



**Daffodil**  
International  
University

## Internship report on

“CIP,ETP,WTP Plant, Ammonia plant and distribution department of Lovello Ice-cream factory”



### **Submitted to:**

Prof. Dr. Bellal Hossain

Head

Department of Nutrition and Food Engineering

Daffodil International University

### **Submission by:**

Mehedi Hasan

ID:-162-34-538

Department of Nutrition and Food Engineering

Daffodil International University

Date of Submission:

## Letter of Transmittal

Date:

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

**Subject: Submission of Internship report.**

Dear Sir,

With due respectfully to state that, I am hereby submitting my Internship report, which is a part of the BSc in NFE program curriculum. It is a great achievement to work active supervision. This report is based on, Lovello Ice Cream and Milk Unit. This Internship gave me both academic and practical exposures.

I will be highly obliged if you are kind enough to receive this report and provide your valuable judgment.

Sincerely yours,

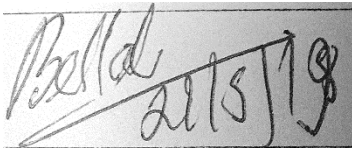
-----

Mehedi Hasan  
ID:162-34-538  
Department of Nutrition and Food Engineering  
Faculty of Allied Health science  
Daffodil International University

## Certificate Approval

I am pleased to certify that, My intership report on Lovello Ice-cream at Taufika foods and Agro Industries Ltd. conducted by Mehedi Hasan bearing ID:-162-34-538 of Department of Nutrition and Food Engineering has been approved for Defense/Viva Exam under my supervision Mehedi Hasan worked at Taufika foods and Agro-Industries Ltd .

I am pleased to hereby certify that the data and test presented in the report are Authentic work of Mehedi Hasan. I strongly recommended the report present by Mehedi Hasan for further academic recommendation and defense/viva-voce. Mehedi Hasan bears a strong moral character and a very pleasant personality. I wish her all success in life.



Prof. Dr. Md. Bellal Hossain

Head

Department of Nutrition and Food Engineering

Daffodil International University

## Acknowledgements

First of all, my gratitude goes to the almighty Allah for giving me the patience and capability to complete my duty and responsibilities in a well and sound health. Then my parents, who had put me on the map and supported me in every situation.

I would like to express my gratitude to **Professor. Dr. Md Bellal Hossain**, Head of the Dept. of Nutrition and Food Engineering, Daffodil International University for creating this enormous scope of practical knowledge in the curriculum and providing me valuable guidance to complete my work.

My deepest respects and thankfulness to **BM Rabbany**, Chief Human Resource Manager Lovello Ice Cream Ltd, and for allowing me to complete the internship in Lovello Ice cream.

I greatly appreciate **Md. Rafiqul Islam Assistant** Manager Quality Assurance Dept, **Md Shahadot Hosan**, Deputy Manager Admin & Compliance, **Md. Abdul Mojid** , Assistant General Manager Production, **Md. Mostafa**, Deputy Manager, Electrical Dept. for giving me valuable time, sharing knowledge and teaching me various practical aspects of industrial life and organizational behavior.

I am bound to the Executives, Junior Executives, Lab Assistants of the Quality Assurance Dept., **Md. Saddam Hosan**, officer (QA), Production officer **Md Ismil Hosan**, **Md. Liton Miah** Asst. Production Officer, **Md. Tarikul Islam** Asst. Quality Assurance Officer, **Md. Shamim Hosan**, Asst. Manager, Mechanical Dept. **Md. Mozibur Rahman** Sr. Tech Officer. **Md. Mafuzur Rahman** Electrical Dept. Designation (TE).

**Md. Mamun**, Mechanical Dept. Designation (Operator), **Md. Amir Shohel**, Refrigeration Unit, Designation (Tech. Officer), Admin, Distribution of Lovello Ice cream for supervising, helping and sharing valuable information and cooperation.

## **Exclusive Summary**

The Internship was conducted at Taufika Foods and Agro Industries Ltd. in Lovello Ice Cream from 09 February, 2019 to 15 March, 2019. This factory mainly manufactures difference types of Ice Cream.

To prepare Ice cream is used to milk, sugar, stabilizers, emulsifiers, water, food grade flavor, food grade color, fruit pulp, skim milk powder, butter oil, coconut oil, glucose. After preparing the mixing tank of ice cream pasteurized and homogenize. In Ice cream they mainly check physical, chemical, microbiological test for quality control.

