BERA FOOD PRODUCTS
CERTIFICATE

OF

COURSE TRAINING

This Certificate is Proudly Present To

MISS SUSMITA JANA

This is to certify that **MISS SUSMITA JANA** of 2nd year under the Department of **B.Voc** (Food Processing), MUGBERIA GANGADHAR MAHAVIDYALAYA , has undergone in-plant training successfully for the period from **26th December, 2022 to 24th January, 2023**. At **the BERA FOOD PRODUCTS (MILK PLUS).** She has been exposed to the plant operation and maintenance practically in the segments of milk procurement, reception, processing, packaging , CIP operation, hygiene maintaining etc. During the period she has been found punctual, honest, and hard working.

We wish her the best in all for his future.

(KHASJUNGAL, ABASH, KOTWALL, PASCHIM MEDINIPUR(W.B.), PIN-721102)

GIVEN THIS 25 DAY OF JANUARY, 2023.

DATE: .....

Sumiyana Das.

Production Manager

BERA FOOD PRODUCTS
Pin-721102
(W.B.)
Ph-03222 269990

.....

Signature of the HOD

BERA FOOD PRODUCTS

Khasjungle, Abas, Kotwali, Paschim Medinipur, pin – 721102

INDUSTRIAL TRAINING REPORT

From 26/12/2022 to 24/01/2023

Mugberia Gangadhar Mahavidyalaya

Bhupatinagar, Purba Medinipur, 721425

Submitted by: - Manisha Barik[1]

Tanushree Jana[2]

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Sandipta Bera[6]

Rakhi Majhi[7]

CONTENT

Procurement

- **VLC:-**

Full form:-Village level collection

Village:-vedua

Distance from chilling centre:-10 km.

Chilling center name: - Kadamdiha chilling center

Daily Milk collection: - 250 lit.

Milk collection from farmer

⇩

Weight measurement

⇩

Fat test

⇩

Payment to farmer according fat percentage

⇩

Chilling center

⇩

Bulk cooling

⇩

Milk industry

ACKNOWLEDGEMENT

I would like to express my special thanks of my gratitude to Dr. Apurba Giri for giving the opportunity to get trained Bera food products.

The training would not be possible without the permission of Mr Bhaskar Bera. I would like to express my cordial thnks to him. I would also like to thanks Mrs Sunayana Das who provide me on overview of the plant which help me to make the report.

Last but not the least I would like to thanks all workers of the plant for helping a lot.

MILK PROCESSING SECTION

Raw milk receiving

⇩

Lab test

⇩

Standardization

⇩

Balance Tank

⇩

Filtration

⇩

Pasteurizer

⇩

Regeneration1 (35^{0c})

⇩

Separator

⇩

Regeneration 2 (62^{0c}-65^{0c})

⇩

Homogenization (2000psi)

⇩

Pasteurization (80^{0}c-85^{0}c , holding 10s)

⇩

Chilling (below 4^{0}c)

⇩

Process tank

⇩

Packeging

Dahi Processing Section

Processed milk

⇩

Inoculation tank

⇩

Heating (90^0c)

⇩

Holding (10 to 11minutes)

⇩

Inoculation tank (40^0c)

⇩

Culture addition

⇩

Agitating (10 minutes)

⇩

Packaging section (pouch temp.41^0c)

⇩

Incubation (40^0c-45^0c)[stay 4to5 hours]

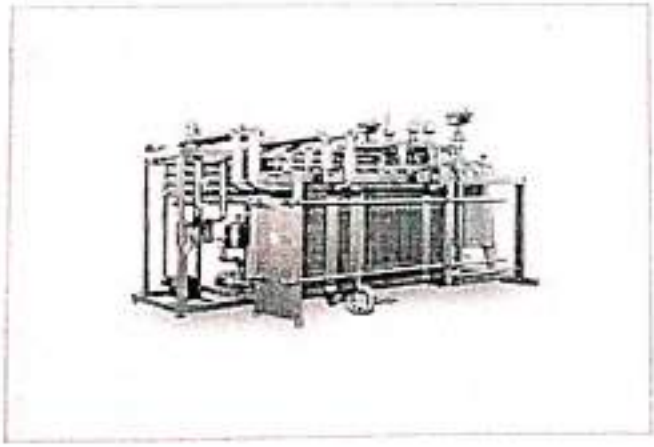
⇩

Cold room (below5^0c)

