

# FORMOSA PLASTICS GROUP

2022 Annual Report



*Mailiao Industrial Complex  
Prosperous Industrial and Ecological Sustainable Development*

# CONTENTS

1	2022 Financial Highlights
2	Preface
16	Formosa Plastics Corporation
28	Nan Ya Plastics Corporation
34	Formosa Chemicals & Fibre Corporation
40	Formosa Petrochemical Corporation
46	Formosa Plastics Group-US. Operations
49	Other Investments
	<b>Non-Profit Organization—Medical Care</b>
50	Chang Gung Memorial Hospital
	<b>Non-Profit Organization—Education</b>
54	Chang Gung University
58	Chang Gung University of Science and Technology
62	Ming Chi University of Technology



## Mailiao Industrial Complex

### Prosperous Industrial and Ecological Sustainable Development

Since its establishment, Mailiao Industrial Complex has upheld the concept of ecological conservation and circular economy to promote environmental protection, energy conservation and emission reduction. To further improve the efficiency of energy and resource use, a dedicated unit for energy conservation and carbon reduction was established, with the Chairman serving as the convener. The unit set annual energy saving and water conservation targets of 3% and 5%, respectively, working towards goals like energy conservation, emissions reduction, energy resource integration, and zero waste. For example, in terms of water usage, the park has achieved 12.7 times reusing per drop of water, reducing impact on the environment, fulfilling FPG corporate social responsibilities and commitment to sustainable development and shared prosperity in the local area.

## Formosa Plastics Group | 2022 Financial Highlights

(In Thousands of USD, persons)

Company	Capital	Assets	Equity	Sales	Income Before Income Tax	Number of Employees
Formosa Plastics Corp.	2,072,991	15,931,816	11,647,937	6,352,964	1,386,720	6,379
Nan Ya Plastics Corp.	2,582,657	18,763,971	12,215,207	5,509,446	1,089,748	13,051
Formosa Chemicals & Fibre Corp.	1,908,684	14,516,852	10,620,253	8,054,941	234,552	4,590
Formosa Petrochemical Corp.	3,102,110	13,399,384	10,176,125	27,531,924	547,463	5,230
Nanya Technology Corp.	1,008,860	6,582,769	5,892,863	1,831,925	546,076	3,564
Nan Ya PCB Corp.	210,423	2,561,088	1,749,465	1,574,357	787,824	6,882
Formosa Sumco Technology Corp.	126,302	1,172,726	808,651	533,834	195,093	1,452
Formosa Taffeta Co., Ltd.	548,608	2,325,093	1,816,048	852,630	118,643	4,246
Formosa Advanced Technologies Corp.	144,009	480,969	413,941	339,763	82,289	2,391
<b>Subtotal of Public Companies</b>	<b>11,704,644</b>	<b>75,734,668</b>	<b>55,340,490</b>	<b>52,581,784</b>	<b>4,988,408</b>	<b>47,785</b>
Other Domestic Companies	2,426,603	20,767,698	17,916,302	7,071,871	681,125	32,482
<b>Subtotal of Domestic Companies</b>	<b>14,131,247</b>	<b>96,502,366</b>	<b>73,256,792</b>	<b>59,653,655</b>	<b>5,669,533</b>	<b>80,267</b>
Companies in U.S.A	1,510,281	16,580,212	13,208,790	8,862,794	650,894	4,247
Companies in China	6,015,580	12,783,355	9,056,284	10,250,947	376,364	18,043
Other Foreign Companies	6,448,254	14,607,810	6,718,329	5,797,100	-328,566	13,494
<b>Subtotal of Foreign Companies</b>	<b>13,974,115</b>	<b>43,971,377</b>	<b>28,983,403</b>	<b>24,910,841</b>	<b>698,692</b>	<b>35,784</b>
<b>Total of Formosa Plastics Group</b>	<b>28,105,362</b>	<b>140,473,743</b>	<b>102,240,195</b>	<b>84,564,496</b>	<b>6,368,225</b>	<b>116,051</b>

\*NOTE: The financial data shown above is extracted from the individual financial statements of each company.



## Preface

Formosa Plastics Group will always take the initiative and pay close attention to market dynamics and future trends. This is how the Group can flexibly adjust production and sales plans and investments to ensure a long-term competitive edge while constantly reminding itself to fully embody its management philosophy of “striving for excellence” .



..... Mailiao Industrial Complex

*Due to the COVID-19 pandemic and geopolitical crises, 2022 was a year of global financial instability, severe inflation, and economic downturn.*

*At the start of the year, as countries around the world continued to ease lockdown measures, the global economy saw a boom in consumption and demand. Therefore, the market anticipated continued global economic recovery. Unfortunately, the Russia-Ukraine war broke out in February, causing the already soaring energy and commodities prices to continue skyrocketing, resulting in high inflation around the world. In response, US and European countries tightened monetary policies by accelerating interest rate hikes, causing terminal demand to shrink and customers to drastically adjust their inventory. Adding fuel to the fire, the pandemic remained unpredictable, disrupting production and consumption and causing the global economy to take a turn for the worse in the second half of the year. The petrochemical industry was not spared either. Not only did demand for products freeze rapidly, but prices also plummeted, the extremely bleak situation forming a stark contrast from the industry’ s boom in the first half of the year.*



**Chairman  
WenYuan Wong**

### Business Operation Overview

Impacted by the sharp reversal of the global economic climate, FPG’s overall revenue in 2022 is NT\$2.5968 trillion, which is a small increase of NT\$136 billion or 5.5% from 2021. However, the rise in overall costs reduced profits in the petrochemical industry, and as a result, the pre-tax profit in 2022 was NT\$195.6 billion, a drastic decrease of NT\$275.6 billion or 58.5% compared to 2021.



..... 2022 Safety Partner Achievement Observation Tour of Formosa Plastics Group



FORMOSA PLASTICS GROUP Profile  
Scan QR code to watch the video

1. Taiwan

In 2022, FPG’s companies in Taiwan generated total revenue of NT\$1.8318 trillion, a 10.1% increase compared to 2021. The pre-tax profit is NT\$174.1 billion, a 49% decrease compared to 2021. The sharp decline in profits is mainly due to a series of chain events, such as the global inflation caused by the Russia-Ukraine war and developed countries like Europe and the US raising interest rates to slow down demand, coupled with the rise in global commodities prices cutting into the profit margin of most petrochemical products.

Although overall market conditions shrunk in 2022, the companies in Formosa Plastics Group continued to expand domestic and foreign sales channels, diversify market risks, and actively develop the market for high-value and differentiated products. For example, Formosa Plastics high-performance PP melt blown filter material, diionic anti-sticking masterbatch and antibacterial oyster shell powder, Nan Ya’s leuko-reduction filter bag and biodegradable thermoplastic (PBAT), Formosa Chemicals & Fibre’s special grade PP (used for automotive materials) and high-value PS/ABS (used for home appliances, 3C, and automotive materials), and Nanya Circuit Board’s high-end IC substrates are all products that are highly competitive in the market.

Additionally, the companies continued to actively integrate AI into smart production, process optimization, quality inspection, maintenance and repair, and industrial safety projection. As of the end of 2022, 901 projects have been completed with estimated annual benefits of NT\$5.2 billion. There are also 624 ongoing projects which are expected to bring in an additional NT\$2.5 billion of annual benefits once completed, which demonstrates the effectiveness of AI applications.

2. United States

In 2022, the US did its best to curb inflation, with the Fed raising interest rates 7 times in a row, lifting rates by 4.25%. This significantly dampened consumer confidence and suppressed product demand and pricing. At the same time, the Russia-Ukraine war caused global energy prices to skyrocket, resulting in poor profitability for the petrochemical industry. FPG’s companies in the US generated total revenue of NT\$272.2 billion, a 13.9% increase compared to 2021; the pre-tax profit was NT\$20 billion, a decrease of 55% from 2021.

3. China

The COVID-19 epidemic continued to break out in China. The Chinese government’s strict “zero Covid” policy not only impacted downstream activation but also dampened consumer demand in the market. At the same time, new refining and chemical production capacity continued to open up despite weak market demands, resulting in price wars. In addition to these unfavorable internal factors, developed countries around the world began hiking interest rates significantly in order to curb inflation, further dampening overall demand. China’s export was also impacted. Facing these internal and external factors, China’s economic performance in 2022 was less than satisfactory. Therefore, FPG’s companies in China generated a total revenue NT\$314.8 billion in 2022, a decrease of 13.2% from 2021, with pre-tax profit of approximately NT\$11.6 billion, a significant reduction of 77% compared to the previous year.

4. Vietnam

The 2022 turnover of Formosa Plastics Group’s companies in Vietnam was equivalent to NT\$158.1 billion, which was down 12% from 2021. In particular, Formosa Industries Corporation was impacted by undesirable factors such as the price cut competition in the textile products from China, rising energy costs, and



..... FPG vigorously plans to build solar power facilities

inflation, causing a drop in sales of textiles, nylon, and rayon cotton. The downturn for the second half of 2022, in particular, led to the downstream becoming conservative about the market. Terminal demand hence shrank significantly, resulting in an annual loss of NT\$2.2 billion, a 228% decline from the previous year.

Additionally, in 2022, Formosa Ha Tinh Steel actively developed new steel types with high added value and expanded the export market to Europe and South America. However, the US Fed significantly hiked interest rates in the second half of the year, dampening investment and consumption. The global steel market demand shrunk drastically, and the domestic sales of steel products in Vietnam also fell sharply, so Formosa Ha Tinh Steel could only partially reduce production in response. Its annual revenue amounted to NT\$124.5 billion, a 15.7% decrease from the previous year, and an annual loss in pre-tax profit of NT\$10 billion, a 130% decline from 2021..

**Implementing ESG Sustainable Development**

For decades, Formosa Plastics Group has remained committed to its corporate tenets of

“get to the heart of matters” and “strive for excellence” , actively carrying out various management tasks to achieve sustainable development, from the 1993 5S management principles, the subsequent 1999 no leakage policy (no gas leakage, no water leakage, no oil leakage) , and the formation of the company-wide "Energy Conservation and Emission Reduction Task Force" in 2006 to further promote energy conservation and emissions reduction.

In 2016, FPG went even further to promote a circular economy, taking the four aspects of circulation – raw materials, water resources, energy, and waste – into consideration to implement inter-company, inter-factories energy and resource integration. In 2018, FPG not only applied AI to our energy conservation, emissions reduction, and circular economy efforts but also initiated digital transformation and further expand the effectiveness. In 2020, FPG expanded the "Energy Conservation and Emission Reduction Task Force" into the “FPG ESG Promotion Organization” , ensuring that the entire enterprise is committed to various ESG (environmental, social, governance) tasks so that the enterprise can move towards sustainable development.

After establishing the “FPG ESG Promotion Organization”, the entire enterprise demonstrated its determination to fully promote sustainable development from top to bottom, not only continuing to promote energy conservation and emission reduction, circular economy, AI, AI+simulation, and digital transformation, but also remaining committed to improving energy efficiency and production efficiency. The enterprise also improved its production technologies, developed and produced green products, and promoted recycling at the processing end and consumer end to expand carbon reduction and waste reduction effects.

At the same time, FPG is actively planning to build renewable energy and energy storage equipment, and also purchase green power certificates and carbon rights. For example, FPG has already installed 4.2MW of solar panels, which can reduce CO<sub>2</sub> emissions by 2,682 tons per year, and plans to expand to 184.3MW, which can generate 232,053 kWh of electricity per year, reducing 190 thousand tons of CO<sub>2</sub> emissions. The company also continues to keep an eye on and introduce the world’s latest carbon reduction technology while researching the feasibility of using carbon-free fuels in response to the carbon fees or carbon tariffs that might be imposed domestically and abroad in the future.

WFPG also actively gathered information on the latest carbon reduction technologies and collaborated with other institutions to develop carbon capture, utilization and storage (CCUS) technologies. In terms of the supply chain, raw materials, and equipment purchasing, FPG also worked with suppliers to develop energy-saving, recyclable products in order to expand the scope of sustainable development to the fullest extent.

While taking multi-pronged approaches to actively promote carbon reduction, companies in the group also signed the SBTi (Science Based Target initiative) in 2022 to declare carbon reduction goals for the next 5-15 years, joining advocacy organizations with scientifically verified

data. The companies also continued to publish sustainability reports, and published the Task Force on Climate-Related Financial Disclosures (TCFD) for the first time, working to achieve transparency and recognition.

**The following is an overview of our ESG measures and their results:**

**1. Environmental Protection (E)**

**(1) Water Conservation**

According to the statistics of the Ministry of Economic Affairs, although Jiji weir was initiated to supply water for the Sixth Naphtha Cracker Complex, industrial water consumption accounted for only 5% of the weir’s water supply, while up to 93% went to supplying agricultural water usage in Yunlin County and Changhua County. Even so, FPG still implemented active measures to use precious water resources more efficiently by reducing the amount of water used in production processes, recycling water, and reducing loss due to evaporation. As a result, the water recycling rate throughout the region exceeded 91.5%, and the Mailiao Industrial Complex conserves up to 290,000 tons of water per day.

Additionally, according to the “Directions for Application Review on Proposal of Water Usage” published by the Ministry of Economic Affairs, the water recycling rate (R1) of the Mailiao Industrial Complex is over 98.8%, which is equivalent to each drop of water being reused up to 12.7 times.

In addition to using less water, FPG also took active measures to cultivate water resources. By increasing rainwater collection areas and rainwater storage tanks to effectively recycle and reuse rainwater, FPG achieved a rainwater collection rate of 99.4% in 2022. This allows an average of 16,090 tons of rainwater to be collected per day, which is enough to provide domestic water usage for the 13,000 employees at the complex for approximately 3 weeks. Furthermore, FPG also invested NT\$5.4 billion to establish a 100,000-



..... FPG has always upheld its principles of balancing industrial development with environmental protection

ton seawater desalination plant in the Mailiao Industrial Complex. The plant is expected to be completed and ready for use by 2023.

**(2) Energy Conservation and Emission Reduction**

To further enhance its energy and resource usage efficiency, FPG established a dedicated unit for energy conservation and carbon reduction in 2006, with the Chairman of FPG serving as the convener. The unit hosts monthly meetings and set the annual energy saving target at 3% and the water conservation target at 5% to promote inter-plant, inter-company energy and resource integration.

According to the statistics, the average daily production output of Mailiao Industrial Complex has risen 5% in the past decade, but the average daily electricity consumption and steam consumption per unit of product have decreased by 17% and 19% respectively, while hourly electricity consumption and steam consumption have decreased by 13% and 15% respectively.

As for air pollution control, in order to continue promoting the optimization of environmental protection control technologies, FPG is working to reduce PM 2.5 emissions by installing wet electrostatic precipitators in co-generation power plants and promote the reuse of heat emitted from boiler chimneys, thereby eliminating the visible pollution of white smoke from chimneys without using extra energy. The two improvement initiatives are well underway and are expected to be completed before April 2024, after which the plants will be able to match natural gas emission standards.

In addition, all vessels traveling in and out of Mailiao Harbor must use low-sulfur fuel or energy-saving power, and vessels in the harbor must use shore-side electricity instead of burning fuel to effectively reduce sulfide emissions. These active environmental protection measures made Mailiao Harbor the first industrial port in Asia to be awarded the “EcoPorts Certification” .

**(3) Overall Water and Energy Conservation Investment and Results**

Using Mailiao Industrial Complex as an example with the measures listed above, FPG has invested approximately NT\$38.53 billion into energy conservation, emissions reduction, and circular economy as of the end of 2020, completing 2,742 water conservation improvement initiatives to conserve 110.74 million tons of water each year. At the same time, 10,211 energy-saving initiatives that can reduce CO<sub>2</sub> emissions by approximately 13 million tons each year were completed. The results are quite impressive, with combined annual water and energy conservation benefits reaching NT\$36.5 billion, making Mailiao Industrial Complex a true eco-industrial park.

Moreover, according to the evaluation results published by the international environmental evaluation index Carbon Disclosure Project (CDP) in 2022 (evaluation scores are divided into 8 grades, from A to D-), Formosa Taffeta was

awarded the top score of A in climate change while Formosa Plastics, Nan Ya, Formosa Chemicals & Fibre, Formosa Petrochemical, Nanya Technology and Nan Ya Printed Circuit Board also achieved an impressive score of A-. As for water resources Nan Ya, Formosa Chemicals & Fibre and Nanya Technology all scored A, while Formosa Plastics, Formosa Petrochemical and Formosa Taffeta scored A-. Such amazing performances demonstrated that FPG's long-term focus on conserving energy and reducing emissions has been recognized by authoritative international organizations.

