

Owens Corning Company Profile

1 Company, Plant / Factory Profile

1.1 Company Information



Owens Corning Headquarters, Toledo, Ohio, USA

Owens Corning is a global building and construction materials leader committed to building a sustainable future through material innovation. Our three integrated businesses – Composites, Insulation, and Roofing – provide durable, sustainable, energy-efficient solutions that leverage our unique material science, manufacturing, and market knowledge to help our customers win and grow. We are global in scope, human in scale with approximately 19,000 employees in 31 countries dedicated to generating value for our customers and shareholders and making a difference in the communities where we work and live. Founded in 1938 and based in Toledo, Ohio, USA, Owens Corning posted 2022 sales of \$9.8 billion Owens Corning has been a Fortune 500 company every year since the list was created in 1955.

1.2 Singapore Plant Introduction



Owens Corning Singapore Plant

In 2010, Owens Corning set up Singapore plant as a business strategy to ensure global supply security, plus the opportunity to grow its business in providing GlassMetal Services for both OC plants and external customers. It is also to support the global supply chain with prior to only a single source in North America, Concord plant.

Currently Owens Corning Singapore plant has 46 employees. The Plant Leader manages the plant, and reports to AP OPS Director and Alloy Engineering Director. There are 25 direct labors who are working in the front line and 21 indirect labors from the support functions. Most of the employees have been working here for more than 8 years. The main process in our plant are; Cleaning, Melting, Forging, Rolling, Stamping, Cutting, Punching and Welding.

Our main products are Bushings and Furnace parts (bubblers, level probe, skimmer block covers, viscosity parts), PGM “tank” as well as lab instruments for glass fiber and wool factories. The products were made of Pt and Rh alloy whereby the customers will provide the alloy as raw materials and OC Singapore plant processes and fabricates them into subsequent products. Most of our products were used for molten glass over 1000°C, with product lifetime between 250-300 days.

We currently supply customers in the region of NA, Europe, AP except China (after the setup of China Suzhou GlassMetal Services plant in 2013)

2 Milestone on the Journey of Manufacturing Excellence

Owens Corning Singapore was set up in 2010 by expatriates from Korea glass plant and US alloy plant. The first batch of employees were sent to US, Concord plant for training, and these trainers from Concord were then sent over to Singapore.

- Equipment in Singapore plant were all transferred from several alloy shops within OC glass plants that were being closed as the result of the global supply security strategy. Most of these machines have been used for over 10 years or longer, although still functional but were not in good condition. With our Maintenance team of 1 leader and 2 technicians, it was plentiful for them to take care of these machines, establish an overall maintenance system and plan, as well as focus on advance problem solving. Most of the time spent by our maintenance team were on breakdowns (reactive) activities.
- We follow the way of manufacturing process as what was taught from Concord; The operators focusing solely on manufacturing process and does not participate in any maintenance activities. Hence, they are lacked the necessary maintenance skills and knowledge.
- Product in Singapore plant were produced via batch process. Some of the critical process only have a single equipment. A failure or breakdown could have a significant impact to the entire process and plant business. Therefore, equipment reliability and predictive maintenance are very important for the plant.

Based on the situation, the company and plant management discussed and made alignment to introduce a system that will ensure that our equipment were always in an optimum condition, reduces the loss caused by machine breakdown, improves peoples' skill and change their mindset on maintenance. TPM is the best choice.

We kicked off TPM in the early 2017, started from 2 pilot areas. A year later, the activities were expanded to another 2 areas, hereby involving all 4 different sections of our shopfloor and achieving 100% employee engagement in TPM activities for our operations team. The experience was shared among other groups, to help each other understand the TPM methodology, accelerate our TPM progression, train and develop the people. We deployed TPM on 5 core pillars. So far, all the pillars made great improvement and have benefited from TPM in both tangible and intangible aspects.

3 Benefits Achieved

3.1 Tangible Improvements

- Safety and Health – We had 3 recordable incidents within 7 years, with 1 consecutive case in 2021 and 2022. Corrective actions were taken promptly and till date there is no reoccurrence.
- Environmental – Energy consumption and total waste per unit of finished goods are decreasing year over year.
- Quality – Gradual decrease of customer complaints despite the increase in production volume. CONQ reduced from 37.3 to 20.82 USD/Kg Shipped. Scrap rate reduced from 2% to 0.37%.
- Productivity and Cost – Manhour/Kg finished goods were reduced, and Unit Cost maintained despite an increase of 30% in production volume. More than 60% reduction in machine breakdown numbers and time at 110 to 41 and 2091 to 192hrs respectively.
- All the tangible results have improved greatly.

3.2 Intangible Improvements

- Achieved huge improvement of 5S in both our shopfloor and offices. People are working in a better environment.
- Through the various TPM activities and training, operators gained more skills and knowledge. They appeared to look confident.
- Operators starts to take ownership of their equipment. They look after it by themselves without directions.
- Improved processes and condition of equipment. A win-win situation was achieved where employees enhanced their skills with better work results and the plant benefited from the peoples' growth.

4 Key to our Manufacturing Excellence

With the experience gained on our TPM journey for the past 6 years, we have learned a lot and will be systematic moving forward;

- AM, total engagement in eliminating forced deterioration. Keep CILT standards updated and continue to perform CILT regularly.
- PM, improve equipment reliability and reduce the Losses due to unplanned maintenance.
- T&D, consistently train and develop our people, reduce the Losses due to insufficient skills.
- FI, continue to monitor and prioritize the Losses, establish project teams and Kaizen culture to reduce the Losses in our plant.
- EHS, consistently keep our people safe by recognizing and control risks, continue to reduce impact to our earth.
- In general, rely on all engaged Daily Management system to follow up and review the TPM tracking items, deploy group activities, ensuring our success to TPM.

TPM Award Assessment Achievement Sheet

Company & plant name	Owens Corning / Owens Corning (Singapore) Pte. Ltd.
TPM Slogan/Objectives	Think, Practice and Manage with the TPM way

▼ Please fill in the range of data you are collecting ▼

Category	Index	Unit	BM (TPM Started or last time awarded)	Actual Status	Target
Enter the year →			2017	2023	2023
S	Number of work-related accidents requiring days off work	Cases/ year	1	0	0
S	Number of work-related accidents not requiring days off work	Cases/ year	0	0	0
P	Productivity for main products	Hours / Kg FG	4.49	4.05	3.95
P	OEE (or Overall Plant Efficiency)	%	62.85	84.24	82.00
P	Availability	%	74.72	88.20	89.00
P	Performance Rate	%	98.1	97.31	95.00
P	Quality Products Rate	%	85.39	98.12	97.00
P	Number of breakdowns	Breakdowns/ year	110	41	30
P	MTBF	Hour	121	168	171
P	MTTR	Hour	0.82	0.23	0.32
Q	Number of customer complaints	Number/year	8	6	5
Q	In-line defect rate (scrap) In-line defect rate (rework)	%	1.99	0.37	0.50
C	Cost index	Cost / Kg FG	---	---	---
D	Production Lead time	Days	20	18	18
D	Delivery performance	%	99.69	99.77	99.80
S	Frequency rate	Number of occupational accidents with leave for 1 000 000 worked hours	13	0	0
M	Number of Employee Suggestions (Kaizen)	Number/year	0	78	70