Milk Processing Machine

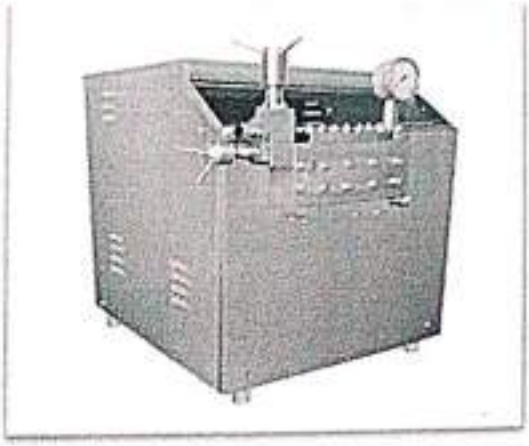
Pasteurizer:- The term pasteurizer is applied to market milk today refers to the process of heating every particle of milk to at least 63^0c for 30 minutes or 72^0c for 15 seconds in approved and properly operated equipment. The equipment used for the pasteurization is called pasteurizer.

Milk pasteurizer machine re used is primarily used to make products safe to eat or drink, increase shelf life and to reduce spoilage.

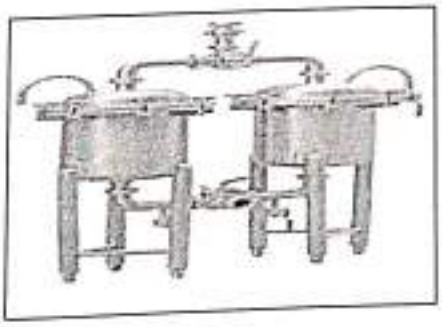


Homogenizer:- The process of breaking up the fat globules to very small sizes in order to prevent cream formation is known as homogenization.

The equipment used for the same is known as homogenizer. The homogenization process involves reducing the size of fat globules.



Milk filter :- The filters that are used in milk filtration are most commonly in-filters that may be made of different types of fiber,paper,or cloth that are fitted over a perforated metal support inside a cylindrical tube. When in-line filters are used the milk should be filtered before it's cooled.



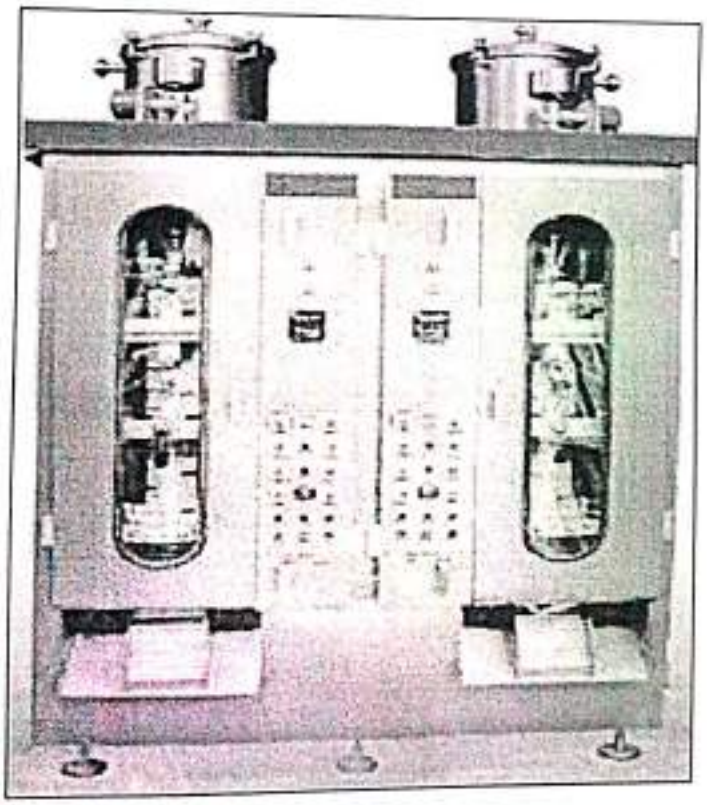
Chiller:- Milk chiller is a modular milk chilling system that instantly cools milk from35^{0}c to 4^{0}c without a diesel generator.

