

## **Brief introduction to Yili Freezing Food (Meizhou) Co., Ltd.**

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**Address: High-tech Industrial Park, Shejiang Town, Meixian District, Meizhou, Guangdong, 514779**

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# Chapter 1 Profile of the company & factory

## 1.1 Company profile

Yili Group is the largest dairy product enterprise with the most complete product lines in China. In 2021, the company achieved the gross operating income of 110.6 billion yuan, ranking first in the Asian dairy industry and Top 5 in the global dairy industry. (See Diagram 1.1 , 1.2)



Diagram 1.1





Diagram 1.2

## 1.2 Overview of the factory

### 1.2.1 Brief history of the factory

Located in the northeastern region of Guangdong, China, Meizhou Yili covers an area of 15,800km<sup>2</sup>, with a population of nearly 5.44 million. The project has a total investment of 540 million yuan and covers an area of 142 acres.

The development history is as follows

In 2013, the foundation of the workshop was laid.

In 2014, the workshop was put into production.

In 2018, the TPM concept and tools were partially imported.

In 2019, the HACCP system certification was passed.

In 2019, the TPM was officially imported.

In 2021, the safety production excellence award of Yili Group was obtained.

### 1.2.2 Factory process

The main production process of the factory is: material receiving → batching → pasteurization/homogenization → aging → congelation/filling → freezing/coating → packaging → boxing → storage/shipment.

#### ■ Material receiving

Deliver qualified raw and auxiliary materials to the factory, and put them into the warehouse for temporary storage for use in the production process after passing internal inspection

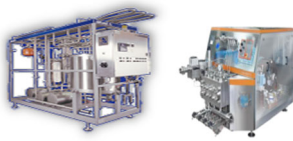


## ■ Excipient



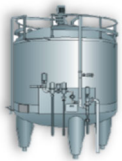
According to the requirements of the recipe, mix the sugar, milk powder, water, grease and other materials added in sequence, with a temperature of 60-65°C in the mixing process.

## ■ Pasteurization/homogenization



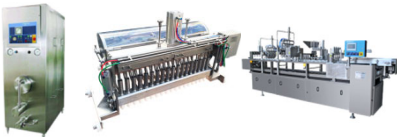
Shear the mixed large particles through the pressure to make the liquid more delicate, sterilize the liquid through high temperature, and cool down the temperature for use; homogenization pressure: 100-160bar

## ■ Aging



Further emulsify the fat, increase the viscosity and foaminess of the liquid, shorten the congelation time, make the product thick, and improve the organization of ice cream; temperature of 2-10°C

## ■ Congelation/filling



Continuously cool and scrape the liquid by the congelation cylinder and scraper, produce the semi-solid liquid with high viscosity, and fill it into the mold using the filling trolley

## ■ Freezing/coating

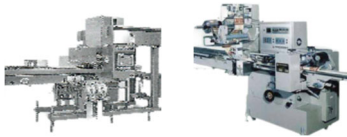


Finalize the liquid on the mold using the refrigerant, pull the product out from the mold using the manipulator, and dip the chocolate liquid to wrap the semi-finished product; coating temperature of 28--38°C

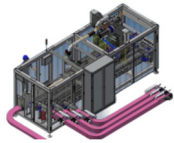
## ■ Packaging

Pack the semi-finished products using the packing bag and cup and other auxiliary materials, and spray the code, thus becoming the finished product that meets the requirements; good sealing and complete packaging





### ■ Boxing



Put the products into the outer boxes according to the product specifications; the boxing quantity is accurate, and the products are piled orderly

### ■ Storage/shipment



After boxing, send the product into the cold storage, waiting for the transfer and sales; storage temperature  $\leq -22^{\circ}\text{C}$

## 1.2.3 Factory equipment & products

With an annual output of more than 60,000 tons, it is one of the largest frozen beverage production bases in China. The workshop is equipped with 5 fancy lines, 4 quick-frozen tunnel lines and 2 Rollo lines. (See Diagram 1.3)



5 long cylinder lines



5 tunnel lines



5 Rollo lines

製品図示	製品分類	設備図示	生産ライン数	生産能力 (本/h)	生産能力 (T/h)	製品名	生産の割合
	アイスクリーム		5本	120000本/h	7.2T/h	巧脆棒、巧恋果、香奶棒等	57%
	棒アイス かき氷		4本	57600本/h	4.6T/h	香草奶昔、紅枣牛奶、三色心香等	26%
	アイスク্যানデー		2本	48000本/h	2.4T/h	小布丁、伊利心情等	17%

Diagram 1.3

### 1.2.4 Factory organization

The factory has 9 departments, including Production Department, Equipment Department, Quality Department, Safety Department, etc. (See Diagram 1.4)



