V. Operational Highlights

1. Business Activities

1. Business Scope

1. Main Business Scope:

(1) CC01080 Electronic Parts and Components Manufacturing
(2) CC01101 Electronic Parts and Components Manufacturing
(3) CC01110 Computers and Computing Peripheral Equipment Manufacturing
(4) CC01120 Data Storage Media Manufacturing and Duplicating
(5) CC01990 Electrical Machinery, Supplies Manufacturing
(6) F119010 Wholesale of Electronic Materials
(7) F219010 Retail Sale of Electronic Materials
(8) H201010 Investment
(9) I301010 Software Design Services
(10) I501010 Product Designing
(11) JE01010 Rental and Leasing Business

2. Revenue Proportion：

Established in May 1997, the Company's primarily provides Integrated Circuit (IC) packaging and testing services. Revenue proportion as of 2020 is as followed：

Unit：NT 1,000s

Items	Net Revenue 2020	Revenue Proportion
Packaging Service	46,606,101	61.18%
Testing Service	20,936,038	27.48%
Wafer Level Packaging	3,582,150	4.70%
Wafer Level Testing	4,897,476	6.43%
Others	158,884	0.21%
Total	76,180,649	100.00%

3.Current Product/Services：

(1)High Pin-count Thin Small Outline Package (TSOP) packaging and testing services
(2)Quad Flat No-leads (QFN) Packaging Services
(3)Multi-Chip Packaging (MCP, S-MCP) Packaging and Testing Services
(4)Ball Grid Array (wBGA, FBGA) IC packaging and testing services
(5)Secured Digital Memory Card (SD, microSD)，USB packaging and testing services
(6)Solid State Drive(SSD)、Embedded Memory (eMMC, eMCP, UFS) packaging and testing services
(7)DRAM Chip-Stacking packaging and testing services
(8)Mobile memory packaging and testing services
(9)Wafer testing services
(10) Wafer bumping packaging services
(11) System-in-Package (SiP) packaging services
(12) Redistribution Layer (RDL) services
(13) Wafer Level Chip Scale Package (WLCSP) packaging services
(14) Package on Package / Package in Package (PoP, PiP) packaging and testing services

(15) CMOS Image Sensor (CIS)packaging and testing services
(16) Flip-Chip Packaging Services
(17) Copper Pillar Bump Flip Chip (Cu Pillar Bump Flip Chip) packaging services
(18) Electro Magnetic Interference (EMI) shield package packaging services
(19) Fan-Out Panel Level (FOPLP) packaging and testing services
(20) Module and System packaging services

4. Product/Service in Development：

(1) Developing ultra-fine RDL line and space 2/2um to provide high efficiency, I/O count, band width, and heterogeneous integration package technologies.
(2) Developing bumping technology use on Fan-out on substrate to provide performance competitiveness solution with 2.5D Si interposer solution.
(3) Developing TSV CIS CSP technology to provide high resolution and consistency image sensor products
(4) Developing Flip Chip packaging for high speed process and transmit on logic products
(5) Developing testing and hardware solutions for high speed 3D NAND (1.6 Gbps) products
(6) Developing Storage Class Memory (SCM) testing services and hardware solutions
(7) Developing USF3.0 Automotive product testing services and hardware solutions
(8) Developing FO Panel Level test handler hardware solutions
(9) Developing high parallelism CIS testing services and hardware solutions
(10) Developing co-use COK for multi-die package
(11) Adopt AI Technology back-end testing services

2. Industry Summary

1. Current Industry Status & Outlook

Border closures and quarantines were introduced by national governments from the second quarter of 2020 onwards in response to the COVID-19 pandemic, forcing drastic changes to people’s way of lives while having a serious impact on the economy as well. The article “Managing Divergent Recoveries” published by the International Monetary Fund (IMF) in April 2021 estimated that the global economy shrunk by 3.3% in 2020. It is now 2021 and vaccines are now becoming available. The global economy is therefore expected to make a strong recovery and grow by 6.0%, and continue this trend to grow by up to 4.4% in 2022.

COVID-19 has changed how people live and work. Tele-commuting and tele-education spurred a surge in demand for notebooks and other electronic products that generated unexpected growth for the semiconductor industry in 2020. According to the latest data from the Semiconductor Industry Association (SIA), global semiconductor sales will reach US$439 billion in 2020, an increase of 6.5% compared to 2019. China is expected to the largest market with a value of US$151.7 billion and 5% growth. The Americas will be worth US$94.2 billion and grow by a staggering 20%.

In the long-term, the semiconductor market expects continued growth over the next few years thanks to demand from constant upgrades to personal devices and chip-based computing devices. In addition to personal devices and services, other semiconductor applications including artificial intelligence (AI), 5G, electric/autonomous vehicles, IoT and tele-medicine are also developing at a rapid pace too. The semiconductor industry can therefore expect its total revenues in 2021 to grow by 8.4% compared to 2020.

Continued growth in the semiconductor industry means Taiwan is now playing an increasingly important role in the global semiconductor industry chain as well. In 2020, the US was the leading semiconductor supplier with 42.9% of the market followed by Taiwan at 19.7%. The foundry and packaging & testing segments of the Taiwanese semiconductor industry now account for over 70% and 50% of the global market respectively. Their importance to the global semiconductor supply chain cannot be underestimated.

According to the Industrial Technology Research Institute (ITRI), the total output of the Taiwanese semiconductor industry reached a new high of NT$3.2222 trillion in 2020 and grew by 20.9% compared to 2019. The IC design industry was worth NT$852.9 billion and grew by 23.1% compared to 2019, while the IC foundry industry was worth NT$1.6297 trillion in 2020, and grew by 24.2% compared to 2019. The memory and other manufacturing industry was worth NT$1,90.6 billion and grew by 19.4% compared to 2019. The IC packaging testing industry was worth NT$377.5 billion and grew by 9% compared to 2019. The IC testing industry was worth NT$171.5 billion and grew by 11.1% compared to 2019.