Major objective of this report is to identify the actual health hazard and quality control of Lovello Ice cream Ltd and also develop the production and quality control. In this regard, Customers are very important for every business. My report is based on the hazardous free and qualified Lovello Ice cream. The report contains information of the organization itself, Sanitation, hygienic facilities of the overall industries and Collected qualified raw materials.

Also involve the raw materials test, safe production, ultimately quality check of the final product than marketing. Also I have discussed about safe production and quality control of Lovello Ice cream.

# Tables of Contents

Number of Chapter	Contents	Number of page
	Cover page	(i)
	Letter of transmittal	(ii)
	Certificate approval	(iii)
	Acknowledgements	(iv)
	Exclusive Summary	(vi)
Chapter no-01	<b>History</b>	<b>01-05</b>
	1.1 History of company	01
	1.2 Lovello Ice-cream at glance	02
	1.3 Objectives of the study	3-4
	1.4 Product of Lovello Ice-cream	05
Chapter no-02	<b>Water Treatment Plant</b>	<b>06-07</b>
	2.1 Definition	06
	2.2 Process of WTP	06
	2.3 Uses of WTP	06
	2.4 Schematic diagram of WTP	07
Chapter no-03	<b>Effluent treatment plant</b>	<b>08-10</b>
	3.1 Definition	08
	3.2 Purpose of ETP plant	08
	3.3 Advantage of ETP plant	09
	3.4 Test for ETP plant	09
	3.5 Schematic diagram of ETP	10
Chapter no-04	<b>CIP process</b>	<b>11-12</b>
	4.1 Definition	11
	4.2 CIP purpose	11
	4.3 Procedure	11
	4.5 Diagram of CIP process	12
Chapter no-05	<b>Distribution Department</b>	<b>13-15</b>
	5.1 Sales and distribution Department	13
	5.2 Name of dipos	14
	5.3 Distribution chain	14
	5.4 Storage	14
	5.5 Ammonia plant	15
Chapter no-06	<b>Conclusions &amp; References</b>	<b>16</b>
	6.1 Conclusions	16

## History of company

1.1 Lovello is a manufacture under Taufika foods and agro industries ltd. Taufika foods and agro industries it is an organization under Taufika group. Taufika has established at 2005 by Md. Ekramul Haque. He is an engineer and he worked almost 20 years for a foreign company in Malaysia. Then after 2000, he came back in Bangladesh and launched this group. The group started Taufika engineering LTD (TEL) which involved in engineering business and build of steel and RCc building, project management and Turnkey general civil construction etc. Since when it has started, it is manufacturing only healthy, Halal and savory Lovello Ice Cream prepared of imported high quality raw materials using state-of-the-art technology.

Lovello, confide in confirming long-term presence by being profitable and successful. They, so deeply take on customers' suggestion, give best attempt and improve as well as add new volumes to their business so that they can confirm anointing in this extremely competitive ice cream industry. This technique has qualify them to effectively dispute the challenge. And that challenge is to stay competitive with the front edge technologies and making quality full product and having a good portion of market share. Close competitor of lovello is polar, it have already same amount of shares in the market So , from here its clear Lovello commits in producing value added products and showing the business's commitment to utilize resources effectively.

Lovello introduce the extensive choice of ice cream to its consumers, compare with other competitors in the market. Lovello is Introducing a total of fifty seven items .But popular ones are couple toub, hidden heart, heart beats, kulfi, shell & cone, Choco bar, Choco blast and family pack items. Lovello has good flavors than what helping them to compete in the industry and constantly introducing new and innovative items. With times lovello is giving the indication of become leading ice cream seller in this industry.

They Started with Choc-bar, which is now contributing 11% of the total sales mainly, constructs of Choco bar and mini choc. Both of those are vanilla flavored and implicated with chocolate and deliver consumers an energetic feeling and they satisfy themselves into it. Then our next analysis about Hidden heart which has already five percent contribution in sales and has flavor of vanilla and strawberry ripple implicated by hazelnut coating and also have coconut taste.