Diagram 1.4

### 1.2.5 Overview of employees

There are 426 employees in Meizhou factory. The regular employees account for 66%, those with



college degree or above 30%, the employees with the working age of more than 5 years 73%, and the employees under 40 years old 68%. The production mode of “three shifts and two operation” is implemented for the factory, with 12 hours as a shift and 7 working days per week. (See Diagram 1.5)

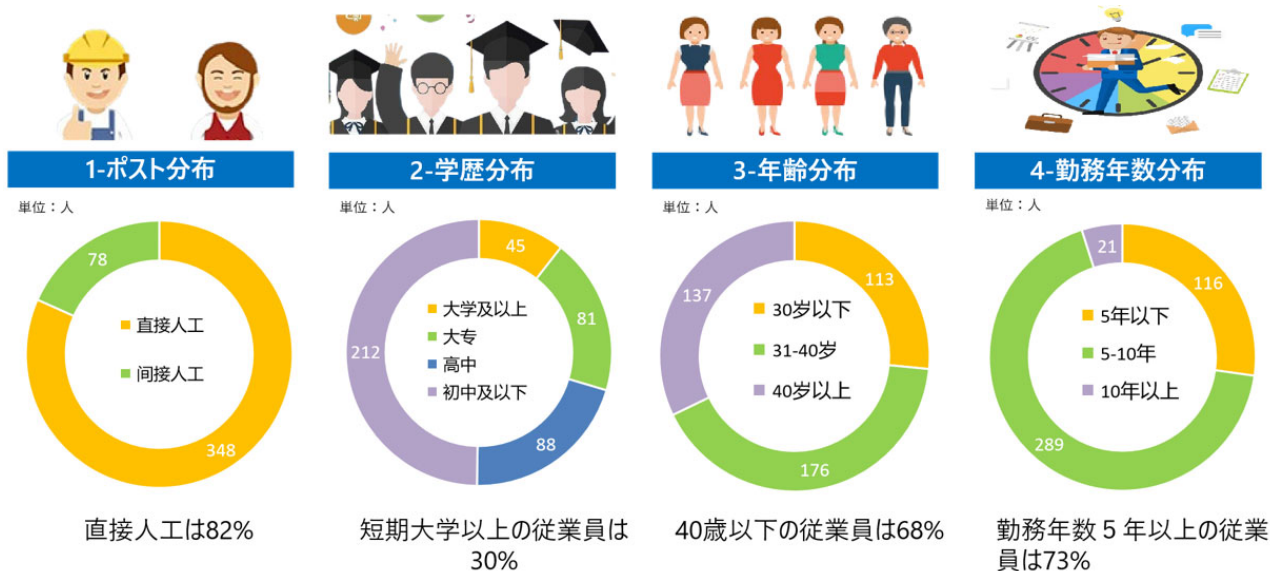


Diagram 1.5

## Chapter 2 Milestones in the journey of manufacturing excellence

### 2.1 Reasons for introducing TPM into the factory

According to the Group's vision of becoming the world's most trusted health food provider and the division's vision of becoming the world's most trusted provider of cold beverages, the factory has proposed the vision of “becoming a lean manufacturing factory for healthy foods in the cold beverage industry”. Based on the analysis of the factory status, we have developed six strategies for 2019 to 2023, that is: "keeping safety, improving quality, enhancing efficiency, controlling cost, gathering talent and sharing health"; we have introduced TPM to achieve the strategy. (See Diagram 1.6)



Diagram 1.6

## 2.2 History of the factory's TPM

In 2018, the improvement proposal was imported, and the DMS and QC group activities were carried out, which laid the foundation for importing TPM activities; in 2019, the TPM activities were comprehensively started by the factory, and FI, ET, AM, PM and QM were carried out in succession. In 2020, the SH and ENV pillars were imported. In 2022, the OM and EM pillars were imported. It is clarified to challenge for TPM Excellence Award (A) in 2023 (see Diagram 1.7).



Diagram 1.7

## Chapter 3 Benefits achieved

### 3.1 Tangible improvements in the factory's operating performance (see Diagram 1.8)



Diagram 1.8 Tangible achievements

### 3.2 Employee participation and improvement of factory atmosphere

A total of 38481 rationalized suggestions and 30013 AM tags have been generated since 2019; the positivity of the personnel's participation in TPM has been increasing, and the participation rate has reached 78.88%; the improvement benefit reached 1898, 5000 yuan. (See Diagram 1.9)