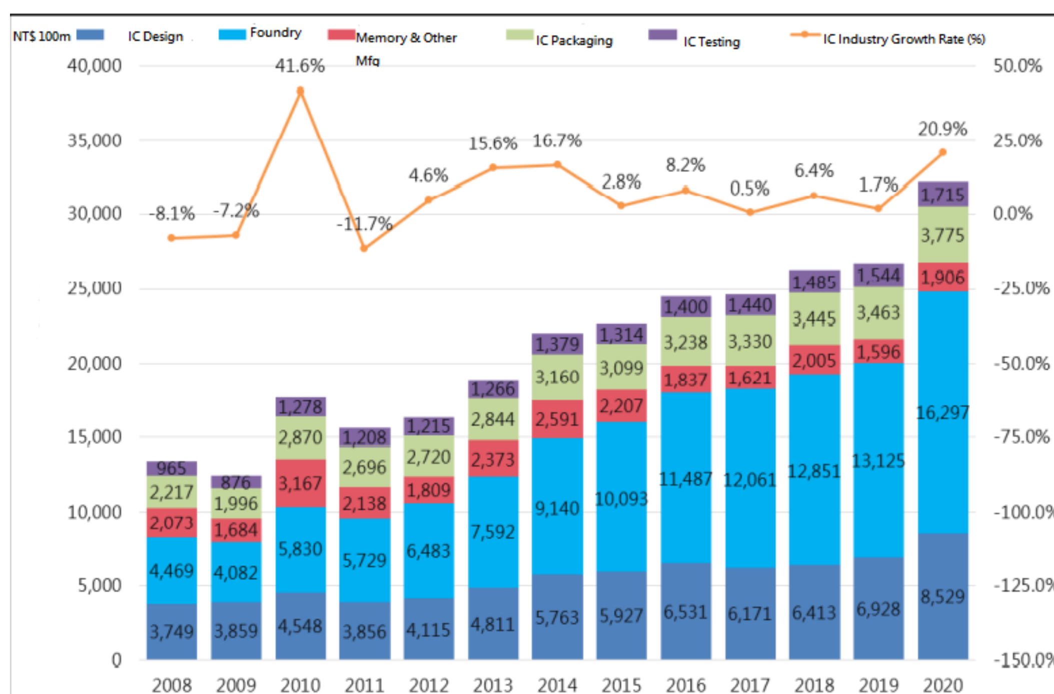
2016-2020 Taiwan IC Industry Value

Unit：NT $billions

In NTD M	2016	YoY	2017	YoY	2018	YoY	2019	YoY	2020	YoY
IC Industry value	2,449.3	8.2%	2,462.3	0.5%	2,619.9	6.46%	2,665.6	1.7%	3,222.2	20.9%
IC Design	653.1	10.2%	617.1	-5.5%	641.3	3.9%	692.8	8.0%	852.9	23.1%
IC Manufacturing	1,332.4	8.3%	1,368.2	2.7%	1,485.6	8.6%	1,472.1	-0.9%	1,820.3	23.7%
Wafer Foundries	1,148.7	13.8%	1,206.1	5.0%	1,285.1	6.6%	1,312.5	2.1%	1,629.7	24.2%
Memory & Other	183.7	-16.8%	162.1	-11.8%	200.5	23.7%	159.6	-20.4%	190.6	19.4%
IC Packaging	323.8	4.5%	333.0	2.8%	344.5	3.5%	346.3	0.5%	377.5	9.0%
IC Testing	140.0	6.5%	144.0	2.9%	148.5	3.1%	154.4	4.0%	171.5	11.1%
IC Product Value	836.8	2.9%	779.2	-6.9%	841.8	8.0%	852.4	1.3%	1043.5	22.4%
Overall Global Semiconductor Value (US$ B)/YoY	3,389	1.1%	4,122	21.6%	4,688	13.7%	4,123	-12.0%	4,404	6.8%

Source：Industrial Technology Research Institute

Taiwan Semiconductor Revenue by Sector



Source：Industrial Technology Research Institute

2. Industry Supply Chain

Sectors in IC industry can be categorized according to position in production process, including IC Design at the upstream, IC Manufacturing & Foundries at the mid-stream and IC Assembly & Testing sector at the downstream.

(1) Upstream：

IC Design Sector includes companies designing IC products. The sector is knowledge-intensive with high entrance barrier and return on investment. Its main business scope includes designing and sales of own products or customized design for customers.

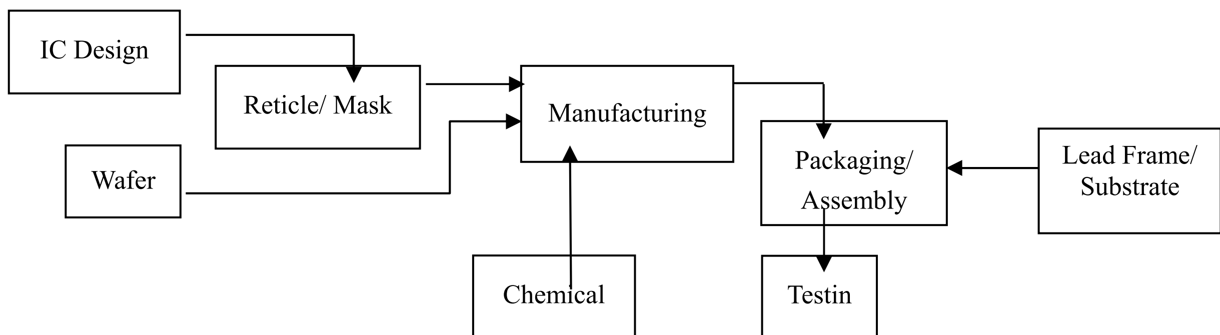
(2) Mid-stream：

Include IC manufacturing sector and related chemical suppliers. Its main business scope involves manufacturing wafer with precision tools according to in IC circuits designed in house or specified by customers. This sector is capital and technology intensive with high entrance barrier

(3) Downstream：

Outsource Assembly and Testing (OSAT) sector provides cutting, packaging, assembly and testing service to manufactured IC wafer for final product application.

IC Industry Supply Chain as illustrated below



In recent years' scope of IC manufacturing as well as assembly and testing continues overlap due to increasing market demand for larger quantity and higher quality IC. In addition to higher performance and smaller profile, IC is also required to satisfy demands for integrated functions. As a result, some wafer foundries begin to develop products and services that extends into scope of IC packaging and assembly. Majority of wafer foundries choose to work closely with cooperating assembly and testing service providers. Integrated Design and Manufacturers (IDM) also collaborate with OSAT service providers in designing and developing product solutions.

3. Trend of Product Development and Competition

(1) Trend of Product Development

IC Assembly and Testing refers to back end of line production process of IC production, including packaging and assembly, as well as testing. Its purpose is to provide protection, thermal management and connectivity to IC chips. Packaging and Assembly technology can be divided broadly into two main stages, including lead frame packaging and leadless packaging on substrate. The initial stage of development is lead frame packaging, which connects IC chips to external connection pins around the IC chips through means of wire bonding. Subsequently lead frames are replaced by substrate where external connection is replaced by led balls under IC chips. The latest development no longer uses lead frames or

led balls. The latest Flip-chip packaging technology places the IC chip directly on motherboard where IC chips are connected directly to substrate through metal bumps

There are two main areas of technological development in Assembly and packaging technology. One is System on Chip (SoC) where the entire system circuit, including Central Processing Unit (CPU), Memory (Flash memory/ SRAM), Digital Signal Processor (DSP), Input/output Interface (I/O interface) … are incorporated onto one single IC chip. The other is System in Package (SiP) where IC chips with different digital or analog functions are connected to Integrated Substrate or Functional Substrate with embedded passive components or electric circuits through bumping or wire bonding. SiP packaging technologies also differs according to application requirements; such as surface Multi-Chip Module (MCM) packaging or 3D Chip-Stacking packaging which reduces surface area.

The current trends toward multi-function, high-performance, power-efficiency, heat dissipation, and highly integrated semiconductor products are driving the push towards System in Package (SiP) and Heterogeneous Integration. These require the integration of different technologies such as Panel Fan-out, Through Silicon Via (TSV), Embedded Package, Thin Wafer, Chip Stacking, Fine Pitch Flip Chip, High Density Encapsulation, Antenna-in-Package (AiP), High Density SMT, system assembly and testing. Future products will require the integration of different advanced technologies. A packaging and testing company must possess all kinds of packaging and testing technologies in order to provide customers with the full range of high-quality products and become a leader in the very competitive semiconductor industry.

