

Stock Code:1802



TAIWAN GLASS IND. CORP.

Spokesperson: Lin, C M
GM, Finance Dept.

Provide satisfactory products to our customers through advanced technology and Total Quality Management (TQM).

- This brief and the related information issued meanwhile were obtained from internal and external data of the Company and the operation perspectives, it reflected the viewpoints to the future. If there is any change or adjustment in the hereafter, the Company has no responsibility to remind or update.
- The Company did not issue financial forecasts. The financial, business or Q&A explanations may differ from actual result in the future. The reasons of differences may include the changed market demand, unsettled factory and material price, industrial competition, international economic situation, exchange rate fluctuation, suppliers and retailers supply chain, and etc. which can not be controlled by the Company.

- Introduction of Taiwan Glass Group
- Production Facilities
- Product Introduction
- General Operation Situation of 2018
- Situation and Development of the Market
- Q&A

* Introduction of Taiwan Glass Group



Founded on	1964年
Capital	NTD\$29.08 billion
Chairman	Mr. Lin, Por Fong
Number of Employee	14,679 (until 2018.9.30)
Date of Listing	Listed in 1973
Main Products	Flat Glass Fiberglass Glassware

* Introduction of Taiwan Glass Group

TGI 19th Directors / 2nd Audit Committee



(Number from left side to right side)

Lin, P F	Front Row 4	Lin, P S	Front Row 5	Lin, P C	Front Row 6		
Lin, F C	Front Row 3	Chen, C C	Front Row 2	Hwang, T Y	Front Row 1	Peng, C H	
Lim, H T	Front Row 8	Hsu, L L	Front Row 7	Lin, C H	Back Row 4	Su, Y T	Back Row 3
Lin, C Y	Back Row 5	Lin, C M	Back Row 6	Chen, C C	Back Row 2	Tsai, T M	Back Row 1

* Production Facilities - Flat Glass



**Taiwan Taichung
Factory (TF)**

250,068 M²

1 Furnace

140,000 mt/y



**Taiwan Lukang Flat
Glass Factory (TF-4)**

260,343 M²

1 Furnace

200,000 mt/y



**TG Qingdao Glass
Co., Ltd. (QFG)
Qingdao Rolled Glass
Co., Ltd. (QRG)**

429,126 M²

1 Furnace

150,000 mt/y



**TG Changjiang Glass
Co., Ltd. (CFG)
TG Kunshan Glass
Co., Ltd. (TKG)**

404,770 M²

3 Furnaces

602,000 mt/y



**TG Chengdu Glass
Co., Ltd. (CDG)**

452,027 M²

2 Furnaces

547,500 mt/y



**TG Huanan Glass
Co., Ltd. (HNG)**

364,907 M²

1 Furnace

328,500 mt/y



**TG Donghai Glass
Co., Ltd. (DHG)**

398,096 M²

2 Furnaces

400,000 mt/y



**TG Tianjin Glass
Co., Ltd. (TJG)**

300,448 M²

1 Furnace

180,000 mt/y



**TG Xianyang Glass
Co., Ltd. (TXY)**

452,703 M²

1 Furnace

438,000 mt/y



**TG Anhui Glass Co.,
Ltd. (TAH)**

572,643 M²

1 Furnace

438,000 mt/y

* Production Facilities - Low-E Glass



**Taiwan Changpin
Factory (TC)**

272,480 M²

1 Line

4,000,000 m²/y



**TG Changjiang Glass Co.,
Ltd. (CFG)**

404,770 M²

1 Line

4,000,000 m²/y



**TG Chengdu Glass Co., Ltd
(CDG)**

452,027 M²

2 Lines

8,000,000 m²/y



**TG Huanan Glass Co., Ltd.
(HNG)**

364,907 M²

1 Line

4,000,000 m²/y



**TG Tianjin Glass Co.,
Ltd. (TJG)**

300,448 M²

1 Line

4,000,000 m²/y



**TG Xianyang Glass Co.,
Ltd. (TXY)**

452,703 M²

1 Line

4,000,000 m²/y



**TG Taichang
Architectural Glass Co.,
Ltd. (TTAR)**

199,525 M²

1 Line

4,000,000 m²/y



**TG Wuhan Architectural
Glass Co., Ltd. (TWAR)**

222,000 M²

1 Line

4,000,000 m²/y



Production Facilities – Fiberglass Reinforced / Fiberglass Fabric



**Taiwan Taoyuan Factory
(TT)**

181,181 M²

2 FRP Fiberglass Fabric
75,000mt/y



**Taiwan Lukang Factory
(TL)**

260,343 M²

2 Electronic Grade FRP
Fiberglass Fabric
25,000 mt/y



**Taichia Glass Fiber Co.,
Ltd. (TGF)**

323,539 M²

4 Electronic Grade FRP
Fiberglass Fabric
56,000 mt/y



**Taichia Chengdu Glass
Fiber Co., Ltd. (TCD)**

362,668 M²

1 Electronic Grade FRP
Fiberglass Fabric
30,000 mt/y

* **Production Facilities – Container & Tableware / Ultra-Thin Glass / Photovoltaic Glass**