## At Glance

### 1.2 At Glance Lovello Ice-cream Factory:

Owner	Md.Ekramul Haque
Corporate Head office	Plot- 80, Road -2, Banani, Dhaka – 1230
Year of Establishment	14 February 2016
Parents Company	Taufika foods and agro industries ltd
Parents group	Taufika group
Managing director	Md. Ekramul Haque
Technology	Tetra pak
Capacity	45,000 L/per day
Investment	1.0 billion



## Objective of the study

### 1.3 Objectives of this study:

#### General Objective:

The main objective is to hazard free safe production and quality control of Ice cream, that's help gain real life exposure and get a clear idea about dairy product as well as promoting brand.

#### Specific Objective:

The specific objectives of this study are as following:

- To focus on the hygienic production and quality control of Lovello Ice cream To have an idea of activities Lovello Ice cream.
- To know different activities of the organization.
- To identify the hazard during the processing and production of Ice cream in the plant, and finding how to take necessary steps.
- To identify different critical control point in Ice cream.
- To describe the processing of Ice cream.
- To fulfill the requirement of NFE Program.
- To give an overview of Taufika Foods and Agro Industries Limited (Lovello Ice cream).#
- To know about WTP,ETP,Ammonia plant of lovello ice-cream

## Objective of the study

### Scope of the study

This study has been conducted on dairy based industry and standard quality control activities of lovello Ice cream. This report has been prepared through extensive discussion with internal processing, quality assurance of final product. The main focus of this internship training is the hygienic production and quality control of Ice cream, compositional standard and quality processing of milk products carried by the dairy Producers Company. The report covers details about the hygienic production and quality control Ice cream. However, the study is related to the hygienic production area and quality control department and this section I got an opportunity to only work in this area.

### Sources of data

There are two source of data. These include primary source of data and secondary source of data.

#### Primary Sources of data

- Practical deskwork in lovello Ice cream.
- I was recruited as a trainer where my job is to learn how dairy related practical knowledge gain.
- Collected data sometime employee's internal management of lovello Ice cream experienced worker.
- During my job I have experienced a lot of important things about dairy based product section which is helping me to do my report.

#### Secondary Sources of data

- Official website of lovello Ice cream.
- Secondary data has been provided by my onsite supervisor **Mr. Rafiqul islam** (QC manager).
- Newspaper, journal, articles etc.
- Annual report of lovello Ice cream.

## Products

### 1.4 Products of Lovello Ice-cream:

Lovello Ice-cream has lots of products. such as-

- 1) Hidden heart
- 2) Heart beats
- 3) Choco blast
- 4) Choco beats
- 5) Shell & core
- 6) 69 Loly
- 7) Cone Ice-cream
- 8) Shahi kulfi



**WTP plant**

## 2.1 Water treatment plant:

Water treatment is any process that improves the quality of water to make it more acceptable for a specific end-use. The end use may be drinking, industrial water supply, irrigation, river flow maintenance, water recreation or many other uses, including being safely returned to the environment. Water treatment removes contaminants and undesirable components, or reduces their concentration so that the water becomes fit for its desired end-use. This treatment is crucial to human health and allows humans to benefit from both drinking and irrigation use.