In response to trend of technological development of the industry, as well as increasing demand from upstream customer for capacity in memory, logic, as well as advance assembly, packaging and testing, our company continues to invest in new equipment and capacity to satisfy customer demand. In the meantime, our company continues to develop assembly and packaging technologies providing high performance at low cost. As assembly and packaging industry evolves with an increasing diversity and technology-intensiveness, companies with capability of independent technological development as well as maintaining stable customer base will benefit the most. PTI held a groundbreaking event in Sep 2018 for a Fan-Out Panel-Level Packing (FOPLP) facility, which is the first one in the world FOPLP dedicated facility. PTI believes the FOPLP will be essential for future applications on 5G, AI, bio tech, Advanced Driver- Assistance System (ADAS), smart city, and IoT related products. Ability to develop advanced packing and testing services and secure customer relations will play major factors for corporate sustainability.

(2)State of Competition：

The Taiwanese IC packaging and testing industry was worth approximately NT$549 billion in 2020 and accounted for more than half of the global semiconductor packaging and testing market. Five out of the top ten packaging and testing service providers in the world were based in Taiwan. PTI has many years of experience in the packaging and testing sector. We lead the global top five in semiconductor packaging and testing service providers with our stacked IC packaging technology. For 2020 our total revenues for the year were NT$76.181 billion, an increase of 14.51% compared to 2019, with Flash accounting for 39%, DRAM accounting for 23%, logic IC accounting for 27%, while System in Package (SiP) and modules accounted for 11% of total revenues.

SOC embedded many components with similar technology notes in one package. Cost of SOC package will increase significantly when technology note migrate to 7 nm and onward which maybe unfavorable for many IC design companies. PTI has been developing advanced packaging for heterogeneous integration to provide affordable packaging solutions. Fan-Out Panel-Level Packaging (FOPLP) is a cost effective solution for embedded components with various technology notes into one package at similar performance as SOC.

A comprehensive back-end packaging and testing capability means that PTI is more than capable of providing semiconductor customers with one-stop service on everything from Bumping, Wafer Sort, WLCSP, Wire Bond Package, Flip chip Package, SiP, Panel Fan-out, 3DIC TSV, Final Test, to System Assembly services. PTI strengths such as technical capability, short lead time, high yield and low cost are all instrumental to our ability to realize continued growth with our customers in the very competitive back-end packaging and testing segment.

Revenue Annual Growth 2015-2020 of Taiwan OSAT Companies Ranking Among Global Top 10

Unit：NT million

Year/Company	2020	YoY%	2019	YoY%	2018	YoY%	2017	YoY%	2016	YoY%	2015
ASE Holding	476,979	15.4%	413,182	4.0%	397,261	36.8%	290,441	5.7%	274,884	-3.0%	283,302
PTI	76,181	14.5%	66,525	-2.2%	68,039	14.1%	59,632	23.4%	48,344	13.7%	42,524
KYEC	28,959	13.4%	25,539	22.7%	20,816	5.7%	19,686	-2.0%	20,081	17.2%	17,129
Chipbond	22,275	9.1%	20,419	9.0%	18,725	16.4%	18,428	6.8%	17,256	2.3%	16.863
ChipMOS	23,011	13.1%	20,338	10.0%	18,480	3.0%	17,941	-7.5%	19,392	-2.4%	19,869

Source：Market Observation Post System/ Relevant Financial Statements Organized by PTI

(3) Summary of Technological Research & Development

1.R&D Cost

Latest Annual R&D expenditure as followed

Unit：NT thousands

Item / Year	2020
R&D Expenditure	2,196,321

2. Successfully developed technology or product：

(1) Packaging Solution Achievements:

A. The method for using RDL first (chip last) for substrate and Fan-Out Panel Level Package (FOPLP) was successfully applied to the development of automotive SiP with embedded passive components and has now been fully validated by the customer.

B. FOPLP method based on RDL with Line/Space 3/3um RDL was successfully developed, validated and applied to high-performance computing IC.

C. SoC and High Bandwidth Memory HBM were successfully integrated through chip middle process for FOPLP. The technology can be used to meet the data processing and low-latency data transmission requirements of HPC/AI.

D. LED and control IC were successfully integrated through chip middle process for FOPLP. Applications include AR/VR devices used in entertainment, healthcare, and education.

E. Embedded die was successfully developed using chip middle process for FOPLP. The process can be used to realize high-density heterogeneous integration of high-end mobile devices and HPC processors.

F. FOPLP products with bump free fan-out and multi-layer RDL can now be mass produced at a very competitive cost. Applications include packaging products for mobile devices, wearable devices, and consumer products.

G. Ultra-thin and high density stacked Bandwidth Memory (HBM) product was successfully developed using Through Silicon Via (TSV) packaging process.
H. TSV CIS CSP process for the mobile device, healthcare, security surveillance and automotive segments was successfully developed and is scheduled to start mass production in the second half of 2021.
I. Completed the development of Antenna in Package (AiP) technology. A Radio Frequency (RF) laboratory was also set up to help customers accelerate the development and validation of their 5G high-frequency packaged products.
J. Flip Chip BGA (FCBGA) for large IC is now ready for mass production. The process can be used to meet the demand for high-performance computing IC from data centers and servers.

(2) Testing Solution Achievements:

A. Testing services for Wi-Fi 6E and BTC.
B. PCIe Gen4 system-level testing services and hardware development.
C. Testing and hardware development for High Density 3D-AND.
D. Testing and development of related hardware for Teradyne IP750 CIS.
E. Development of high-speed test board for Advantest T5503HS.
F. Development of Thin package COK.
G. Development of O/S test bench.

(4) Long-term and Short-term Business Strategy

Our Short-term and Long-term strategic business planning in management, production, sales & marketing and research & Development are outlined below

1. Short-term business planning

(1) Technological leadership is one of PTI’s key business strategies. The diversification of semiconductor product applications is reflected in the packaging technologies they need as well. PTI will continue to develop new processes and technologies aimed at meeting the needs of the industry. An example of this is advanced packaging technology for CMOS Image Sensors (CIS). This is one of the products that PTI will be focusing on in the short-term.

(2) Continue to reduce production lead time in order to provide speedy service for customers.

Out main advantage lies in flexible production process offering high level of mobility. We will continue to reduce production lead time in order to provide speedy service for our customers.

(3) Continue to provide integrated Turn-Key services

Due to consideration in cost, up-stream wafer foundries continues to outsource IC assembly, packaging and testing to specialized assembly and testing facilities (OSAT). We are among the few companies capable of providing complete assembly, packaging and testing services in the country. In order to increase our competitive advantage in providing customer with more options and better service, we will continue to offer integrated Turn-Key services.

(4) Explore foreign and domestic market and increase market share

In addition to maintaining strong relationship with existing foreign and domestic customers, we will use our competitive advantage in flexible production process, high level of mobility and capability in proving Turn-Key services to develop new customer worldwide.

2. Long-Term Business Planning

(1) Emphasize long-term partnership with customer and supplier

Through emphasizing long-term collaboration with up-stream and down-stream partners, we aim to become the trusted OSAT service provider providing our customer reliable quality and

service. We will also develop strong collaborative partnership with our suppliers

(2) Emphasis on long-term cooperation with suppliers

Our suppliers for semiconductor equipment and materials have been crucial to the growth of PTI over the years. The Company will therefore continue to strengthen and expand our cooperation with suppliers so that we can all grow and succeed together.

(3) Increase the level of production automation with an emphasis on smart factories to improve product yields and production efficiency.

(4) Continue to development next-generation packaging and testing technologies

PTI has always been on the cutting-edge of the industry in developing advanced packaging technologies that our customers need. The establishment of the packaging and testing R&D center in 2006 saw PTI become the industry leader in innovative R&D of new technology patents. The new technologies are then introduced into mass product at a suitable time and place. In the future, technology will continue to service as the foundation for sustained innovation. PTI will therefore continue to focus on the development of innovative technologies as well.

