

## Award for TPM Excellent, Category B

### Branch of Vietnam Dairy Products Joint Stock Company (Vinamilk) - Vietnam Dairy Factory

#### 1 Organization profile:

Formally known as Southern Coffee Dairy Company, the company was established on August 20, 1976, based on three dairy factories from the old regime. The company was a 100% State-owned enterprise. On November 2003, the company listed IPO and changed its name to Vietnam Dairy Products JSC (Vinamilk).

The main businesses are the development, production, and sale of dairy products. Vinamilk has expanded to 46 subordinate units (Figure 1-1), including one headquarter, 5 branches, 16 factories (14 in Vietnam and 2 overseas), 13 dairy farms, 2 warehouses, 8 subsidiaries, and affiliates in Vietnam and over the world.

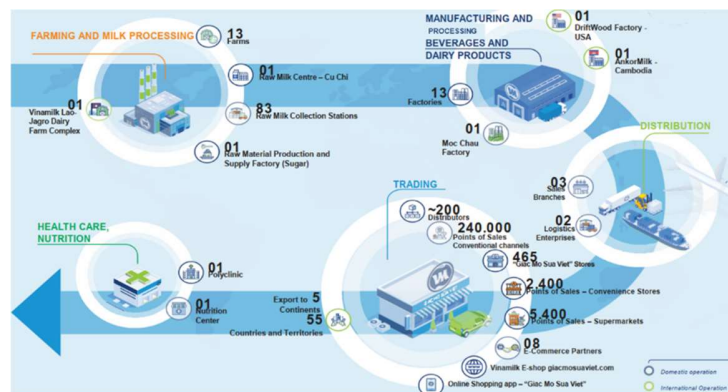


Figure 1-1 Vinamilk's subordinate units

Vinamilk has developed more than 250 SKUs, varying from yogurt, fresh yogurt, fresh milk, UHT milk, powder milk, cheese, ice cream, condensed milk, and fruit juice.

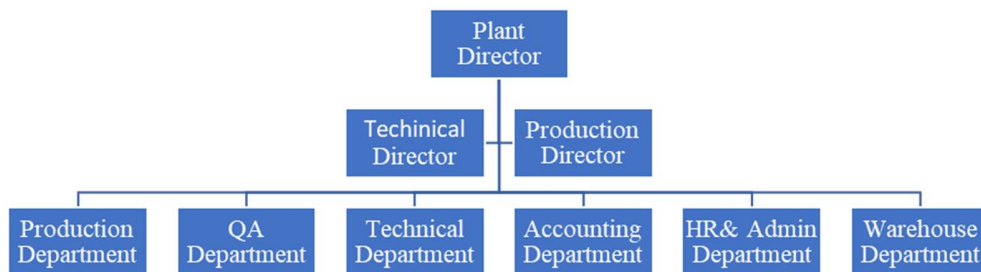
Inaugurated in 2013, Mega factory is the biggest and the most advanced plant of all 13 plants in Vinamilk. The plant is dedicated to the production of various UHT-drinking dairy products such as UHT liquid milk, soya milk, ready-to-drink formula drinks, and Juicy beverage.

The plant is equipped with Tetra Plant Master technology, which enables the plant to autonomously monitor, manage, and continuously control the production process and product quality.

The plant has been growing since 2013, with business performance constantly improving.

The capacity at that time was 400 million liters per year. With significant plant improvement, as of now, the plant's capacity has reached 800 million liters of milk production per year. The shop floor is divided into four areas: processing, filling, DE, and smart warehouse. The processing area consists of 4 pasteurizer lines, and 9 UHT lines. The filling areas include 3 rooms: A1 with 16 machines, A2 with 6 machines, and A3 with 9 machines. DE area consists of 31 DE lines.

Mega Plant has one Plant Director, one Technical Director, one Production Director, and six departments. There are 474 employees. The organizational structure is as below:



*Figure 1-2 Mega plant Organization Structure*

The plant consists of 474 employees, 57% work in Production Department, and 50% have been working for more than 5 years. Most of the employees are under 40-year-olds. Furthermore, 57% of employees have college's degree or above.