Container & Tableware



Taiwan Hsinchu Factory (TS)

129,090 M²

5 Container : 170,000 mt/y

2 Tableware & Kitchenware :
10,000 mt/y

Ultra-Thin Glass



Taiwan Taichung Factory (TF-5)

250,068 M²

1 Ultra-Thin Glass
21,480 mt/y

Photovoltaic Glass



TG Fujian Photovoltaic Glass Co., Ltd. (FPG)

388,822 M²

1 Photovoltaic Glass
219,000 mt/y



TG Yueda Solar Mirror Co., Ltd. (TYSM)

266,400 M²

Solar Mirror Glass
72,000 mt/y

Automotive Glass



Taiwan Autoglass Ind. Corp. (TAGC)

250,068 M²

1 Automotive Glass
250,000 units



TG Yueda Autoglass Co., Ltd. (TYAU)

132,755 M²

4 Automotive Glass
600,000 units

Achievements of Sustainable Operation in 2017

<p>Silver Award</p>	<p>TGI has been awarded silver price for the past three years in the "Traditional Manufacturing" category incorporate sustainability report award.</p>
<p>2 times</p>	<p>Convened two sessions of our "Corporate Social Responsibility Committee" in 2017.</p>
<p>8 categories</p>	<p>TGI identified eight categories of stakeholders, including shareholders/investors/financial institutions, employees, business customers, suppliers, contractors, sub-contractors, dealers and government/authorities.</p>
<p>198 copies</p>	<p>Questionnaires are distributed among stakeholders, according to the communication between stakeholders and TGI and the degree of stakeholders' influence and importance in a total of 198 questionnaires are collected. The impact of each TGI's material issues is accessed by 22 senior executives.</p>
<p>10 Major Aspects</p>	<p>In 2017, we identified a total of 10 major perspectives and an effective management policy was assigned to each of these perspectives.</p>







Achievements of Green Production in 2017

400 million	In 2017 invested a total of 400 million in the plan to promote environmental policy.
180,000 tons	Recycled 180,000 tons of scrap glass in 2017.
61%	Taoyuan Factory recycled 61% of its waste in 2017.
12.2%	The product water consumption intensity of glass container dropped by 12.2% compared to 2016.
55%	Environmental equipment, pollution-handling expense, environmental management system and training expenses increased by 55% compared to 2016.
-59,481 GJ	Heavy crude oil consumption was 1,480 kiloliters lower than 2016 and the heating value dropped by 59,481GJ.
ISO 50001	The Taoyuan and Hsinchu Factory, for better energy management, implemented the ISO 50001 energy management system to maximize its energy efficiency through systematic examinations.
5.35%	Hsinchu Factory increased its water recycle rate by 5.35% compared to 2016.

* Product Introduction

TGI's main products include flat glass, fiberglass, and glassware. There was no any violation of regulations related to product health & safety, labeling and marketing and no product's sale was prohibited in 2017.

Flat glass is one of the core products of TGI. With production plants based in Taiwan and China, TGI's major markets reach Taiwan, China, Japan, Korea, North America, Middle East, Australia, Europe, South Africa and so forth. TGI was not involved in any anti-competitive behavior, anti-trust and monopoly practices or legal proceedings in 2017.

Flat Glass	Fiberglass	Container, tableware & kitchenware
		
		

Note: For product details, please scan the respective QR Code with your smart phone.

Flat Glass

TGI's flat glass has 100% passed the EU CE, US ANSI, Taiwan CNS and other relevant standards. In the production of the flat silver mirror TGI uses advanced lead-free copper process, to avoid heavy metal pollution. TGI also actively promotes the hot-dip process to strengthen glass, even if broken it will become small pieces to reduce harm. Laminated Glass has the PVB interlayer withstands penetration from impact. Even if the glass cracks, splinters will adhere to the interlayer and not scatter. In comparison with other kinds of glass, laminated glass has much higher strength to resist shock, burglary, burst and bullets. Cladding, coating, vacuum and other energy-saving glass has more excellent thermal insulation so it can reduce the heat exchange of indoor and outdoor to save air conditioning usage, and indirectly reduce greenhouse gas emissions.