(5) Increase revenue contribution from Logic, Module(SSD) and Micro-electro-mechanical Systems(MEMS)

Through increasing customer and revenue in areas of Logic, Module (SSD) and (MEMS) we continue to diversify product risk and increase company scale.

2. Market and Product Sales Outlook

(1) Market Analysis

1. Primary area of product/service sales/provision

PTI primary business scope includes providing IC outsourced assembly and testing (OSAT) services in overseas as well as domestic market. As of 2020 revenue from domestic sales account for 20.15% of overall revenue while that of overseas markets account for 79.85%. PTI principle markets are located in Japan, Singapore, and North America.

Unit：NT Thousands

Year / Market	2020	%	2019	%
Domestic	15,347,846	20.15	13,401,920	20.15
Export	60,832,803	79.85	53,123,224	79.85
Japan	27,395,237		23,245,391	
Singapore	14,378,679		13,147,802	
North America	13,111,792		12,634,897	
Europe	2,281,902		2,367,141	
China and Hong Kong	1,085,555		1,133,562	
Others	2,579,638		594,431	
Total	76,180,649	100	66,525,144	100

2. Market Share：

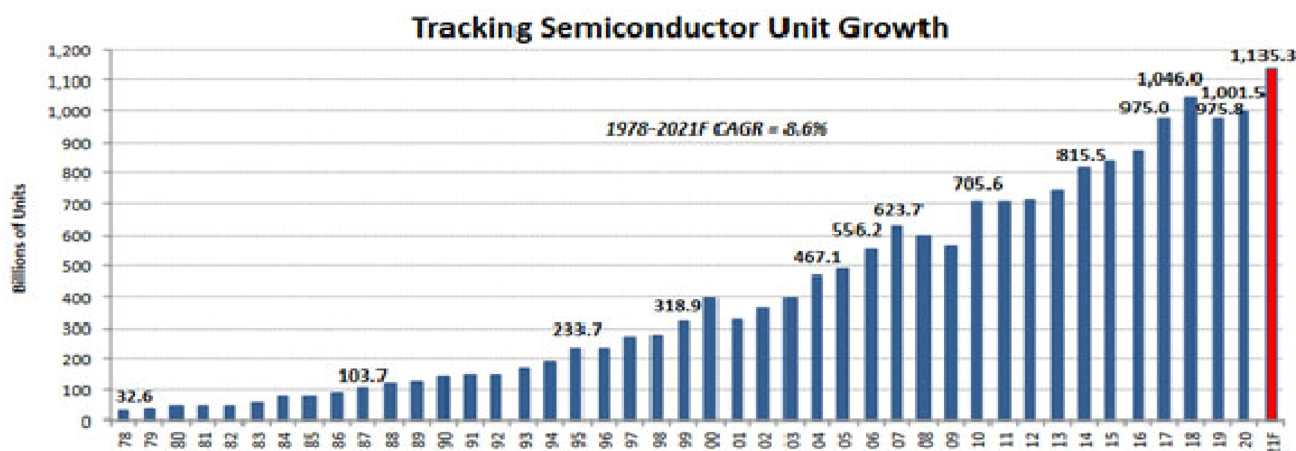
A surge in demand in the global semiconductor market from all kinds of applications meant that almost all spare packaging and testing capacity was used up in 2020. Most OSATs experienced high growth as a result. Chip insight data placed PTI 4th out of the global top 10 in packaging and testing revenues. This was the same ranking as 2019 but market share increased from 8.01% in 2019 to 8.18% in 2020. PTI is therefore continuing to grow at a steady pace.

3. Market Supply and Demand Outlook and Growth Potential

According to the annual market forecast for 2021 published by SEMI in March, data centers, 5G

applications, HPC and AI applications will continue to drive growth in the semiconductor industry. The favorable outlook for semiconductor manufacturing, packaging and testing should also translate into continued growth for the semiconductor equipment and materials industries.

At the same time, World Semiconductor Trade Statistics (WSTS) reported that the semiconductor market will grow by 10.9% in 2021 with sensors growing by 16.8%, analog IC growing by 15.2%, and logic IC growing by 13.0%. The research report published by research firm IC insight in April also expected total shipments of semiconductor products to grow by record-breaking 13% in 2021.



Source：IC Inside (2021)

4. Competitive Advantages

PTI have grown to become one of the major OSAT service providers, delivering high quality, dedicated service and advanced technology for our customers. We continue to collaborate closely and maintain solid relations with our customers. Our competitive advantages are as followed.

(1) Solid Strategic Allies and Globalization

The IC OSAT sector is characterized by high level of collaboration with upstream wafer foundries. Consequently, profitability of assembly, packaging and testing service providers relies on solid relationship with customers. In the meantime, IC manufactures also chose long-term partnership with assembly, packaging and testing service providers due to confidentiality in product technology, product quality and production process. Such strategic alliance with concrete relationship of collaboration is beneficial for long-term development of the company.

(2) Turn-key Service

In response to rapid decline in IC sales prices, we offer Turn-key Service to our customers, including both assembly and packaging, as well as testing in order to reducing cost and risk in shipping process.

(3) Outstanding capability in development and production

PTI have been committed in developing new technologies while investing heavily in technological research and production process improvement. We have been proudly awarded many domestic and international patents, as well as technology license from multiple major international manufacturers, establishing our solid competitive edge within the industry.

(4) Investment in high precision automated equipment

In response to development of IC product towards increasingly higher performance, pin-count and density we continue to invest in high precision automated equipment from well-known Japanese and US vendors in order to satisfy customer needs and continuously improve our quality of service.

(5) Online automated customer service system

Our online automated customer service systems enable customer to track closely product status, production progress, and any potential problems. This facilitates swift problem resolution and product improvement while increasing added value for customer.

5. Supporting and Hindering Factors and Responding Strategy

(1)Supporting Factors：

【Industry Background】

① Competitive Advantage of Taiwanese Semiconductor Industry

Taiwan semiconductor industry encompasses a complete semiconductor industry structure from upstream IC Design and wafer foundries to downstream OSAT service providers. This vertically integrated chain of supply, consistent with industry development, contributes to establish the strong competitive position of Taiwanese semiconductor sector in the global market. Booming IC industry facilitated by rapid global development in electronics, information technology, communication technology, consumer electronics, optoelectronic industry, Artificial Intelligence (AI) and Internet of Things (IoT) will continue to support stable growth in OSAT sector.

②OSAT Sector Benefitting from Major Integrated Device Manufacturer (IDM) Outsourcing Trend.

Due to high capital investment of advanced production process, global IDM manufacturers continue to increase its outsourcing of wafer manufacturing, assembly, packaging and testing to Asia region with lower production cost. Taiwan, with its complete industry structure and dynamic vertical supply chain, is the most preferential outsourcing choice for international IDM manufacturers and IC Design Companies. Taiwanese OSAT sector also benefits from OEM orders.

【Competitive Niche】

① Strong Managing Team and Solid Strategic Alliance

Our major share-holders include well-known companies such as Kingston Group and Taiwan Toshiba Semiconductor, facilitating solid reputation and stable customer base. As our revenue continues to grow, support from our shareholders also ensures sufficient capital supply for our future operation and development. Furthermore, our management team is equipped with comprehensive working experience within the semiconductor sector and capability of making appropriate decisions according to market trend.