## **2 Milestone on the Journey of Manufacturing Excellent:**

### **2.1 External factor:**

Firstly, sales of various drinking milk products are estimated to be increased, to be precise the volume growth of all products will be increased by at least 50% (Figure 2-1).

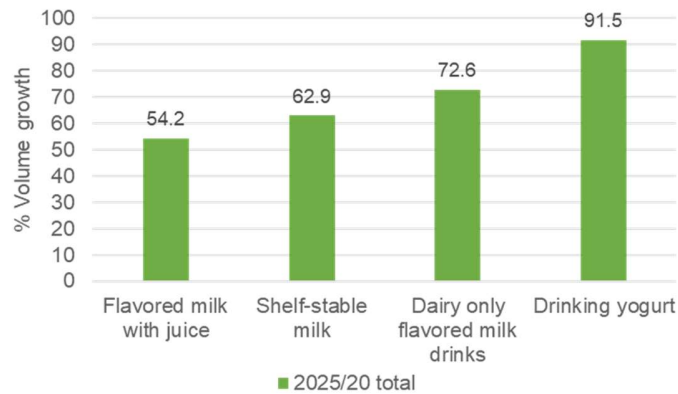


Figure 2-1 Forecast sales of various UHT drinking dairy products

Secondly, Vinamilk is struggling to claim a bigger share of the market as its growth potential diminishes in the face of stiff competition from fast-growing rivals (Figure 2-2). From 2016 to 2018, Vinamilk's shares increased by 1.8%, however, from 2019 to 2020, the shares increase was only 0.2%. On the other hand, Vietnamese consumers are shifting its consumption toward higher quality labeled milk with competitive price.

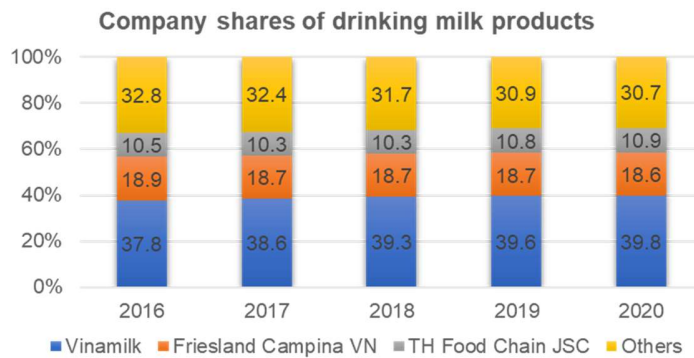


Figure 2-2 Company shares of drinking milk products

From 2016 to 2021, skim milk powder price increased by 55%, and labor cost increased by 40% (Figure 2-3). Vinamilk also faces challenges related to transportation costs, which rose 20% domestically and 500% globally in 2021 due to the COVID pandemic.

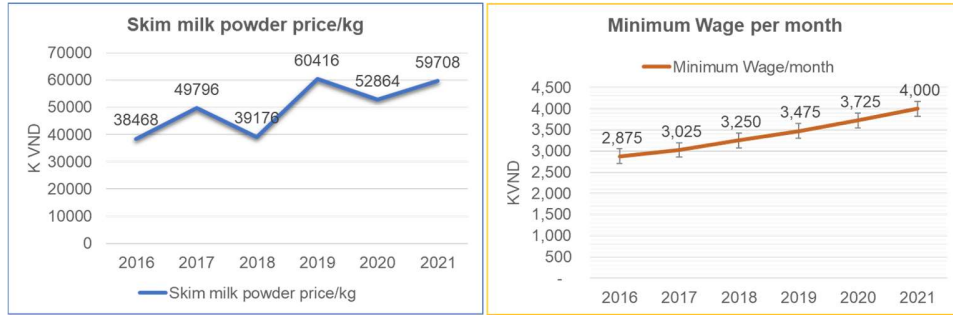


Figure 2-3 Raise in skim milk powder and minimum wage per month

## 2.2 Internal challenges:

From the 2013-2018 period, due to the 65% increase in volume, the plant decided to invest in 16 new filling lines. The expected production capacity was expected to reach 800 million liters per year after the investment.