cream separator:-Cream separator machine is used for removing cream from whole milk.It is used as a clarifier.

Air compressor:- An air compressor is a pneumatic device that converts power into potential energy stored in pressurized air.

Packeging Section

In this plant there are milk packing machine including double packaging head. There is two packing machine, one is used for milk pouch packing and other is dahi packing .there are two type of jaw there one is vertical and other is horizontal. Operator has to maintain the temperature, Injection, Weight etc. After Packeging milk poches are placed crate. Then crates are gone to storage room (temp. below 5°c). Then it is ready for supply.



- <u>Vacuum paneer packeging machine:-</u>

1. Increased shelf life: - vaccum packeging can improve product shelf life.
2. Reduced product loss: - Vaccum barrier packeging material protects paneer from loss of moisture.
3. No chemical preservative required for storage of paneer with vaccum packeging.

Quality control lab

- Acidity test in milk:-

10 ml milk sample

⇩

8to 9 drops phenolphthalein

⇩

Titrate by adding NaoH until the solution changes for colorless to light pink.

Formula:- NaoH pipette point ×0.09

- Lactometer reading:-

Heating milk sample at 40°c temperature

⇩

Decrease temperature at 27^0c

⇩

Measuring cylinder filled with milk

⇩

Put calibrated lactometer in milk

⇩

Reading

- SNF calculation = Fat+CLR/4+o.44
- CLR= correct lactometer reading

- Fat Test / Gerber Test:-

Heating milk sample at 40^0c

⇩

Decrease temperature at 27^0c

⇩

Butyrometer

⇩

10 ml H_2SO_4

⇩

10.75ml milk sample

⇩

1 ml amyl alchohol

⇩

Shaking properly

⇩

Gerber centrifuge (5 minutes)

⇩

Result

- SMP protein test:-

5gm SMP sample

⇩

50 ml distill water

⇩

Heating

⇩

Measuring cylinder

⇩

Mix in beaker

⇩

Holding (10 minutes)

⇩

Mixing

⇩

10 ml smp solution

⇩

2-3 drops phenolpthalein

⇩

0.4 ml potassium oxalate

⇩

Holding (3minutes)

⇩

Titrate by NaoH (only for colour)

⇩

Titrate by formadehyde

⇩

Titrate by NaoH

⇩

Reading

Formula:- reading×1.7

- Quality of SMP

100 gm. SMP sample

⇩

Hot water

⇩

Mixing

⇩

Decrease temperature (60-65^{0}c)

⇩

Acetic acid

⇩

Holding (10 minutes)

⇩

Weight measurement

Laboratory Equipment

1. **Beaker**:- A beaker is a glass container with a flat bottom and small pout for pouring. It is used in lab for mixing, heating, and stirring liquids.
2. **Graduate cylinder**:- A graduate cylinder also known as a measuring cylinder, is a common piece of laboratory equipment used to measure the volume of a liquid.
3. **Test Tube** :- Tes tubes are widely used by chemist to handle chemicals , especially for qualitative experiments and assays.
4. **Pipette**:- A pipette is a laboratory instrument used to measure out or transfer small quantities of liquid, in volumes of millilitres.
5. **Conical flask**:- A conical flask is a piece of laboratory glassware. They are used for storing , mixing, and measuring liquids.
6. **Lactometer**:- A lactometer is a little glass instrument that tests the purity of milk based on density and works on the principle of specific gravity.
7. **Gerber centrifuge**:- Gerber centrifuge is an instrument to determine the fat and extract the fat from milk .

