



MECHANICAL ENGINEERING DEPARTMENT

A Report on one day Industrial Visit

to

“Surat District Co-operative Milk Producers' Union Ltd (SUMUL)”, Surat

EXECUTIVE SUMMARY

Mechanical Engineering Department of S.N.P.I.T. & R.C., Umrakh arranged an industrial visit to Sumul Dairy, Surat on 8th September 2023 with 33 students of 7th sem Mechanical Engineering. The purpose of the visit was to enhance industrial exposure of the students, get practical knowledge of manufacturing procedures and Refrigeration Process. Our faculty Ankur S. Gamit took part in prestigious industrial visit.

AIM OF INDUSTRIAL VISIT

Industrial visit is considered as one of the tactical methods of teaching. The main reason behind this- it lets student to know things practically through interaction, working methods and employment practices. Moreover, it gives exposure from academic point of view. Main aim of industrial visit is to provide an exposure to students about practical working environment. They also provide students a good opportunity to gain full awareness about industrial practices. Through industrial visit students get awareness about new technologies. Technology development is a main factor, about which a students should have a good knowledge. Visiting different companies actually help students to build a good relationship with those companies. We know building relationship with companies always will always help to gain a good job in future. After visiting an industry students can gain a combined knowledge about both theory and practical. Students will be more concerned about earning a job after having an industrial visit.

ABOUT INDUSTRY

Sumul Dairy, also known as Surat District Co-operative Milk Producers' Union Limited, is a prominent dairy cooperative located in Surat, Gujarat, India. Established in the year 1951, Sumul Dairy has grown to become one of the largest and most well-known dairy cooperatives in the country. It is a part of the larger Gujarat Co-operative Milk Marketing

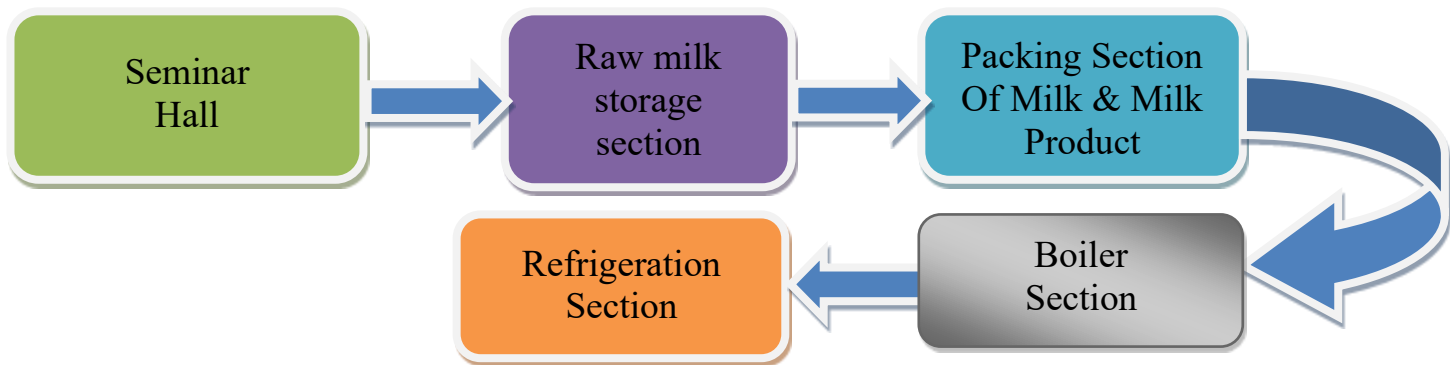


Federation Ltd. (GCMMF), which operates under the brand name "Amul."

Sumul Dairy's success story is emblematic of the cooperative movement in India's dairy sector, which has played a crucial role in transforming the lives of rural dairy farmers and providing consumers with high-quality dairy products. The cooperative's commitment to quality, innovation, and community development has made it a respected and trusted name in the dairy industry.