Flat Glass Related Certification



歐盟 CE



美國 ANSI



台灣 CNS



ISO 9001



ISO 14001/SGS



PASMARK



IGCC

Green Product - Flat Glass

The new generation energy-saving Low-E glass products can effectively block the radiation from sunlight while allowing most sunlight to enter, which solves the problem of lighting and heat insulation. This product also significantly reduces energy consumption from air conditioners. TGI's Low-E glass products are in compliance with CNS12681 standard and certified with ISO 9001 standard and IGCC. Currently the product has been vastly used in buildings.

TGI actively promotes the green building concept. The Low-E Glass can reduce 30% energy consumption of air-conditioning, and Low-E vacuum energy-saving glass insulation performance is 4-6 times of ordinary glass chip. The energy-saving products can better conserve energy than other industrial products. Therefore energy-saving buildings will become a key to the energy conservation energy of the country.

適用(亞)熱帶型氣候組合

Assembly Sequence Suitable for
(Sub) Tropical Zone



室外 Outside
Low-E glass
(coating on surface #2)

1 2 3 4 室內 Inside
Clear or tinted glass

鍍面在#2面: 阻斷大量輻射熱能的穿透, 僅少數熱能進入使室內保持涼爽。

coating on surface #2: The heat is reradiated back outdoors, reducing the heat gain potential into the building interior.

適用(寒)溫帶型氣候組合

Assembly Sequence Suitable for
(Frigid) Temperate Zone



室外 Outside
Clear or tinted glass

1 2 3 4 室內 Inside
Low-E glass
(coating on surface #3)

鍍面在#3面: 室內的熱能因Low-E雙層玻璃的阻斷而不易輻射至室外而能保暖。

coating on surface #3: Low-E insulating glass will reflect IR heat from inside the room to help reduce the energy loss.

Fiberglass

Our Fiberglass Department actively promotes the application of fiberglass in daily life products. Compared to metal supporters, fiberglass has better resistance to corrosion and elements. Fiberglass is low-cost, more durable and has great a strength/weight ratio. Different types of fiberglass, based on their structures and features, are extensively used in thermal insulation, heat insulation, fireproof material and reinforcement.

TG's fiberglass products all meet RoHS and REACH requirements. For food contact products, a total of 4 meet US FDA standards; 8 meet EU 10/2011 regulation and have Germany's BfR approval; 2 meet France's requirements for drinking water (CAS). The quality of our products meets CNS national standards. We print the CNS logos on labels according to different customer requirements. The packaging labels of fiberglass fabric and fiberglass yarn are marked with RoHS compliance logos.



Glass container, tableware, and kitchenware

Glass containers, with excellent transparency, showcase the real color of anything inside the container. They also have the advantages of easy sealing and flavor preservation. Furthermore, glass containers can be heated up gradually without deforming. TGI's glass containers come in various shapes. A suitable container can further highlight your product's texture.

The manufacturing facility of the container, tableware, and kitchenware has received FSSC 22000 certification; moreover, it has obtained ISO 50001 in 2017. All products meet Taiwan's Sanitation Standard for Food Utensils, Containers and Packages. TGI can also provide products that meet RoHS and REACH standards based on clients' requests. For our heat-resistant products, all of our baby feeding bottles meet EU's latest EN 14350 standard. All of our coffee pots come with heat-resistant labeling. TGI has established a waste glass recycling factory where waste glass is cleaned and recycled. This company periodically sends samples from this factory to SGS to test for lead content. Due to an increase in export-share, TGI has a USD 5,000,000 global product liability insurance covering all the products.



Green Products – Glassware

TGI began acquiring German NNPB glass-blowing technology in 1983 in order to meet the needs of the market and enhance environmental protection. This technology produces attractive, lightweight bottles of uniform thickness. More recently, TGI has participated in technological cooperation with Germany's Heye-Glass Group, producing more than 200 million bottles per year. Lightweight bottles are the product of future trends in the glass container market. Besides helping customers cut production costs, lightweight bottles are environmentally friendly, as their production consumes fewer resources and energy.

Advantages of Lightweight Bottle

- Conserves raw materials use. It has the same strength despite a thinner bottle wall.
- Reduces energy consumption.
- Reduces clients' production costs.
- Glass containers are 100% recyclable and will not destroy the earth's ecological environment.



Example: 1-liter liqueur bottle originally weighed 540g. After the implementation of the NNPB technology, the bottle weighs 480g, 12.5% lighter.