The carbon emissions of FPG reached a peak in 2007 with 61.48 million tons, making 2007 as FPG's base year for carbon reduction. After years of promoting energy conservation, emission reduction, and circular economy, emissions were reduced to 51.12 million tons by 2021, a 16.9% decrease from the base year. The short-term goal is to lower emissions to 49.18 million tons by 2025, a 20% decrease from the base year. The mid-

term goal is to lower emissions to 39.96 million tons by 2030, a 35% decrease from the base year. Moving forward, FPG will continue to stay in line with government policies and the international promotion of ESG, while making plans to move towards achieving the long-term goal of carbon neutrality by 2050.

**2. Social Responsibility (S)**  
**(1) Friendly Workplace**

FPG has long built a friendly and happy workplace to continue attracting and recruiting outstanding talent. FPG provides professional and new technology training to help employees cultivate diversified professional skills and also takes care of the health and welfare of employees, allowing every employee to reach their full potential in a position suitable for their skills. At the same time, to take care of employee welfare and health care, FPG not only provides benefits superior to regulatory requirements, but also added gift bags for pregnant women and their babies, a NT\$20,000 maternity subsidy for each pregnancy, a monthly NT\$2,000 childcare subsidy for children under the age of 6, and a day of paid "health check leave" each year. Therefore, FPG has earned the title of "Happy Enterprise" for three consecutive years in the voting event organized by the 1111 Job Bank from 2019 to 2022. Meanwhile, in 2022, 13 units in the Group received accolades, such as the Health Promotion Label and Excellent Healthy Workplace Award, which shows how much the group values and cares for its employees.

**(2) Social Outreach**

FPG remains committed to its management philosophy of "taken from the community, given back to society". In addition to the establishment of three universities and the Chang Gung Memorial Hospital, FPG has founded multiple foundations and charitable trusts, giving back over NT\$101.2 billion to the community over the years. FPG's main charitable projects include (see attachment for details):



..... FPG donated rapid tests to local governments

- Campus reconstruction: Since the 921 earthquake, FPG has sponsored the reconstruction projects of 76 school buildings throughout Taiwan that have deteriorated with age or have been stricken by natural disasters. Through these projects, FPG has rebuilt more than 900 classrooms.
- Welfare for the elderly: FPG has donated approximately 1.15 million doses of the pneumococcal vaccine with a total market value of nearly NT\$1 billion for senior citizens over the age of 75. According to research by Chang Gung Memorial Hospital, the vaccine can reduce the infection rate by 76% and the mortality rate by 91%. These donations saved the government over NT\$14.3 billion in medical expenses for pneumonia treatments. Meanwhile, FPG also provided subsidies for improving housing for the elderly, established senior health centers, donated funds and equipment to the Yunlin County Evergreen Canteen, and supported other charitable programs.
- The Rainbow Program and Sunny Program: FPG provided health education, psychological counseling, and skill training for drug-addicted inmates with AIDS (Rainbow Program) and drug offenders (Sunshine Program). FPG also



..... Sponsored the Gardasil 9 HPV vaccination program for girls in the first year of junior high school in Yunlin County



..... FPG has been working on the development of clean energy

provided regular follow-up counseling after inmates are released to help them find employment, cutting recidivism rates from 60-80% down to approximately 10%. Because of these programs, FPG's Chairman received the 11th "Charity Award" from the HK & Macau Taiwanese Charity Fund. In addition to donating all of the prize money, the Wang Jhan-Yang Charitable Trust Fund also donated a matching amount to expand the project.

- Welfare for women and children: FPG promotes many welfare programs for women and children, including medical and financial assistance for patients with rare diseases, education support for minor welfare institutions, support for minors that have left welfare institutions, professional early intervention and treatment for children with developmental disabilities (benefiting over 30,000 children and 92 institutions), financial assistance for families affected by domestic violence, scholarships for low-income students, work-study programs at social welfare institutions, financial support for students in remote areas, talent training programs in remote areas, grants for school lunches in elementary and junior high schools in Yunlin County,

donations towards childcare subsidies provided to grandparents caring for children ages 0-2, donations to provide funds for 7th grade girls to receive the HPV 9-valent vaccine, English courses for students in the remote areas of Hualien and Taitung Counties, and support for the development of preschool children in vulnerable families.

- Other social welfare programs: In addition to providing funding to train young athletes in sports like tennis, table tennis, billiards, and badminton, FPG also actively promotes performances by local art and culture groups, such as Ming Hwa Yuan Arts & Cultural Group, I Wan Jan Puppet Troupe, and Apple Theater, making arts and culture events more accessible to people in remote areas and helping local art and culture groups to grow.

Many of the charitable programs promoted by Formosa Plastics Group were the first of their kind in Taiwan and were widely praised, allowing the Group to elevate the quality of their services and meet the goal of sustainable operation. Under the Chairman's leadership, Formosa Plastics Group is fully realizing the two founders' wish to give back to society.

### (3) Corporate Governance (G)

Sound corporate governance has always been the cornerstone of FPG, as the Company actively practices its management philosophies of "diligence, perseverance, frugality and trustworthiness", "strive for excellence", "positive contribution to the society", and "sustainable development", focusing on the industry, setting targets, formulating measures, and carrying them out to the fullest. At the same time, FPG follows laws and policies protecting the rights of shareholders, strengthening the functions of the company's board of directors, actively improving the transparency of the company's financial and business information, and respecting the rights and interests of stakeholders.

As a result, Nanya Technology ranked in the top 5% in the 8th Corporate Governance Evaluation published in 2022, while Formosa Plastics, Nan Ya, Formosa Chemicals & Fibre, Formosa Petrochemical, Nan Ya Circuit Board, Formosa Sumco Technology and Formosa Taffeta ranked in 6-20%. The 6 listed companies in the Group – Formosa Plastics, Nan Ya, Formosa Chemicals & Fibre, Formosa Petrochemical, Nanya Technology, and Nan Ya Circuit Board – were all selected in the TWSE Corporate Governance 100 Index, demonstrating that FPG's corporate governance achievement is well recognized.

#### Future Operating Environment

The global economy continues to be impacted by factors like geopolitical conflict, inflation, interest rate hikes, climate anomalies, and the pandemic, which have greatly increased global economic risks and uncertainties. Therefore, the economic trend in 2023 will be even more severe and complicated, and it is harder than ever to predict when the global economy will recover.

Additionally, although China's petrochemical industry has partially halted production in 2022 despite expanding new production capacity in recent years, it is bound to resume full production

in the future, which means that output of many products will grow exponentially, which will seriously interfere with market supply, demand and prices, posing a big threat for the global petrochemical industry.

Furthermore, Taiwanese industries are also facing major issues such as economic and trade marginalization, carbon reduction, and energy structure adaptation. CPTPP (Comprehensive and Progressive Agreement for Trans-Pacific Partnership) and RCEP (Regional Comprehensive Economic Partnership Agreement) came into effect at the end of 2018 and January 2022, respectively. Among them, RCEP is the largest free trade agreement in the world, but it is led by China, which makes it unlikely for Taiwan to be allowed to normal in join; Both Taiwan and China applied to join the CPTPP in September 2021, but there has been no good news so far. The government is still working hard to see if Taiwan will be able to join the agreement.

These two agreements both have serious impacts on Taiwan's role in terms of economics and trade. In particular, China and Hong Kong account for more than 40% of Taiwan's foreign trade volume. Failing to join these agreements will surely cause Taiwan to suffer from order transfers. Additionally, Taiwan's FTA coverage is under 10%. With the pressure of tariffs increasing day by day, reducing impact is a challenge that the government must face head-on and respond to in advance.

Particularly, China announced in April 2023 that it will conduct a trade barrier survey on Taiwan's trade restrictive measures against China, involving a total of 2,455 products, including agricultural products, metallurgical and chemical products, and textiles. The survey will be completed as soon as October 12 and is something Taiwanese manufacturers are paying close attention to. Regardless of the results of the survey, China is the second largest economy in the world and Taiwan's largest export market. Its every move is scrutinized by the global economy.

If China expands its countermeasures to other areas of trade, it might even affect the preferential tariff treatment under the early harvest list under ECFA (Cross-Strait Economic Cooperation Framework Agreement), which will ultimately be detrimental to the long-term development of Taiwan's industries, and will also affect cross-strait economic and trade exchanges and collaborations between people. Therefore, this is an issue that requires the government's attention and proper response in advance.

On the other hand, countries around the world are committed to achieving the goal of carbon reduction and net-zero emissions in response to climate change. The EU will even start requiring a declaration of carbon emissions for some imported goods in October 2023 and begin imposing carbon tariffs in 2027 (CBAM, Carbon Border Adjustment Mechanism). With climate change causing severe disasters, countries around the world will continue to roll out new restrictions, which is why all corporations must respond to this global trend of carbon reduction as soon as possible.

Taiwan's industry has always been dominated by manufacturing, and circular economy is currently the most effective way to save energy and reduce carbon. Currently, green electricity is still subject to many restrictions and high cost, so the mandatory use of it will have a great impact on the overall economy. Therefore, FPG suggests that the government consider the vulnerability of energy sources in Taiwan when establishing energy supply structures and not give up on any form of energy allocation. For example, Taiwan can reference the example of other countries and consider the feasibility of developing next-gen small modular reactors(SMR) to ensure stable power supply, using the most appropriate energy structure to ensure sufficient and stable supply in order to keep industries in Taiwan and foster economic development.

## Future Outlook

With so many unfavorable factors, the global economy slowed down significantly in the second half of 2022, and the slowdown may continue throughout 2023. The European and American economies may fall into zero growth or even recession. Under such circumstances, the Chinese economy is expected to rebound due to the relaxation of epidemic prevention measures, but the degree of the rebound still needs to be closely monitored. Therefore, in general, 2023 will likely be a pessimistic and difficult year for the global economy.

Although it is difficult to view the challenging international political and economic situation with optimism, FPG has fortunately always maintained a sense of caution, devoting itself to business operations with a careful and pragmatic attitude.

### (1) New expansions and investments

As for business development, in response to the coming age of 5G and AI, we have introduced 10nm grade DRAM production technology at existing fabs and plans to gradually invest NT\$360 billion to upgrade existing fabs and construct a new fab to introduce several generations of 10nm grade technology and products in order to build a foundation in the DRAM industry and strengthen international competitiveness. FPG is also planning for the development of its business in new energy. It has started construction on the largest lithium iron phosphate battery cell factory in Taiwan in 2023, aiming at its four major goals of "energy saving, energy storage, new energy, and recycling" to do its part in environmental protection.

Regarding overseas business, FPG continues to promote various investment and expansion projects, including the new cold-rolled stainless steel plant in China's Fujian Province, the expansion of petrochemical raw material production capacity in the Ningbo

Plant, and the electronics material expansion project in Huizhou to secure its leading position in the global electronics material market. As for businesses in the US, in order to fully grasp the low-cost competitive advantage of shale gas, FPG has already built its 3rd ethane cracker plant and downstream related petrochemical plants in its Texas plant. Going forward, FPG will also evaluate the feasibility of expanding its investment.

In addition, Formosa Ha Tinh Steel's development of the export market has gradually shown results, with the business successfully entering the European and American markets. The global steel industry is expected to rebound in 2023 thanks to a rise in demand in Europe and the US as well as China lifting its epidemic lockdown policies, so Formosa Ha Tinh Steel will continue to deepen and expand its exports business; At the same time, Formosa Ha Tinh Steel has developed many high-value products, actively breaking into the high-end automotive market as it continues towards its goal of becoming a world-class steel factory.

### (2) AI and ESG development

To enhance operation performance, FPG has also continued to promote AI and AI+simulation, as well as digital transformation to improve production efficiency and the energy utilization rates. The goal is to increase profits by NT\$20-30 billion annually, thereby improving operational efficiency and maintaining stable operations.

On the other hand, not only is achieving net-zero emissions important for keeping in line with international standards, but its success or failure is also an important variable that will affect the development of the industry over the next few decades. In the pursuit of sustainable development, FPG has not only continued to promote ESG sustainable management strategies like energy conservation, carbon reduction, and circular economy, but also further expanded its recycling of discarded oyster shells into antibacterial powder for plastic products, the recycling of PET bottles

to make polyester stable fiber, and the recycling of discarded fishing nets to make reconstituted nylon. FPG is also developing biodegradable and environmentally friendly products, expanding its level of influence and cooperation, before working with downstream supplies to establish a recycling mechanism.

Also, in response to the global trend of energy conservation, carbon reduction, and new energy development, FPG has been working on the development of clean energy such as solar power, minimal water, and wind power generation for many years. FPG will continue expanding upon these efforts as it continues to move towards the long-term goal of achieving carbon neutrality by 2050, and pursuing the sustainable development of the enterprise.

For over six decades since it was founded, FPG has continuously worked to strengthen its global competitiveness. In recent years, FPG has even devoted itself to the development and sales of high-value, differentiated, and green products, expanding the breadth and added value of products as it actively strives for transformation and upgrade; FPG also pays close attention to market and continues the global planning and expanding new overseas markets and diversifying market risks in hopes of creating a solid corporate foundation with diverse values. We firmly believe that it is only with a long-term and solid corporate foundation that we can create prospects for further development in the face of global political and economic changes.



**Summary Table of Formosa Plastics Group's Social Welfare Projects in Taiwan (As of the end of 2022)**

Unit: NTD million

Donors	Main Social Welfare Projects	2022	As of 2022
Formosa Plastics Group	1. Established Ming Chi University of Technology, Chang Gung University, and Chang Gung University of Science and Technology	1,721	44,527
	2. Established Chang Gung Memorial Hospital		
	3. Made donations towards earthquake and typhoon relief and sponsored campus reconstructions		
	4. Organic vegetables, food waste recycling, afforestation		
	5. Donated epidemic relief supplies and the Executive Yuan relief fund.		
	6. Local contributions		
Founder and the Wang Family	1. Established Ming Chi University of Technology, Chang Gung University, and Chang Gung University of Science and Technology	0	26,842
	2. Established Chang Gung Memorial Hospital		
	3. Donation of cochlear implants		
Chang Gung Memorial Hospital (Founded in December 1976)	1. Cover medical expenses for poor or disadvantaged families and unaccompanied or unidentified patients, as well as any emergency relief or care expenses	704	17,842
	2. Provide patients or families with care services and hold various outreach activities		
	3. Organize community health care and health promotion services		
	4. Provide social services		
	5. Organize international medical aid		
	6. Donation of cochlear implants		
	7. Other expenditures		
Wang Chang-Gung Charitable Trust Fund (Founded in October 2002)	1. Disability welfare - Disability welfare such as improving the quality of early intervention institutions	311	3,285
	2. Welfare for minors and women- funding Orphan Scholarship Program, provide nutritious breakfast for junior high school students from disadvantaged families, donate to the Foundation for Scholarly Exchange's Hualien and Taitung English Teaching Assistant Program, the Second-Hand Toys and Children's Playground Project, the Positive Education Campus Promotion Project, and the Vocational Empowerment Program for Women Re-entering the Work Force		
	3. Welfare for the elderly - Pneumococcal vaccine donations for the elderly, Donated to the Smart Long-term Care Assistance System and the FHC Volunteer Program, etc.		
	4. Sports promotion - Athletic trainer assistance program		
	5. Health research - "Formosa Plastics Group - Fulbright" Scholarship		
	6. Educational support and other subsidies for indigenous students		
	7. Welfare for the disadvantaged and others - Homeless service plan, etc.		
Wang Jhan-Yang Charitable Trust Fund (Founded in March 2006)	1. Welfare for minors and women - Scholarships for children and teens, nutritional breakfast subsidy, medical and economic assistance for patients with rare diseases, economic assistance for families affected by domestic violence	122	1,492
	2. Inmate assistance - Sunshine Program rehab program (for inmates with drug offenses), purchase lacquerware made by inmates of Taichung Prison, Ministry of Justice Inmate Family Assistance and Care Program, etc.		
	3. Welfare for the Elderly - Pneumococcal vaccine donations for the elderly, Mailiao and Taixi Township meal delivery plan for senior citizens living alone, Wisdom Foundation Dementia Family Support Program, etc.		
	4. Health promotion - Strategic research on building new health risk concepts, research into preventable factors behind leading causes of death in Taiwan, and health promotion research, etc.		
	5. Cultural sponsorship - Development Program for Taiwan's Characteristic Cultures, Mind Theater campus tour, Yunlin local puppet theater campus performances, etc.		
	6. Sports promotion - Flaming Stars Athletic Talent Cultivation Program, Future Stars Athletic Talent Overseas Training Program, etc.		
	7. Educational support and other subsidies for indigenous students		
	8. Welfare for the disadvantaged and others - Taiwan New Economy Foundation's Industry Environment Excellence Program, lighting improvement program for social welfare institutions (children's institutions, study programs, elder-care institutions)		