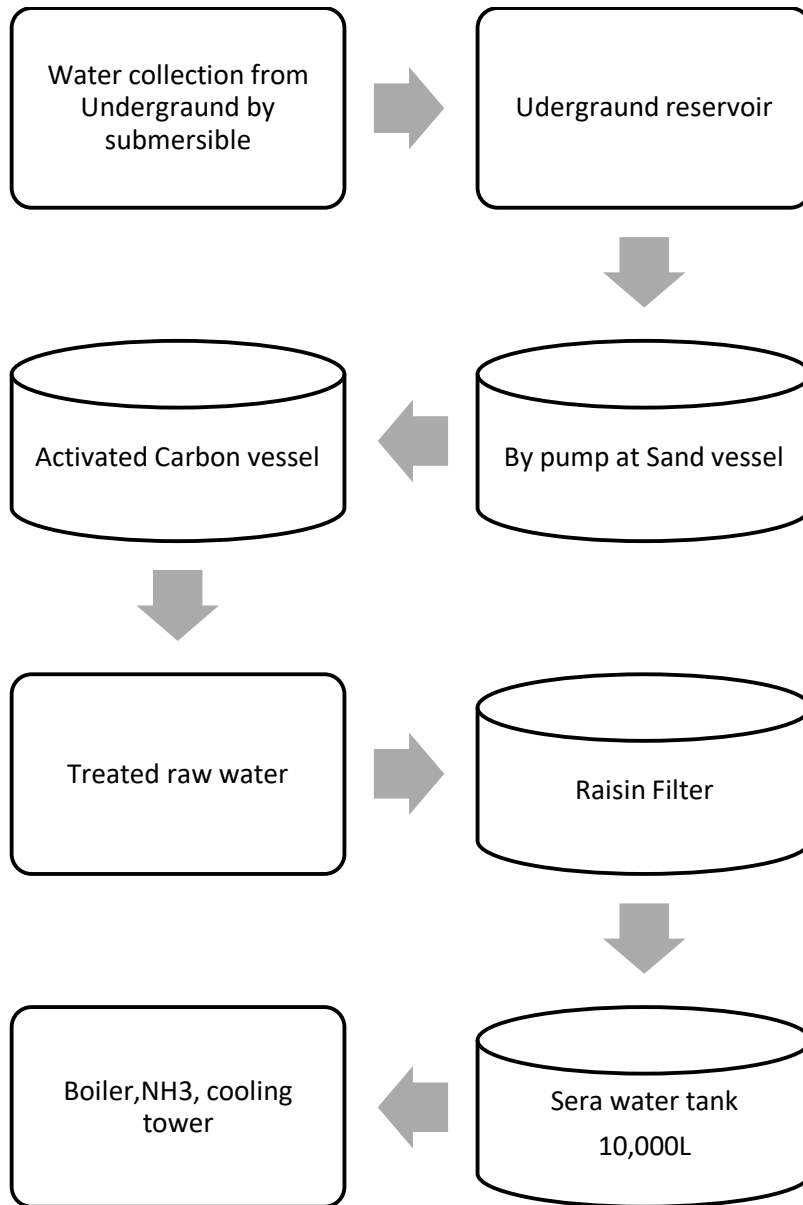
## 2.2 Process of WTP:-

At first collect the raw water by centrifugal moto .then A reserb tank filled by raw water.In this proecess 3 fillter using for water process.First filter is brime media and Second filter is carbone and thrid fillter is resins.

## 2.3 Uses of WTP

- ✓ For labarity test
- ✓ To make soft water and hard water
- ✓ Equiments cleaning

## 2.4 Schemetic diagram of WTP:



**ETP plant**

### **3.1 Definition of ETP plant:**

The Effluent Treatment Plant (ETP) located inside the factory is the unique exemplar among the food processing industry. Most of the food processing industry throw away their waste waters in the drainage system with or without any kind of physical, chemical and microbiological treatment. But Lovello Ice cream and Milk Unit has taken the futuristic and responsible step to stand beside the conservation of the environment and practicing the concept of recycling water to lessen the pressure on both ground and surface water. The plant is operated by (2) operators under the supervision of the Quality Assurance Dept.

### **3.2 Purpose of ETP plant:**

The production department uses lots of water in the production floor for general cleaning purpose and especially for Clean in Place (CIP) procedure. The (CIP) procedure, multiple types of chemicals such as Hydrogen peroxide ( $H_2O_2$ ) Sodium Hydroxide (NaOH), Nitric Acid ( $HNO_3$ ) and heated water. These chemical mixed water carries out a large amount of fats and greases from the production floor. These fats and greases are removed from the waste water, filtered, microbiologically and chemically treated to make the water suitable for washing of the vehicles and gardening, to decrease the use of ground and surface water, as well as eliminating the chance of contamination. Most of the industries produce wastewater also known as effluent, as a bi-product of their production process. The effluent/wastewater generated varies so greatly in both flow and pollution strength and consists of several contaminants/pollutants, which can be removed with the help of an effluent treatment plant (ETP).

Food industry requires greater amount of water for processing food product. Wastewater discharged from food and beverage industries vary with strength and characteristics. Effluent from food industry consists of high concentrations of suspended solids, total solids, BOD (Biological Oxygen Demand), COD (Chemical Oxygen Demand), dissolved oxygen, oil and grease, fats, sugar, color, preservatives, and usually nutrients such as nitrogen, ammonia and phosphate etc

### 3.3 Advantage and Important of ETP plant:

Water is one of the most important natural resource that is one of the basic necessities in human life. Water is used for a number of purposes, but it is used mainly for drinking. Apart from household uses, it is also use for several industrial purposes. Though water is found in abundant in nature, yet most of it is contaminated, and therefore it needs to be treated so that it can be recycled.