②Continued Development and Innovation

In response to rapid changes in semiconductor market, PTI is dedicated to technological development. In addition to developing new products, we continue to introduce new technologies through collaboration with our strategic partners. Our research and development team is equipped with capability in independent designing and developing testing software and hardware programs. In addition to continually developing testing program and improving testing equipment in areas of IC testing, we also continue to develop cutting edge technologies and services in respond to future mainstream IC market demand. Our business scope has extended into logic market from assembly, packaging and testing of memory products. Building on our leading advantage in assembly, packaging and testing for both memory and logic IC, PTI continues to expand its scope into 3D IC. In assembly and Packaging we have completed development in IC Chip-Stacking technology, Field Programmable Gate Array (FPGA) and Fan-Out Packaging technology, and have been rewarded many patents. We will also continue our effort in refining in material and production process.

③Turn-key Service and Flexible Capacity

We able to provide our customer integrated turn-key service of IC assembly, packaging, testing and packing service in a single order, effectively reducing shipping time and cost. In addition, we are able to respond quickly to market and customer demand and swiftly expand and adjust our capacity accordingly through timely investment in advance equipment, providing our customer with most competitive solutions.

(2) Hindering Factor and Responding strategy

① Fluctuation in IC Industry in Connection with Economic Climate

Strategic Response：

A. Product Diversification

In addition to continually strengthening our memory assembly, packaging and testing quality and technology, acquisition of Greatek Electronic Inc. also contributed immensely to expansion into Logic market. Furthermore, our new production technologies such as copper pillar bump, Re-distribution Layer (RDL), Wafer Level CSP, MEMS and SSD continues to achieve customer qualification. Through product diversification we are able to mitigate risk of economic cycle as well as provide our customer greater range of assembly, packaging and testing services

B. Strengthening Collaboration with Customers

Establish long-term partnership with existing customers, establishing Powertech Semiconductor (Xian) Co. Ltd. and actively developing new customers to achieve stable and sufficient level of capacity utilization.

C. Increase Market Scope

With Akita facility as production basis in Japan, supported by Tera Probe, Inc., PTI will establish comprehensive chain of supply in Japan.

② Erosion of Gross Profit by Increasing Material Cost

Strategic Response：

A. Lowering Production Cost

Mitigating the effect of increasing material cost by varying product structure, improving yield, developing alternative material solution and continue to improve production process.

B. Emphasizing Added value

Continue to support our customer with high quality product with short lead time and swift responding service. Enabling our customers to produce time-effective and competitive product through our dedication in developing new technologies.

③Manpower shortage

Strategic Response：

A. Increase staff welfare and bonus incentives to attract talent and encourage cohesion among staff members. We also design staff training program according to long-term development strategy to support progress for both company and staff member.

B. We will continue to improve productivity and dependence on manpower through actively introducing advanced automated equipment in conjunction with upcoming Industrialization 4.0.

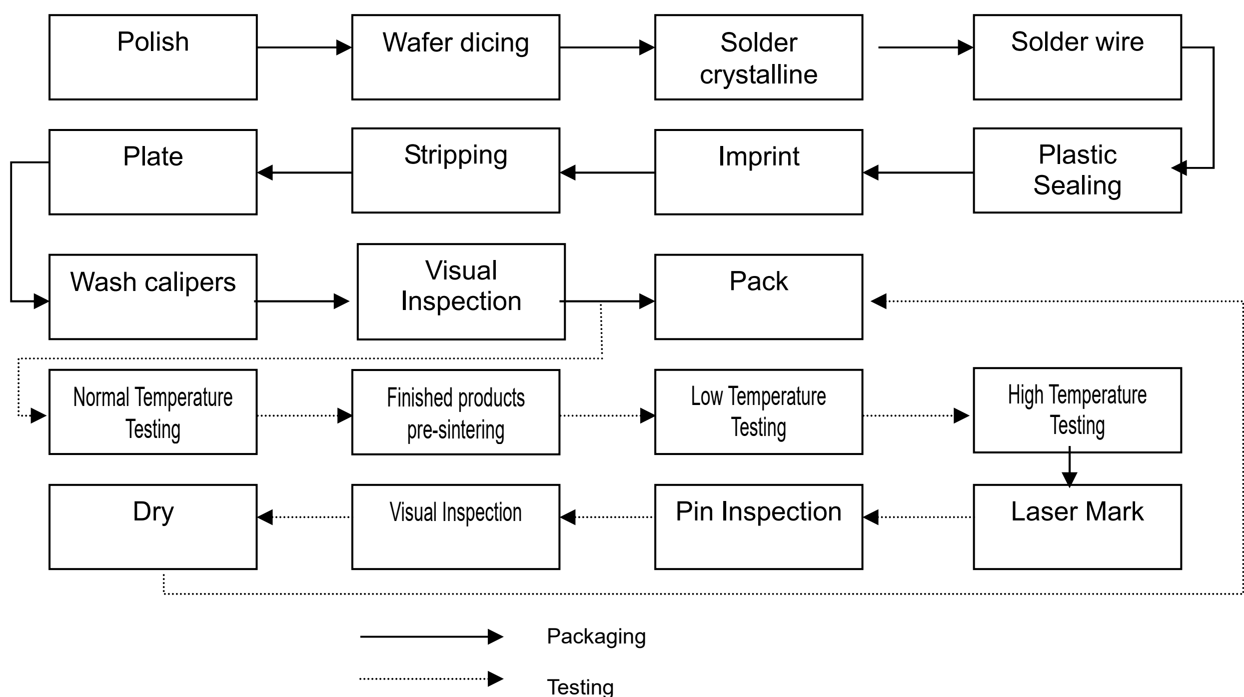
C. Alleviating the effect of manpower shortage by employing foreign workforce with permission from Ministry of Labor.

(2) Important Applications and Production Process of Main Products

1. Product Applications

Main Products or Services	Important Applications or Functions
IC Assembly	To turn Wafer into complete single product through sawing, mounting, wire bonding, molding, trimming/forming, and other processes of the Integrated Circuit (IC).
Final Test	Placing the IC into different environment such as normal, high, or low temperature to test and classify according to test conditions specified by customers. These steps ensure the product conforms to the quality and stability demanded by customers.
Burn-In	Using Burn-In process forced the IC operate in extreme environments to accelerate aging of the products and screen out the unqualified, to ensure reliability of products.
Laser Mark	Printing the name of company and product details on the IC.

2. Production Process



(3) Suppliers of Major Raw Materials

Our company mainly provides IC processing for our customers. The suppliers of the key raw materials used in packaging operations are listed below:

Main Raw Materials	Main Suppliers
Lead-Frame	Shinko Electric Ind. Co., Ltd. Nichiden Seimitu Kogyo Co., Ltd.
Substrate	Nan Ya Printed Circuit Board Corp. Unimicron Technology Corp. Simmtech Co., Ltd. Shinko Electric Ind. Co., Ltd. Kinsus Interconnect Technology Corp. Zhen Ding Tech. Inc. Shennan Circuits Co. Ltd.
Die Attach Film (DAF)	Hitachi Chemical Co.(HK) Ltd. Nitto Denko Corp. LINTEC Corp. Henkel AG & Co.
Gold Wire	Chroma New Material Corp. TANAKA Kikinzoku Kogyo K.K.
Compound	Taiwan Hitachi Asia Pacific Co., Ltd. Showa Denko Materials Co., Ltd. Shin-Etsu Chemical Co., Ltd. KYOCERA Corp. Chao Young Corp.