Donors	Main Social Welfare Projects	2022	As of 2022
Ching Pao Charitable Trust Fund (Founded in June 2010)	1. Disability welfare - Employment assistance program for mildly autistic people	28	835
	2. Welfare for minors and women - Scholarships and talent training programs for remote areas, Donated to the Foundation for Scholarly Exchange's English Teaching Assistant Program, etc.		
	3. Welfare for the elderly - Housing improvement and home appliance subsidy program, The Foundation for the Welfare of the Elderly's Make a Wish Program, Rural Elders Assistance Program, etc.		
	4. Donated vehicles to social welfare organizations, provide holiday bonuses to low-income households in Mailiao, donated daily necessities and rice to social welfare organizations, emergency aid, assistance program for Yunlin veterans and their families, donated daily necessities to the Chinese Christian Relief Association (1919) food bank, etc.		
Wang Jhan-Yang Social Welfare Foundation (Founded in August 1995)	1. Disability welfare - Improving the quality of early intervention institutions	141	1,919
	2. Welfare for minors and women - Funds for school lunches for elementary and junior high school students in Yunlin County, funds for the construction of welfare institutions for minors and women, donations to provide funds for 7th grade girls in Yunlin County to receive the HPV vaccine, and childcare subsidies provided to grandparents caring for children ages 0-2 in Yunlin County		
	3. Inmate assistance - Rainbow Program (inmates with drug addiction and AIDS), donation to the Taipei Prison Environment Improvement Project, etc.		
	4. Welfare for the elderly - Pneumococcal vaccine donations for the elderly, donation of funds and equipment to the Yunlin County Evergreen Canteen		
	5. Culture - Sponsored the Vienna Philharmonic New Year Concert		
	6. Educational support and other subsidies for indigenous students		
	7. Welfare for the disadvantaged and others - Sponsored the renovation of Mailiao Kongfan Temple, Donations to the Mailiao Township Library and volunteer firefighting group		
Ching Pao Charitable Trust Fund (Founded in November 1995)	1. Disability welfare - Improving the quality of early intervention institutions, donation to the Yunlin Physical Therapy Youth Association for building repairs	306	2,706
	2. Welfare for minors and women - Ching Pao P.D. Scholarship, part-time student workers at social welfare organizations, donation to the Taipei Orphan Welfare Foundation, donation towards breakfasts for junior high school students from disadvantaged families, talent training programs in remote areas, support for minors that have left welfare institutions, and after-school care for elementary school children in remote areas.		
	3. Welfare for the elderly - Housing improvement and home appliance subsidy programs for the elderly, Active Aging Center Program, donation towards establishing healthcare plans for remote areas, etc.		
	4. Health promotion - donations to environmental protection research projects at Chang Gung University and Ming Chi University of Technology		
	5. Educational support and other subsidies for indigenous students		
	6. Support for the disadvantaged and others - Donate daily necessities, rice and vehicles to social welfare organizations for emergency aid. make donations to the Chang Gung Memorial Hospital Social Welfare Foundation, United Way, the Dharma Drum Mountain Humanities, Social Improvement Foundation, and to various social welfare organizations and county/city government social welfare programs.		
Ming-De Foundation (Founded in July 1974)	1. Disability welfare - Early Intervention Service Efficacy Enhancement Program	0.2	89
	2. Welfare for minors and women - Donations to CGU Choir and the Nantou County After-School Program for Indigenous Students		
	3. Educational support and other subsidies for indigenous students		
Jin-che Indigenous Foundation (Founded in April 1997)	1. Welfare for minors and women - Work-study programs and emergency relief for indigenous students	2	17
	2. Educational support and other subsidies for indigenous students		
	3. Welfare for the disadvantaged and others - Donation to the Yilan Leshui Community Development Association		
Ming Chi University of Technology (Founded in December 1963) Chang Gung University of Science and Technology (Founded in June 1988)	Assist indigenous students in their education and employment	2	1,675
Total	Formosa Plastics Group	1,721	44,527
	Founder and the Wang Family	0	26,842
	Chang Gung Memorial Hospital	704	17,842
	Chang Gung University, Chang Gung University of Science and Technology and Ming Chi University of Technology	2	1,675
	Foundations and Charitable Trusts	910	10,343
Total		3,337	101,229



## Formosa Plastics Corporation

FPC commits to developing innovative and high-value materials and processing technologies, and AI technology to enhance the long-term competitiveness.



..... FPC Linyuan Complex

*The Company (Formosa Plastics Corporation) generated consolidated sales of NTD 251.64bn in 2022, reaching 91% of its target of NTD 277.06bn and was down by 8% from NTD 273.59bn generated in 2021. Consolidated pre-tax profit came in at NTD 43.79bn in 2022, reaching 64% of its target of NTD 68.11bn and declined by 49% from NTD 85.95bn generated in 2021.*



*Chairman  
Jason Lin*

It is a challenging year in 2022. In the first quarter, the outbreak of the war between Russia and Ukraine pushing up the price of crude oil, natural gas, coal and other energy prices drove up the price of petrochemical products. In the first half of the year, the consolidated sales and pre-tax profit of the Company reached a new historical high during the same period. However, in the second half the year, the inflation and the accelerated interest rate lifting in the US and Europe affected consumer purchasing power, and both of production and consumption were hindered by the recurrent waves of COVID-19 pandemic, which led to an economic slowdown. The petrochemical industry was not spared. The plummeting product prices on muted demand resulted in a sharp contrast between the industry's boom in the first half of the year and a slump in the latter half of the year. As a result, the Company's consolidated revenue in 2022 decreased by 8% from 2021 and operating profit of NTD 26.79bn was down by NTD 33.36bn from 2021 with a decrease of 55%, mainly due to the narrowed spreads from the most products as their average selling prices could not fully reflect the cost of raw material.

Even though the total cash dividend revenue in 2022 was NTD 8.44bn with an increase of NTD 5.44bn from 2021, the equity income from

investees including Formosa Petrochemical Corp. and Formosa Plastics Corp., U.S.A.(FPC-USA) lowered by NTD 17.69bn from 2021 to NTD 5.44 bn in 2022. The decrease has led the Company's pre-tax profit to decline significantly by 49% YoY.

Looking back at 2022, the war between Russia and Ukraine triggered financial sanctions on oil and gas, and boosted up energy and commodity prices that impacted the global supply chain and caused inflation surge. In an attempt to curb the soaring inflation, countries such as the US and Europe instituted a series of aggressive interest rate hikes and tightened their monetary policies, which has plunged the economy into severe contraction. In addition, the escalation of the trade war between the US and China, COVID-19 policy and the property market situation in China, global climate change, recurrent waves of COVID-19 pandemic and other crisis also led to the economy further towards the trend of de-globalization and set back global trade developments. This appeared to impact Taiwan as its GDP growth of 2022 below 3%. Although Taiwan's economy has been performing well for quite long time, with GDP per capita reaching USD 30,000, many problems have emerged along with its economic and industrial developments that need to be solved by the government and industry together.



..... Chairman inspects the plant of Formosa Tokuyama Advanced Chemicals Co., Ltd.

Taiwan has an independent power grid system, and a stable power supply is the primary goal of the economic stability and development. Since 2016, Taiwan government has been promoting the energy policy of “Promote Green Energy, Increase Natural Gas, Reduce Coal-Fired Power, and Achieve Nuclear-free” , aiming to replace nuclear electricity with natural gas power and renewable energy. However, the energy shortage issue is still not solved under the situation of the lagged construction progress of renewable energy and the unstable power supply. Besides, Taiwan is highly dependent on imported natural gas. In the face of energy shortage and the delayed construction of gas receiving stations, the industry not only was forced to reduce production, but was also pressured to cooperate with some local governments in transitioning away from coal power, which are uncondusive to the long-term development of the industry.

The pursuit of net-zero carbon emission has been the internationally agreed upon goal to fight against global warming and climate change.

The Company, as a global corporate citizen, has committed to achieving carbon neutrality by 2050. However, Taiwan authorities ruling out nuclear energy as an option to the road to net zero has plunged Taiwan into a power shortage crisis, and as aforementioned, making it more difficult for the industry to achieve carbon neutrality goals. Meanwhile in Europe, under the Carbon Border Adjustment Mechanism (CBAM), the importers of certain goods will be required to report on their emissions starting in 2023, while the obligation for importers to pay a levy will kick off in 2027. The counties around the world are expected to follow suit, and if Taiwan is not able to come up with a carbon pricing or carbon control mechanism soon to meet the international carbon reduction requirements, it will adversely affect Taiwan’s global competitiveness.

Moreover, Taiwan has been excluded in both the “Comprehensive and Progressive Agreement for Trans-Pacific Partnership” (CPTPP), which has long been in place, and the world’s largest free trade deal “Regional Comprehensive Economic

Partnership” (RCEP), which has entered into force in 2022. In the short term, the impact of long timeline of tariff reduction under RCEP and the not high rate of cut would be limited for Taiwan as already 70% of the exports to ASEAN region are duty-free and that some Taiwanese companies have set up manufacturing facilities in Southeast Asia. In the long term, however, it is expected to rise pressure on tariff as Taiwan’s free trade agreement (FTA) coverage is standing at less than 10%. As an export-oriented country, this is casting out concerns over Taiwan’s economic growth momentum, particularly in petrochemical, steel and textile industries, as RCEP would provide an access within Asia, Australia and New Zealand to link their resources and reshape APAC supply chain.

In the face of the crises and challenges mentioned above, the Company recommends the government to establish pragmatic energy transition policies, especially at a time when the war between Russia and Ukraine has plunged the European countries that are highly dependent on natural gas into a dilemma of high energy prices and shortage. The government should deploy diversified energy sources, carefully evaluate the extension of existing nuclear power plants under safe circumstances, and assess the feasibility of developing an advanced small modular reactors (SMR) to ensure stable energy supply. The authorities should construct carbon pricing policies and measures that are in line with international carbon market to minimize the gap with international rules, and provide the support to small and mid-size enterprises in reducing carbon footprint. In addition, they should actively participate in regional economic and trade integration with key trading partners to offset the negative impact that RCEP has brought on Taiwan. The Company hopes the Taiwan government would work with the industry to build a friendly and sustainable investment development environment.

In response to the depressed demand and supply bottlenecks in petrochemical industry amid

global political and economic challenges, the Company adheres to the guidance of “Sustainable Operation, and Positive Contribution to Society” ruled by our two founders. By utilizing the advantages of our R&D technology and economies of scale for production capacity accumulated over many years in the industry, the Company and the downstream companies has jointly developed a functional fabric that is fully recyclable, lightweight, antibacterial and organic, aiming to enhance the value of the products and sales volume while improving human’s well-being and quality of life. It is used in apparel productions from industrial, medical, consumer to sports industries such as EVA foam footwear, carbon fiber work boots, 100% polypropylene clothing, etc.

The Company has deepened the development and application of artificial intelligence (AI) technology and digital transformation, and combined AR, VR, and digital twinning technology to realize the application of the Metaverse, and gradually developed AI modules for optimizing the entire factory and digitizing operations, moving towards intelligent factories to improve operational performance. In 2022, 188 out of 415 AI projects completed with an estimated annual benefit of NTD 600 million. Aside from this, in an effort to cultivate existing talents, the Company continues to provide business managers and outstanding talents the training courses from professional institution such as Taiwan Artificial



..... FPC developed the fully recyclable slippers made by TAISOX EF-EVA.



Formosa Wang Brothers Park

Intelligence School. As of 2022, 88 employees have completed the training courses. In order to cultivate more cutting-edge talents, improve the development technology, accelerate process, and lay a solid foundation for digital transformation, the Company provided systemic training courses at all stages, interacted and cooperated with other companies, academic institutions, domestic and foreign experts, and established an AI exchange platform to hold competitions. Furthermore, an automatic machine learning and data lake platform will be built in 2023 in response to the needs of data integration and operation after AI models went online. This is to utilize automated processes in order to reduce the difficulty of maintaining AI models and ensure smooth operation. The Company established a dedicated team for information security in order to strengthen and implement information security measures from these three aspects of management, technology and training.

Furthermore, to achieve the digital transformation goal of customer-centricity and

develop towards a smart production and marketing system, following the establishment of the “Formosa Plastics E-Commerce Platform” in 2021, the Company established a combat center in 2022 in order to integrate real-time information required for operation and management and to improve operational efficiency. The Company would conduct reviews on production, sales, R&D and effectiveness of market expansion on a regular basis, keep abreast of the industry trend, and form strategic alliance with customers as well as with the related industries to improve technology and develop new products and applications. Jointly apply for patents to support market development and create a win-win situation with customers.

Meanwhile, in an attempt to develop circular economy, promote project improvements, reduce the consumption of water, energy, and the utility usage volume per unit, the Company accomplished 1,104 projects in 2022 with an annual benefit of NTD 680 million. By the means mentioned above, the Company is able to gradually pursue the rationalization, strengthen the business essence,

and mitigate the impact of various operating challenges on the Company.

Moreover, the two founder’s offices in the Kaohsiung plant, the birthplace of Formosa Plastics Group, were registered as monument by Kaohsiung City Government. The “Kaohsiung Cultural Foundation of Brothers Wang Yung-Ching and Wang Yung-Tsai Park” was established in the 2.5 hectares’ original site. The restoration was completed and opened to the public from April 2022. The Company, its China Ningbo and the US subsidiaries mainly produce plastics and chemical fiber raw materials. In 1H22, demand from downstream processors of PVC remained strong compared to the previous year, leading to the increase in the price and sales volume. However, the sales volume of PVC in 2022 declined by 3.5% to 1,610K MT from 2021, given (1) the demand in American or European housing and automotive market declined significantly in 2H22 due to accelerated interest lifting against the high inflation, and (2) orders from processing customers decreased sharply due to strict pandemic restrictions policy in China. In 1H22, the sales of caustic soda benefitted from favorable EDC prices, and the peers in Europe reduced production caused by rising energy prices due to the outbreak of the war between Russia and Ukraine, making the customers turn to Asia for procurement, and leading to increased productions and sales for caustic soda plants of the Company. However, the sales volume of caustic soda in 2022 declined by 4.3% to 1,460K MT from 2021, because the Company adjusted production rate during peak and off-peak time after considering the poor profit synergy for EDC and caustic soda, as the market reversed due to inflation and interest rate lifting in 2H22.

The sales volume of high density polyethylene (HDPE) in 2022 decreased by 24.1% to 360K MT from 2021, given (1) the weak global economic growth amid high inflation triggered by the war between Russia and Ukraine and interest rate lifting in the US, and (2) the falling demand under

the strict pandemic restriction policy in China made the price overwhelmed by the variable cost. The sales volume of polyethylene vinyl acetate (EVA) in 2022 decreased by 6.8% to 274K MT from 2021, because of the slowdown in the global economy and the decrease in demand in China, coupled with the reduced production due to the regular maintenance at Mailiao and Ningbo EVA plants. The sales volume of linear low density polyethylene (LLDPE) in 2022 decreased by 0.8% to 480K MT from 2021 as the same reasons abovementioned, which resulted in lower sales volume by 27.1% in Taiwan plants, but it was partially offset by the increasing productions and sales volume of HDPE plants from the US subsidiary, Formosa Industries Corp. The sales volume of acrylic esters (AE) in 2022 decreased by 7.2% to 532K MT from 2021, given (1) the weak demand for house coatings and packaging tapes due to high inflation and interest rate lifting in various counties depressed the demand of raw materials, and (2) the downstream customers gave priority to destocking existing inventory and purchasing based on immediate demand. The sales volume of carbon fiber in 2022 decreased by 9.5% to 6K MT from 2021 as the Company improved the sales mix through strategically increasing production of high-value-added products with better profitability and reducing the 48K large-tow carbon fiber with low margin. The Company’s supply of N-butanol (NBA) is mainly for captive use by AE plants at Taiwan and Ningbo and sales volume in 2022 increased by 3.2% to 220K from 2021 MT, because the Company resumed normal operation in 2022 after the replacement of catalyst in 2021. The sales volume of super absorbent polymer (SAP) in 2022 increased by 14.1% to 192k MT from 2021 due to the order won from Middle East and Turkey market where the local player’s productions were constraints by the shortage of raw materials, acrylic acid.