From the 2019-2022 period, due to the unforeseen COVID pandemic, production volume decreased by 17% leading to shut down of 8 filling lines. And in 2022, 2 filling lines were transferred to another plant in Cambodia.

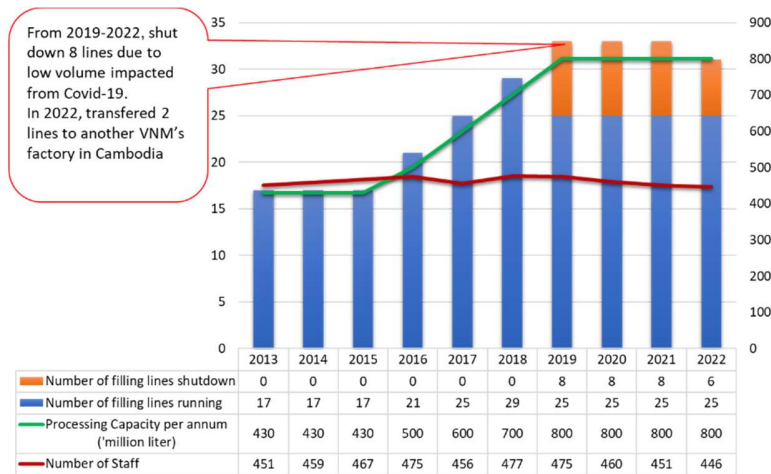


Figure 2-4 Plant capacity throughout the years

## 2.3 An upgrade of management system:

From the external and internal challenges, the plant has realized that an upgraded management system is required to maintain sustainable development. Therefore, the TPM system have been implemented in 2019 to improve management and to gain a competitive edge for the plant.

## 2.4 Mega's TPM timelines:

To achieve plant strategy and vision, the TPM project was introduced in September 2019. TPM overview training was conducted on October 19. And on December 2019, total cleaning was performed with their presence of the management level. After 6 months of preparation and training, the TPM Kick-off Meeting was held on March 2020.

Mega plant received Greenlight Audit in July 2022; and Health-check Audit on October 2022 by JiPM expert. The evaluations were satisfactory for both audits.

On 2023 Mega Plant received JIPM first audit in Jun & final audit in Dec.

A brief timeline of TPM activities in Mega plant are shown in (Figure 2-5):