The treatment of contaminated water can be done with the **ETP**, it is an **effluent treatment plant** that cleans the effluents form the industry, polluted water from rivers, lakes etc so that it can be recycled for further use. In this way, water is recycled and conserved. It is technically proven that any kind of pollutant can be removed from such effluent by the use of the water treatment plant. Again the treatment of these effluents is treated depending on the type of industries.

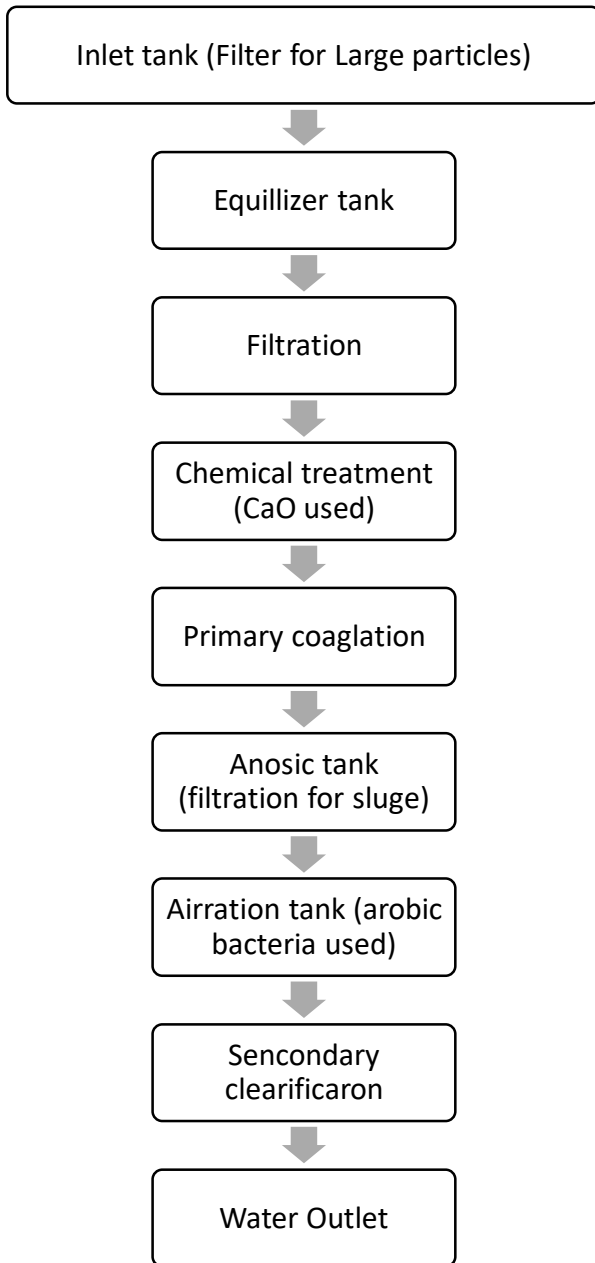
The ETP has a great role to play in discharging the contaminated and polluted water before releasing it back to the environment. Without these water treatment plants, we would not be able to get clean water for domestic uses. They are mainly use:

- ✓ Metal finishing / automobile / steel mills / Electroplating
- ✓ Dying /Bleaching processes/tanneries/laundry-Textile Industry
- ✓ Acid-Alkali treatment- chemical industry/recovery of chemical
- ✓ Paper & pulp Industry, Leather Industry
- ✓ Oily waste water- automobile /refineries
- ✓ Pharmaceutical & food industry
- ✓ Conventional ETP
- ✓ Thermal power / Rubber industry / Fertilizers
- ✓ Dairy Industry

### 3.4 Test for ETP Plant:

1. Measuring the amount of “Dissolved Oxygen” (DO) of sample
2. Measuring the amount of “Total Dissolved Solid” (TDS) of sample.
3. Total Soluble Substance” (TSS) of sample
4. Biological Oxygen Demand” (BOD) of sample.
5. Chemical Oxygen Demand” (COD) of sample

### 3.5 Schematic diagram of ETP plant:-



- 1. pH- 6-9[ Standard for 7-8 pH is better]
- 2. DO-4.5-8
- 3. COD-200ppm



## Chapter No-4



### Clean in Place (CIP)



#### 4.1 Definition of CIP:

“**Clean-In-Place**” (CIP) System is an automated method of **cleaning** the interior surfaces of pipes, tanks, lines, process equipment, and associated fittings without requiring the operator to disassemble the equipment. ”