ACTIVITIES AND OUTCOMES OF THE VISIT

Flow of the Visit



As scheduled, the visit team reached Sumul Dairy at 10:30 am. Warm welcome was received from company representatives and they gave us the brief idea about their work culture. Then Technology description by Engineering team was imparted to us.

Students has visited following departments and understand the processes which undertaken for the manufacturing of various Milk & Milk Product, Also Working of Refrigeration and Boiler

- **Packing Section Of Milk & Milk Products**
- **Boiler Section**
- **Refrigeration Section**

Below is the Process learning from the industrial visit at Sumul Dairy which will impart roots of knowledge in our students of Bachelor of Engineering.

When the visit team reached at the location they found that there are various divisions of the Milk Processing. All division makes the products based on Milk. At the first, our visit starts



by introducing some of the basic process of Milk Process, machines and introduction on the staff of the All section in seminar hall. They told us that they are making processed milk and milk products for daily use.

Around 11:00 A.M. we started our visit in Raw milk Storage section. In this section, there was a Raw milk is receiving from chilling center (40%) & Bulk chilling unit (BCU 60%). Milk is receiving from insulating tankers to dairy. Milk temperature is 5 °C to 6 °C in tanker to silo. Milk is store in silo by helping of different type of pump. There are six silos in sumul dairy. milk is store in silo depend on its fat % . Whatever milk getting from village fat % is 4.5 to 5.5. Capacity of silos is 60,000 liter, 1,00,000 liter and 1,50,000 liter (Rest milk).

After the introduction of Raw milk Storage section we gathered at the Packing Section where different types of Milk & Milk product are packed in different Volume. Deccan Packaging System are used to pack milk in poly of different volume in different pack. It used different components like Dancing Machines, Film drawing motor, vertical and horizontal sealing and Injection piston types mechanism. In Deccan Packing system different instrument and sensors are used To control various parameter and for accurate packing. Solenoid valve is used for control the flow of milk going into injection piston from balance tank. Inductive sensor is used for measure the speed of motor used for sealing. Photocell sensor is used for detect dark mark on film for perfect sealing on desired boundaries and printing. PLC is used for interface motor drives and sensor reading digitally and to set parameters like speed of driving motor according to pouch size and ro set electrode heating by adjusting its supply line.

After the Packing Section we moved towards the Boiler Section where Three Pass Horizontal fire tube package Boiler is available. It is used For Steam production. Steam production rate is 10,000 kg/hr. These Steam Are supplied into Various Section like Process Section, Product Section, Flavored Milk Section, Paneer Section, Dahi Section, Pouch Section, Powder Plant, UHT Plant and Sweet Plant.

After the Boiler Section we gathered at the Refrigeration Section where Vapour Compression Refrigeration System is Used. Refrigeration is required in following place in Sumal dairy Plate chiller, Pasteurizer, Cream tank jacket, Chilled water in Butter churn, packaging in butter packaging room, In pouch cold store room, In dahi cold store room, In



chilling of paneer, In paneer cold store room. Capacity of refrigeration plant is 1250 TR . Per day Average 8 Lakh ltr milk Chilled. Here ammonia is used as a refrigerant. Ammonia leakage by sulphur candle in which a dense white fume shall indicate the leakage of ammonia. Around 4:00 P.M. we almost completed our visit with satisfactory knowledge.

APPRECIATION

The students got the opportunity to learn about different products and process which undergoes the subject Refrigeration And Air-Conditioning. In addition, Machine learning was given by their officials at every corner of their plant. We S.N.P.I.T. & R.C. Mechanical Engineering department team are really thankful to the Sumul Dairy, Surat and their team.

Report prepared by,

Prof. Ankur S. Gamit

(Mechanical Eng. Dept.)