The sales volume of Polypropylene (PP) in 2022 decreased by 22.1% to 746K MT from 2021, given (1) the production in 1H22 decreased



..... 2022 Energy Taiwan- FPC exhibited the application about solar power.

because of the upgrade of granulators at Linyuan PP plant, (2) the retailer focused on destocking due to the weakened customer purchasing power triggered by the severe situation of the war between Russia and Ukraine, and inflation, and (3) the weak demand in China because of the strict pandemic restrictions policy. The sales volume of AN in 2022 decreased by 28.2% to 201K MT from 2021, given (1) the shrinking terminal demand due to intensified inflation, (2) the peers in China added the new capacity, which resulted in the sharp decline in the demand for import, and (3) the peers aggressively exported to make the fierce competition. The sales volume of methyl methacrylate (MMA) in 2022 declined by 24.6% to 64K MT from 2021, due to a significant decline in demand for both consumer and durable goods triggered by the slowdown in economic growth. On the other hand, as the supply and demand in the US and Europe have stabilized, Asian suppliers, who used to rely on exports to clear inventory, have been forced to compete within the region. This has resulted in a severe oversupply in the spot market. The sales volume of epichlorohydrin

(ECH) in 2022 decreased by 9.4% to 87K MT from 2021 because of the weaker than expected downstream Epoxy demand during the downcycle in tech sector.

In terms of capacity expansion, in order to strengthen the competitiveness and enhance the product's added value, the Company aggressively expanded its capacities and conducted debottleneck projects. In Taiwan Complex, the debottleneck project of PP plant in Linyaun with new capacities by 10K MT to 484K MT per annum has been completed in 1H22. The debottleneck project of PVC plants in Renwu, Linyaun and Mailiao with new capacities by 100K MT to 1,415K MT per annum is expected to be completed in 2023. In addition, the Company has set up a medical material center in Renwu to produce medical-grade compound resin and natural antibacterial materials such as PVC, PE and PP. It is expected to be completed and commerce in 2023. The expansion project of Renwu carbon fiber series A with an annual output of 1,600 MT is expected to be completed in 1H25.

In Ningbo Complex, the EVA debottleneck project with new capacity by 28K to 100K MT per annum has been completed and started production in 2022. The new PDH plant with annual capacity of 600K MT propylene is expected to be completed and commence production in 2H23. In the US Complex, the new Texas 1-hexene plant with annual capacity of 100K MT is planned to be completed at the end of 2025.

Furthermore, in Kaohsiung, the Company's storage tank in Qianzhen District will be moved to the Phase II intercontinental petrochemical zone in order to follow the local urban development plan. The Company has rent the land and dock from Kaohsiung Taiwan International Ports Corporation for petrochemical usage and will build 12 storage tanks and 1 salt warehouse, which are expected to be completed by 1H25. In addition, in order to increase the storage space of the Linyuan factory area and strengthen research and development, it is planned to build a new Linyuan joint shipping center and a R&D building, which are expected to be completed at the end of 2024.

In terms of equity investments, FPC-USA's (22.66% owned by the Company) pre-tax income of USD 726 million declined from 2021 due to the war between Russia and Ukraine has led to a global surge in energy prices. In addition, the United States Federal Reserve accelerated interest rate hikes to curb the persistent inflationary pressure. The global supply and demand chain have become imbalanced due to factors such as China's mainland epidemic prevention and control policies. As a result, the prices of major products of the Company have dropped significantly since 3Q22, leading to a decrease in profits.

In addition, Fujian Fuxin Special Steel Co., Ltd. (29.16% owned by the Company) struggled and continued to operate at loss in 2022 as demand deteriorated amidst rising energy prices in Europe, China lockdowns, and global high inflation environment. Moreover, in order to ease the debt pressure in the real estate market,

China announced various fiscal stimulus, but the effect was minimal, resulting in a significant reduction in steel demand. At the same time, Chinese government promoted carbon neutrality, implemented energy consumption dual control, and limited electricity production. It is expected that the pandemic prevention control in China will be gradually loosened, and stimulus policies to boost domestic demand will be rolled out, and the stainless steel market is expected to rebound in 2023.

In terms of research and development, the Company spent NTD 3bn on R&D in 2022, accounted for 1% of the Company's revenues. These R&D expenses were mainly spent on new formulation development, production process improvement, product quality upgrade, energy consumption saving, and human resources cultivation to increase added value and lower cost. In 2022, the Company completed 59 R&D projects with an annual benefit of NTD 150 million. Meanwhile, the Company conducted R&D on advanced production techniques and commercialize specialty products including micro-suspension paste PVC for low-temperature foaming application, cross-linked paste PVC for matte finish product, high efficiency baffle in the reactor, silica aerogel insulation paint, anti-fouling peritoneal dialysis silicone catheter, PERT-I type heat-resistant HDPE pipe, black HDPE compound for injection-molded pressure fittings, fully recyclable physical foaming EVA resin, modulus enhanced carbon fiber with dry jet wet spinning, intermediate modulus carbon fiber with dry jet wet spinning, high-end thermoplastic carbon fiber composite, biopropylene based SAP, biodegradable PP, post-consumer recycled resin(PCR), anti-adhesion PP paint bucket, high gloss random impact PP copolymer, which has achieved good results in increasing the added value of downstream products.

In order to enhance the competitiveness, the Company actively invested in the key technology development and applied for both domestic and

international patents. In 2022, the Company received approval on 40 patents, and had a total of 250 effective patents as of the end of 2022. In order to deepen the research and development foundation and continue to strengthen the connotation of industry-academia cooperation, the Company speeds up and widens the research ability, which help to shorten product development cycle by the quantum high-speed computing research resources from top domestic academic institutions. In addition, combined with the establishment of Mailiao high-end instrument center and virtual laboratories, the Company will develop forward-looking composite materials such as medical materials, energy, and green materials. Meanwhile, the Company also set up medical material center and continued to work with industry experts and academic areas to specialize ultra-high-performance PP melt-blown filter materials and zwitterionic anti-fouling compound resin, as well as natural anti-bacterial and beauty-related green products.

Regarding to the National Science and Technology Program, “Capture and Reuse of Flue Gas”, was qualified to receive the subsidy from Ministry of Economic Affairs in 2019. It was put into trial operation in December 2021 and review meeting was completed in September 2022 in Renwu Complex, which will help to promote ESG and carbon neutral development policies in the future.

On the operational safety and environmental protection front, the Company always puts emphasis on industry development and environmental protection equally. As of the end of 2022, the accumulated investments on operational safety, environmental protection, and firefighting reached NTD 28bn, which was mainly spent on controlling pollution, energy saving, waste and greenhouse gases reduction, and operational safety and firefighting improvement. The Company’s pollution treatment and emissions are better than national regulatory standards. In 2022, several business units of the Company were praised by

local government on the good performance in operational safety and environmental protection front, such as, Mailiao ECH and Butanol plants praised by Yunlin government for strong performance on occupational safety and health. The Mailiao ECH factory won the Five-Star Award due to its good performance in the last three years. The Company also received the Green Procurement Excellent Unit awards separately from Department of Environmental Protection in Taipei and Kaohsiung.

In terms of greenhouse gas reduction, the Company sets short-term (20% reduction in 2025), medium-term (40% reduction in 2030) and long-term (carbon neutrality by 2050) reduction targets based on the benchmark of greenhouse gas (Scope 1 and 2) emissions in 2020 with 8.635 million MT. After a thorough test conducted by a third-party institution, the total greenhouse gas (Scope 1 and 2) emissions in 2021 was 8.604 million MT, a reduction of 31,000 MT compared with 2020, a decrease of 0.4%.

In terms of water and energy conservation and greenhouse emissions reduction, the Company accomplished 949 improvement projects in 2022. Total water saved amounted to 3,789 MT/day, while greenhouse gas emissions reduction reached 136K MT/year. Other ongoing 1,179 improvement projects were expected to further conserve water by 8,202 MT/day and reduce greenhouse gas emissions by 389K MT/year. According to the results announced by Carbon Disclosure Project (CDP) in 2022, the Company was rated as “A-” in climate change assessment and water resources assessment. Both achievements were among the top rankings within many well-known international chemical companies, which shows that the Company’s efforts in energy saving, emission reduction and circular economy in response to climate change have achieved considerable results.

Besides, in order to enhance operational safety, prevent occupational disasters, and ensure

the safety and health of labors, the Company continued to conduct overall equipment inspection, implement Standard Operating Procedures (SOP), Management of Change (MOC) and Process Hazard Analysis (PHA) operations, and strengthen inspections of machinery and equipment for improvement. For the Company’s expansion projects, supervisors and contractors are required to manage themselves and mobile cameras are installed on site to strengthen the control of operation progress to supervise whether the safety regulations of operators are implemented, and to assist supervisors to better ensure industrial safety. Besides, the company developed “Image Recognition System for Construction Site Safety” through AI and image recognition technology to set up electronic fences. It can be applied to personnel control in suspension areas, helmet belt wearing, and high-risk area management which have been tested at the expansion construction site to fulfil the need to monitor construction site 24 hours a day, implement industrial safety management, prevent productions issues, and establish a happy, friendly and healthy workplace.

In response to increasingly stringent environmental regulations, all plants are required to implement measures such as reducing VOC sources, streamlining equipment components,

and gradually eliminating low-leakage equipment components. The Company also strengthen autonomous inspections by the application of infrared detector (Gas Finder). Meanwhile, the Company enhance the management of various environmental indicators to continue promoting carbon neutrality and zero discharge of wasted water for a friendly environment.

Looking ahead to 2023, due to the ongoing uncertainty from the war between Russia and Ukraine and the high interest rate in several major countries, global economy is faced with suppressed outlook. According to the forecast of the International Monetary Fund (IMF), the global economic growth rate will decline compared with 2022 and be the weakest in the near 90 years. However, the recent high inflation in the US and Europe seems to have reached the peak. The prices of energy, shipping and logistics costs, real estate and rents have fallen due to the expectation of slowing down of inflation and interest rate lifting. With increasing demand after the reopening in China, sign of recovering economy has emerged.

Nonetheless, there is still uncertainty ahead. The timing and magnitude of recovery may depend on when the war between Russia and Ukraine ends, the development of pandemic and



..... FPC Flue Gas CO<sub>2</sub> Capturing and Utilization Pilot Plant

the adjustment of pandemic prevention control policies in various countries, the interest rate hikes cycle and inflation status, and the impact of geopolitical risks on raw material prices.

The supply of petrochemical raw materials exceeded demand in the 2H22. According to the estimate of the international professional organization CMA (Chemical Market Analytics), the global annual ethylene production capacity will increase by 10.76 million MT in 2023. In terms of demand, based on the global ethylene demand growth of 0.9x of GDP growth, demand should only increase by 4.4 million MT in 2023. While propylene net capacity increase will be 12.08 million MT in 2023, the incremental propylene demand (based on 0.6x of GDP growth) should only be 2 million MT in 2023. The supply of petrochemical products will continue to exceed demand.

After recording a historical strong performance in 2021, the war between Russia and Ukraine and deglobalization caused the rising price in food and energy in 2022, which pushed up the inflation. The Consumer Price Index (CPI) of the US and Europe hit the historical peak respectively after June 2022, which made Fed in the US and central bank in Europe lift the interest rate to depress the inflation. However, it resulted in the weak terminal demand, the declined product price, comprehensive inventory adjustment across the petrochemical and related industry chains and sharply decreased international trade logistics which could be evidenced by falling freight in 2022. The global economy depressed and the demand of Asia's petrochemical raw material sharply declined. As the CPI in various countries seems to have peaked at the end of 2022 and the prices of energy, raw materials and shipping logistics costs have fallen, the market expects inflation to decrease quarter by quarter. As the interest rate hikes cycle may normalize, and consumer confidence may also improve, the demand of petrochemical products is expected to gradually recover. Inventory destocking at retailers

is expected to come to the end after three quarters of adjustment from the 2Q22.

Furthermore, China is the largest market for petrochemical products and the key factor of the market price. As the China government loosen the pandemic restrictions in December 2022 and cancelled lockdown in January 2023, it may face the period of economic pain intensified by the pandemic in the short term. In the long term, it is expected to achieve herd immunity early by coexisting with the virus. If the China government still promotes the economy stimulation policy and stabilize the real estate market after the meeting of the 20th National Congress of the Communist Party, it could be a positive on the demand of petrochemical products and shorten the stock adjustment cycle. Therefore, petrochemical industry is expected to rebound from the bottom in 2023.

However, several factors will lead to the regionalization of the industrial chain, including pandemic, extreme weather, geopolitical conflicts, deglobalization, and the war between Russia and Ukraine. In addition, the new capacity from peers will make the market more competitive and the Company's operation will be more challenging.

In order to achieve sustainable operation and minimize the impact of industry fluctuations, the Company strictly monitors capital expenditures, reduces raw materials and finished product inventories, and thoroughly reviews various safety management regulations of petrochemical plants, and replaces old equipment. The Company also implements SOP, MOC, and PHA operations to eliminate potential safety hazards and allow the factory to maintain stable production with zero accidents. In terms of sales management, differentiated and high-quality products and timely services are provided to win the trust of customers. The Company will also accelerate digital transformation, use AI technology to optimize production and sales, and actively expand new customers and new markets through long-distance

marketing to enhance competitiveness.

Meanwhile, to better support its future growth, the Company will continue to deepen AI development, strengthen industry- academia-research cooperation, and seek advanced technology transfer or cooperative development. To follow the success in the development of shoe materials, the Company will join with raw material suppliers, upstream and downstream supply chains through strategic alliances to enhance its technology capability and develop new products. The Company will also apply for patents for its new development to ensure its market monopoly and share future growth profits.

In addition, in the face of the global low-carbon transformation wave, and the trend of health care, technological innovation and new economic development in the post-pandemic era, the Company is committed to the research and development of environmentally-friendly and

medical-grade products, such as fully recycled plastics, anti-adhesive composite rubber resins, biodegradable and green plastics, etc. The Company will also continue to promote product transformation, create product's multiple values, promote circular economy and energy conservation and carbon reduction transformation strategies, strengthen risk control of climate change, cooperate with upstream and downstream supply chains to promote ESG transformation, and move towards carbon neutrality by 2050. The Company looks forward to strengthening its business operations through innovative and adaptable strategies, in order to mitigate operation headwinds, maintain profitability in the downturn, and fully prepare for the next upcycle in petrochemical industry.



2022 TASS Sustainable Taiwan Expo-FPC dye-sensitized solar cell



## Nan Ya Plastics Corporation

Nan Ya combines technological innovation application, green environmental protection and circular economic development, moves production process towards intelligence, and achieves the goal of reuse and resource utilization.



..... Nan Ya pipe manufacturing process

*In 2022, Nan Ya Plastics Corp. (NPC) recorded a consolidated revenue of NT\$355.18 billion, marking a 13.7% decrease from NT\$411.67 billion in 2021; and a consolidated pre-tax income of NT\$47.55 billion, declining by 54.0% compared to NT\$103.46 billion in 2021.*



*Chairman  
Chia-Chau Wu*

The global economic growth experienced a slowdown in 2022 due to factors such as inflation, the Russia-Ukraine war, and pandemic control. Nevertheless, thanks to the expanding demand for circuit boards, the comprehensive cross-strait distribution of electronic material products such as copper-clad laminate, coupled with the competitiveness of polyester products in the U.S., and the vigorous improvement in the operating quality of plastic processing products, the Company's consolidated revenue and operating income for the year both achieved the second-highest performance since the adoption of IFRSs consolidated financial statements, despite the unfavorable overall environment.

The four major product categories of NPC operations are plastic processing, chemicals, polyesters, and electronic materials.

In terms of plastic processing, NPC continued to engage in the R&D of innovative applications, new materials, and eco-friendly products with special specifications to increase the sales ratio of differentiated and high-value products. We also carried out capacity consolidation, introduced automatic monitoring equipment to enhance machine productivity, and expanded into high-end and potential emerging markets by promoting e-commerce and online marketing.