Chemicals

1. **Sulphuric Acid (H_2SO_4)**:- Sulphuric acid is a mineral acid with the chemical formula H_2SO_4. Sulphuric acid is also known as mattling acid or oil of vitriol.It has strong acidic nature and is corrosive.
2. **Amyl alchohol**: - Amyl alchohol is a clear liquid with a mild alchohol odor. It is used as a solvent, in synthetic flavourings, and in making other chemicals.
3. **Phenolpthalein:** - Phenolpthalein is often used as an indicator in acid-base titration. For application, it turns colorless in acidic solutions and pink in basic solutions.
4. **Sodium Hydroxide (NaoH)**:- Sodium hydroxide also known as caustic soda is an inorganic compound with the formula NaoH. It us a white solid ionic compound consisting of sodium captions Na^+ and hydroxide anions OH^-.
5. **Ethanol:**- Ethanol is an organic compound. It is a volatile , flammable, colorless liquid with

characteristic wine like odor and pungent taste.

1. **Formaldehyde:-** It is a naturally occurring organic compound with the formula CH20. The pure compound is pungent, colourless.

IBT(Ice Bank Tank)

IBT is a system which stores energy in the form of ice. It is applicable in dairy industry for quick process in short time with certain limit of power load

Advantage:-

1. Requires less connected power load.
2. The ice water intensively cools the product without any risk.
3. Power supply is not required once ice formation is completed.

Clean In Place

Acid (20 min circulation, 80-90^{0}c)

↓

Draining of acid

↓

Caustic (25 min circulation 80-90^{0c})

↓

Caustic draining (15 to 20 min)

↓

Hot water (85^{0}c)

↓

Hot water draining

↓

Normal water circulation, 40 min

Effluent treatment plant (ETP)

❖ ETP process:

1. **Equalization tank:**
   Equalization tank is designed in such a way to enable the effluent to operate at predetermined rate varies from hour to hour. Its important role is to male water homogeneous in nature.
2. **Physiochemical dosing:**
   A. Coagulation by non ferric alum dosing :
   Coagulation is an essential part of wastewater treatment. Dosing of non-ferric alum is dosing here as per requirement after making a dilution of 5%. Here we are using alum for coagulation in view of reducing the suspended solids. The efficiency of chemically enhanced primary treatment or CEPT in terms of BOD and COD removal, depend on effluent characteristics.
   B. Flocculation by polyelectrolyte dosing:
   This is for aggregation of suspended matters. Dosing of this chemical is done after making a dilution of 1%. Adsorbing is one of the many important steps involved in particle aggregation with long chain polymers. This is a process in which the charged sites of linear polymer molecules are adsorbed to the surface of a number of particles, forming what is generally referred to as particle – polymer- particle – bridges, resulting large sized particles which settle faster.

By the above process of such physiochemical treatment TSS is reduced up to 80% and BOD, COD also reduced to significant level.

3. **Primary settling tank:**
   All settled sludge is easily handled here. Sludge is removed from here by a sludge lifting pump to the sludge drying bed. The liquid mass is flown by gravity from the top portion of PST to aeration tank.
4. **Aeration Tank:**
   Here a compressed air blower is fitted connection with diffusers in view of supplying oxygen to bacteria for treating and stabilizing the effluent. Oxygen is needed by the bacteria to allow biodegradation to occur. The supplied oxygen is utilized by bacteria in the wastewater to break down the organic matter containing carbon to form carbon dioxide and water
5. **Sludge drying bed:**
   All sludg accumulation here in view of drying and is using as a fertilizer for cultivation and gardening.

