

INDUSTRIAL VISIT
AT



AMUL DAIRY: KANER, VIRAR EAST
A SYNOPSIS PREPARED AND SUBMITTED BY:

BE ELECTRICAL

VII SEMESTER



UNDER THE GUIDANCE OF:

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DEGREE IN

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INDEX

SR NO.	TOPIC NAME	Page No.
1.	Introduction to Amul dairy	1
2.	History of Amul	1
3.	Product range	2
4.	Production department	3
5.	Summary	5

Department of Electrical Engineering of Viva Institute of Technology Organized an Industrial Visit on the date of 29th July 2022 for 70 students in VII semester at Amul Dairy Anand to understand the actual industrial application of Subject Refrigeration and Air conditioning which is offered in VII Semester by Mumbai University.

INTRODUCTION

AMUL's unique invention and rapid expansion across Gujarat inspired political leaders to replicate the successful business model in other parts of India. Thus, Amul Dairy became instrumental in bringing about the White Revolution in India, also called the Operation Flood. Amul's business model also played a key role in transforming India from a milk-deficient country to one of the largest producers of milk in the world.

Apart from a state-of-the-art factory, Amul headquarters in Anand houses a dairy museum and some Amul parlors. The dairy museum is the first stop for visitors where a guide runs you through the history of Amul in the backdrop of visually attractive collage walls. His explanation lasts no more than 10 minutes and the experience is very ordinary for milk co-operative with such rich history and a victorious tale to tell.

HISTORY OF AMUL DAIRY

Amul is an Indian dairy co-operative, based at Anand in the state of Gujarat, India. Formed in 1946, it is a brand managed by a co-operative body, the Gujarat

Co-operative Milk Marketing Federation Ltd. (GCMMF), which today is jointly owned by 3.6 million milk producers in Gujarat.

The white revolution was spearheaded by Tribhuvandas Patel under the guidance of Sardar Patel. As a result, Kaira District Milk Union Limited was born in 1946. Tribhuvandas became the founding chairman of the organization which he led till the last day of his life. He hired Dr. Kurien three years after the white revolution. He convinced Dr. Kurien to stay and help with the mission rest was history in the dairying industry.

Amul spurred India's White Revolution, which made the country the world's largest producer of milk and milk products. In the process, Amul became the largest food brand in India and has ventured into markets overseas. Dr. Vergese Kurien founder-chairman of the GCMMF for more than 30 years (1973–2006), is credited with the success of Amul.

DETAILS OF VISIT

PRODUCT RANGE:-

- Amul's product range includes Milk powder, Milk, Butter, Ghee, Cheese, Masti Dahi, Yogurt, Buttermilk, Chocolate, ice cream, cream, Shrikhand, paneer, Gulab Jamuns, flavored milk, Basundi, Amul pro brand, and others. Amul pro is a recently launched brown beverage just like Bournvita and Horlicks offering whey protein, Dhai and essential nutrients.

- Amul launched India's first sports drink, stamina, which competes with coca cola's powered and PepsiCo's Gatorade. Amul offers mithai mate which competes with milkmaid by nestle by offering more fat at a lower price.
- Amul introduced Kool Koko, a chocolate milk brand extending its product offering in the milk products segment. Other Amul brands are Amul Kool, a low-calorie thirst-quenching drink; masti buttermilk; and Kool cafe, ready-to-drink coffee. Amul's Ice-creams are made from milk fat and thus are ice-creams in the real sense of the word, while many brands in India sell frozen desserts made from vegetable fat.
- Amul's sugar-free pro-biotic ice-cream won the international dairy federation marketing award for 2007. Anand plant produces milk powder and butter.

PRODUCTION DEPARTMENT:-

MILK POWDER Processing Of Milk Powder Contains Classifier Unit, Pasteurizer Unit, Separator, And Powder Packing. Classifier Unit separates solid impurities from flow of milk. Before that milk was kept at low temperature in tank. Pasteurizer Unit performs pasteurizing process continuously on milk so that milk was disinfected from bacteria.

A steam Boiler passes heat to the milk and water content was evaporated from milk. After that Separator separates powder and stores to tank.

Powder packing Unit packs that powder into Printed packing boxes
Butter was made from cream made continuously from machine. Salt
as Preservatives and color as additives are added to the butter
continuously. After that, it was packed on an automatically Packing
Machine. Capacity of the butter plant is 25 tons per day.

KNOWLEDGE OF RAC SUBJECT: We see at industry much
equipment, it related to RAC Subject. → Pasteurized Milk Storage
Tank- 10 Nos each have capacity of 35729 liters. → Pasteurizer – 3
nos each have capacity of 1700 liters → Separator – 2 nos → Butter
milk tanks & Can washer– 5 nos → Weight balance tank & collection
tank

→ Butter milk heating equipment in Amul 40% electricity consumed
by refrigeration plant so refrigeration plant very important unit In
Amul, this refrigeration plant work on base of vapor compression
refrigeration system (VCRS) and refrigerant used for chilled the milk
in required temperature. Refrigeration system has capacity to produce
500 TR of refrigerants for milk processing at 20°C and 200 TR for Ice
Cream at -400°C and the system is fully automated without Ice Bank
Tanks in order to provide instant cooling to save energy. The entire
cold storage area has been equipped with Ammonia detection system
as a measure of safety and integrated with Centralized Control and
Monitoring system. Oxygen sensors have also been installed and
integrated with automatic fire extinguishing system, indicating
location of fire on the Central Monitoring System. In refrigeration

there are three diff. Sections → -2 deg. C. System – Used for chilling the water → -10 deg. C. System – Used for maintain for ice silo. → -30 deg. C. System – used for cold storage and deep freezer The vapor absorption machine (VAM), mainly working equipment is used screw compressor for refrigerant and circulate hole plat and also installed recently for variable load pattern in Amul Dairy, is the first major successful waste heat-run cooling technology in the dairy sector, according to a release here. Unlike conventional power-run refrigerated chillers, the vapor absorption chillers in VAM are recovering waste heat from flue gases of gas engine at the dairy plant. In the process, the VAM is generating refrigeration used as a cooling agent to produce 3.5°c chilled water for processing of milk. The vapor absorption cooling technology has emerged as an economic and eco-friendly solution to the ever-increasing power cost, declining power availability and increasing emission of pollutants, the release added.





Milk packing stage



Milk powder processing plant

SUMMARY OF VISIT:

We arrived at AMUL at 10:00 AM. After that we gathered at the front gate and visited various sections of AMUL. We started with the animation movie for showing glimpse of Amul dairy from its beginning at Anand district at auditorium of dairy memorial. It also gave introduction of company profile and its present functioning in dairy industry for different milk products. The technical team has explained automation of dairy through presentation containing many functional block diagrams and existing computerized controlled machineries.

After that the students visited 4 different sections of AMUL Dairy Plant:

1) Butter plant, where the students were informed of butter production in AMUL.

2) Milk powder plant, where the students visited manufacturing as well as packing and dispatching functions of AMUL

3) Refrigeration Unit, where student were getting knowledge about refrigeration system.

4) Milk process unit, where the students were informed of pasteurized milk production Process

In Overall observed Amul factory where one can see machineries at work and how Amul products are processed and packed. On the way to the factory, you are captivated by the sight of huge milk silo units which quickly become the best feature of our entire visit We were given ice-cream to eat after the industrial visit ended from Amul

GROUP PHOTO