Moreover, we took advantage of our decentralized production sites at home and abroad in Taiwan, China, the U.S., and Vietnam. By coordinating production and marketing operations among our plants promptly, we provided satisfactory service and experience to our customers. Despite the challenges posed by the pandemic, our various efforts enabled us to achieve consistent profitability in plastic products..



..... Nan Ya and Privo collaborate blood bag and leukocyte reduction filter system

In terms of petrochemical products, in line with vertical integration and division of labor in the Sixth Naphtha Cracking Plant in Mailiao, NPC's products, including ethylene glycol (EG), Bisphenol-A (BPA), 1,4-butylene glycol





..... SAYA brand releases environmentally sustainable products

(1,4BG), plasticizers, phthalic anhydride (PA), 2-ethylhexanol (2EH), and epoxy resin (Epoxy), have been vertically integrated into upstream and downstream industries to form a complete supply chain that supports the development of downstream industries such as polyester, electronics, and plastic processing, respectively.

In 2022, mainland China continued to retain strict zero-COVID measures, which affected end-user demand. On top of that, global inflation and interest rate hikes weakened people’s purchasing power, resulting in a sharp economic downturn. Moreover, continuous expansions of new petrochemical production capacity in China intensified market competition. Accordingly, some EG plant production lines in Taiwan and the U.S. were suspended in response to the weak market conditions.

The market for BPA experienced oversupply due to increased industrial production capacity and a slowdown in downstream demand. Thus, both sales price and volume were lower than those

in 2021. The sales of 1,4BG products were also impacted by a significant decrease in downstream industry activation and the overall profitability of chemical products showed a decline.

The demand for polyester products weakened due to inflation, causing a contraction of end consumption in various applications such as apparel and automotive interiors. It led to the accumulation of inventories for brand owners and downstream customers. Additionally, owing to price-cutting competition from the mainland industry, customers tended to be cautious in placing orders, and the activation rate failed considerably, leading to a drop in the overall profitability of the Taiwan and mainland plants compared to that of 2021. Nonetheless, the U.S. plant in South Carolina remained profitable thanks to its strong competitiveness.

With the rise of global environmental awareness, there are unlimited opportunities for recycling and the circular economy. The Company has been keenly invested in the R&D

of products related to PET bottles, marine, and fabric recycling, as well as biodegradability and green energy. Meanwhile, we are devoted to promoting dope-colored PET, which saves 97% water compared to traditional dyeing methods, effectively reducing energy consumption. We are also working to develop 100% recyclable polyester to improve recycling efficiency and expand fiber product applications, thereby achieving further profit growth.

As for electronic materials, which were impacted by war, inflation, and interest rate hikes in 2022, coupled with the relaxation of pandemic control in Europe and the U.S, people gradually resumed their pre-pandemic lifestyles, causing a slumping demand for computers, cell phones, and home economy-related electronic products. Accordingly, the supply chain prioritized destocking in the latter half of the year, resulting in a drop in sales of various products. Whereas overall profitability remained positive, it was relatively lower than the peak in 2021.

During the first half of 2023, countries such as Europe and the U.S. are expected to curb inflation with continuous tightening policies while the market remains conservative. In the second half of the year, the market is expected to return to normalcy with the easing of pandemic control, a slowdown in inflation, and almost a year of inventory control within the industrial chain. Moreover, various countries persist in pushing new energy vehicle policies and accelerating the development of lithium batteries, together with AI, 5G communication, server, wind power construction, and related applications, which will drive the growing demand for electronic materials.

We will seize the opportunity of the gradual market recovery and flexibly utilize cross-strait production capacity in Taiwan and China to maximize margins by taking full advantage of the vertical integration of upstream and downstream. Furthermore, we will earnestly propel differentiated products to increase the sales ratio of

high-function niche products to drive revenue and profit growth.

Nan Ya Printed Circuit Board Corp., a reinvestment company of NPC, has been cultivating the high-end IC substrate market for a long time and has been working with customers to launch next-generation CPU, GPU, Netcom, automotive, AI, and HPC (high-performance computing) application substrates. With their new capacity for high-end IC substrates now in mass production since the fourth quarter of 2022, the sales ratio of high-value products will be further elevated, leading to a quarterly increase in revenue and taking operating performance to the next level.

Under the development of advanced technologies such as chiplet packaging and heterogeneous chip integration, the demand for high-end IC substrates continues to grow. In response to future development trends, Nan Ya Printed Circuit Board Corp., has actively strengthened its R&D capabilities and expanded production capacity to meet market demand. Amongst, the new ABF substrate capacity of Shulin Plant Phase I and Kunshan Plant Phase II have contributed to revenue and are scheduled to reach full production by the first quarter of 2023, while Shulin Plant Phase II is set to begin mass production in the first quarter of 2024, which is expected to significantly raise revenue and profitability.

Nan Ya Technology Corp., another reinvested company of NPC, is dedicated to developing, manufacturing, and selling DRAM products. Although market conditions remained favorable in the first half of 2022, customers began to adjust inventories in the second half of the year because of plummeting demand for consumer electronics products, resulting in a quarterly decline in memory market prices and volumes. Without delay, Nan Ya Technology Corp. adopted several measures to enhance its operational resilience, including inventory control, reduced capital expenditures, and cost-cutting.



Groundbreaking ceremony for Nanya Technology Corporation's new factory

DRAM is an essential component in the smartification of electronic products. The future introduction of various consumer smart electronics, together with the advancement of AI, 5G, smart cities, smart factories, smart cars, etc., will drive the diversification of DRAM applications. It is expected that the market will begin to improve quarterly starting in the second half of 2023. Aside from continuing to promote existing product sales, we will intensify our independent development capabilities to foster our long-term competitiveness.

As we look towards 2023, the Russia-Ukraine war shows no signs of abating in the first quarter. In addition, inflation in Europe and the United States has not yet reached its lowest point, and China's domestic demand has not picked up despite the lifting of the lockdown, leading to an overall weak global economy. Some of these negative factors are expected to gradually ease from the second quarter onwards, and market conditions are likely to pick up quarter by quarter. Nonetheless, the global economy remains vulnerable to political and economic risks that could undermine the progress made toward recovery this year.

In addition, the U.S. ban on China's technology industry is becoming increasingly stringent, and the shift from a trade war to a technology war may impact global supply chains. Furthermore, corporations are facing challenges related to issues such as climate change, sustainable development, and smart technology. Given the complexity of international situations and market trends, we will aggressively give impetus to the following business strategies to establish a solid foundation for our growth and profitability:

1. Optimizing the product portfolio, proactively expanding markets, and maximizing productivity
2. Utilizing smart technology, accelerating digital transformation, and enhancing NPC's operating efficiency
3. Strengthening operational resilience, surpassing governance indicators, and moving toward sustainable corporate development

Under the aforesaid business strategy, we will stay up-to-date with market trends, remain

focusing on new materials for 5G high-frequency and high-speed, new energy vehicles, and automotive electronic substrates as the core to develop high-value and differentiated advanced applied materials, and drive the development of a series of upstream and downstream products. We will also optimize our existing products by eliminating underperforming products and shifting towards high-end products, expand into diverse markets and consolidate our equipment production lines concurrently to realize the maximum production capacity, effectively increase capacity utilization, and maximize productivity.

Apart from that, the application of smart technology is becoming increasingly mature. In addition to the continuous introduction of AI into equipment and manufacturing processes, various digital data will be integrated to establish a digital management platform so as to optimize production control, smarten up the process and management, and ultimately enhance NPC's operating efficiency.

Additionally, global climate change and sustainable development are inevitable issues for business operations. Hence, the "Sustainable Development Commission" has been established under the Board of Directors to push forward "low-carbon energy transition," "energy conservation and circular economy," "increasing renewable energy usage," "application of carbon capture technology," etc. We are taking proactive measures to confront the opportunities and challenges posed by climate change to the business, strengthening operational resilience, implementing corporate governance, fulfilling corporate social responsibility, and moving toward sustainable corporate development.

To seize the opportunity of the green environment and circular economy, we have developed environmentally friendly and high-value green products to provide consumers with more choices. In addition to obtaining environmental protection labels and green building material labels, some products also meet the global

standard of textile recycling. Over the past three years, we have sold 271,000 tons of PET bottle recycling products, approximately reduced 468,000 tons of greenhouse gas emissions, equivalent to the carbon absorption of 1,199 Daan Park, and realized the goal of reduction, reuse, and resource utilization.

Subsequently, to meet market demand and respond to trends such as supply chain shift, carbon footprint reduction, and local supply, we will establish a regionalized supply system and fortify the autonomy of the supply chain with production layout in Taiwan, China, the U.S., Vietnam, and other places to master emerging developments in Southeast Asia, South Asia, etc. and economic recovery opportunities in Europe, and to improve production and sales flexibility by diversifying production areas, markets, and channels.

In terms of new expansions and investments, the copper-clad laminate and glass fiber at Huizhou Plant in China has been put into production in 2022. This year, several investments will also be completed successively, including release liners, ABF substrates, and leukoreduction blood bags for medical use at Shulin Plant, Taiwan, thermoplastic biodegradable plastic (PBAT) at Linkou Plant, Taiwan, bisphenol-A (BPA) at Ningbo Plant and ABF substrates at Kunshan Plant, China. These investments are expected to generate an annual output value of over NT\$20 billion.

In the upcoming years, the Company plans to pursue various expansion projects such as ABF substrates of Nan Ya Printed Circuit Board Corp., electronic materials, and plant solar system installation in Taiwan. Moving forward, we will closely monitor changes in the supply chain along with industry trends and international economic and trade situations and make timely and appropriate investments in new capacity expansion and low-carbon energy transition to enhance operational resilience and drive sustainable growth.



## Formosa Chemicals & Fibre Corporation

Promote green products, to live up to the theme: "We Produce, We Recycle", and create a responsible and sustainable operational environment.



..... Chiayi Xinggang Plant

Impacted by the imbalance of the supply chain and the Ukraine-Russia conflict, costs of crude oil, energy, and raw materials and supplies rose in 2022. Governments followed one another in raising interest rates against inflation. The zero-COVID lock-down for control purpose in Mainland China, the shrinking market demand, and the slowing economic growth, in addition, all posed challenges for operations as far as the stress in de-stocking and the rising costs are concerned. The consolidated revenue of the Company throughout 2022 came to NT\$379.9 billion, an increase of NT\$14.1 billion and a growth of 3.9% from that in 2021, which was NT\$365.8 billion. As far as the selling price is concerned, due to continued investment in and release of additional throughput and the fierce competition on the market of Mainland China, selling prices of plastic products, acetone, and acetic acid were lower than those in 2021 while prices of petrochemical and textile products remained higher than those in 2021. For the second half of 2022, reflective of the rise in the price of coal, selling prices of electricity and steam rose NT\$34.3 billion. In terms of sales, impacted by inflation and the zero-COVID policy in Mainland China against the pandemic, demand weakened. Except for the new production line of PIA in Ningbo that was on full production and full sales and the increased sales of SM, production and sales were regulated and periodic exams were scheduled for a majority of products. Sales dropped by NT\$20.3 billion.

In terms of interest, the consolidated pre-tax one came to NT\$9.6 billion in 2022, which, compared to NT\$50.2 billion in 2021, dropped by NT\$40.6 billion, a decline of 80.9%, mainly because of the investment in and release of the refining new throughput in Mainland China and the increase in market demand that suppressed the quotations plus the skyrocketing energy cost and inflation stress from the Ukraine-Russia war. All

of these led to shrinking consumption power on the market. Zero-COVID lock-down for control purpose in Mainland affected activation in the downstream. Customers purchase conservatively and counterparts compete with one another at slated prices. As a result, business profits for the Company dropped significantly throughout the year.



Chairman  
**Hung Fu Yuan**



..... Taipei Innovative Textile Application Show(TITA)- FPG demonstrates the spirit of energy saving, waste reduction and sustainable environmental protection

In 2022, global inflation climbed at an alarming rate. The US government increased the interest rate seven times by 17 x 0.25% in total. The Ukraine-Russia war triggered a shortage in energy and rising prices. Plus the dynamic zero-COVID policy in Mainland China and the excessive investment in and release of the new refining throughput. These five factors led to shrinking consumption on the market and suppressed the demand for and prices of products. The crude oil in West Texas for the first half a year rose to USD 130 per barrel once and then slid all the way down to USD 80 per barrel as the global economic growth slowed down and consumption demand slid. On average, it was USD 94.33 per barrel, which was still an increase of 38.5% from that in 2021. The demand for naphtha was undesirable; nevertheless, it also rose by 21.1%. Petrochemical and plastic products, however, did not rise; instead, they fell. Comprehensive falls were seen in plastic products, in particular. Raw materials in the upstream, such as vinyl, acrylic, benzene, SM, phenyl hydroxide, and BPA

and, also fell much and rose little. In the case of benzene, which showed the most significant rise, it was only 11.6%; none was comparable to naphtha. With the additional refining throughput in Mainland China that continued to be invested in and devoted, supply and balance on the market experienced an imbalance. Prices slid quickly. Demand from downstream customers featured rigid procurement meant to help stay operative at low inventory levels. In addition, the sky-rocketing energy cost squeezed the profits of petrochemical products and plastics in the mid-stream and downstream. Profits of the Company also began to drop. For the second half of the year, deficits showed. Despite the devotion to expand sales and to secure market presence, operations were quite harsh.

As part of the consolidated revenue in 2022, the parent company's net revenue was NT\$194 billion accounting for 51.1% of the consolidated revenue. Net revenue of subsidiaries such as Formosa Industries Corporation in

Ningbo, Formosa Industries Corporation in Vietnam, and Formosa Taffeta Co., Ltd., totaled NT\$185.9 billion, accounting for 48.9% of the consolidated revenue. Main contributors to the parent company's revenue are petrochemical and plastic products. Both combined had a net worth of NT\$178.8 billion, accounting for 92.2% of the parent company's revenue. Among them, petrochemical products totaled NT\$127.8 billion or 65.9% and plastic products NT\$51 billion or 26.3%.

Under the premise that safe production is ensured, for each major product, the operation focuses on market expansion reflective of the production and distribution status, continued promotion of water and energy conservation, and reduced consumption and emissions, among other circular economy improvement, as well as proactive promotion of AI smart production and digital transformation and maximized high value-oriented product developments in order to improve quality of products, bring down costs, and strengthen the operational composition.

As far as petrochemical products are concerned, multiple energy improvement projects such as heterogeneous unit thermal recycling and process cross-zone thermal integration and addition of heat separator to the transalkylation unit were completed for the first aromatic hydrocarbon plant to significantly reduce energy consumption. Meanwhile, efforts continued to promote recycling of waste heat from processes for production of low-pressure steam, enhance equipment efficacy, and optimize and adjust operations for the sake of optimizing energy conservation, consolidating carbon reduction, and realizing energy transformation. EBMAX and SM distillation zone thermal integration were completed for the styrene plant in Mailiao to improve and bring down the processing cost and to increase competitive advantages. Although the product spread of PTA continued to slide due to increased supply from the additional throughput

invested in and devoted, PTA energy consumption is low in Ningbo and the product is known for its optimal quality and steady lead-time to be highly trusted among customers. Full-energy production throughout the year got to be maintained. The production lines in Taiwan, on the other hand, had their production adjusted reflective of the production and distribution status. In terms of PIA, the new production line with a throughput of 200 thousand tons a year in Ningbo was commissioned in May 2021, the potential customer bases domestically and internationally for bottle chips, low-melt fibers, and coatings continued to be expanded. The monthly sales across the Taiwan Strait in October 2022 broke the threshold of 40 thousand tons in total and are heading towards 45 thousand tons in order to increase the presence of the Company's PIA on the global market and to gradually secure the leading position on the market.

For plastic products, impacted by the zero-COVID lock-down for control purpose in Mainland China and the heated global inflation in 2022, the stocks of various plastic products and their production sizes and sales were adjusted and hence sales saw consistent declines compared to 2021. Only PS showed profits throughout the year. Others like ABS, PP, and PC suffered deficits. Faced with the additional throughput in Mainland China, for 2023, continued efforts will be made to increase the ratios of differential sales and to realize market decentralization. Differential goals of respective products will be 50% for PS, 42.3% for ABS, 55% for PP, and 35% for PC and the ratios of sales on the market of Mainland China will be reduced wherever possible. Furthermore, additional throughput of ABS totaling 250 thousand tons is expected to be added in April 2023 in Ningbo to continue securing the market share in Mainland China and to proactively sell to RCEP tariff-free countries.