Asia's Top Quality Heat-resistant Baby Feeding Bottle

Starting on June 1, 2011, China banned the baby bottles containing bisphenol A, which is also regulated in countries worldwide. TGI container factory started the production of heat-resistant borosilicate bottles from April of 2013. These bottles have the CTE of 33, which is certified by AGR (American Glass Research) with leading quality in Asia.

* General Operation Situation of 2018



Consolidated Statements of Income			NTD : thousand dollars (Except EPS)		
Items	2017	Q1 of 2018	Q2 of 2018	Q3 of 2018	Q1~Q3 of 2018
Operating Revenues	44,869,581	10,995,239	11,832,756	12,067,176	34,895,171
Gross Profit	7,638,003	2,030,635	2,167,772	1,738,829	5,937,236
Gross profit margin	17%	18%	18%	14%	17%
Operating Income	2,640,535	763,648	897,403	491,257	2,152,308
Operating Profit Margin	6%	7%	7%	4%	6%
Non-operating Income and Expenses	(249,740)	144,988	(353,605)	(494,236)	(702,853)
Income (Loss) before Income Tax	2,390,795	908,636	543,798	(2,979)	1,449,455
Net Income (Loss)	2,175,745	807,473	371,834	(114,046)	1,065,261
Profit margin	5%	7%	3%	-1%	3%
EPS (NTD)	0.73	0.26	0.13	(0.03)	0.36

* General Operation Situation of 2018



Consolidated Balance Sheet

Items	2017.12.31		2018.03.31		2018.06.30		2018.09.30	
	NTD000	%	NTD000	%	NTD000	%	NTD000	%
Current Assets	25,148,319	30	25,917,538	31	27,737,724	32	25,811,184	30
Noncurrent Assets	58,878,242	70	58,992,804	69	58,104,339	68	58,881,434	70
Total Assets	84,026,561	100	84,910,342	100	85,842,063	100	84,692,618	100
Current Liabilities	21,602,960	26	23,242,716	28	25,608,342	30	24,179,378	29
Noncurrent Liabilities	12,809,639	15	10,327,392	12	10,422,795	12	12,800,447	15
Total Liabilities	34,412,599	41	33,570,108	40	36,031,137	42	36,979,825	44
Capital	29,080,608	35	29,080,608	34	29,080,608	34	29,080,608	34
Additional Paid-in Capital	1,921,575	2	1,921,575	2	1,921,575	2	1,925,311	2
Retained Earnings	16,766,110	20	17,551,764	21	16,471,988	19	16,170,951	19
Other Components of Equity	(1,729,033)	(2)	(939,860)	(1)	(1,344,038)	(1)	(2,975,592)	(3)
Non-controlling Interests	3,574,702	4	3,726,147	4	3,680,793	4	3,511,515	4
Total Equity	49,613,962	59	51,340,234	60	49,810,926	58	47,712,793	56

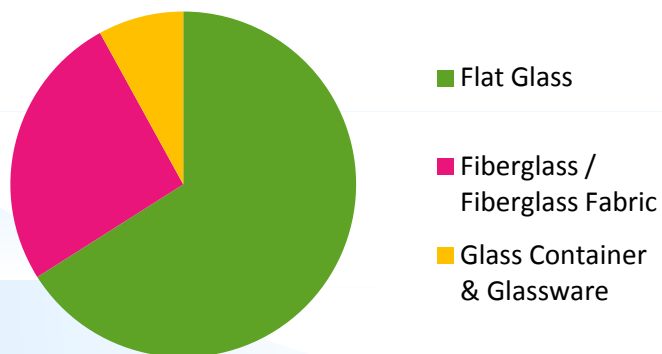
* General Operation Situation of 2018



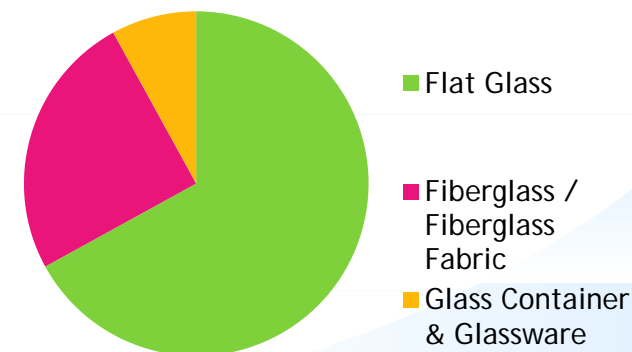
The proportion of major product revenue

Items	2017		Q1 of 2018		Q2 of 2018		Q3 of 2018		Q1~Q3 of 2018	
	NTD000	%	NTD000	%	NTD000	%	NTD000	%	NTD000	%
Flat Glass	29,650,666	66	7,170,559	65	8,014,219	68	8,330,974	69	23,515,752	67
Fiberglass / Fiberglass Fabric	11,616,201	26	2,925,284	27	2,863,002	24	2,818,488	23	8,606,774	25
Glass Container & Glassware	3,510,845	8	889,706	8	945,602	8	904,913	8	2,740,221	8
Others	91,869	-	9,690	-	9,933	-	12,801	-	32,424	-
Total	44,869,581	100	10,995,239	100	11,832,756	100	12,067,176	100	34,895,171	100