#### 4.2 Purpose of CIP:

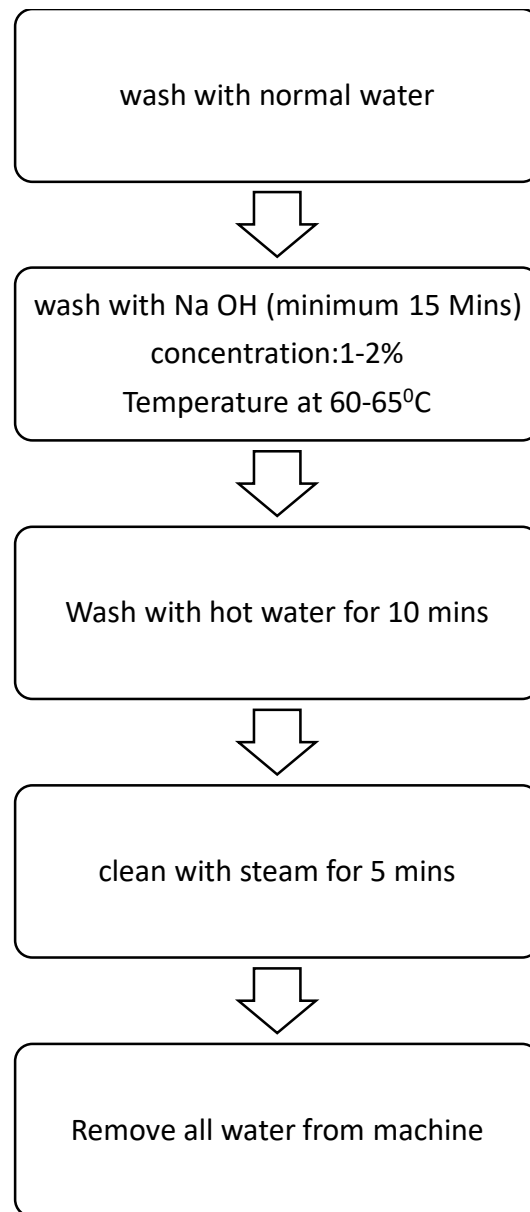
- Provide faster cleaning, less labor intensive and more repeatable and processes less of chemical exposure risk to people.
- Perform cleaning for two times a day before and after production

#### 4.3 Chemicals

- Sodium Hydroxide (NaOH) solution
- Nitric Acid (HNO<sub>3</sub>) Solution
- Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) solution

#### 4.5 CIP process:

CIP process is very important for machinery or other Equipment cleaning. The following process of CIP below



**Figure 4.5.1: General flow diagram of CIP process**

## Chapter No-5

### Distribution Department

#### 5.1 Sales and Distribution Department:

Distribution Department is the most important department which takes the huge responsibility to transport the finished products in its peak condition in controlled and modified temperature and environment. Otherwise all the efforts of the rest of the departments will go to vain. The distribution department is placed beside the entry of the factory and the pallet washing room.

There are 11 points of dispatch in the Bangladesh. Three (3) of them are in Dhaka city and eight (8) of them are outside of the Dhaka. For distribution convenience the Whole Bangladesh is divided into some certain territories or regions. A Regional Sales Manager (RSM) is responsible for the sales and activities of that certain area.

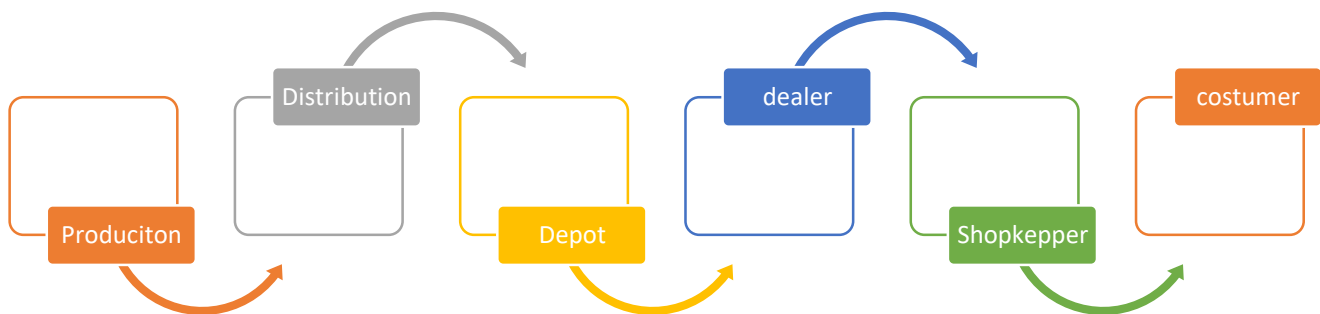
During the peak or High demanding Months, the market places huge demand. The demanding months are April, May, June, August and September. January, February, March, November and December are the low demanding months.

