in or close to the water. It can likewise defile yields and drinking water, influencing human wellbeing. Wastewater treatment is major to secure the soundness of a wide range of environments.



14.1 Water Treatment Plant Procedure:

Water treatment plant mainly used for removing unwanted harmful substances from water and in order add some consumable chemical substances to maintain the standard of purity in water.

Two process is conducted in the plant. One is RO process and another is Coagulation process. The capacity of coagulation tank is 60000 LTR.

| Coagulant chemical | Chemical Flow rate | Concentration |
|--------------------------------------|--------------------|---------------|
| Ferrous Sulphate (FeSO_4) | 1700 ml/m | 8.33% |
| Lime CA (OH_2) | 3000 ml/m | 5% |
| Belching Powder CA(ol) Cl | 1600 ml/m | 1-5% |

At first ground water is collected through motor and these water needs to transfer into coagulation tank. Then the water is stored in buffer tank. A sand filter is used in the plant to remove Iron. A reserve tank then store the non-iron water. After that carbon tank helps to remove the CL and bad odor from water. At last 3 micron filter removes the micro particles from water. The pure water then goes to filter and gets ready for the selling process.



14.2: Lab Test:

Coagulation tank pH → 10 above

Treated water pH → 8.5 above

TDS - Less 250

Coagulation tank chlorine → 6-8%

Final Chlorine - 0

Ground water iron - less .5 ppm

Alkalinity → 300-350

final alkalinity → 20-30

Ground water hardness → 280-350

Final water hardness → 80-150

Ground water chlorine → 25-40

Final later chlorine → 60-70C

15. Conclusion:

In conclusion, Akij Food and Beverage Ltd (AFBL) already established its name and reputation in the food and beverage industry with their quality products and services. The sales are increasing and customers are more satisfied with their product quality and affordable price. The organization is up to date in terms of modern technology, environment protection, corporate social responsibilities, production, marketing, customer satisfaction and services. Without any doubt Akij Food and Beverage Ltd is at its peak and one of the leading companies in food industry. Not only that, AFBL maintains and follows all the Bangladesh Government's rules and regulations.

In my time at AFBL I have seen the most talented, experienced hardworking team members and at the same time friendly and dynamic too. The entire organization works together is like family members. I have enjoyed my time over here with the support of the AFBL team and my supervisors. I will end by stating that being part of such huge and old organization enabled me to gain lots of practical knowledge which in return will support me for my future work.