(4) Information of suppliers' who commanding 10% and plus of annual purchasing volume in any year over the last 2 years.

1. List of major supplier accounted for over 10% of total purchase over the last 2 years.

Unit: NT$ Thousands

Year	2019				2020				As of 2021 Q1			
Rank	Name	Amount	Percent of total amount sold (%)	Relation with Issuer	Name	Amount	Percent of total amount sold (%)	Relation with Issuer	Name	Amount	Percent of total amount sold (%)	Relation with Issuer
1	A	1,886,899	8.96	None	A	2,951,768	10.72	None	A	599,989	9.27	None
2	Others	19,169,128	91.04		Others	24,594,203	89.28		Others	5,872,298	90.73	
	Net Amount Sold	21,056,027	100		Net Amount Sold	27,545,971	100		Net Amount Sold	6,472,287	100	

Reason for changes: PTI revenue increase contributed by capacity expansion, and customer demand increase.

2. List of Major Customers:

	2019				2020				As of 2021 Q1			
Rank	Name	Amount	Percent of total revenue %	Relation with Issuer	Name	Amount	Percent of total revenue %	Relation with Issuer	Name	Amount	Percent of total revenue %	Relation with Issuer
1	A	17,934,998	26.96	Related Party	A	21,607,896	28.36	Related Party	A	4,674,276	25.36	Related Party
2	B	14,818,184	22.27	None	B	16,116,653	21.16	None	B	3,692,128	20.03	None
3	C	9,319,159	14.01	None	C	11,035,903	14.49	None	C	2,214,776	12.02	None
	Others	24,452,803	36.76		Others	27,420,197	35.99		Others	7,848,053	42.59	
	Net Revenue	66,525,144	100		Net Revenue	76,180,649	100		Net Revenue	18,429,233	100	

(5) Production Quantity & Value Table 2019-2020

Quantity Unit: 1,000 wafers Amount Unit: NT$ Thousands

Year / Production Units	2019			2020		
	Capacity	**Quantity**	**Amount**	**Capacity**	**Quantity**	**Amount**
IC Packaging	12,633,942	11,083,932	30,073,884	15,437,158	13,771,870	35,221,455
IC Testing	8,861,588	6,715,326	13,151,756	9,919,695	8,611,083	15,955,862
Wafer Level Packaging	1,300	774	2,483,523	1,366	863	2,585,149
Wafer Level Testing	1,204	1,068	2,272,550	2,551	1,857	4,261,861
Total	21,498,034	17,801,100	47,981,713	25,360,770	22,385,673	58,024,327

(6) Sales Quantity & Value Table 2019-2020

Quantity Unit: 1,000 wafers Amount Unit: NT$ Thousands

Year / Sales Quantity & Value	2019				2020			
	Domestic Sales		**Exports**		**Domestic Sales**		**Exports**	
	Quantity	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
IC Packaging	6,304,864	8,519,264	4,815,833	31,664,280	8,099,698	9,967,064	5,592,115	36,639,037
IC Testing	4,217,109	2,271,432	2,548,104	15,352,216	5,689,608	2,566,242	2,872,768	18,369,796
Wafer Level Packaging	176	881,556	551	2,564,593	236	1,018,282	620	2,563,868
Wafer Level Testing	981	1,722,420	836	3,128,665	1,077	1,794,971	819	3,102,505
Others	—	7,248	—	413,470	—	1,287	—	157,597
Total	10,523,130	13,401,920	7,365,324	53,123,224	13,790,619	15,347,846	8,466,322	60,832,803

3. Employee Status

Table for Employees Number, Average Age, Average Years of Service, and Distribution of Education for Last Two Years

Year		2019	2020	As of Mar 31, 2021
Employees number	Administration and Management Staff	1,435	1,434	1,426
	R&D Engineering Staff	2,394	2,493	2,434
	Operators	7,562	7,674	7,582
	Total	11,391	11,601	11,442
Average Age		34.50	35.07	35.34
Average Years of Service		5.46	5.99	6.22
Education Distribution in %	Doctorates	0.08	0.08	0.07
	Masters	7.77	8.03	7.90
	College and Universities	71.72	71.60	71.68
	High School	19.96	19.89	19.96
	Below High School	0.47	0.40	0.39

4. Environmental Protection Expenditures

The total amount of losses (including reparations) and penalties due to environmental pollution caused in most recent year and as of the publication date of this annual report, and an explanation of future responses (including improvement measures) and possible expenditures.

(1)The total amount of losses (including reparations) and penalties due to environmental pollution caused as of most recent year and publication of annual report.

1. The Environmental Protection Bureau of Hsinchu County Government issued a notice (Huan-Ye Letter No. 1093401212) on May 15, 2020, stating according to an audit of the work logs conducted on May 13, 2020, the following infractions were identified at the Company's 3C factory:

(1) The waste storage area labeled as D-0899 (Mixed waste fibers, cotton and fabrics) contained other plastic waste, and R-1908 (other IT products) also contained waste plastic. A fine of NT$6,000 was therefore imposed for failure to properly sort and store waste by their composition violated Paragraph 1, Article 36 of the *Waste Disposal Act*, and Item 1, Paragraph 1, Article 6 of the *Methods and Facilities Standards for the Storage, Clearance and Disposal of Industrial Waste*.

(2) Empty, unwashed waste liquid containers were placed in the area marked for R-0201 mixed waste plastics. The containers were determined to have contained a flammable liquid, making them flammable hazardous waste that should be properly marked and sorted for storage. A fine of NT$180,000 was therefore imposed for violating Paragraph 1, Article 36 of the *Waste Disposal Act*, as well as Item 2, Paragraph 1, Article 7, and Paragraph 4, Article 11 of the *Methods and Facilities Standards for the Storage, Clearance and Disposal of Industrial Waste*.

Corrective Action:

(1) The waste storage area at the 3C factory was re-organized by May 29 (Fri). The storage facilities and waste markings were also inspected. A factory-wide education campaign was also conducted to ensure proper sorting and storage of waste by employees.

(2) A review was conducted on hazardous waste and a dedicated storage area established. Instructions on the storage of empty waste containers were also issued.

Preventive measures:

The environmental inspection/patrol plan for the site was reviewed. Frequency of inspections by assigned personnel was also increased.

2. The Environmental Protection Bureau of Hsinchu County Government issued a notice (Huan-Ye Letter No. 1098655225) on June 9, 2020, stating according to an audit of the work logs conducted on May 13, 2020, an issue was identified at the Company's Datong factory (3A factory). The replacement cycle of the scrubber equipment (A001) for the IC testing and packaging process (M01) did not match the specifications (as of the date of audit, the carbon had not been replaced since the last filter change conducted on October 18, 2019) (a replacement interval of once every 6 months was specified in the operating permit). A fine of NT$100,000 was therefore imposed for failure to comply with the conditions of the operating permit for a stationary pollution source under Paragraph 2, Article 24 of the *Air Pollution Control Act*.

Corrective actions:

The activate carbon of the scrubber equipment (A001) was immediately replaced.

Preventive measures:

The replacement time and frequency for activated charcoal is now defined in the annual preventive maintenance plan for air pollution control equipment to ensure that it is regularly examined and replaced.