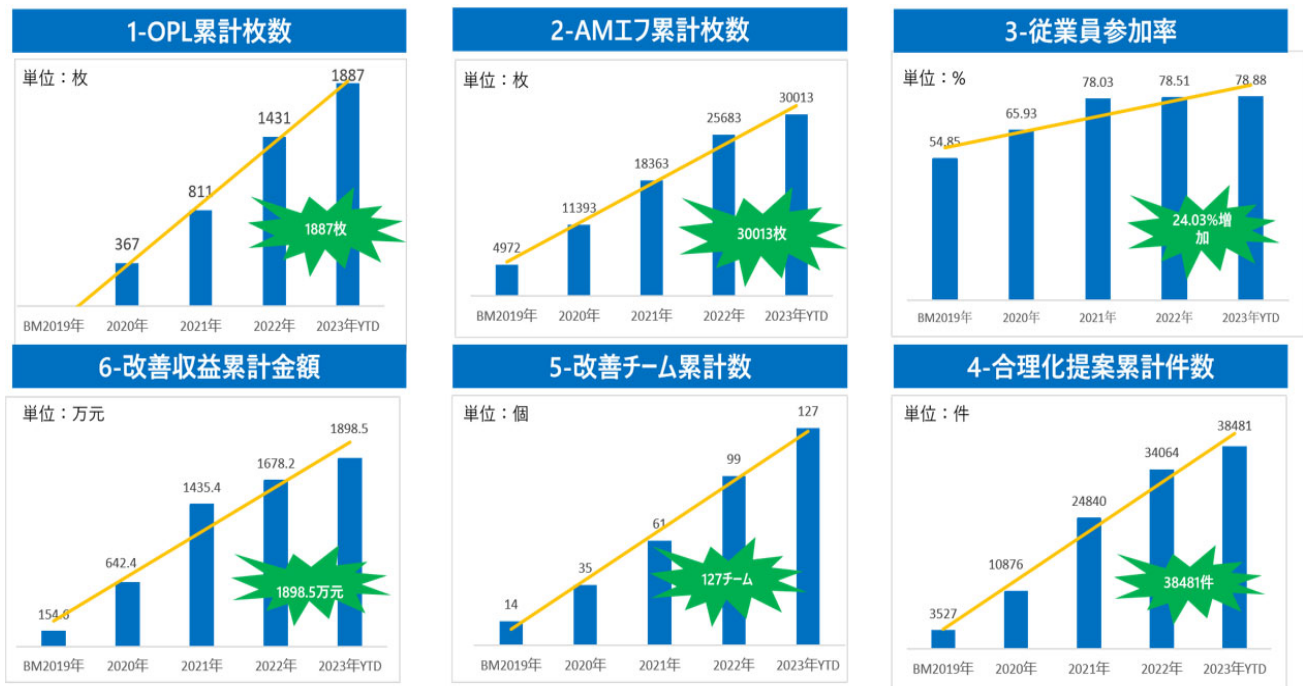


Diagram 1.9: Achievements of TPM

### 3.3 Other intangible achievements

The factory has become more confident in practicing the world-class manufacturing management model, and will continue to promote the full expansion of TPM in the factory.

### Chapter 4 Key points for success of the factory

- The factory management pays attention to and adheres to TPM.
- The interdepartmental cooperation is closer.
- Combine TPM activities to daily work.
- Apply the standard approach to make continuous improvement.
- Establish the TPM incentive system to drive more people to participate in TPM activities.

### Chapter 5 Achievements obtained

#### TPM Award Assessment Achievement Sheet

Category	Index	Unit	BM (TPM Started or last time awarded)	Actual Status	Target
Enter the year →			2019	2022	2023
S	Number of work- related accidents requiring days off work	Cases/ year	2.00	0.00	0.00
S	Number of work- related accidents not requiring days off work	Cases/ year	0.00	0.00	0.00
P	Productivity for main products	Parts/Operator hours	102.73	120.78	152.97
P	OEE (or Overall Plant Efficiency)	%	69.57	79.45	82.21
P	Availability	%	92.40	91.13	93.83
P	Performance Rate	%	73.45	87.50	87.90
P	Quality Products Rate	%	95.50	96.30	99.68
P	Number of breakdowns	Breakdowns/ year	537.00	257.00	163.00
P	MTBF	Hour	112.80	228.00	232.80
P	MTTR	Hour	0.77	0.95	0.75
Q	Number of customer complaints	Number/year	15.00	45.00	26.00

<b>Q</b>	<b>In-line defect rate (scrap)</b>	<b>%</b>	0.45	0.37	0.36
<b>Q</b>	<b>In-line defect rate (rework)</b>	<b>%</b>	/	/	/
<b>C</b>	<b>Cost index</b>	<b>Cost/Unit Cost/Kilogram</b>	6.90	8.19	8.46
<b>D</b>	<b>Production Lead time</b>	<b>Days</b>	22.80	15.68	12.91
<b>D</b>	<b>Delivery performance</b>	<b>%</b>	99.96	97.93	100.00
<b>S</b>	<b>Frequency rate</b>	<b>Number of occupational accidents with leave for 1 000 000 worked hours</b>	1.47	0.00	0.00
<b>M</b>	<b>Number of Employee Suggestions</b>	<b>Number/year</b>	3527.00	32346.00	38481.00