PARTICIPANT DETAILS: ANNEXURE – I

VISIT SCHEDULE: ANNEXURE II

VISIT PHOTOGRAPHS: ANNEXURE



PARTICIPANT DETAILS: ANNEXURE – I

SNPIT&RC, UMRKHX			
MECHANICAL ENGINEERING DEPARTMENT			
STUDENT LIST SEM 7			
Educational Visit : Sumul Dairy, Surat			
Date : 08/09/2023			
Sr. NO.	PEN	Name	SIGN
1	170490119034	JOBANPUTRA DEVARSH ATULBHAI	
2	190490119009	CHAUDHARI STAVANKUMAR DEVSINGBHAI	
3	190490119060	VALVI VIKASBHAI TEJPALBHAI	
4	200490119541	VASAVA DHAVALKUMAR BALVANTBHAI	
5	200490119543	VASAVA DHARMESHKUMAR DINESHBHAI	
6	200490119549	CHONKAR ADARSH HARIDATT	
7	200490119550	CHAUDHARI MALAY BHARATBHAI	
8	200490119564	PATEL TANMAYKUMAR MAHENDRABHAI	
9	200490119569	PATIL SWAPNIL MOHAN	
10	200490119574	MAHYAVANSHI DARSHAN KARSHANBHAI	
11	200490119001	CHAUDHARI SHREYAS M	
12	200490119002	BHAGARIYA RAHUL MADHUBHAI	
13	200490119004	MATHUKIYA PRATIK KAILASHBHAI	
14	200490119005	CHAUDHARI PRIYANSHUBHAI DHANSUKHBHAI	
15	200490119006	TANDEL AKASH KANUBHAI	
16	200490119007	GUPTA VUNAYKUMAR MATABADAL	
17	200490119008	GAMIT AYUBBHAI DILIPBHAI	
18	200490119009	CHAUDHARI ANGELKUMAR VINAYBHAI	
19	200490119010	CHAUDHARI YUSUFKUMAR ARJUNBHAI	
20	200490119011	PARMAR DHAVAL KANTIBHAI	
21	200490119012	TAILOR PARTHKUMAR DHARMESHBHAI	
22	200490119013	CHAUDHARI ASHISH ARJUN	
23	200490119014	GEDIYA OM AJITBHAI	
24	200490119015	MAHLA ANKITBHAI DHIRUBHAI	
25	200490119016	PADVI ANIRUDDH NARESHBHAI	
26	200490119017	NAYKA BHAVINKUMAR GIRISHBHAI	
27	200490119018	ROHIT KARAN SHASHIKANT	



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29	200490119020	CHAUDHARI NILKUMAR JITENDRABHAI	
30	200490119021	PATEL NEELKUMAR NATVARBHAI	
31	200490119022	GANVIT MAYANKBHAI RAJESHBHAI	<i>m.k.g</i>
32	200490119023	VASAVA JAIMINKUMAR NARENDRABHAI	
33	200490119024	RATHAVA DHAVAL RAMANBHAI	
34	200490119025	GAMIT NIRMALBHAI PRAVINBHAI	<i>N.P.</i>
35	200490119026	VASAVA MEHULKUMAR SURESHBHAI	
36	200490119027	PATIL CHETAN LAKHICHAND	
37	200490119028	KHALASI UTSAVBHAI SANJAYBHAI	
38	200490119029	PAWAR NILAYBHAI GANESHBHAI	<i>P. Pawar</i>
39	200490119030	PATEL DISHANG DILIPBHAI	
40	200490119031	PATEL JAINIL GORDHANBHAI	<i>P. Jainil</i>
41	200490119032	GAYAKWAD ROHITBHAI RAJUBHAI	
42	200490119034	RAJPUROHIT KRISHNA DEEPSINGH	
43	200490119036	PATEL ROHITBHAI ALPESHBHAI	<i>R. Patel</i>
44	200490119039	PRAJAPATI UDIT JIGNESHBHAI	
45	200490119040	PATEL SHIVKUMAR PRAKASHCHANDRA	
46	200490119041	GOHIL PIYUSHKUMAR MAHENDRASINH	
47	210490119501	GANDHI SAHIL SIRAJUDDIN	
48	210490119502	GAMIT SHRADDHABEN RAVINDRABHAI	<i>S.R. Gamit</i>
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50	210490119504	GOSWAMI SHIVAM SURESHBHAI	<i>S.S.G</i>
51	210490119505	VISHASH SHUKLA	
52	210490119506	MEHTA VISHAL VINAYKUMAR	<i>V.V.M</i>
53	210490119507	Rathod Vivekkumar Prabhulal	
54	210490119508	PATEL HENIL MUKESHBHAI	<i>Henil</i>
55	210490119509	SHARMA YASH GANGARAMBHAI	<i>Yash</i>
56	210490119510	LAD NIRALKUMAR HARESHBHAI	<i>Lad</i>
57	210490119511	PATEL MAYANKKUMAR NAGARBHAI	<i>Patel</i>
58	210490119512	PANCHOLI AYUSHKUMAR SHAILESHBHAI	
59	210490119513	PATEL KRUNALKUMAR NILESHBHAI	
60	210490119515	Gamit Jaineshkumar Rakeshbhai	
61	210490119516	VALVI ANKUJBHAI AMRATBHAI	<i>Valvi</i>
62	210490119517	RAM VINAY BACHCHARAM	
63	210490119518	NIKAM KRISHNA DAMODAR	