ETP process flow diagram:

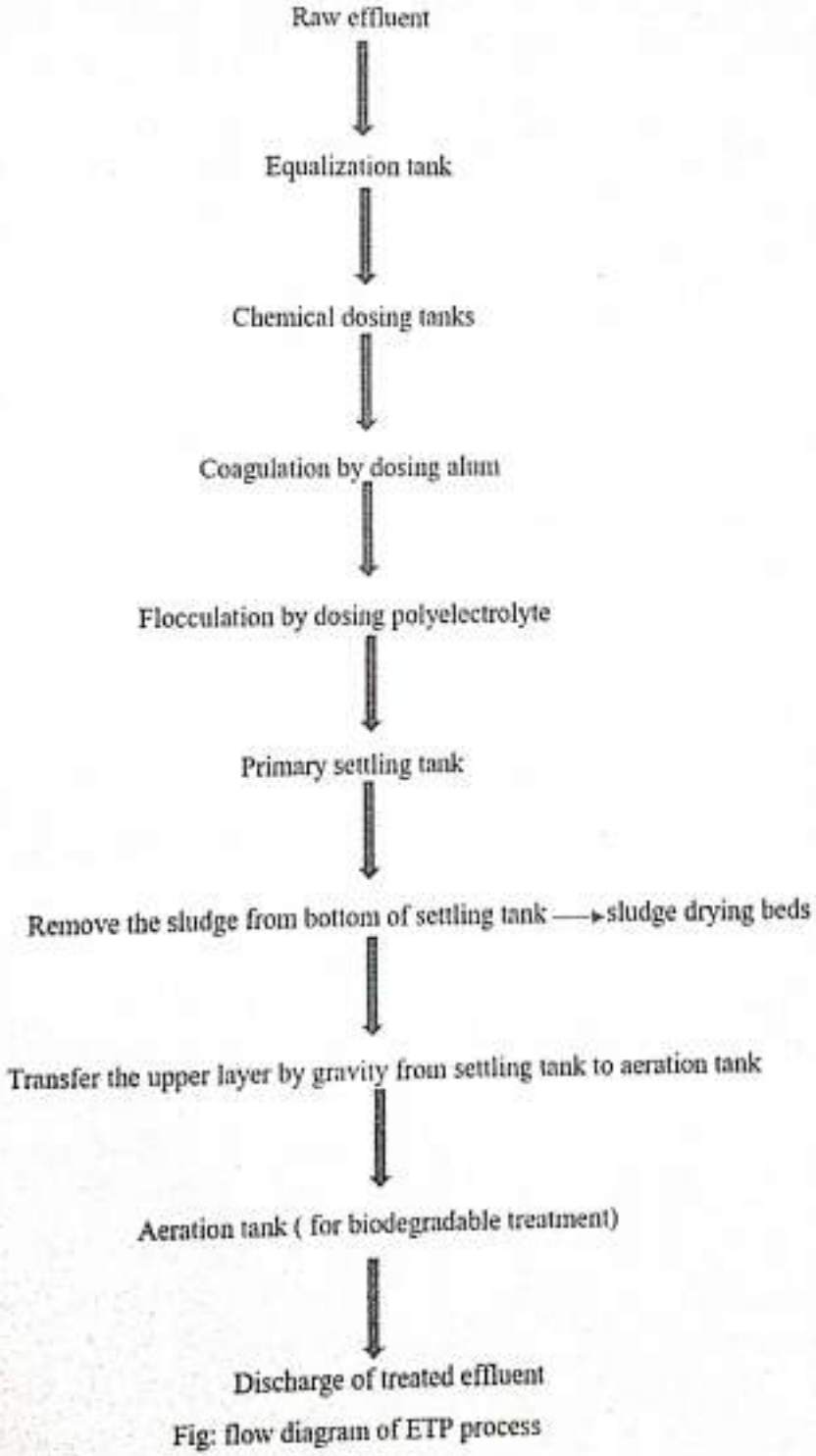


Fig: flow diagram of ETP process

❖ **ETP layout:**

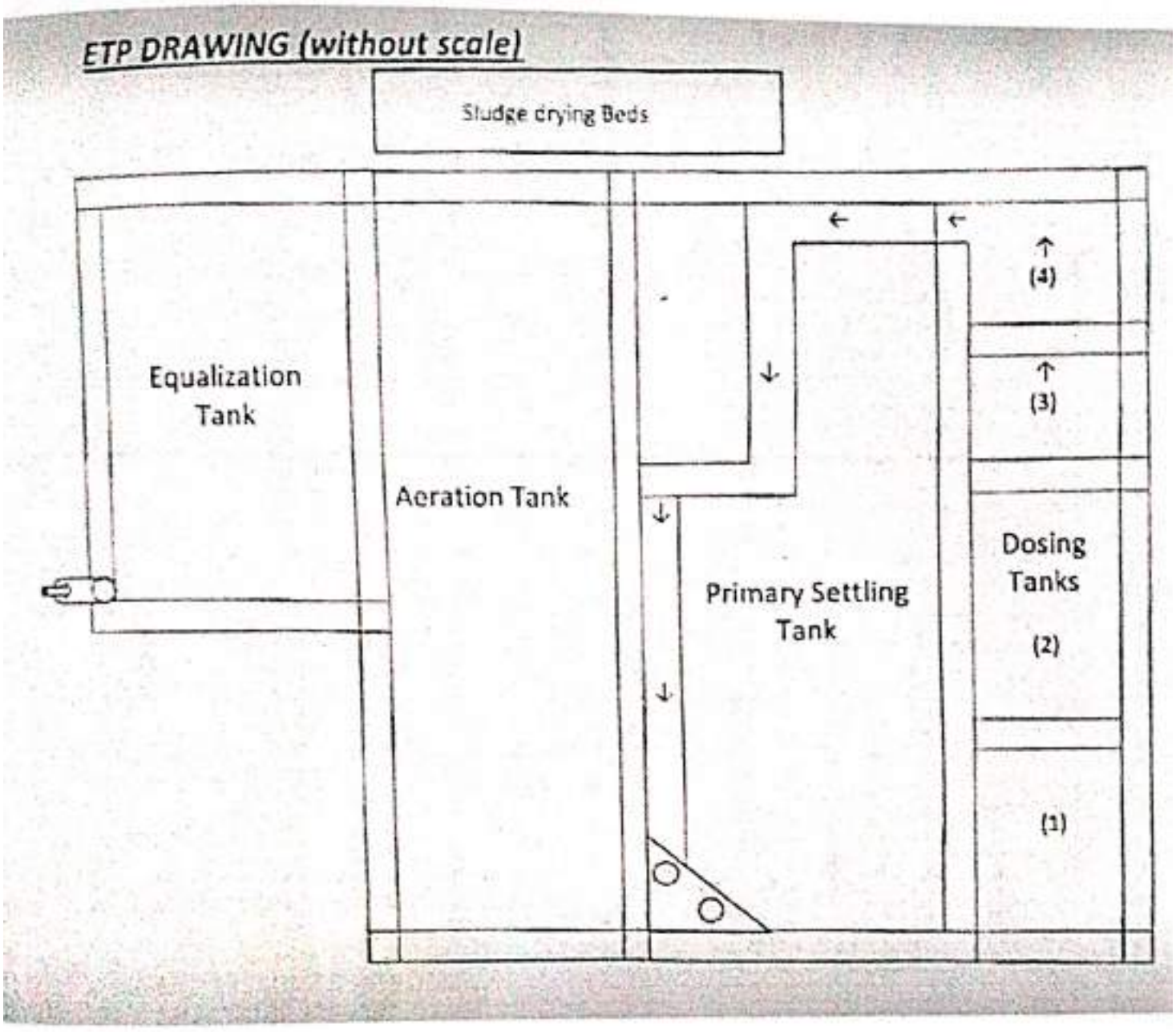


Fig: ETP layout

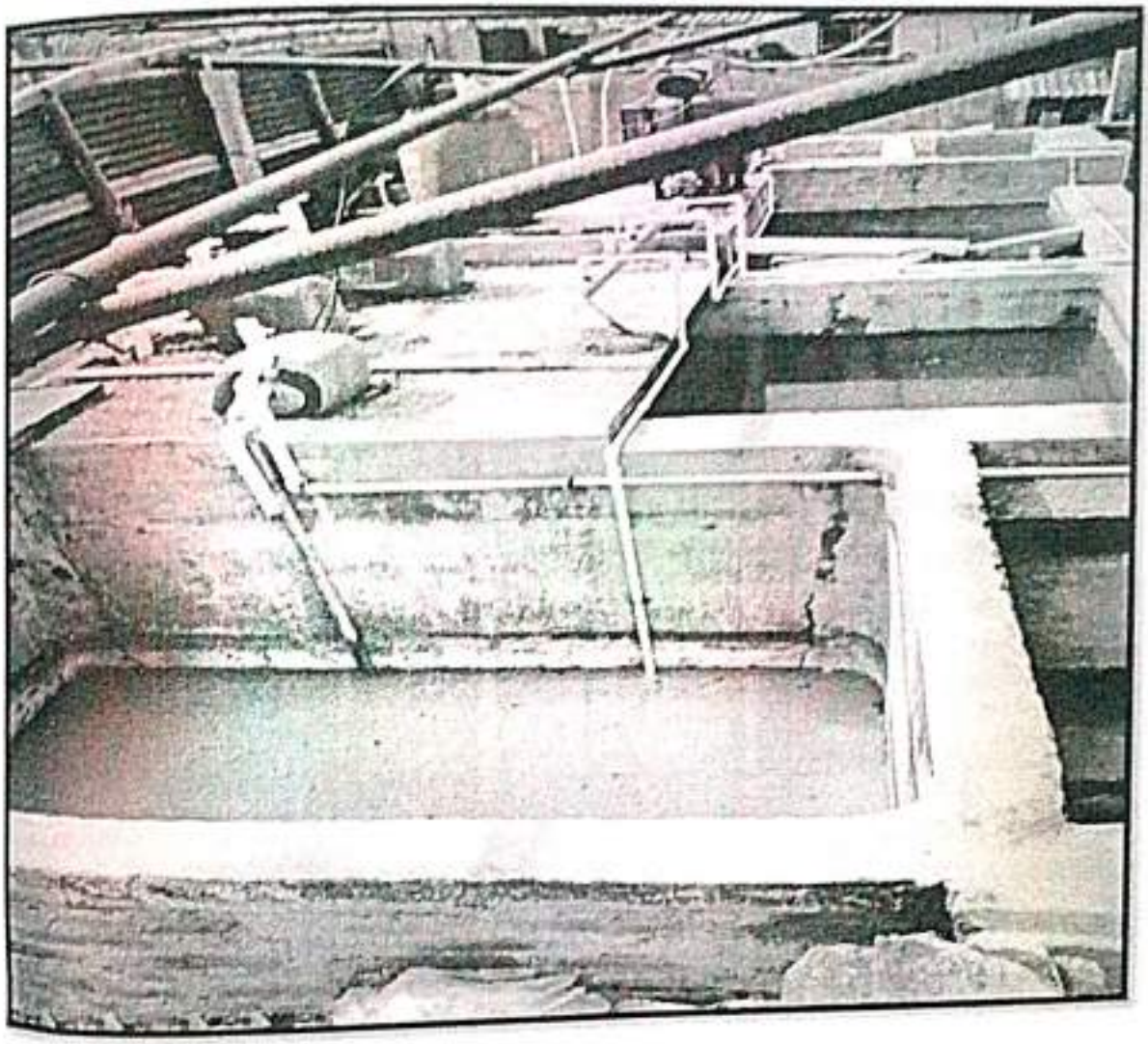


Fig: ETP Plant

CONCLUSION

After undergoing a successful training of one month we have gather many valuable experience and proper knowledge about industry. We observed each and every section like:-

1. Raw milk receiving section
2. Processing section
3. Packeging section
4. Quality control lab
5. CIP section

We learn a lot from the official and staff and such a nice experience will help us in future. Also we will try implementing them in future.

Lastly, many many heartily thanks to "Bera Food Products" for fetching out thirst of such a nice industrial exposure.