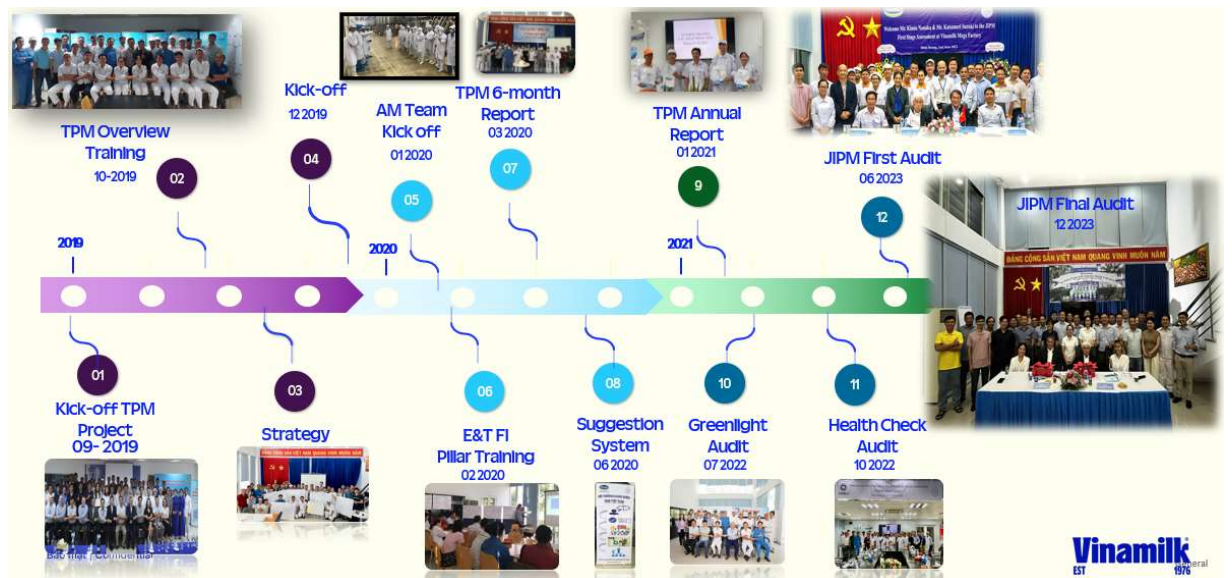


Figure 2-5 Mega's TPM timeline

## 3 Benefits achieved:

### 3.1 Tangible results:

With the implementation of TPM, the plant performance has significantly improved in many aspects. The plant has successfully tackled many unforeseen issues, in terms of energy/raw material/process improvement, thus saving the plant over 113 billion VND. Secondly, the overall efficiency of machines has greatly improved, as shown in a rise in OEE performance in Line A1 and 2A for 3 years. Another astounding achievement is the quality aspect, as the plant has maintained zero loss in defective products. Another zero loss is the safety in the plant, this year the plant has not recorded any safety-related accidents, and the safety index has been maintained for 4 consecutive years.

### 3.2 Intangible results:

Mindsets from managers to employees change, and now all focus on one shared goal. The overall skill of operators/technicians increases significantly; thus they are more responsible with their machines. More and more released training/OPLs/SOPs help create a learning environment in the factory, which enables a more active learning curve for all employees. Moreover, the collaboration between departments becomes smooth due to activities such as Tags/DMS/SEA/Kaizen improvement teams.

With the establishment of a recognition system, employees are recognized for their contributions to the plant. This creates an enthusiastic atmosphere; employees are engaged more in different activities, especially in improvement activities, and employee satisfaction drastically increased.

Especially, operators are active and care about the machines more than ever. This leads to numerous suggestions and improvements to machines/ procedures, which in turn improve work performance and reduce unnecessary costs.

### 3.3 Benefits achieved:

Below are few benefits achieved of PQCDSME:

Category	Index (Calculation Formula)	Unit	Kick off/TPM Started (or last time awarded)	Actual Status 2023
S	# of accidents off work	#/year	NA (*)	0
S	# of accidents w/o off work	#/year	NA (*)	0
S	Safety index (LTAR)	# per 1 million hours	NA (*)	0
S	Total recordable accident rate (TRAR)	# per 1 million hours	NA (*)	0
Q	Defective products/batch	batch/year	0	0
Q/D	Missed products due to subjective factors	%	0%	0%
Q	% of defective products reworked in-line	%	NA (*)	0.05%
Q	Quality Index	%	98.31%	99.95%
P	OEE	%	70%	79.95%
C	Packaging materials Waste	%	NA (*)	-0.78
C	Milk Waste	%	NA (*)	-0.47
C	Energy cost	VND/pack	53.07	51.1
E	Waste/ tons of products	kg/ ton product	NA (*)	3.1

E	% Green energy	%	NA (*)	57%
M	# of employee suggestions	#/year	NA (*)	100
M	# of employees participating in teams	%	NA (*)	100%
M	Employee satisfaction	Score %	63.40%	85%
M	# of internal trainers developed	#/year	NA (*)	15

(\*): The KPI result is not available yet in 2019

#### **4 Key of our manufacturing excellence:**

After implementing TPM for 3 years, the board of directors is aware of the importance of TPM in daily activities. In term of Vinamilk, the headquarter will form a TPM department and implement TPM in other plants in Vinamilk. This surely will create a sharing forum between factories and headquarter to learn from each other, thus more suggestions are implemented.

Another goal is to set up and standardize learning documents, and in the future, a learning library including TPM activities/tools. With this implementation, new employees will take less time to learn their roles and can apply TPM tools in a such short time.

Finally, the plant will sustain the current pillars and implement the last two pillars into TPM activities, to strive for World Class Manufacturing.

#### **5 Contact:**

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