The Distribution runs with the help of the Transportation Unit. The vehicles produced by the transportation department carry the finished products in the certain temperature to the dealers. Dealers are the biggest receivers of the products. The facilities and freezers are built and supplied to the dealers in a sharing concept. The company cost of building a facility and cost of the freezers are carried by the company as well as the dealer. The company takes a certain amount of payment from the dealer to build the storing facility and cost of the freezers. Then the payment is deducted from the business profits.

## 5.2 Name of dipot:

1. Tejgaon
2. Uttra
3. Jatrabari
4. Comillia
5. Sylhet
6. Foridpur
7. Barisal
8. Khulna
9. Bogra
10. Rangpur

## 5.3 Distribution chain:



**Figure 5.3.1: Flow chart of Distribution chain**

## 5.4 Storage:

Lovello Ice cream has biggest floors for the General Store department for receiving, storing and supplying the incoming raw materials and other associated ingredient with the finished product. The subunits of the General Store departments are,

The raw materials, ingredient storage and packaging materials is divided into two floors for two types because of the needed storage temperature to store them in the peak condition before using. In the refrigerated storage, the temperature s kept below or at  $10^{\circ}\text{C}$  for keeping the temperature sensitive raw materials such as different kinds of nuts, flavors, colors, essences etc.

## General Storage:



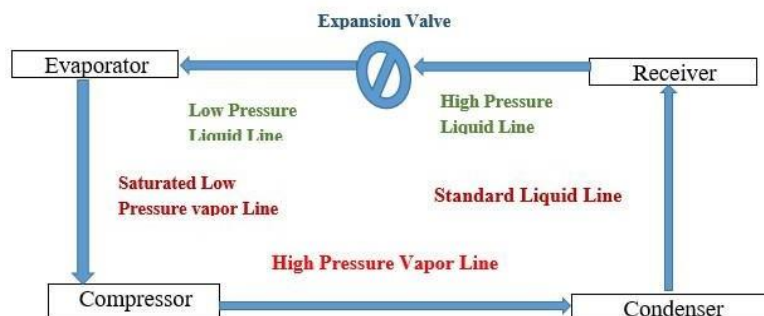
## 5.5 Ammonia plant:

Lovello ice cream has an own ammonia plant .The major equipment's of ammonia plant are

- Compressor
- Condenser
- Shiffun trap
- High pressure receiver
- Low pressure receiver
- Liquid pump
- Evaporator

### Refrigeration

Freon and  $\text{NH}_3$  are used as refrigerant in Refrigeration Cycle



Conclusions

**6.1 Conclusions:**

lovello Ice Cream factory is a new Ice Cream Industry in Bangladesh. lovello Ice Cream Factory daily average different types of Ice Cream Production about 45,000 Litter. This Internship Report help us from many side about Ice Cream. Like- Raw material collection, Quality control, Manufacturing process and finished product quality checkup of Ice Cream and Ice Cream Products.

This study shows how to maintain the hygienic production and quality control of milk & Ice cream. The internship program has covered both hygienic production and quality control of dairy product. To ensuring the quality and hygienic production of milk & ice cream has been taken different types of test parameter, including Physical, Chemical, and Microbial Parameter.

Physical test (Organolapic, specific gravity, homogenization, pasteurization, pH, overrun) Chemical test (soda, hydrogen pre oxide, formalin, protein, fat, lactose, iodine specification, acid value, arsenic, total calcium, CIP, acidity) above these test is done in implementing routinely daily procedure in the lab. Microbiological test is very important especially for final product. The microbiological test is also carried out such as Total Plate Count (TPC), Coliform Count (CC), Yeast Mold count (Fungi) and Salmonella.

Report also represent how to produce Ice Cream as Industrial Level.