2017



Q1~Q3 of 2018



Flat Glass

China

The flat glass market has been steady since 2017 and the market price has no significant change. Therefore, the profit of Q1~Q3 in 2018 was increased than in 2017. Since the reform of flat glass supply was effective in China, and the effect of US-China trade war, the supply and demand of flat glass market is expected to be influenced by several uncertain factors in the next year, such as unpredictable fuel cost increasing, if the export tax refund can drive the increase of downstream processing glass exports or not, and the implement power of environmental rules. However, based on safety considerations, the designs of new high curtain wall are laminated and hollow. One set is composed of three or four flat glass so the amount of glass is increased. It can remain sales volume. For cost, due to the growth of raw materials and fuel costs, the profit of flat glass factories is expected to decrease.

Taiwan

Taiwan Glass Ind. Corp. is the only sizable glass manufacturer in Taiwan with the only Coating Production Line for architecture in Taiwan. It introduced the vacuum sputtering coating equipment and technology of Von Ardenne to produce high effect energy-saving glass with high transparency and low heat transmission to apply to green buildings, being the leader of the market in Taiwan.

In 2018, the amount of remained house in Taiwan is raising. The supply and demand of real estate market need a period of time to be adjusted. Therefore, the sales volume of flat glass in 2018 is lower than before. The Company strives for government infrastructure, private construction projects, orders from malls, and increasing projects of a homecoming trend among Taiwanese entrepreneurs for US-China trade war.

To sum up, the flat glass production capacity of 2019 is approximately equal to the production capacity of 2018. There is no plan for expansion. It's hard to predict the perspective of whole flat glass market due to uncertain factors. Nevertheless, TGI's quality is good enough to meet the demands on market changes for secondary processing and clients' demands. TGI develops its market steadily by providing clients with excellent products and quality service, building clients' trust in the products and the Company.

Fiberglass Fabric

In fiberglass, the technology and quality of fiberglass products are always the core competency of TGI. In particular, the capacity of electronic fiberglass fabric is accounts for 16% of the global market. For the material of PCB, TGI has successfully developed products with global leading technology. It meets the demand of mobile devices, electronic products for automobile and IoT, and continues to hold the market trend to supply products to high-end clients.

For FRP, this year, TGI signed an agreement for technology cooperation, manufacturing and supply with Owens Corning, the global leading manufacturer of fiberglass. It is expected to start production in Q3 of 2019. Through this agreement, TGI obtains the most advanced fiberglass formulation and technology in the world. It will help to increase capacity to 80,000 tons from 60,000 tons, cut production costs and provide clients with higher performance and more environmental products. Furthermore, it will also boost domestic clients' composite material quality and market competitiveness.

The fiberglass products which are made in China and sold to U.S.A are under 3%. It will not be affected by US-China trade war because these products can return to Taiwan for production if it is necessary.

Glass Container

The Dept. of Glassware was set up decades ago and has started to actively develop the market of export sales since 2007. In recent years, TGI confronted the competition of alternative packing materials. PET and carton have the advantages of lightweight, low-priced, and flexible in design, however, the glass packing material being irreplaceable for high-priced refrigerated beverage, beer and wine. TGI has lightweight bottle technology to reduce clients' production costs, and its experienced technology can lower the limitation of product design. We continues to popularize the environmental aspect to clients by developing glass packing material. Moreover, the Company invested in equipment for producing heat-resistant bottle in 2003, which is only the third one in the world. After introducing and promoting to clients for years, the quality and technology are accepted by international famous brand companies supplied to European laboratory equipment and glass feeding bottles in Asia. Considering the effects of orders diverted from US-China trade war, TGI will achieved glassware production lines expansion in Q2 of 2019 for increasing capacity to receive high-end products.

TGI continues to improve the automated inspection equipment and employee training, and passed all food safety regulations certifications. It strives to maintain clients in niche market, avoid the threat of low-price competition, and move toward the B2C market by boosting the development of high value added²⁴ products.

Q&A

Thanks for your attention.
Have a great day.