(2) Expected Environmental Protection Capital Expenditures for Coming Years
Intended purchase of pollution prevention equipment or capital expenditure is listed below:

Unit：NT$ Thousands

Item/Year	2021	2022	2023
Greenhouse gas examination and consultant fees	400	400	400
Wastewater treatment and emission fees	30,000	31,000	31,000
Wastewater treatment fees	37,624	40,000	40,000
Environmental protection monitor & exam fees	700	800	800
Waste material disposal fees	55,000	60,000	60,000
Expansion of wastewater treatment equipment	95,200	29,400	4,410
Air pollution examination fees	1,672	1,752	1,752
Establish air pollution treatment equipment	19,700	4,700	700
Air pollution prevention fees	250	300	300
Total Expenditure Amount	240,546	168,352	139,362

2. Maintenance Measures

(1) Management Program:

The Company conducts the following programs to implement its responsibilities on environmental protection:

A. Air Pollution Control: Set up air pollution control equipment VOCs. Regularly exam the air quality to meet Environmental Protection Bureau standards. Hsin Chu Science Park Plant I and II both adopted Best Available Control Technology (BACT) to eliminate the impact on the environment.

B.Recycle Waste Water: Utilize waste water recycle system to reduce waste on resources and re-use the recycle water to save and protect the water resources.

C.Water Pollution Control: all facilities waste water must be treated and meet official standard before release back to the water system. Internal monitoring system and regular measure & calibration were in place.

D. Waste Disposal: The entire disposal must meet environmental protection regulations. Enhance the recycle and re-use rate by well-classify materials.

E. Work with suppliers: Regular inspects suppliers to meet environmental protection regulations.

F. Climate Change and Energy Control: the company has established Greenhouse Gas Control Procedures followed the guidance of ISO14064-1 and Task Force on Climate-related Financial Disclosures (TCFD) to reduce impacts and financial risks of extreme weather.

G. Voluntary Environmental Monitor Program: Program including waste water, noise, air quality, waste material impact on environment to effectively control the company operations impact on the environment.

H. Allowance Permit: Consistently monitor the company operations meet the latest environmental standards.

(2) Environmental management performance

A. Air pollution control:

a. The Company emitted 138.4 tons of Volatile Organic Compounds (VOCs) in total during 2020. The reporting and payment of pollution control fees for use of VOCs were completed through the EPA Air Pollution Control Fee for Stationary Sources System every quarter as required by law.
b. Regular monitoring data provided by qualified external contractors indicated that concentrations of polluting emissions from all factories were lower than the regulatory threshold.
c. The Best Available Control Technology (BACT) was adopted by the Hsinchu Science Park (HSP) Factory and HSP Factory 2 for treating VOCs. Environmental impact is reduced through the Zeolite concentrator rotor/regenerative incinerator.

B. Waste water treatment and process recovery:

a. Regular monitoring of discharge water quality indicated that concentrations of all pollutants was lower than the regulatory threshold.
b. Total waste water discharge from all PTI sites in amounted to 1,882,198 tons in 2020, an increase of 201,226 tons compared to 2019. The increase in total waste water (sewage) discharge compared to 2019 was due to an increase in production output in 2020.
c. PTI Taiwan achieved a 36% recovery rate for water used in the packaging process in2020.

C. Waste disposal:

a. Waste was recycled for reuse if possible during waste disposal to turn rubbish into usable resources; The recovery and reuse of waste liquid produced by raw materials at the PTI HSP Factory reduced the amount of waste liquid by 151.07 tons per year.
b. PTI Taiwan recycled 1,023.06 tons of waste in 2020, On average, 85.25 tons were recycled each month.
c. Waste disposal/treatment/recycling contractors undergo field/written audits or random tracking of their vehicles every year. A total of 37 regular audits were conducted for waste contractors during 2020.

D. Energy conservation and greenhouse gases

a. Preference was given to high-efficiency models as well as green refrigerants

with lower global warming potential (GWP) during the selection of factory equipment to reduce GHG emissions.

b. ISO 50001 Energy Management System certification was obtained by PTI in 2020.

c. Total power savings in 2020 amounted to 11,937,528 kWh, or the equivalent of 42975.1 GJ, and met the target of reducing energy consumption by 1%.

d. Green building design is now introduced during the planning of new factories to reduce the consumption of energy and resources.

5. Labor Relations

(1) The Implementation Status for Employee Welfare Policy, Training and Continue Education

PTI values the salary and benefits for its employees and offers lawful benefits. According to the bonus payment specifications, annual earnings minus taxes, surplus and dividends are then appropriate for employee bonuses. Employees can also enjoy benefits provided by the Employee Welfare Committee. With PTI family day, movie screenings and year end banquets to relieve stress from work and bond with coworkers.

1. Insurance: All PTI employees are insured with free general group insurance (including life, accident, medical, cancer, and other insurances). In the spirit of caring for employees as well as their families, the spouse and children of employees also include in the free group insurance.

2. Health and Safety:

(1) Through professional medical staff and health management, PTI conducts health promotion and health management for employees. All plants are staffed with professional medical personnel to monitor the health of employees. We collaborate with professional medical organizations to conduct health examinations for employees.

(2) We conduct risk management and assessment for resumption of work for individuals with high health risks. We also offer health information and courses.

(3) PTI prevent the disease triggered by abnormal workload by self-reporting the workload, work in day/ night shift, prolonged abnormal workload, irregular schedule, frequent business trips, or tense working conditions. These employees undergo health risk evaluation, overwork risk evaluation, and Framingham risk evaluation. On-site doctors evaluate the results, talk with the employees, and if necessary, change job positions, decrease working hours, or take other administrative management to maintain employee health.

(4) In 2004, PTI obtained the OHSAS 18001 occupational health and safety management certificate. To prevent occupational injuries and accidents and ensure the safety and health of our workplace, we also devised our "Environmental Safety and Health Policy".

3. PTI uses the "Psychological Counseling System" to let employees unload burdens and listened to themselves in this ever changing world of responsibilities. Care-free conversations during the Psychological Counseling System to heal inner wounds, rejuvenate, see a different world, and create a healthy work environment.
4. Company Trips: Employee Welfare Committee has unscheduled company trips to for coworkers to bond with each other. In 2017, we offered vouchers of a value of NTD$1,500 to each employee. PTI Taiwan also signed contract with renowned travel agencies to offer package tour or coupon to employees, allowing them to achieve the balance between commitments to work and relaxing lifestyles.
5. Family Day/ Large-scale events: Employee Welfare Committee has irregularly scheduled family day and other large-scale events. The event is held to bond us together. Also, family members of our employees can get to know each other. This company is driven by the support of our colleagues and families. Family Day makes us happy and maintains our physical and mental health. 2017 was the 20th anniversary for PTI, we held special events to thank all the collaboration from our partners. Movie ticket issuing is part of our benefits. Through regular free ticket issuing, employees can enjoy movies together and reach the effort of bonding people. In 2017, we organized entertainment park day trip. Each employee was given two tickets.
6. Employee Club Activities: We value the balanced development of work and life of our employees. PTI's Employee Welfare Committee plans a variety of events throughout the year and encourages employee participation to relieve stress from work, bond with coworkers, develop physical and mental health, cultivate cultural knowledge, promote social welfare, and thus become an employee in the technology industry with LOHAS. We have 9 employee clubs with 822 members.
7. Ask for Leave: In accordance with Labor Standard Act, PTI offers holiday and annual leave to employee. Regular reports are provided to supervisors to assist employee has a balanced work and life.
8. Birthday/ Funeral and Other Benefits:
   (1) Birthday star is given a coupon equivalent of NTD$500 to celebrate his/her birthday. Employees with matters of material contingencies are offered a grant from NTD$1,000 to NTD$10,000.
   (2) PTI offers NTD$1,000 value of cash or equivalent coupon, gift on annual Labor’s Day.
   (3) PTI offers coupon/ gift equivalent of NTD$1,000 during Dragon Boat Festival, Mid-autumn Festival etc.
   (4) Gifts are offered to employees with 3, 5, 10, 20 years of seniority.
9. Maternity Subsidies and Other Services: A NTD$2,000 of subsidies per child birth are provided to employee or its spouse. Also, PTI provides related application services for labor insurance. PTI cares about the employees and their interaction with their families. By having the employee welfare committee signing designated kindergartens and child-care facilities in the areas where employees reside, we offer options of pre-school care for the children of our employees, so that the employees can excel in both their work and their family life without any worries.
10. Food and Housing: (1) PTI has outsourced catering services with subsidies for employees. Employee only has to pay a small amount to enjoy lavish meals. Catering Committee has been established since 2008 to enhance the quality and welfare of employees. (2) PTI offers dormitory option for long distance commute employees.
11. On-Job-Training: To ensure a diverse talent, we "listen to needs" to consider internal and external issues. PTI has committed to meet the demand of employee learning, organizational development, and company policies, which has led to PTI's unique "need and resolution oriented" operational model and training system, where PTI enhances the managerial abilities of executives, improve employee competence, and ensure the sustainable growth of the company. PTI has been promoting virtual training courses and