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65	210490119520	MUKULBHAI BHUSARE	<i>[Signature]</i>
66	210490119521	PRANIL ANIL SONAWANE	<i>[Signature]</i>
67	210490119522	THAKOR PRUTHVIRAJ BHUPENDRABHAI	<i>[Signature]</i>
68	210490119523	BIND AADITYA SURESHKUMAR	
69	210490119524	CHAUDHARI PIYUSHKUMAR DINESHBHAI	
70	210490119527	PATIL NILESH AMRUTLAL	<i>[Signature]</i>
71	210490119529	GAMIT JATINBHAI ARVINDBHAI	<i>[Signature]</i>
72	210490119530	PATIL VIPUL BHARAT	<i>[Signature]</i>
73	210490119531	PARMAR DHRUVKUMAR JASHVANTBHAI	
74	210490119533	PATIL DEVIDAS GULABRAO	<i>[Signature]</i>
75	210490119534	SALVE SNEHA RANDHIRBHAI	<i>[Signature]</i>
76	210490119537	PATEL KUMPALKUMAR SURESHBHAI	<i>[Signature]</i>
77	210490119538	PATEL MAYANKBHAI JITENDRABHAI	<i>[Signature]</i>
78	210490119541	PATEL NILAYKUMAR PRAFULBHAI	
79	210490119542	ANSARI AZHARALI SHAUKATALI	
80	210490119543	SURTI PRUTHVIKUMAR NATVARBHAI	<i>[Signature]</i>
81	210490119544	Yelave kalpesh vasant	<i>[Signature]</i>
82	210490119545	CHAUDHARI VIVEKKUMAR NAVINBHAI	
83	210490119546	Bhavsar Mitanshu Narendrabhai	<i>[Signature]</i>
84	210490119548	PATIL SAURAV NIMBA	
85	210490119552	CHAUDHARI PRASHANTKUMAR VALMIKBHAI	<i>[Signature]</i>



ANNEXURE II VISIT SCHEDULE

SCHEDULE OF VISIT	
Date & Time	08 th Sep 2023 & 10:30 AM
Venue	From: SNPIT & RC, UmraKh, Bardoli To: Sumul Dairy, Surat, Gujarat - 395 008, India
Staff Accompanied	Prof. Ankur S. Gamit & Prof. Vipul J. Variya Assistant Professor, Mechanical Engineering Department
Visit Module	Working Factory's Machinery
No. of Benefited Students	33



ANNEXURE III PHOTOGRAPHS

A. VISIT PHOTOS





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