In textiles and fiber products, impacted by undesirable factors, such as the pandemic for



FCFC with Taiwan Water Corporation developed the small hydropower generation at Shalu Water Distribution Center

the plants in Taiwan and Vietnam, the price cut competition in the textile products from Mainland China, rising energy costs, and inflation, sales of textiles, nylon, and rayon cotton dropped. The downturn for the second half of 2022, in particular, led to the downstream becoming conservative about the market. Terminal demand hence shrank significantly and production was reduced in response. Deficits surfaced. On the basis of long-term promotion, costs of raw materials for the first half of the year were properly controlled for high-value textile products. Their profits were higher than those of cotton yarn that sold better. As a result, the plant in Vietnam remained profitable throughout the year.

Sustainable development is the focus of business administration while ESG (environmental protection, social responsibility, and corporate governance) is the unchanged priority in business operation of the Company.

In order to boost industrial safety, the Company formed the Sustainable Safety Project Team in 2019 to enforce the “person-centered” safety strategy, explore blind spots in safety management, eliminate underlying risks, and reinforce communications on safety awareness among employees. It optimally contributed to workplace security. The Company won awards as the “Annual Out-standing Healthy Workplace”

and the “Occupational Safety and Security Out-performer” in 2022. For 2023, the goal is “continue with fundamental security and advance in autonomous management”. Sharing of experiences, consolidation of contractor and staff trainings, promotion of equipment MI, change of ideas about safety and culture among employees, and zero-disasters are to be fulfilled through internal and external exchanges.

In the face of changes in digital technology and the macro-environment, the Digital and Energy Transformation Project Team was formed in December 2021 to take charge of integrating digital and energy transformations throughout the Company. Digital transformation, in particular, covers digital optimization and AI application of a smart plant (covering operation, care, and safety) and dynamic operational management. Energy transformation covers continued efforts in the promotion of water and energy conservation, establishment of coal reduction and energy transformation strategies, development of clean energy, such as solar power, minimal water, and wind power generation projects as well as enrollment in the Science Based Targets Initiative (SBTi) and the Task Force on Climate-related Financial Disclosures (TCFD) in order to be on a par with international climate change-related initiatives and to answer to the international carbon reduction trend. Throughout 2022, energy conservation and carbon reduction accomplishments totaled NTD 0.95 billion, with 375 engineering improvement projects completed, saving a total of 2,793 tons of water per day, 100.2 tons of steam per hour, and 7.26 kWh of electricity per hour.

The Company continues with investments and transformations. Plastic recycling began in the beginning of 2022. The annual throughput of composite materials of the three plants across the Taiwan Strait under the Plastics Department reached 132 thousand tons already. In addition, the new throughput of the ABS plant in Ningbo totaling 250 thousand tons and the expanded

annual production process of 1.5 million tons a year of the PTA plant in Ningbo that are to be completed in 2023, and the additional throughput of 100 thousand tons for the fourth series of PS in Xingang for 2024 consistently feature the most advanced production technology and are unparalleled in the industry.

For the coming 2023, uncertain factors such as carbon tax, the Ukraine-Russia war, geopolitical competition, and economic slow-downs in Europe and America remain. After three years of the pandemic, the Company will be dealing with pressure and challenges in its operations such as the changing economic model, the changing manpower structure, the significantly increased shortage in labor, and the possible lagging production, marketing, and transportation chains to catch up with recovery. The nearly doubling quantities of petrochemical and plastic products from additional investments in and releases of throughput in Mainland China have seriously impacted the supply and demand and prices on the market and are the greatest gray rhino. With the removal of control over the pandemic in Mainland China, the gradual recovery of liquidity in society, and the slow recovery of demand for consumption, however, the accumulated stocks will be gradually consumed in the first half of the year. New orders will begin to be released starting from the second quarter. Economic developmental momentum will become better and better. As inflation tops out and the rate hike policy eases internationally, it is hopeful that energy pricing will orderly lower and gradually stabilize. It is expected that pricing of crude oil will stabilize around USD 80 per barrel while naphtha will return to USD 650 per ton. Prices of intermediate petrochemical products and plastics, on the other hand, are already at the bottom and can no longer be any lower, to favor improvements in profits. All of these will help the Company’s operations become better.

To cope with the operational stress of 2023, the Company will continue to enforce circular economy, conserve energy, and reduce emissions,

keeping only the best under its production and distribution structure while at the same time promoting smart plants and operational management to improve the production and management efficiency. As far as the issue of carbon neutralization is concerned, the Company has a reduction of 25% in carbon emissions from 2020 as its phased goal by 2030 and declares comprehensive carbon neutralization by 2050. It is estimated that a total of NTD12.2 billion will be devoted between 2021 and 2030 to the implementation of related carbon reduction proposals, including improved energy conservation, fuel transformation, energy conversion, development of green renewable energy, and recycling and reutilization of CO<sub>2</sub>, etc.

The Company will be devoted to realizing high-value differential plastic fiber products in 2023 to decentralize the market and to secure its market share while at the same time continuing with the promotion of energy conservation and carbon reduction, energy and digital transformation, and improving the operational composition. More proactive efforts will be devoted to the expansion of green products, consolidation of the collaboration with downstream practitioners in establishing a circular and recycling mechanism for marine waste such as nylon oyster ropes and recycling fishing nets, fulfilling the belief: “We Produce, We Recycle” and bringing the volume to 1,250 tons/month, that is, the goal of recycled marine waste accounting for 12.5% of the overall quantity of raw materials used. Meanwhile, the Company will work with plastics recycling businesses and hold shares in them to hopefully ensure sources of plastics to be recycled, to secure the production of quality green materials, and to create an accountable and sustainable operational environment, addressing the challenges and opportunities under the global climate change trend, keeping track of new business opportunities, and fulfilling goals of sustainable developments.



## Formosa Petrochemical Corporation

Expedite the development of high-value products and diversified product categories through digital transformation and application of artificial intelligence - achieving sustainability and co-prosperity with the environment.



..... Refinery plants in Mailiao

The world economy is recovering from COVID-19 pandemic. However, geopolitical instability and volatile energy price have made the refining industry struggle to deal with it. In the first half of 2022, Russia-Ukraine War made oil price hike, and the issue of supply shortage led to export product crack higher, although the policy of stable commodity price and weak petrochemical demand eroded profit, FPCC delivered a remarkable performance relying on a flexible inventory/production control mechanism. In second half of 2022, inflation and China zero COVID policy have lowered product crack and corporate profit.



Chairman  
Bao-Lang Chen

To summarize, FPCC tried to maintain a competitive advantage by enforcing high safety standards and efficient operations toward the refinery. Despite geopolitics, monetary policy and inflation were challenging in 2022, FPCC still achieved positive EPS last year.



..... Sustainable development business to the goal of energy saving and emission reducing

ITEM	In Thousands of NT Dollars		
	2022	2021	%
Consolidated Revenue	848,048,496	620,062,326	36.8
Consolidated Operating Income	5,420,137	55,177,385	-90.2
Consolidated Earnings Before Tax	16,968,396	60,484,975	-71.9
EPS After Tax	1.51	5.19	-70.9



Through multiple channels to expand the brand image and to reach the goal of market sales increasing

### Petroleum Refining

Benefits from the implementation of easing border control policy in Europe and South East Asia, global oil demand increased in the first half of 2022, along with the declination of oil export from Russia and the decrease in oil export quota from China, the product spread rose up dramatically. FPCC made a fast response to the market and higher the run rate, further reaching a healthy profit margin in the first half of 2022. The Petroleum Refining profit of FPCC reached 21% annual growth rate compared with 2021, but margin in the second half of 2022 declined rapidly. Therefore, FPCC is cautious about operating environment in 2023.

In terms of production, the average daily throughput reached 428 thousand barrels (+10.7% YOY). The increase was mainly from the recovery of RDS #2 in July 2021, which caused the utilization rate in 2022 is higher than in 2021.

Furthermore, the performance was attributed to the better market for export oil products along with the increased refinery utilization rate.

As for the domestic market, petroleum sales increased slightly compared with 2021 and the average market share was 22.8% in 2022. FPCC was committed to making commodity prices stable together with increasing petroleum sales volume, although there were multiple losses due to the rising cost of raw materials and the policy of price stabilization by the government. In addition, diverse marketing channels have been utilized to raise brand awareness and expand the customer base. For instance, not only did FPCC let the activity “Formosa Member Day On Saturday” be promoted continuously to strengthen the relationship with clients and increase sales, but let its brand name be shown on well-known TV programs and sports events to increase brand exposure.



FPCC has a long term support to charitable and caring plans

With regards to foreign sales, FPCC exported gasoline and diesel at 2.8 million KL (-3.1% YOY) and 8.7 million KL (+19.3% YOY) respectively, which was caused by the better price spread of diesel. Therefore, the overall export sales of oil products grew by 22% compared with 2021.

### Basic Petrochemical Materials Business

The market for global petrochemical materials was very weak in 2022, which was mainly affected by China’s strict implementation of lockdown and continuously raising interest rates to fight inflation by various countries. Therefore, it was hard to increase the demand effectively. Additionally, China expanded lots of capacity for petrochemical production capacity in the middle of the year, and the expansion influenced the price of ethylene and propylene at the same time.

As for raw materials, the average price of naphtha in 2022 was higher than in 2021 because

of the rise in crude oil prices and the impact of Russia-Ukraine War, which caused FPCC to face high feedstock cost of naphtha. As a result, FPCC reduced the utilization rate to meet the needs of downstream companies in response to aforementioned situations and made a loss in 2022.

### Utilities Division

The primary mission of our cogeneration units is to offer stable and sufficient power to all units within Mailiao complex. However, affected by Russia-Ukraine War, on one hand, the European Union (EU) has stopped importing Russian coal against Russia. On the other hand, Russia has diminished the supply of natural gas which forced the EU to find other sources. This situation caused a tight supply of fuels and made the price of coals rise dramatically. Due to the significantly increasing cost of raw materials, the utilities division made a loss in 2022.



Refinery plants in Mailiao

### 2022 Sustainable development

FPCC takes sustainable development as the core value and focuses on various ESG areas. FPCC strives to achieve company growth, environmental sustainability, and social prosperity, while takes into account the interests of employees, investors and stakeholders. Therefore, with Chairman as the convener, FPCC established a task force to integrate the resources of departments and promote sustainable development.

FPCC adopted big data and AI to navigate the company and optimize the process models to achieve high-value products with low energy costs. In 2022, FPCC completed 19 projects related to AI implementation, with estimated benefits up to NT\$ 100 Million. FPCC also took actions to reduce energy consumption and carbon emission. 250 proposals were raised in Mailiao complex in 2022, and all the cases were addressed properly.

To be more specific, the complex conserved 195 thousand tons of GHG emissions, saved 33 GWh per year and reduced 360 thousand tons of water per day. In addition, in order to protect tree resources and improve operating efficiency, FPCC actively promoted paperless work, as well as expanded the application of electrical workflow and data digitalization. FPCC reduced the amount of paper used in 2022 by 30% compared with 2021..

In Corporate governance, FPCC was devoted to protect the interest of the investors. Also, FPCC enhanced the function of board directors and made information disclosure transparent. In 2022, the Sustainable Development Committee was established to guide the sustainable development policies and management guidelines, and supervise the progress of the sustainability report and verification of greenhouse gas.

FPCC is always dedicated to community investment as we believe giving back to society and to those people in need are our sacred missions. In 2022, when the domestic epidemic was rapidly heating up and the demand for rapid tests was increasing, Formosa Plastic Group donated 100,000 doses of rapid tests to Yunlin Government to help the public overcome the epidemic. FPCC collaborated with charity foundations to support children who suffered from violence, poverty, and pandemic. In addition to providing materials, FPCC hopes to attract more companies and people to join the charity activities, so every child can grow up in healthy and happy environment.

### 2023 Sales Goals

For petroleum products, the estimated sales volume for gasoline and gasoil are 5.5 million KL and 10.5 million KL respectively. FPCC keeps bringing more member feedback activities to retain a solid relationship with existing domestic customer group. On the other hand, FPCC will continue to expand the customer base via various marketing channels such as TV, broadcast, internet, and sports events. Regarding the export market, FPCC cooperates with oil majors and trading house to expand our market shares in global market.

In respect to petrochemical products, the expected sales volumes of ethylene, propylene and butadiene are 2.5 million MT, 2.2 million MT and 358 thousand MT respectively. The petrochemical plant, with stable operation, will meet the feedstock needs of the downstream units while selling the excess products in the international market to obtain higher profit. As for the Utility division, the key role is to provide consistent electricity and steam to meet the demand of all units in Mailiao complex.

### Outlook

In order to curb inflation, major economies have accelerated the pace of interest rate hikes since 2022, which led to slowdown in production activities and consumer demand. Most major agencies are conservative about 2023 GDP growth due to the uncertain impact of Russia-Ukraine War and USA-China unstable relation. Therefore, Morgan Stanley used "Even Darker Before the Dawn" to express concerns about the economic outlook. Considering the profit structure of FPCC closely linked to global economic activities, FPCC will keep more concentrate on production and sales plans to go through the unknown challenges.

On the other hand, as the countdown to the EU carbon tariff policy approaches, countries are gradually increasing their focus on sustainability issues. Also, in January 2023, the domestic climate change adaptation law was amended with a target of achieving net-zero emissions by 2050, and a phased carbon tax will be imposed. In response, our company has systematically built a sustainable strategy based on three main pillars: green factories, green energy, and green innovation. While improving the production efficiency of existing products, we will accelerate investment in digital transformation, AI applications, clean energy, and decarbonization technologies. We hope to enhance the company's resilience to external risks and create diversified income by grasping sustainable trends.



Strengthen company's competitiveness by digital transformation and artificial intelligence application





## Formosa Plastics Group-US. Operations

FPG U.S. operation has always had a core management goal of ensuring sustainable operation and growth. Achieving this goal relies heavily on our continuous efforts to emphasize environmental and safety management, long-term human resources training, and staff quality improvement.



..... New Ethylene Glycol Plant  
in Point Comfort, TX

*The operation of Formosa Plastics Group - U.S. Operations consists of Formosa Plastics Corporation America, Nan Ya Plastics Corporation America, and Nan Ya Plastics America reported a total revenue of \$8.4 billion in 2022, representing a 27% increase from the total revenue of \$6.6 billion in 2021. The U.S. and global economies faced numerous challenges in 2022, including labor shortages in industries such as retail, transportation, and healthcare, as the COVID-19 pandemic gradually eased and restrictions were lifted. Additionally, the pandemic's impact on the global supply chain has not yet subsided, causing an unprecedented surge in labor and transportation costs, resulting in the highest inflation in nearly 40 years. Furthermore, the eruption of the Ukraine-Russia conflict in February 2022 further pushed up commodity prices, with Brent crude oil prices surpassing \$130 per barrel, forcing the Federal Reserve to accelerate interest rate hikes and tighten monetary policy, which may result in an economic recession crisis. In 2022, the U.S. GDP growth rate slowed to 2.1%, a 3.8% decrease from 5.9% in 2021. The Manufacturing Purchasing Managers' Index (PMI) also declined from 57.6 in January to 48.4 in December 2022, indicating a significant slowdown in the U.S. manufacturing industry's outlook. As for the U.S. petrochemical industry, profits remained high in the first half of 2022 due to congestion in shipping and domestic rail transportation and a rise in petrochemical raw materials, as well as sustained demand levels from 2021. However, in the second half of the year, profits declined month by month, or even incurred losses due to concerns about economic recession, interest rate hikes, and new production capacity in North America, coupled with continuous decline in market demand.*

In terms of production, in line with the concept of sustainable management, the Taiwan-based US subsidiary of Formosa Plastics Corporation continuously improves its production processes and closely monitors market dynamics while flexibly adjusting production strategies to maximize overall benefits in the face of many challenges. In addition, it continues to review and improve various aspects of production management, such as product quality, processes, and production efficiency, as well as analyzing its competitiveness in the industry to strengthen its competitive advantage in reducing production costs.

In the olefin product segment, the Taiwan-based US subsidiary of Formosa Plastics Corporation purchases natural gas from external sources, which is then processed at natural gas treatment and liquid fractionation plants to produce ethane and propane. The ethane is then cracked at three cracking plants, producing 2.76 million metric tons of ethylene and 350,000 metric tons of propylene annually. The polyolefin plants produce 1.97 million metric tons of polyethylene and 850,000 metric tons of polypropylene.

