



**G.H.PATEL COLLEGE OF ENGINEERING & TECHNOLOGY**

**Vallabh Vidyanagar**

**Department of Electronics and Communication Engineering**



## **INDUSTRIAL VISIT REPORT**

**NAME OF THE INDUSTRY: AMUL CHEESE PLANT,  
KHATRAJ, GUJARAT**

**DATE: 4<sup>TH</sup>, OCTOBER, 2016**

**VENUE: Jibhaipura - Nadiad, Mehmedabad Road, Near to Anand, Khatraj, Gujarat 382721, India.**

**NO. OF STUDENTS PARTICIPATED: 38 (Third Year EC Students)**

**FACULTY MEMBERS: 03**

Prof. Rohit Parmar

Prof. Mayank Ardesana

Prof. Geetali Saha

One day industry visit to Amul Cheese Plant was organized by Electronics & Communication Engineering Department, GCET for their 5<sup>th</sup> semester students as a part of teaching learning activity. The visit was planned for making observations in desired framework of the course.

Due to prior communications with Amul dairy, Mr. Sudaram Public Relation officer, made special arrangements for students of GCET.

**Amul** is an Indian dairy cooperative, based at Anand in the state of Gujarat, India formed in 1946, it is a brand managed by a cooperative body, the Gujarat Co-operative Milk Marketing Federation Ltd. (GCMMF), which today is jointly owned by 3.6 million milk producers in

Gujarat. 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 Verghese Kurien, founder-chairman of the GCMMF for more than 30 years (1973–2006), is credited with the success of Amul. Amul-operative registered on 14 December 1946 as a response to the exploitation of marginal milk producers by traders or agents of the only existing dairy, the Polson dairy, in the small city distances to deliver milk, which often went sour in summer, to Polson. The prices of milk were arbitrarily determined. Moreover, the government had given monopoly rights to Polson to collect milk from mikka and supply it to Bombay city.

Angered by the unfair trade practices, the farmers of Kaira approached *Sardar* Vallabhbhai Patel under the leadership of local farmer leader Tribhuvandas K. Patel. He advised them to form a cooperative and supply milk directly to the Bombay Milk Scheme instead of Polson (who did the same but gave them low prices). He sent Morarji Desai to organise the farmers. In 1946, the milk farmers of the area went on a strike which led to the setting up of the cooperative to collect and process milk. Milk collection was decentralized, as most producers were marginal farmers who could deliver, at most, 1–2 litres of milk per day. Cooperatives were formed for each village, too.

The cooperative was further developed and managed by Dr. Verghese Kurien with H.M. Dalaya. Dalaya's innovation of making skim milk powder from buffalo milk (for the first time in the world) and a little later, with Kurien's help, making it on a commercial scale, led to the first modern dairy of the cooperative at Anand, which would compete against established players in the market. Kurien's brother-in-law K.M. Philip sensitized Kurien to the needs of attending to the finer points of marketing, including the creation and popularization of a brand. This led to the search for an attractive brand name. In a brainstorming session, a chemist who worked in the dairy laboratory suggested Amul, which came from the Sanskrit word "amulya", which means "priceless" and "denoted and symbolised the pride of swadeshi production."

The trio's (T. K. Patel, Kurien and Dalaya's) success at the cooperative's dairy soon spread to Anand's neighbourhood in Gujarat. Within a short span, five unions in other districts – Mehsana, Banaskantha, Baroda, Sabarkantha and Surat – were set up. To combine forces and expand the market while saving on advertising and avoid competing against each other, the

GCMMF, an apex marketing body of these district cooperatives, was set up in 1973. The Kaira Union, which had the brand name Amul with it since 1955, transferred it to GCMMF.

In 1999, it was awarded the "Best of all" Rajiv Gandhi National Quality Award.

Adding to the success, Dr. Madan Mohan Kashyap (faculty Agricultural and Engineering Department, Punjab Agricultural University Ludhiana), Dr. Bondurant (visiting faculty) and Dr Feryll (former student of Dr Verghese Kurien), visited the Amul factory at Anand as a research team headed by Dr. Bheemsen & Shivdayal Pathak (ex-director of the Sardar Patel Renewable Energy Research Institute) in the 1960s. A milk pasteurization system at the Research Centre of Punjab Agricultural University (PAU) Ludhiana was then formed under the guidance of Kashyap. The technological developments at Amul have subsequently spread to other parts of India.

Amul's product range includes milk powders, milk, butter, ghee, cheese, dahi, yoghurt, buttermilk, chocolate, ice cream, cream, shrikhand, paneer, gulab jamuns, flavoured milk, basundi and others. Amul PRO is a recently launched brown beverage. In January 2006, Amul launched India's first sports drink, Stamina.

#### **PROCESS OF CHEESE MAKING:**

- Once a cow has a calf, she is ready to provide milk. Our farmers' cows are milked two to three times a day. Each cow, at each milking, can give up to four gallons of milk. The milk travels right from the cow through a stainless steel pipe into a cooler where it is kept clean and cold. Burnett Dairy's milk truck drivers visit our area farms and haul their milk back to our cheese plant.
- Before the cheesemaking process begins, incoming milk is first tested for quality and purity. It takes approximately 10 pounds of milk to make one pound of cheese. Burnett Dairy brings in just under 1 million pounds of milk per day from a 60 mile radius around our plant.
- Next, the milk is pasteurized to ensure product safety and uniformity. Starter cultures, or good bacteria, are added to start the cheesemaking process. They help determine the ultimate flavor and texture of the cheese. Next, a milk-clotting enzyme called rennet is added to coagulate the milk, forming a custard-like mass.
- The process of separating liquid from milk solids.

- Our award-winning pasta filata cheeses, Mozzarella and Provolone, are heated and stretched to authentic Italian standards. These varieties are sold in block, shred, dice and our World Champion string cheese.
- As the final step, our cheese is packaged and sold to retail and foodservice markets across the United States. Foodies, chefs, and families enjoy our cheeses for everyday use and for entertaining.

## **Visit**

There were 38 Students in total who took fond interest and opted for the visit. Accordingly, the registrations were done for form filling by students and Gate passes were obtained individually.

The necessary information & schedule related to the trip was shared to students. The Visit was scheduled as follows:

- Gathering at GCET Foyer: 9:30 AM
- Journey Start time: 10:00 AM
- Visit Time: 10:00 AM to 02:00 PM
- Lunch: 02:00 PM to 03:00 PM

As per planned schedule, the students started gathering at GCET Foyer at 09:30 AM. Thereby necessary instructions were given to students. After which, Students were queued and asked to board the GCET bus and start occupying seats.

Upon Checking the total count and required documents, the bus journey was initiated towards Amul Cheese Plant.

The Journey was made enjoyable and entertaining by students as they begun to sing songs and play group games. There was active participation shown by most of the students.

Upon reaching, students were queued and guided to the Registration Desk by the faculty coordinators and student volunteers. Sooner, the registration process was initiated and students were granted entry to the premises.

While the show was rolling, the students were divided into two batches and were accordingly directed to proceed towards the Visit in an order along with a Faculty coordinator.

The visit comprised of Different sections of Cheese Plant that were whey powder, Packaging Plant of whey Powder, Cheese Manufacturing Plant and where house,

Each division of Cheese Plant showcased:

- live processing of milk product,
- models of high-tech instruments and,
- Informative posters depicting some of the research activities being pursued at Amul Cheese Plant and which are of common interest.

We are thankful to the institute & company management for providing the all facilities and generous support.

## PHOTOGRAPHS



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