e-books for continue education especially during the COVID-19 periods.

(2) The Implementation Status for employee retirement and pension system

PTI Taiwan follows the Labor Standards Law and the Labor Pension Act in implementing employee retirement regulations and established a labor pension supervision committee to appropriate the full amount of pension contribution for employee to apply for pension after retirement. The insurer of Annuity Insurance is an insurance company approved by the central competent authority and the insured of the Annuity Insurance contract is the employer who will insure from the same insurer. The workers are the insured persons and beneficiaries. The Annuity Insurance premium to be paid by the employer each month may not be less than 6% of the monthly wages of the worker. In 2020, the listed total amount contributed to pension was NT$367,032,914.

(3) Negotiation between Management and Labor and the Implementation of Employee Rights

1. Employee Care:

PTI values the opinion of its employees. We offer various channels to encourage communication between employees and the management, so that we thoroughly understand employees' satisfaction with management and welfare systems and maintain good labor-management relationship. Since our foundation, PTI has enjoyed harmonious labor-management relationship. There has been no occurrence of labor-management disputes that resulted in losses. The possibility of future labor management disputes leading to losses is extremely low. In addition, with quarterly labor management meetings and welfare committee meetings, employees can voice their opinions on specific issues and reach agreement with the company through discussions in the meetings, thus perpetuating effective communication channels. PTI also respect and protect employees' rights of freedom of speech and freedom of assembly and association. The quarterly labor management meetings are negotiated by labor representation voted by employees.

2. Comprehensive Communication Channels

We have established comprehensive channels for diverse, two-way, and open communication. By helping employees communicate their opinions to the management, their concerns can be effectively taken care of. Our fair, confidential, and efficient handling procedure resolves employees' concerns while maintaining good labor management relationship. We have also established sexual-harassment prevention measures, employee psychological counseling services, and rewards and discipline regulations. We are always listening to employees' opinions. Anonymous or otherwise, we always exercise confidentiality and fairness in handling such information. All forms of retribution are protected against, so that employees can express their concerns without fear.

(4) Status of Violation of Labor Standards Act：

Date	Case #	Violated Regulation	Violated Description	Penalty
Exam Date：2020/3/20 Finding Date：2020/5/21	1093932128	Labor Standards Act Article 32-2	Over maximum overtime allowance	NT$50,000

6. Major Contracts

Contract Classification	Contract Company	Contract Duration	Main Contents	Limitations of Terms
Outsource Services Contract	A Company	Jun 2019 ~	Packaging and testing services	Non-disclosure agreement
	F Company	Dec 2019 ~ Dec 2020	Packaging and testing services	Non-disclosure agreement
	I Company	Dec 2019 ~ Dec 2022	Packaging and testing services	Non-disclosure agreement
Asset Acquisition Contract	UTAC	Sep 2020	Packaging equipment	Non-disclosure agreement
Bank Loan	CTBC Bank	Dec 2020 ~ Dec 2023	Medium-term credit loan	Commitment to maintain a certain ratio between the assets & liabilities and net worth
	Mega International Commercial Bank	Sep 2020 ~ Sep 2023	Medium-term credit loan	None
	Yuanta Commercial Bank	Nov 2018 ~ Nov 2022	Medium-term credit loan	Commitment to maintain a certain ratio between the assets & liabilities and net worth
	KGI Bank	Dec 2020 ~ Dec 2024	Medium-term credit loan	Commitment to maintain a certain ratio between the assets & liabilities and net worth
	E.Sun Bank	Sep 2017 ~ Sep 2032	Building Construction	None
		Sep 2017 ~ Sep 2024	Building Construction	
		May 2020 ~ May 2023	Medium-term credit loan	
	Hua Nan Bank	Sep 2020 ~ Sep 2023	Medium-term credit loan	None
		Mar 2020 ~ Mar 2023		
		Jul 2020 ~ Jul 2023		
		Jun 2020 ~ Jun 2023		
		Aug 2020 ~ Aug 2023		
	First Bank	Oct 2020 ~ Oct 2025	Medium-term credit loan	None
		May 2018 ~ May 2023	Building Construction	
		Oct 2018 ~ Oct 2023		
	Bank of Taiwan	Nov 2012 ~ Nov 2027	Building Construction Loan	None
		Sep 2017 ~ Sep 2022	Machinery & Equipment Loan	
		Jun 2020 ~ Jun 2025		

Contract Classification	Contract Company	Contract Duration	Main Contents	Limitations of Terms
	Taiwan Cooperative Bank	Apr 2017 ~ Apr 2032	Building Construction Loan	None
		Apr 2017 ~ Apr 2024	Medium-term credit loan	
		Sep 2017 ~ Sep 2022	Machinery & Equipment Loan	
	Shin Kong Bank	Nov 2020 ~ Nov 2023	Medium-term credit loan	None
	Chang Hwa Bank	Mar 2017 ~ Mar 2023	Machinery & Equipment Loan	None
		Jun 2017 ~ Jun 2023	Machinery & Equipment Loan	
		May 2019 ~ May 2025	Machinery & Equipment Loan	
	Taishin Bank	Sep 2020 ~ Sep 2023	Medium-term credit loan	Commitment to maintain a certain ratio between the assets & liabilities and net worth
	O Bank	Jul 2020 ~ Jul 2023	Medium-term credit loan	Commitment to maintain a certain ratio between the assets & liabilities and net worth
	Land Bank of Taiwan	Aug 2020 ~ Aug 2023	Medium-term credit loan	None
	HSBC	Sep 2019 ~ Sep 2022	Medium-term credit loan	None
		Sep 2020 ~ Sep 2023		
	Cathay United Bank	Nov 2019 ~ Nov 2022	Medium-term credit loan	None
	Shanghai Commercial & Savings Bank, Ltd.	Sep 2020 ~ Sep 2023	Medium-term credit loan	None
	MUFG Bank	Oct 2019 ~ Oct 2022	Medium-term credit loan	None
		Dec 2020 ~ Dec 2023		