For the Chlor-Alkali, the FPC USA Utility Venture's power plant generated electricity to electrolyze brine to produce 970,000 metric tons

of caustic soda and chlorine. These materials then pass through our ethylene dichloride (EDC), vinyl chloride monomer (VCM), and polyvinyl chloride (PVC) process to produce 1.39 million metric tons of PVC resin. NPC USA made 60,000 metric tons of rigid PVC film, and NPCA had 48,000 metric tons of flexible PVC film produced using a portion of the PVC resin.

In the PET/Fiber segment, FPC USA supplied the ethylene for NPCA to produce 1,190,000 metric tons of ethylene glycol, 860,000 metric tons of polyester derivatives, and NPC USA to produce 11,000 metric tons of PET Rigid Film.

In terms of sales strategy, each product strives for a balance between production and sales, with a focus on the North American market and coordination between domestic and international sales. In terms of customer management, the company has established a basic customer group, selected strategic market segments, and developed strategic customers and partner alliance relationships to jointly establish customer relationships and develop new products. The company focuses on developing high-growth and high-value-added markets in the North American market, balancing the distribution of large, medium, and small customers, and beginning to adopt a strategy of gradually reducing the sale of disposable plastics year by year. In terms of overseas markets, the company has established bonded warehouses and shipping and storage stations in various regions in Europe, and has been promoting sales through contract dealers and agents, with a focus on the European market. Additionally, the company also places emphasis on maintaining the Mexican and Central and South American markets to enjoy competitive advantages in shipping costs.

In terms of new plant expansion, the PVC and VCM plants located in Louisiana and Texas will complete their debottlenecking expansion and begin operation in 2023. Additionally, a heavy ends treatment system will be added to enhance the PVC production line and improve competitiveness.

FPG U.S. operation has always had a core management goal of ensuring sustainable operation and growth. Achieving this goal relies heavily on our continuous efforts to emphasize environmental and safety management, long-term human resources training, and staff quality improvement. We also begin evaluating carbon reduction strategies and focus on value-added and environment-friendly products development. We will continue to enhance the customer-oriented sales service and management functions - by focusing on long-term customers who demand excellent product quality and services. Ultimately, we believe these implementations will improve our global presence, increase profitability and grow the market share.

Looking ahead to 2023, with the strong guidance of the Federal Reserve's interest rate hikes, it is expected that the US inflation problem will significantly cool down in 2023. However, various uncertainties such as geopolitical and military tensions such as the Ukraine-Russia war, debt problems in developing countries, and the subsequent development of China's relaxation of epidemic prevention policies, pose challenges to the future economic outlook of 2023. According to the latest economic outlook report from the International Monetary Fund (IMF), curbing high inflation will still be the top priority for governments around the world, so economic growth in the short and medium term will continue to be constrained by high interest rates. Recently, the World Bank significantly lowered its forecast for global economic growth in 2023 to 1.7%, with the US economy expected to grow by only 0.5%. In the US petrochemical industry, demand for major products is expected to rebound in 2023 compared to the end of 2022, with petrochemical raw material prices stabilizing and product prices expected to hit bottom and rebound, but remain low throughout the year. With several improvement projects and the completion of the PVC and VCM capacity bottleneck plans in Louisiana and Texas, respectively, Formosa Plastics Corporation USA expects slightly better profits in 2023 than in 2022. However, facing numerous uncertainties, cautious responses are still needed in overall strategy.



## Other Investments

*In addition to these four major corporations, the Formosa Plastics Group has many other affiliates.*

### Our domestic affiliates include:

NanYa Technology Corp., Nan Ya Printed Circuit Board Corporation, Formosa Sumco Technology Corp., Formosa Taffeta Co., Formosa Advanced Technologies Co., Formosa Heavy Industries Corp., Mailiao Power Corp., Formosa Daikin Advanced Chemicals Co., Ltd., Formosa Asahi Spandex Co., Hwa Ya Power Corp., PFG Fiber Glass Corp., Formosa Environmental Technology Corp., Formosa Idemitsu Petrochemical Corp., Formosa BP Chemicals Corp., Formosa FCFC Carpet Corp., Formosa Oil (Asia Pacific) Corp., Formosa Plastics Transport Corp., Formosa Plastics Marine Corp., Nan Ya Photonics Inc., Formosa Biomedical Technology Corp., Formosa Technology Corp., Formosa Lithium Iron Oxide Corp. and Formosa Smart Energy Tech Corp.

### Our overseas affiliates include:

Formosa Plastics Corporation, U.S.A., Nan Ya Plastics Corporation, USA, Nan Ya Plastics Corporation, America, Formosa Ha Tinh Steel Corporation and P. T. Indonesia Nan Ya Indah Plastics Corporation. FPG's investments in Mainland China include Formosa Plastics Corporation, Nan Ya Plastics and Formosa Chemicals & Fibre Corporation.



Formosa Smart Energy Tech Corporation - Energy storage system



Formosa Ha Tinh Steel Corporation



**Non-Profit Organization—Medical Care**

## Chang Gung Memorial Hospital

Chang Gung Memorial Hospital implements Artificial Intelligence in clinical medicine fields with a patient-centered way, and will continue to use "Informatization" as an overall strategic tool to become a more technology- and information-advanced hospital.



..... 2022 Chang Gung Medical Week

*In order to achieve the goal of “service quality improvement and appropriate medical cost control”, Chang Gung Memorial Hospital has continuously evaluated Taiwan's environment and needs with the exploration of each core problem for more than 40 years. Patient orientation is our central belief to develop environmental innovation and high-quality medical care. Taking good use of limited resources maximizes the effectiveness and the contribution with unstoppable progress of Taiwan's medical standards*

Established in 1976, Chang Gung Memorial Hospital (CGMH) is now in its 47<sup>th</sup> year of operation. Adhering to the belief of “What is Taken from the society is to be used in advancing the interests of the Society”, we have overcome numerous obstacles during that timeframe. By integrating teaching, research, services and sound management, we have created an institution that serves the public as we strive toward upgrading the level of medical care and enhancing the well-being of the society.

### 1. Teaching

As a teaching hospital, we have launched cooperative programs with Major medical schools in the country to provide their interns with clinical Training. We have also developed a highly respected resident training system designed to nurture highly competent attending physicians in different specialties. In 2022, 183 residents finished their training program at CGMH for promotion to Attending Physician. Over the years CGMH has graduated over 4,589 students to achieve excellent performance in their respective careers in the medical profession.

### 2. Research

To encourage R&D, we provide funding for clinical research, basic medical research and international studies for our medical, nursing, technical and administrative staffs. In 2022 we supported international studies for 30 research staff personnel, and conducted more than 3,213 medical

research projects under the National Science and Technology Council and Ministry of Health and Welfare. In addition, we provided Funding of US\$ 123.74 million, and published 3,518 SCI qualified papers. 62 patents, 11 patent authorizations, 43 Research Innovation Award winning projects and 39 winners. The academic research results and published manuscripts contribute greatly in the academic fields.

### 3. Services

As one of the biggest general hospitals in Taiwan, both our facilities and our level of health care are on par with first-rate hospitals around the world. By the end of 2022, we offered over 11,000 beds with health care services provided by over 25,648 employees. In 2022 we served over 9.70 million outpatients and admitted almost 274,000 patients for inpatient services.

### 4. Management

To achieve the goal of enhancing service quality and controlling medical costs within reasonable limits, for over 46 years we have constantly evaluated local conditions and needs, inquiring into the root of every problem. With patients at the center of our mission, we have embraced innovations allowing us to provide the best possible medical care, to make the most of limited resources and to enhance the quality health service in the country.



..... Chang Gung Artificial Intelligence Customer Service press conference

Following the Founder, Mr. Yung-Ching Wang’s idea, Chang Gung Medical Foundation has dedicated ourselves in consolidating work flows, human resources and facilities with technology to assist the operation and improve the quality of medical service. We have also made efforts to implement Electronic Medical Record and Smart Hospital policies in order to enhance medical information security.

In 2019, Chang Gung Memorial Hospital became the first hospital that receives field certification of “Healthcare Information and Management Systems Society (HIMSS)” Level 7, the highest level of this certification. In 2022, Chang Gung Memorial Hospital participated in the Digital Health Indicator (DHI) assessment by the “Healthcare Information and Management Systems Society (HIMSS)”. The four major dimensions are "Interoperability", "Person-Enabled Health", "Predictive Analytics", and "Governance & Workforce". Chang Gung Memorial Hospital was honored with the second best Smart Hospital in the world and the first in Taiwan, which is recognition of our solid achievements in the construction and application of information technology.

In the future, we will continue to use "Informatization" as an overall strategic approach to become a tech-savvy and information-based organization.

Valuing the necessity of artificial intelligence as part of the future development, Chang Gung Medical Foundation set up the Artificial Intelligence Core Laboratory to apply AI technology on clinical use, assisting diagnosis and avoiding human resource waste at the same time.

The laboratory also focuses on combining communication technology and existing resources to make the process of medical service more convenient. For example, clinic visits, hospitalization, prescription pick-ups etc.

In the future, the laboratory will work on developing mobile telemedicine equipment with high resolution using 5G technology. The results could allow patients from distant areas or under the influence of pandemic to keep accessing medical services.

During this once-in-a-century pandemic, Chang Gung Memorial Hospital developed the “Infection Control Information Platform”, connecting personal travel and contact history data from the National Health Insurance Cloud Database to collect Travel history, Occupation, Contact History, and Cluster History (TOCC) of patients and employees. All information systems in the hospital can be linked to remind medical staffs of the patient’s relevant information during the medical process.

Meanwhile, through business intelligence application, the infection control department can monitor all fever patients from all wards in the hospital on a real-time basis to discover pulmonary infiltrate cases based on medical records and quarantine them to prevent hospital-wide infections.

On the other hand, the “Infection Control Technology Platform” developed during the COVID-19 pandemic implemented the fully automate process of PCR test to meet all clinical demand while combining the Smart Specimen Identification System to automate the process from

distributing specimens according to the inspection tickets to generating laboratory profiles and the corresponding tags. The aforementioned process greatly increased the efficiency of laboratory tests, capable of conducting 5,800 specimen test per day and generating reports within 3 to 6 hours, the total number is up to 300 thousand which is the largest capacity in Taiwan.

In addition, our hospital had applied technology to all aspects of infection control. For example, the PPE supply monitor and abnormal use alarm system, video consultation system and the telemedicine system.

In the area of organ management, we continue to promote the concept of organ donation and perform organ transplants. In 2022, CGMH received organ donations from 109 people and performed organ transplants that included 135 cornea cases, 4 heart

cases, 13 lung cases, 62 kidney cases (include 35 case of vivo transplant), 214 liver cases (include 179 case of vivo transplant). The hospitals also handled 1 anatomical pathology case, and 4 body donations.

CGMH has also been active in providing advanced social services. In 2022, CGMH provided relief to over 3.05 million patients, CGMH have taken an active part in Social welfare such as Charity project of sport medicine, Mobile health care project for rural schools in Yilan County, The protection of children and youths program, Health care system of communities in Yunlin County, Telemedicine service, Medical volunteer programs by employees, etc. An outlay over US\$ 23.45 million from our social service fund.



..... Chang Gung Memorial Hospital-Taoyuan Fuxing District Integrated Delivery System (IDS) 20<sup>th</sup> Anniversary Conference



**Non-Profit Organization—Education**  
**Chang Gung University**

Employing internationalization to promote innovation, the university keeps enhancing teaching and research in various fields, continues working on industrial innovation, and facilitates international academic exchanges in response to social demands and trends.



..... Chang Gung University Campus

*From the very beginning of the establishment, Chang Gung University has been planning long-term curricula and academic research programs under the educational motto of “Diligence, Perseverance, Frugality, and Trustworthiness” . These endeavors have helped the university achieve its goal of “combining theory and practice in education programs” . In addition, efforts have been made in pursuit of excellence in instructions and academic research and long-term promotion for holistic education of its students.*

Chang Gung University was established in April 1987 under the name of Chang Gung Medical College, with the aim of preparing future outstanding medical professionals. In order to support the economic development of the nation, Chang Gung Medical College later introduced the engineering and management programs to prepare young talents in these fields, and was renamed to Chang Gung College of Medicine and Technology. In August 1997, the Ministry of Education formally approved the name change to Chang Gung University. At present, Chang Gung University has four colleges: Colleges of Medicine, Engineering, Management, and Intelligent Computing, and includes 20 departments, 3 bachelor’s degree programs, 24 master’s programs, 7 master’s degree programs, 12 doctoral programs, and 1 doctoral degree program. Furthermore, the Department of Artificial Intelligence and the Department of Digital Financial Technology will be established in the 112th academic year.

From the very beginning of the establishment, Chang Gung University has been planning long-term curricula and academic research programs under the educational motto of “Diligence, Perseverance, Frugality, and Trustworthiness” . These endeavors have helped the university achieve its goal of “combining theory and practice in education programs” . In addition, efforts and medium to long-term plans have been made in pursuit of excellence in instructions, academic research, guidance and service and long-term promotion for holistic education of its students.

There are 582 full-time and 665 part-time faculties and preceptors currently. CGU has 6,987 students, including 5,236 undergraduate students and 1,751 postgraduate students. In addition to classroom learning, students are required to participate in various internships and cooperation programs with Formosa Plastics Group, Chang Gung Memorial Hospitals and other institutions in order to achieve the goal of “combining theory and practice” . There are plenty of opportunities for various practical training or work-study programs available to students during semester breaks. These programs are designed to allow them to gain working experience and to develop proper working ethics before graduation. In response to the needs of industry as well as the growing trends of artificial intelligence, the university has introduced a number of credit programs and micro programs to encourage students to pursue a double major and interdisciplinary learning. The university has also expanded the summer credit program as well as the digital innovation program. These programs are also available to the students who desire to develop additional expertise or secondary specialty in addition to their major programs. Graduates of Chang Gung University have proved their abilities and competence at work or during their advanced studies; they also are well liked by their employers because of their devotion and ethics displayed in the workplace.

Our interdisciplinary research centers develop key technologies and jointly participate in domestic and international organizations to assist



..... Outstanding Chang Gung University teachers pose for a photo with the Chairman's commendation

in solving significant social and environmental issues. For instance, the Molecular Medicine Research Center continued participating in the US Cancer Moonshot Program to contribute to the prevention and treatment of cancer. The Research Center for Emerging Viral Infections continued working with international organizations and participating in the Centers for Research in Emerging Infectious Diseases (CREID) to fight against emerging viruses, including COVID-19. The Healthy Aging Research Center collaborated with the ENIGMA-PD Group of the University of Southern California for the Parkinson's Disease initiative. In terms of academic performance, the US-based Stanford University has recently released a list of World's Top 2% Scientists in 2022. Chang Gung University was ranked the 7th nationwide and the first among all domestic private universities. According to the 2022 Academic Ranking of World Universities (ARWU) published by the Shanghai Ranking Consultancy, CGU was ranked at the 482nd

place globally and the 1st among all private comprehensive universities in Taiwan. Based on the 2022 CWTS Leiden Ranking exclusively based on bibliometric indicators published by Leiden University in the Netherlands, CGU was ranked within the top 300 in the world and the 2nd in Taiwan, closely following National Taiwan University. In particular, in the field of biomedical and health sciences, CGU was ranked 92nd worldwide and top-ranked countrywide. CGU is indeed an exemplary university that is impactful on Taiwan's scientific development.

Devoted to holistic education, Chang Gung University places emphasis on the equal development of morality, literacy, and professional abilities, integration between the individual and groups, and harmony between body and mind. Students are expected to develop into well-balanced individuals and are also encouraged to shape a lifelong learning attitude. Furthermore, the university also urges students



..... A silicon wafer with a 5 nm-thick dielectric layer is going to locate in the chamber of Inductively Coupled Plasma Reactive-Ion Etching (ICP-RIE) system for drying etching process

to learn to be self-disciplined, engage in the management of student clubs, participate in public affairs, learn to serve, and shape moral integrity. Besides, soft-power indicators including caring and giving, teamwork, humanity and art, self-reflection, self-discipline, and innovation and progress, etc. are used to periodically measure the effect of holistic education. These endeavors are made to ensure our students to transform into individuals who have balanced development in all aspects, have moral integrity, and maintain their principles. The university spares no effort in promoting the "Student Club PLUS" project to encourage students to participate in the management of student clubs. As a result of our efforts, the Mountaineering Club was honored to receive the First Prize Award in the Collegiate Student Club Evaluation Nationwide in 2022. Moreover, the CGU Wind Band, the CGU String Club, and the CGU Xiao-Yun Melody Choir won the Excellence Award. These awards are an endorsement to our devotion to holistic

education as well as an affirmation of our ultimate educational goal of the cultivation of sound personality in our students.

Chang Gung University aims to develop into a top-notch and first-choice university with the interdisciplinary medicine feature. Using research to lead teaching and industrial innovation as a strategy, the university sets goals to attain excellence in internationalization, digitalization, cross-disciplinary learning and collaboration. CGU aims to create a student-centered learning environment. In addition, the university will persist on edification of its students by encouraging them to care for humanity and to devote themselves to serving society. The university's mission is to educate good young generation to develop sound personality, to acquire specialized knowledge and skills, to possess excellent learning capabilities, to believe in lifelong learning, and to develop abilities for international mobility.

**Non-Profit Organization—Education**



**Chang Gung University of Science and Technology**

Founded to support commitment to humanity and integrity, its vision is to be, in every aspect of health care, the highest-quality school and the source of the highest-quality nurses entering the field.



..... Chang Gung University of Science and Technology Campus

*The institution today known as the Chang Gung University of Science and Technology (CGUST) was first established as the Chang Gung Institute of Nursing, a two-year junior nursing college granted approval by the Ministry of Education in 1988. In 2002, the university underwent restructuring, becoming the Chang Gung Institute of Technology.*



..... Gallery of CGUST History

In early 2004, the university's Chiayi Campus was created to address the need for healthcare professionals in the Yunjia area healthcare system. The college finally transitioned to its modern iteration as the Chang Gung University of Science and Technology (CGUST) in 2011.

Currently, the Linkou and Chiayi campuses maintain two colleges, a Center for General Education, three graduate programs, and six departments. The institution's two colleges include the College of Nursing and College of Human Ecology; the Nursing Department, Graduate Institute of Nursing, Department of Gerontology and Health Care Management, Department of Respiratory Care, Child Care and Education Program, Department of Cosmetic Science, Department of Nutrition and Health, and the Graduate Institute of Health Industry Technology comprise CGUST's post-secondary departments. The five research centers include the Clinical Competency Center, Chronic Diseases and

Health Promotion Research Center, Geriatric and Long-Term Care Center, Research Center for Food and Cosmetic Safety, and Research Center for Chinese Herbal Medicine. The university embodies the pragmatic spirit of technical vocational education, helping fulfil a need for healthcare professionals in society.

The university's outstanding performance has been recognized by students, parents, and numerous institutions both nationally and across the world.

- All departments have passed the "Professional Education Certification" of the Taiwan Evaluation Association, ensuring that the university fulfills nationally accredited teaching quality assurance standards.
- The school placed in the Top 6 medical universities for Global Views Magazine's



..... Education Base for Image Reconstruction

“Taiwan’s Best Universities” ranking in 2022.

Ministry of Education’s “Higher Education Sprout Project” (HESP)

- Times Higher Education’s 2023 World University Rankings ranked CGUST as Number 2 in their list of Taiwan’s best private science and technology universities, further awarding CGUST 801+ achievements in the fields of "Clinical and Health" and "Life Sciences.”
- According to the Ministry of Education’s Public Information on University, CGUST’s enrollment rate in the 2022-2023 academic year was 98.1%, ranking first among Taiwan’s private universities of science and technology; the retention rate was 96.53%, the highest rate nationally among vocational universities.
- From 2018 to 2022, the school was awarded NT\$301.38 million by the

The Chang Gung University of Science and Technology has grown since its founding, reflecting the strength of the University’s central tenets and educational principles. Currently, the University employs 362 full-time teachers and enrolls 6,271 students. With additional expansion of excellent academic programs over the years, the University seeks to nurture high-quality professionals in the healthcare industry.

CGUST is a health sciences university which places an equal emphasis on research and teaching performance alike. Founded to support commitment to humanity and integrity, its vision is to be, in every aspect of health care, the highest-quality school and the source of the highest-quality nurses entering the field. To develop the spirit of diligence and endurance in its students, and to enable them, in both theory and practice, to apply that spirit for the benefit of society, the

University has cooperated with Chang Gung Memorial Hospital, the Formosa Plastics Group, and 308 other organizations to provide students with a wealth of internship opportunities. The students are thus offered chances to accumulate work experience and hone their skills. This strategy is designed to help students achieve their educational goals of combining work experience with classroom knowledge concretely, placing them in an advantageous position in today’s competitive job market.

Moreover, the University has implemented a mandatory on-campus residence policy to pursue integration of school education with guidance and discipline. Based on the belief that ethical and moral education is developed in daily life, the policy aims to promote holistic student development, encouraging emotional awareness, humility, respect for life, and conscientious engagement with society. These programs cultivate students as consummate professionals, with love and patience for their work.

With respect to academic research, the University encourages teachers to participate in research projects in cooperation with the government, Chang Gung Memorial Hospital, and the Formosa Plastics Group. Efforts in

cooperative research projects with other industries are strongly supported as well. In the academic year of 2022 alone, the university received 222 Industry-University Collaboration Projects with grants values approaching \$5,775,968.74 USD. A total of \$1,923,582.38 USD in grants was awarded from the National Science and Technology Council for 59 research projects, and a total of \$1,868,582.64 USD in grants was awarded from governmental offices for 63 research projects. In addition, grants totaling \$1,983,998.73 USD were accumulated by 100 cooperative projects between the University and the private sector.

In response to the rapid changes in society, the University is dedicated to improving its administration, with personnel as its central consideration. Moreover, CGUST’s learning environment is constantly being improved to support the ideal of providing quality health care for the general public. As we move forward, our aim toward perfection will continue to guide the development of the University administration, teaching, research, industry cooperation, and student development. The Chang Gung University of Science and Technology continuously strives to foster top-quality professionals who provide the best professional education.



..... Elderly Care Scenario Simulation Center





## Non-Profit Organization—Education

### Ming Chi University of Technology

In the pursuit of adhering to the spirit of perfection, we strive for excellence in everything, keep making self-improvement, and are tailored to the requirements of the development of the whole industrial economy in order to continue cultivating professional talents with good character.



◆◆◆◆ Ming Chi University of Technology Campus

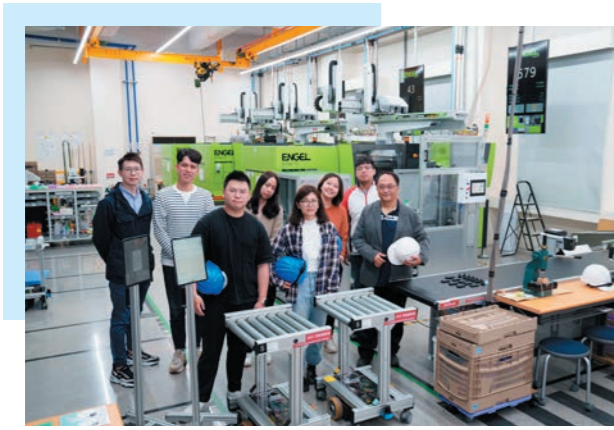
*In the 1960's while both the industrial and economic developments were taking off in Taiwan, there was a lack of mid-level professionals in the industries. In response to the developmental needs, Mr. Y. C. Wang and Mr. Y. Z. Wang, the founders of Formosa Plastics Group, donated the funds for the establishment of the University in December 1963 in order to strengthen the cultivation of talents.*

The University is located on the hillside of Kueizi Village in Taishan District, New Taipei City and was originally named “Ming Chi Institute of Technology.” The campus occupies an area of 62 hectares with vast green areas and beautiful yet tranquil sceneries. More than 200 years ago, during the reign of Emperor Chienlong in the Ching Dynasty, the “Ming Chi Academy,” founded by a Tributary Scholar, Mr. Hu Cho-yu in Southern Fukien, was located in the vicinity of the University. At that time the Academy was a center of intellectual and cultural hub and was also the cultural origin of northern Taiwan. This university was named “Ming Chi” with an aim to encourage the faculty and the students to learn from the virtuous elders and to embrace heritage and vision as their own mission.

With the exceptional operational performances and in response to the need for talents due to the economic development and the industrial advancement in Taiwan, the School was approved in 1999 for its transformation into “Ming Chi Institute of Technology.” After being awarded Excellence by the annual evaluation conducted by the Ministry of Education (MOE) for six consecutive years, the Institute was approved again in 2004 for its further transformation into “Ming Chi University of Technology.” The University currently hosts 4,344 students (4,124 students in the day division and 220 students in the continuing education division), 202 faculty members, and 120 staff members. The University consists of the College of Engineering, College of Environment and Resources, and College of Management and Design, offering three Ph.D. programs, 12 M.A. programs and 13 departments (including three bachelor programs). All the departments and graduate institutes have passed the certifications of IEET (Institute of Engineering Education Taiwan) or ACCSB (Accreditation of Chinese Collegiate School of Business), showing that the University's educational system is on the international track.

Due to Ming Chi's units receiving top rankings and the school being ranked number one nationwide in the 2011 MOE Evaluation of Technological Universities, Ming Chi was granted permission to conduct self-evaluation instead of being evaluated by the MOE. Since then, Ming Chi has passed the MOE evaluation held every five years, starting from 2016, on technological university affairs and self-evaluation on colleges. According to the data collected from Web of Science, Ming Chi was ranked in third place among all the technological universities and colleges, and ranked number one among all private ones nationwide in the year of 2022 in producing SCI/ SSCI papers per author, including assistant professors and above. In 2018, the Institutional Research Center was established to develop a data-based decision-making model to implement efficient and effective school management systems and pursue sustainable school administration. The average amount of subsidies per student at Ming Chi received from the MOE (including MOE grants, Teaching Excellence Program funds, and Higher Education Sprout Project grants) has led other funded technological universities for years. Ming Chi, which has been awarded certificates of information security management system (ISMS) ISO-27001, and environmental management system (EMS) ISO-14001 every year, is an outstanding technological university with excellent traditions and achievements.

The motto of the University is “Diligence, Perseverance, Frugality and Trustworthiness.” In terms of “Diligence and Perseverance,” we expect the students not only to work hard but also to do the right and useful things. Students are encouraged to build their wisdom and enhance self-confidence through the accumulation of such useful experiences. When students live simple and honest lives, they can concentrate on the pursuit of their life goals. Based on this foundation and equipped with the professional knowledge and skills, all our students are expected to become useful members of the society. Ming Chi has



..... MCUT Advance Intelligence Real-Time Factory

been a boarding school since its establishment. Through this shared on-campus living, students are encouraged to maintain a regular life, strong body and mind, while fostering grounded characteristics and good moral character. The Mindfulness Center was established in 2016. A selective course of Mindfulness for general education was offered to help students boost their concentration and observation. In 2018, the general education course “Design Thinking” was offered to guide students to develop interdisciplinary skills, to inspire their creative thinking, and to lay the foundation for them to explore practical problems and solve problems in the future. From 2019 to 2022, Ming Chi was awarded the “Excellent Green Procurement Performance” school by the Environmental Protection Department, New Taipei City. Moreover, since teachers also live on campus, they can better guide students and live up to the standards of propagating the doctrines of the ancient sages, who would not only teach but also clarify any doubts.

In order to take both theory and practice into account, and to help students develop the spirits of self-supporting, hard working, and endurance, Ming Chi has implemented the co-op programs by alternating regular classes and internship in four years. Students are arranged to participate in full time practical internship program for one year in the Formosa Plastics. This allows students to receive salaries from the work so that they could reduce the financial burden of their families and complete their studies. Through the internship, students are able to learn the techniques relevant to their professions as well as the practical management skills. Students are also able to experience the meaning of diligence, perseverance, frugality

and trustworthiness and develop the attitude of being down-to-earth and always getting to the bottom of everything. The overseas internship system is unprecedented. Presently the practical training program has expanded to various industries and companies in the U.S., Switzerland, Mainland China, Indonesia and Vietnam. The amount of students working overseas has accumulated to 608 till now. Moreover, Ming Chi has been selected to establish a project office to facilitate nationwide vocational schools in offering co-op programs. The practical training program has expanded to various types of industries with over 160 companies participating in the program. Students’ performances are highly accredited in the industry. Ming Chi has also received lots of recognition of “Excellent Performances in Industry-Academia Cooperation” evaluated and selected by the Chinese Institute of Engineers. The gap between school education and the employment among industries is effectively shortened, realizing the educational goals in connecting industries and education. Commonwealth Magazine announced in the “2022 USR University Citizens” survey that Ming Chi ranked number two among private technological universities nationwide. According to the 2022 university ranking released by Global Views Monthly, Ming Chi ranked number one in the technology category of comprehensive universities among all other private technology universities. The Ming Chi alumni of the past years have received positive affirmation from the academic, industries, and business fields. In addition, to continue the founder’s spirit of caring the financially/ physically challenged, Ming Chi has been offering scholarships of NTD 150 million accumulated until now.

Beginning from the academic year 2004, Ming Chi started to recruit aboriginal students in the four-year college in order to extend our concerns for the aboriginal students. Ming Chi has funded the aboriginal students up to NTD 405 million. This program has gained much appreciation from the aborigines and acclamation from the public in the society. Moreover, in coordination with the needs in lifetime learning and returning education for technical training, Ming Chi provides employee training for enterprises as well as career guidance for young adults. Meanwhile, in order to satisfy the needs of the alumni and members

of the society in continuing education, the Division of Continuing Education was established. This Division has offered in-service master program. In 2016, Dual Award Master’s Degree Program was offered between Ming Chi and University of Cincinnati. Further in 2017, Ming Chi together with National Taiwan University of Science and Technology set up dual award Ph.D.’s degree program. In 2019, Dual Award Master’s Degree Program was offered between Ming Chi and Northern Illinois University. Ming Chi has signed more than 89 sister school partnership agreements with overseas schools striving toward a goal of globalization.

After the institute was upgraded to the university level, in addition to the usual devotion in the maintenance of the existing educational beliefs and practice, Ming Chi also focuses on “Industry-Academia Cooperation.” Since 2007, Ming Chi has frequently been awarded the title of “Outstanding Unit for Industry-Academia Cooperation” by the Chinese Institute of Engineers in their biennial selection of units for industry-academia cooperation. The iAuto team from Taiwan, consisting of Ming Chi University of Technology, National Taiwan University, L. L. iAuto Technology LTD, the Formosa Plastics Transport Corporation, and Industrial Technology Research Institute, took the runner-up prize in the 2019 Dubai World Challenge for Self-Driving Transport. Eleven professors from Ming Chi are on the list of the “World’s Top 2% Scientists 2021,” released by Stanford University in 2022. According to the 2022 statistics released by the National Science and Technology Council (NSTC), Ming Chi has ranked number four nationwide, and number one among private technology universities in the category of the average amount of funding per project director. MOE also announced in 2022 that Ming Chi ranked the fourth nationwide, and number two among private technological universities and colleges in the average amount of conducting public and private industry-academia cooperation projects per project holder. These honors demonstrate the fruitful results of developing collaborative relationships with industry partners. In recent years, by means of continuously integrating the resources of various colleges, ten research centers have been established: the Biochemical Engineering R&D Center,

the Center for Plasma and Thin Film Technologies, the Chinese Herbal Medicine Center, the Battery Research Center of Green Energy, Organic Electronics Research Center, Center for Reliability Engineering, Research Center for Intelligent Medical Devices, Artificial Intelligence and Data Science Research Center, Center for Environmental Sustainability and Human Health, and Intelligent Vehicle R&D Center. The faculty and students are always encouraged to participate in practical researches and to provide industry-academia services for enterprises. With the development of internship opportunities, the industry-academia cooperation relations are actively being built. Utilizing the resources of intern students, guidance teachers, specific research centers, the Industry-Academia Cooperation Center, and the Innovation and Incubation Center, we are able to achieve close cooperation with the industries and improve the research quality and quantity, and further contribute the research findings to the industries. While the education purposes as well as the advancement of technological force in the industries are achieved, a win-win situation is also created.

Education is the foundation of a nation and its importance is hardly surmountable. Ming Chi looks for “perfection” in every aspect including school administration, research, industry cooperation, and cultivation of students’ integrity. We seek the best for everything we do, and pursue self-improvement at all the times. We hope to continue nurturing professionals with sound personality to work with the need of industrial economic development, and fulfill the university social responsibility. We aim to set a new model for the vocational education in Taiwan.



..... MCUT Intelligent Vehicle Research and Development Center

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